

ISSN 2707-3092

Professional PEDAGOGICS

Професійна
ПЕДАГОГІКА

The institute of Vocational Education
of The National Academy
of Educational Sciences of Ukraine

2(31)'2025

The National Academy of Educational Sciences of Ukraine
The Institute of Vocational Education

PROFESSIONAL PEDAGOGICS

No 2(31)'2025

ISSN 2707-3092 (Online)

<https://doi.org/10.32835/2707-3092.2025.31>

Scientific journal,
founded in 2011

Publishing House of the Institute of Vocational Education of NAES of Ukraine
Kyiv
2025

*Published by decision of the Academic Council of the Institute of Vocational Education of the NAES of Ukraine
(protocol No. № 8 від 07.07.2025 of 2025)*

EDITORIAL BOARD:

Editor-in-Chief: **Luzan Petro** - Doctor of Pedagogical Sciences, Professor, Chief Research Fellow of the Department of Professional Pre-Higher Education, Institute of Vocational Education of the National Academy of Educational Sciences of Ukraine (**Ukraine**).
Deputy Editor-in-Chief: **Romanova Ganna** - Doctor of Pedagogical Sciences, Professor, Deputy Director for Research and Experimental Work, Institute of Vocational Education of the National Academy of Educational Sciences of Ukraine (**Ukraine**)

Editorial board members:

Androshchuk Iryna - Doctor of Pedagogical Sciences, Professor, Head of the Department of Technological and Vocational Education and Decorative Arts, Khmelnytskyi National University (**Ukraine**).
Antonova Olena - Doctor of Pedagogical Sciences, Professor, Head of the Department of Vocational and Pedagogical, Special Education, Andragogy and Management, Zhytomyr Ivan Franko State University (**Ukraine**).
Didenko Oleksandr - Doctor of Pedagogical Sciences, Professor, Deputy Head, Head of the Department of Scientific, Technical Activity and Intellectual Property of the Scientific and Organizational Division, National Academy of the Border Guard Service of Ukraine named after Bohdan Khmelnytskyi (**Ukraine**).
Kalenskyi Andrii - Doctor of Pedagogical Sciences, Professor, Leading Research Fellow of the Department of Vocational Education Content and Technologies, Institute of Vocational Education of the National Academy of Educational Sciences of Ukraine (**Ukraine**).
Kamińska Małgorzata - Dr hab., Paweł Włodkowic University College in Płock (**Poland**).
Kovalchuk Vasyl - Doctor of Pedagogical Sciences, Professor, Head of the Department of Educational Measurements, State Institution "Scientific and Methodological Center for Higher and Pre-Higher Vocational Education" (**Ukraine**).
Kulalaieva Nataliia - Doctor of Pedagogical Sciences, Professor, Vadym Hetman Kyiv National Economic University (**Ukraine**).
Kush Joseph - Ph.D., Professor, Duquesne University (**USA**).
Marhuenda-Fluixá Fernando - Dr., Professor, University of Valencia (**Spain**).
Pryhodii Mykola - Doctor of Pedagogical Sciences, Professor, Corresponding Member of the National Academy of Educational Sciences of Ukraine, Deputy Director for Research, Institute of Vocational Education of the National Academy of Educational Sciences of Ukraine (**Ukraine**).
Radkevych Valentyna - Doctor of Pedagogical Sciences, Professor, Full Member (Academician) of the National Academy of Educational Sciences of Ukraine, Director, Institute of Vocational Education of the National Academy of Educational Sciences of Ukraine (**Ukraine**).
Tanaś Maciej - Dr hab., Dr h.c., Professor, The Maria Grzegorzewska University, Warsaw (**Poland**).
Tomaszewska Renata - Dr hab., Professor, Kazimierz Wielki University in Bydgoszcz (**Poland**).

Decision of the National Council of Ukraine on Television and Radio Broadcasting on Registration No. 1430 dated 16.11.2023

Identifier in the Media Register: R40-01555

Professional Pedagogics: Scientific Journal / Editor-in-Chief P. Luzan, Deputy Editor-in-Chief G. Romanova. Kyiv: Institute of Vocational Education of the National Academy of Educational Sciences of Ukraine, 2025. Issue 2(31). 283 p.

The journal Professional Pedagogy is included in the Register of Scientific Publications of Ukraine (Category "B"), in which the results of dissertation research for obtaining academic degrees in educational and pedagogical sciences may be published (specialties: **A1, A5**).

The journal is indexed in the following scientometric databases:
Index Copernicus, Google Scholar, CrossRef, ERIH PLUS, PKP index, Academic Resource Index

Website: <https://jmls.ivet.edu.ua>

Website Manager: Oleksandr Radkevych
Bibliographic Editor: Viktoriia Markova
Indexing Manager: Leonid Romanov
Plagiarism Check: Ivan Holub

Signed for publication 07.07.2025. Format 60×90/8. Typeface Times New Roman
Conventional printing sheets 17.0. Accounting-publishing sheets 22.5.

Publisher: Institute of Vocational Education of the National Academy of Educational Sciences of Ukraine
Certificate of Publishing Entity: DK No. 3805, issued June 21, 2010
E-mail: professional.pedagogics@gmail.com
Ukraine, 03045, Kyiv, Vito-Lyтовskyi Lane, 98-a
tel: (044)2594553; (044)2527175

Національна академія педагогічних наук України
Інститут професійної освіти

ПРОФЕСІЙНА ПЕДАГОГІКА

2(31)'2025

ISSN 2707-3092 (Online)

<https://doi.org/10.32835/2707-3092.2025.31>

Науковий журнал,
заснований у 2011 році

Видавництво Інституту професійної освіти НАПН України
Київ
2025

*Видається за рішенням Вченої ради Інституту професійної освіти НАПН України
(протокол № 8 від 07.07.2025 року)*

РЕДАКЦІЙНА КОЛЕГІЯ:

Головний редактор: **Лузан Петро** - доктор педагогічних наук, професор, головний науковий співробітник відділу фахової передвищої освіти Інституту професійної освіти НАПН України (**Україна**).

Заступник головного редактора: **Романова Ганна** - доктор педагогічних наук, професор, заступник директора з наукової роботи Інституту професійної освіти НАПН України (**Україна**)

Члени редакційної колегії:

Андрощук Ірина - доктор педагогічних наук, професор, завідувач кафедри технологічної та професійної освіти і декоративного мистецтва Хмельницького національного університету (**Україна**).

Антонова Олена - доктор педагогічних наук, професор, завідувач кафедри професійної та педагогічної, спеціальної освіти, андрагогіки та менеджменту Житомирського державного університету імені Івана Франка (**Україна**).

Діденко Олександр - доктор педагогічних наук, професор, заступник начальника, начальник відділу науково-технічної діяльності та інтелектуальної власності науково-організаційного управління Національної академії Державної прикордонної служби України імені Богдана Хмельницького (**Україна**).

Каленський Андрій - доктор педагогічних наук, професор, провідний науковий співробітник відділу змісту та технологій професійної освіти Інституту професійної освіти Національної академії педагогічних наук України (**Україна**).

Камінська Малгожата - Dr hab., Вища школа імені Павла Влодковича в Плоцьку (**Польща**).

Ковальчук Василь - доктор педагогічних наук, професор, завідувач кафедри освітніх вимірювань Державної установи «Науково-методичний центр вищої та фахової передвищої освіти» (**Україна**).

Кулалаєва Наталія - доктор педагогічних наук, професор Київського національного економічного університету імені Вадима Гетьмана (**Україна**).

Куш Джозеф - Ph.D., професор, Університет Дюкейн (**США**).

Мархуенда-Флуїкса Фернандо - Dr., професор, Університет Валенсії (**Іспанія**).

Пригодій Микола - доктор педагогічних наук, професор, член-кореспондент Національної академії педагогічних наук України, заступник директора з наукової роботи Інституту професійної освіти Національної академії педагогічних наук України (**Україна**).

Радкевич Валентина - доктор педагогічних наук, професор, дійсний член (академік) Національної академії педагогічних наук України, директор Інституту професійної освіти Національної академії педагогічних наук України (**Україна**).

Танась Мацей - Dr hab., Dr h.c., професор, Університет Марії Гжегожевської, Варшава (**Польща**).

Томашевська Рената - Dr hab., професор, Університет Казимира Великого в Бидгощі (**Польща**).

Рішення Національної ради України з питань телебачення і радіомовлення про реєстрацію № 1430 від 16.11.2023
Ідентифікатор у Реєстрі медіа: R40-01555

Професійна педагогіка: науковий журнал / гол. ред. П. Лузан, заст. гол. ред. Г. Романова. Київ: Інститут професійної освіти НАПН України, 2025. Вип. 2(31). 283 с.

Журнал «Професійна педагогіка» внесено до реєстру наукових видань України (категорія «Б»), у яких можуть публікуватися результати дисертаційних робіт на здобуття наукових ступенів з освітніх, педагогічних наук (спеціальності: А1, А5)

Журнал індексується в таких наукометричних базах:
Index Copernicus, Google Scholar, CrossRef, ERIH PLUS, PKP index, Academic Resource Index

Сайт видання: <https://jrnls.ivet.edu.ua>

Менеджер вебсайту: Олександр Радкевич
Бібліографічний редактор: Вікторія Маркова
Менеджер з індексування: Леонід Романов
Менеджер з антиплагіату: Іван Голуб

Підписано до видання 07.07.2025 р. Формат 60x90/8. Гарнітура Times New Roman
Ум. друк. арк 17.0 Обл.-вид. арк 22.5.

Видавництво: Інститут професійної освіти НАПН України
Свідоцтво суб'єкта видавничої справи: серія ДК №3805 від 21.06.2010 р.
електронна пошта (E-mail): professional.pedagogics@gmail.com
Україна, 03045, м. Київ, пров. Віто-Литовський, 98-а
тел.: (044)2594553; (044)2527175



KEY TRENDS IN THE DEVELOPMENT OF THE QUALITY ASSURANCE SYSTEM FOR VOCATIONAL EDUCATION AND TRAINING IN GREAT BRITAIN

Valentyna Radkevych

Doctor of Pedagogical Sciences, Professor, Academician of the National Academy of Educational Sciences of Ukraine, <https://orcid.org/0000-0002-9233-5718>, e-mail: mrs.radkevich@gmail.com

Abstract

Relevance. The article provides a comprehensive analysis of the key trends in the development of the quality assurance system for vocational education and training (hereinafter – VET) in Great Britain. Particular attention is paid to the study of the balanced functioning of external regulatory control bodies and internal institutional mechanisms for VET quality assurance, which makes the study of Great Britain's experience important for improving the quality assurance system of vocational education in Ukraine.

Objective: The objective of the article is to identify and analyze the key trends in the development of the VET quality assurance system in Great Britain and, based on the results obtained, to formulate practical recommendations for improving the quality assurance system of vocational education in Ukraine.

Methods: analysis of legal and regulatory acts of the British government from 2000 to 2025, strategic documents, reports of leading regulatory bodies (Ofsted, Ofqual, Institute for Apprenticeships and Technical Education), as well as scientific publications by leading British and European researchers in the field of educational policy – to systematize data on VET quality assurance; synthesis – to establish a holistic understanding of the key trends in VET quality assurance in Great Britain by combining theoretical and practical approaches; generalization – to formulate comprehensive conclusions and prepare practical recommendations for incorporating the progressive ideas of the British experience into the improvement of the quality assurance system of vocational education in Ukraine.

Results: Based on the analysis of legal and regulatory acts of the British government, strategic documents, reports of leading regulatory bodies, and scientific publications by leading researchers in the field of educational policy, the key trends in the development of the VET quality assurance system in Great Britain have been identified and analyzed, and on this basis, practical recommendations for improving the quality assurance system of vocational education in Ukraine have been formulated.

Conclusions: The British VET quality assurance system is in constant development, adapting to changing economic and social conditions with a clear focus on a competency-based approach and meeting the needs of employers. This is reflected in the following key trends: the introduction of an institutionally established mechanism for independent external quality control of VET; strengthening the incorporation of employers in the processes of developing technical qualifications and independent assessment of learning outcomes and graduate competencies; digitalization of VET quality monitoring and evaluation processes; systematic collection and analysis of data on the educational experience, employment, and subsequent career paths of graduates; and increased attention to the professional development of teaching staff at VET institutions. To improve the quality assurance system of vocational education in Ukraine, it is recommended to: create a two-tier system of external quality control for vocational education based on institutional audit and validation of qualifications; institutionalize the leading role of employers in increasing the relevance of vocational education to labor market demands, awarding, and conferring qualifications; stimulate the integration of modern digital tools into the management of the educational process and the assessment of learning outcomes; introduce a comprehensive system for monitoring the quality of vocational education based on data analysis; and intensify the processes of standardization and professional development for vocational training teachers.

Keywords: *accreditation, Great Britain, quality assurance, assessment, vocational education and training, labor market, standards, trends.*

Introduction. Great Britain, with its developed economy and long-standing educational traditions, is a prime example of a country actively adapting its quality assurance system for vocational education and training (hereinafter - VET) to modern realities. The importance of VET for the economic development and social stability of Great Britain lies in its creation of a direct link between skills formation and market needs, ensuring increased labor productivity, income growth, and the development of small businesses. Empirical studies show that graduates of VET institutions are able to integrate quickly into economic activities, have a higher probability of employment, and their earnings are 7–19% higher than those who have not received such training (Esteves et al., 2020). This also contributes to the reduction of unemployment and poverty (Dixit Bajpai, 2023). Therefore, the constant review and improvement of VET quality assurance mechanisms is a priority for the British government and educational institutions. A thorough analysis of the British experience is methodologically valuable for national systems undergoing the modernization of their own vocational education sectors. The British system is an example of a hybrid model that strives for synergy between centralized state supervision, the institutional autonomy of VET providers, and the strategic involvement of employers in all stages of the educational cycle – from developing standards to assessing learning outcomes. This approach is characterized by an attempt to institutionalize the leading role of employers in shaping national VET policy and is key to enhancing the economic relevance and validity of vocational qualifications. The government's strategy is to create an ecosystem where educational programs respond directly to the dynamic needs of the labor market, which in turn contributes to increasing the productivity and competitiveness of the UK economy (CDI, 2021; Productivity.ac.uk, n.d.).

An important vector of research is the continuous evolution and adaptation of the British VET quality assurance system to changing economic realities, which is reflected in the introduction of innovative funding mechanisms and new educational standards. One of the large-scale experiments in this area was the introduction of the apprenticeship levy. This financial instrument

requires large companies with an annual payroll exceeding £3 million to transfer 0.5% of this amount to a special fund. The mechanism of the levy involves not just a fiscal burden, but the creation of a direct incentive for investment in human capital. Every employer who pays the levy gains access to a personal electronic account from which they can exclusively fund apprenticeship and training programs for their new or existing employees (Department for Education, 2024). This model fundamentally changes the funding paradigm, transforming employers from passive consumers of educational services into active clients and investors in skills development. The theoretical basis of this reform lies in the idea that direct financial involvement increases employers' demands on the quality of training and its relevance to real production needs, as detailed in reports from the parliamentary library (House of Commons Library, 2023). In parallel with financial reforms, there has been a significant transformation in the structure of qualifications themselves. Since 2020, technical qualifications known as T Levels have been introduced in Great Britain. They are positioned as a technical alternative to traditional academic qualifications (A Levels) and represent a third educational pathway for young people aged 16-19, alongside academic education and apprenticeships (Institute for Apprenticeships and Technical Education, 2022).

At the same time, despite the ambition and innovation of the reforms, the British VET system faces challenges and systemic limitations. One of the main problems remains the significant fragmentation of the educational landscape. There is a huge number of different qualifications, providers, and funding sources, which creates confusion both for young people trying to choose an educational path and for employers who find it difficult to navigate the value of a particular qualification (GOV.UK, n.d.). In addition, VET continues to face serious financial constraints. Although the apprenticeship levy has provided funding for large companies, the overall funding for the VET sector, which is the main provider, has seen significant cuts

over the last decade, negatively affecting its infrastructure, resources, and ability to attract highly qualified staff (Institute for Fiscal Studies, 2025). This creates a paradoxical situation where the government introduces new standards, such as T Levels, but VET institutions do not always have sufficient resources for their quality implementation. The problem of recruiting and retaining teachers remains acute. The specificity of VET requires so-called "dual professionals" – specialists who possess both deep theoretical knowledge of their field and current industry experience, as well as pedagogical skills. Such personnel are scarce, as the salary level in the education sector often cannot compete with wages in industry (Edge Foundation, n.d.). Finally, there are significant discrepancies in the perception of VET quality among different stakeholders. Reports from the supervisory body Ofsted often record significant differences in the quality of educational services between different VET providers, and employers, especially representatives of small and medium-sized businesses, are not always satisfied with the level of graduate training or consider the apprenticeship system too bureaucratic (Ofsted, 2023).

For Ukraine, which is undergoing deep reforms in the field of education and striving for European integration (MES, 2021), studying the experience of Great Britain is a particularly valuable source for modernizing its own system of quality assurance in vocational education. The goal of current reforms in Ukraine is to update the vocational education system, as the existing one does not meet modern requirements, which is reflected in draft law No. 13107-d "On Vocational Education," supported by the Verkhovna Rada in its first reading (Vseosvita.ua, n.d.; MES, 2025). These reforms include the introduction of new terminology (e.g., "professional education" instead of "vocational-technical education," "student" instead of "pupil," "professional college" instead of "PTU"), strengthening the autonomy of institutions, introducing mechanisms for recognizing learning outcomes, and expanding cooperation with employers. The study of the British experience in VET quality assurance becomes particularly relevant in the context of the full-scale invasion of the Russian Federation into Ukraine. The state of war has caused significant challenges for vocational education, including the migration of students and teachers, problems with material resources, destruction and damage to educational institutions,

as well as difficulties in organizing the educational process, particularly distance learning (Radkevych, V., & Yershova, L., 2022; IMZO, 2022). In these conditions, there is an urgent need to support the transition of vocational education institutions to a green and digital economy, the development of lifelong learning, mentorship in the workplace, harmonization of credit systems, and the development of centers of vocational excellence (Confederation of Employers of Ukraine, 2022).

Ukraine's European integration also requires the harmonization of educational structures and the adoption of best practices. Key Ukrainian institutions, such as the State Service for Education Quality and the National Agency for Qualifications, already play an important role in ensuring the quality of vocational education and developing professional standards. Specifically, the State Service for Education Quality (2023) is responsible for implementing state policy in the field of education quality assurance, including the institutional audit of vocational education institutions, which assesses the educational environment, the system for assessing learners, pedagogical activities, and management processes. The National Agency for Qualifications (n.d.a) is one of the key players in creating the National Qualifications System and is responsible for developing methodology and coordinating the development of professional standards. Studying the British experience can provide valuable tools for strengthening their activities, particularly in involving employers in the development of professional standards, educational programs, creating flexible learning pathways, and procedures for the independent assessment of learning outcomes.

Sources. An analysis of scientific literature and official sources from 2000 to 2025 reveals a multifaceted and dynamic discussion on VET quality assurance in Great Britain. This period is characterized by a constant pursuit of improving the quality and value of VET, often with the aim of achieving "parity of esteem," which was a response to its historical undervaluation and underfunding compared to university education (King's College London, n.d.; Productivity.ac.uk, n.d.). The legislative regulation of VET quality assurance in Great Britain covers a set of acts that form the normative basis for its functioning. The main regulatory act for VET in England, Wales, and Northern Ireland is the Learning and Skills Act (United Kingdom, 2000), which establishes the powers of the Learning and Skills Council and the

relationship with Sector Skills Councils (Cedefop, 2005). Additionally, the Apprenticeships, Skills, Children and Learning Act (Parliament of the United Kingdom, 2009) defines the status of bodies, including Ofqual, and regulates the qualifications that can be regulated by state bodies, including VET (GOV.UK, 2014). These acts allow for the formation of a system for accreditation and management of qualifications, ensuring the educational process complies with national standards.

Within educational practice, the Education and Skills Act is in force, containing provisions on the general structure of VET, including rules for funding, accessibility of educational services, and student rights (United Kingdom Government, 2008). This act forms the basis for the management of VET for individuals, defining the responsibilities of ministries and relevant bodies. It enables the provision of mechanisms for monitoring and evaluating the results of vocational training, interaction with employers, and transparent funding. At the level of professional qualifications, the regulatory framework includes the General Conditions of Recognition, which are regulated by Ofqual for all awarding organisations. These documents define procedures for accreditation, assessment standards, monitoring of awarding organisations, and their ability to meet market demands and national standards. In particular, the Apprenticeships, Skills, Children and Learning Act (Parliament of the United Kingdom, 2009) allows Ofqual to determine which qualifications can be regulated and provides the legal basis for implementing conditions for technical qualifications (Office of Qualifications and Examinations Regulation, 2021). The regulation of VET quality also has a European foundation – the British system is influenced by EQAVET, but the integration of regulatory practice is carried out through national acts. And although the UK is no longer a member of the EU, the influence of EQAVET standards on the structure of Sector Skills Councils and national qualification frameworks is still present in British regulation (Gatsby Foundation, 2025). This allows for coherence between different parts of the system and social partners, particularly employers.

A significant portion of research interprets the evolution of quality assurance mechanisms in British VET based on the principles of New Public Management. The introduction of quasi-market mechanisms, increased external control, and standardization are seen as an attempt to enhance the

efficiency and accountability of the education sector. However, this approach inevitably caused tension between the demands of external accountability, realized through regulatory bodies, and the need to preserve the internal professional and institutional autonomy of VET institutions. This dichotomy has been the subject of sharp criticism from the academic community, which pointed to the risks of excessive bureaucratization and a potential shift in focus from deep educational processes to formal compliance with performance indicators (Policy and Society, 2014).

The financial dimension of the reforms is another central element of analysis in the scientific literature. Since the 2000s, the adult education sector has experienced a significant and prolonged reduction in public funding in real terms. A direct consequence of this policy was a substantial decrease in the number of learners obtaining state-funded qualifications. This caused serious concern among experts about the narrowing of access to lifelong learning, especially for the most vulnerable segments of the population, and the potential decline in the overall quality of educational services due to financial constraints on providers (Institute for Fiscal Studies, 2025). Against this backdrop, the introduction of the apprenticeship levy in 2017 was seen as an attempt to partially solve the funding problem and stimulate employers to invest in the development of apprenticeships. However, empirical studies record mixed consequences of this reform. Data analysis indicates a significant shift in focus from initial and intermediate-level programs to higher and master's level programs, which are often used for upskilling employees rather than for attracting young people to the labor market. Furthermore, the system has faced problems such as large amounts of unused funds in the levy pot by employers and, paradoxically, an overall decline in the number of new apprenticeship starts after the levy's introduction (Centre for Vocational Education Research, n.d.; HEPI, 2024).

The introduction of T Levels as new technical qualifications, intended to be the equivalent of academic A Levels, has also been the subject of close monitoring and analysis. Official reports from key oversight institutions, particularly the Office for Standards in Education (Ofsted) and the National Audit Office, have identified a number of serious challenges in the implementation phase of these programs. The main problems include: uneven quality of teaching for the theoretical component; difficulties in recruiting and retaining qualified

teaching staff with current industry experience; systemic obstacles in finding a sufficient number of quality placements for mandatory work experience; and a low level of student satisfaction with certain courses. Moreover, studies record a significant percentage of student dropouts before completing the two-year course. A separate concern is the issue of financial efficiency: the initial costs for developing and implementing technical qualifications were substantial, yet the actual number of enrolled students turned out to be significantly lower than projected, calling into question the expediency of the investment (Powel & Foley, 2020). Thus, despite ambitious goals, the practical implementation of key reforms in the UK VET sector faces significant obstacles, requiring further deep analysis and adjustment of state educational policy.

Objective of the article: to identify and analyze the key trends in the development of the VET quality assurance system in Great Britain and, based on the results obtained, to formulate practical recommendations for improving the quality assurance system of vocational education in Ukraine.

Methods: analysis of legal and regulatory acts of the British government from 2000 to 2025, strategic documents, reports of leading regulatory bodies (Ofsted, Ofqual, Institute for Apprenticeships and Technical Education), as well as scientific publications by leading British and European researchers in the field of educational policy – to systematize data on VET quality assurance in Great Britain; synthesis – to establish a holistic understanding of the key trends in VET quality assurance in Great Britain by combining theoretical and practical approaches; generalization – to formulate comprehensive conclusions and prepare practical recommendations for incorporating the progressive ideas of the British experience into the improvement of the quality assurance system of vocational education in Ukraine.

Results and Discussion. The quality of VET in Great Britain is defined as the ability of the system to enable individuals to achieve consistent outcomes in learning, personal development, and professional activity in line with the expectations of employers, the state, and society as a whole (Quality Assurance Agency, 2023). A central element is the focus on learning outcomes, which encompass not only technical competencies but also general skills, social adaptation, and career development (Cedefop, 2004). In addition, the quality of VET includes the

relevance of learning outcomes to labor market requirements and involves the participation of employers in the development of standards (Lain & Maginn, 2003). Such an approach, where quality is determined not only by internal academic criteria but also by the external effectiveness of graduates and the satisfaction of social partners, emphasizes the dynamic and multidimensional nature of this concept. However, the definition itself does not reveal the processes of VET quality assurance. In this context, it becomes important to study the key trends that reflect modern approaches to monitoring, evaluating, and improving the quality of the British VET quality assurance system.

Of scientific interest is the trend towards the introduction of an institutionally established mechanism for independent external quality control of VET, based on a two-tier model of external regulation. This institutional architecture consists of two key, though autonomous, organizations: the Office for Standards in Education, Children's Services and Skills (Ofsted) and the Office of Qualifications and Examinations Regulation (Ofqual). The coordinated activities of these regulators have a decisive impact on the entire VET sector, shaping funding conditions, influencing reputation, and determining the very possibility of providers operating in the educational services market. The first level of control, represented by Ofsted, focuses on the quality of the educational process directly within institutions providing VET services. Its mandate extends to inspecting colleges, private training centers, and organizations implementing apprenticeship models. The basis for the audit is the Education Inspection Framework (EIF), which, after a significant update in 2019, shifted the focus from quantitative performance indicators to a qualitative expert examination of the content and implementation of educational programs (Ofsted, 2019). According to the EIF, inspectors analyze providers' activities against four criteria, with "quality of education" holding a central place. This criterion is viewed through the prism of three aspects: the validity of intent, the effectiveness of implementation, and the measurability of impact. This approach encourages educational institutions to concentrate on developing fundamental, labor-market-oriented learning content, rather than preparing for formal exams. The inspection procedure is multi-component and includes document analysis, observation of classes, and in-depth interviews with all stakeholders, including employers.

The final evaluation on a four-point scale ("outstanding," "good," "requires improvement," "inadequate") is public and has direct consequences for the provider, up to the risk of ceasing operations. Thus, Ofsted acts both as a controlling body and as a catalyst for institutional development. Complementing Ofsted's activities, the second level of control, carried out by Ofqual, focuses not on the learning process, but on the quality of the qualifications themselves. Ofqual's mission is to maintain standards and public confidence in the qualifications and assessment system in England. This body does not create qualifications but regulates the activities of accredited awarding organisations that develop and award them. Regulation is based on the normative document "General Conditions of Recognition," which governs the entire lifecycle of a qualification – from design to certification (Ofqual, 2022). Ofqual ensures that qualifications have clear objectives and reliable, valid assessment tools, and that their standards remain stable over time, which is a particularly challenging task in a dynamic labor market (Price, O'Donovan & Rust, 2007).

The interaction between Ofsted and Ofqual creates a comprehensive system of checks and balances that ensures the integrity of VET quality control. For example, the high-quality implementation of an educational program, positively assessed by Ofsted, does not compensate for the shortcomings of an outdated qualification, which is the responsibility of Ofqual. Conversely, an innovative qualification will not achieve its goal without a proper level of teaching at the provider, which is subject to Ofsted's monitoring. This synergy is critically important for new educational initiatives, where regulators collaborate with the Institute for Apprenticeships and Technical Education (2021). At the same time, the system is not without criticism: the high stakes of Ofsted inspections can create excessive pressure, leading to a narrowing of the educational content in favor of easily measurable outcomes. Despite this, the two-tier model of regulation remains a fundamental element of the UK VET system, supporting its transparency, accountability, and responsiveness to economic needs.

A reflection of the strategy to overcome the historical dichotomy between academic and vocational education (Department for Education, 2023) in the evolution of the UK's VET quality assurance system is the trend towards strengthening the incorporation of employers in the processes of

developing technical qualifications and the independent assessment of learning outcomes and graduate competencies. This approach presupposes that the determination of the content and structure of occupational standards is carried out not by educational institutions or state bodies, but directly by representatives of the relevant economic sectors. This trend can be seen as a response to long-standing criticism that the VET system operated with a certain disconnect from the real labor market, leading to the training of graduates with skills that did not always meet the current or future needs of the economy (Keep & James, 2012).

The new paradigm positions employers as active and full-fledged partners, whose involvement is institutionalized by a number of mechanisms that guarantee their decisive influence at all stages of the educational cycle and ensure a key aspect of quality – relevance. The central function in the process of institutionalizing this influence is assigned to the Institute for Apprenticeships and Technical Education (IfATE), an independent organization managed by business representatives. The creation of IfATE in 2017 was a key step towards delegating control over VET content to entities with a deep understanding of industry needs. IfATE is responsible for the development and approval of apprenticeship standards and the new T-Levels technical qualifications. The process of developing standards is an example of a demand-led system: the initiative to create a new standard comes from employers themselves, who form trailblazer groups and collectively define the set of knowledge, skills, and behaviors that a competent employee should possess (Department for Education, 2021).

The influence of employers is also extrapolated to the level of implementation of educational programs in educational institutions, which are obliged to actively cooperate with local businesses by creating advisory boards to adapt programs to the needs of the regional labor market (Johnston & Johnston, 2024), as well as through direct participation in training. Most important is the partnership in providing work placements, the quality of which is subject to careful verification during Ofsted inspections (2019). At the final stage, which consists of verifying learning outcomes, the influence of employers becomes crucial. In the apprenticeship system, it is the employer, together with the provider, who decides on the student's readiness for the independent end-point assessment (EPA). Employer satisfaction with the quality of graduate training, measured through regular national

surveys (Department for Education, 2023), is one of the key performance indicators for the entire system. Thus, this market-oriented model creates a powerful feedback mechanism that serves as a safeguard against the detachment of education from economic reality and is designed to ensure that investments in VET benefit both individuals and the UK economy as a whole. The most illustrative example of this approach is the implementation of T-Levels technical qualifications, which began in 2020 (NAO, 2025). This systemic reform led to the creation of a comprehensive quality model that covers all stages of the qualification lifecycle and functions in addition to the existing binary system of external regulation represented by the Office for Standards in Education (Ofsted) and the Office of Qualifications and Examinations Regulation (Ofqual).

At the heart of the integrated quality model for T-Levels lie fundamental principles: cooperation with employers to ensure content relevance, a combination of theoretical learning with prolonged practical experience, and reliable and independent mechanisms for assessing learning outcomes. The first principle is realized through the development of qualification content in close cooperation with real employers and industry associations, coordinated by an independent body – the Institute for Apprenticeships and Technical Education (IfATE). Expert panels are created for each industry, which determine the necessary competencies for an entry-level specialist (Department for Education, 2023). This demand-driven approach ensures that educational programs meet the needs of the labor market and minimizes the risk of training specialists with irrelevant skills, which was identified as a chronic problem in the VET sector (Wolf, 2011). The structure of a T-Level, which includes a "core component" and an "occupational specialism," is approved by IfATE, creating a multi-level control system at the qualification design stage. The second principle is embodied through the unique dual structure of the program, which combines classroom learning with a mandatory and lengthy industry placement. The duration of this placement is at least 315 hours, ensuring the student's deep integration into the professional environment (Department for Education, 2024). This component not only allows for the application of theoretical knowledge in practice but also promotes the development of so-called "soft skills," which are difficult to cultivate in a classroom setting but are critically important for a future career (Chang, 2019). The quality of the placement itself is subject to careful monitoring by

educational providers. The third principle concerns the assessment system, designed to ensure maximum reliability and comprehensiveness. The assessment of both the "core component" and the "occupational specialism" is exclusively external. It is developed and verified not by the educational institution, but by an accredited awarding organisation, whose activities, in turn, are regulated by Ofqual to ensure the validity and reliability of the procedures (Ofqual, 2021). Thus, the integrated model for T-Levels is a complex ecosystem. Within it, there is constant interaction between IfATE, employers, colleges, and the regulators Ofqual (regarding qualification standards) and Ofsted (regarding the quality of program implementation). This synergy creates multi-level control that ensures content relevance, practical validity of learning, and the reliability of awarded qualifications.

The introduction of independent assessment of graduate competencies based on apprenticeship standards has fundamentally transformed the philosophy of quality control, making a transition from ongoing monitoring, carried out mainly by the education provider, to an objective and impartial verification of final learning outcomes by an independent organization. The central element of the apprenticeship system reform, which began in 2017, was a complete restructuring of the assessment model, consisting of a shift from the so-called "frameworks" system, where assessment was often conducted by the same provider that delivered the training, creating a potential conflict of interest and variability in standards (Fuller & Unwin, 2012), to a new model. This model is based on "apprenticeship standards," which are developed by groups of employers for specific occupations and clearly define the knowledge, skills, and behavioral competencies that a qualified specialist must possess, and it culminates in a mandatory, independent End-Point Assessment (EPA).

A key innovation is the "gateway" stage, at which the employer and the education provider jointly confirm the learner's readiness to undergo the final assessment. After the gateway, the EPA process is conducted by a completely independent End-Point Assessment Organisation (EPAO), which is subject to mandatory registration and approval by the regulator Ofqual, guaranteeing its competence and impartiality (Department for Education, 2021). The independence of the assessor is the cornerstone of the system, as their sole purpose is to objectively determine whether the apprentice's level of training meets the approved standard. The methods used

during the EPA are varied and are developed for each profession separately to ensure a valid check of competence, including practical demonstrations, professional discussions based on a portfolio to assess reflection and justification of decisions (Sluijsmans, Straetmans & van Merriënboer, 2008), as well as projects or tests. An important requirement is the "synoptic" nature of the assessment, meaning that tasks must require the apprentice to integrate and apply knowledge and skills from different parts of the program to solve a complex problem.

The quality of the EPA process itself is ensured by a multi-stage control system: the Institute for Apprenticeships and Technical Education (IfATE) is responsible for developing and approving standards and assessment plans, Ofqual regulates the activities of EPAOs, and an additional level of oversight is the External Quality Assurance (EQA) system, within which specialized providers check the work of EPAOs (Institute for Apprenticeships and Technical Education, 2022). Thus, this multi-layered control mechanism – from the development of the standard by employers to the independent EPA and external quality assurance – creates a reliable basis for trust in the apprenticeship system and guarantees that the qualification obtained by a graduate is a true mark of quality.

An important trend that significantly transforms assessment methods and simultaneously sets new standards for VET quality, alongside structural and institutional reforms, is the digitalization of VET quality monitoring and assessment processes. This process performs a dualistic function: on the one hand, it provides tools for more effective, transparent, and prompt monitoring of the educational process and verification of learning outcomes, and on the other hand, it itself becomes an object of quality control, as the quality of digital pedagogy and the development of digital skills in students have become key indicators of the effectiveness of educational programs. This trend, significantly accelerated by the experience of the COVID-19 pandemic, has forced regulators, providers, and awarding organisations to reconsider traditional approaches and integrate digital solutions into the core of their activities. One of the key directions is the use of virtual learning environments (VLEs), which, with the help of learning analytics, allow for real-time tracking of student engagement, enabling proactive intervention and the provision of targeted support at early stages (Ferguson, 2012). In addition,

VLEs centralize the processes of submitting and assessing work, creating a clear and transparent digital trail that significantly simplifies internal and external verification procedures.

Particularly revolutionary has been the introduction of e-portfolios, which allow for the collection of evidence of professional competence in various forms, making the assessment process more authentic and holistic (Di Silvestro & Nadir, 2021). From a quality assurance perspective, e-portfolios provide an unprecedented level of transparency, creating a comprehensive audit trail accessible to all stakeholders, which increases the reliability and objectivity of the assessment process. At the same time, the development of technology places new demands on the VET system itself, where digital skills have become a fundamental competence. In response, national standards for Essential Digital Skills have been introduced (Department for Education, 2019), and organizations like Jisc (n.d) are developing digital capability frameworks to support the sector. Regulators, particularly Ofsted, have adapted their inspection programs, paying significant attention to how pedagogically soundly technologies are used to modernize educational programs and the impact they have on the quality of learning.

Another important trend transforming approaches to VET quality assurance in Great Britain is the systematic collection and analysis of data on the educational experience, employment, and subsequent career trajectory of graduates. This trend reflects a fundamental shift in the conceptualization of quality, moving the focus from the analysis of resources and processes to final outcomes and their impact on students. The modern paradigm is based on the logic that an educational program cannot be considered high-quality if students are not satisfied with their learning and do not achieve positive results after its completion. Thus, the systematic collection and analysis of data on experience and employment are a central element for both the internal improvement of providers and the external quality control of VET.

One of the key mechanisms is the collection of data on the educational experience of graduates through national and local surveys of their satisfaction with their learning achievements. The results of these surveys are public and serve as an important indicator for Ofsted inspectors, as low scores can signal systemic problems (Gibbons & Silva, 2011). The regulator Ofsted also integrates this approach into its practice through so-called

"deep dives," a central element of which is direct dialogue with groups of students without the presence of teaching staff. This allows for an unbiased picture of their experience and verifies how well the stated educational intentions correspond to reality (Ofsted, 2019). If the educational experience is an indicator of the quality of the educational process, then post-completion outcomes are an indicator of its effectiveness. Therefore, the collection and analysis of data on the employment and further educational trajectory of graduates are an integral part of the VET quality assurance system. Government and funding bodies require VET providers to track the career successes of their graduates, as these indicators are key to assessing the effectiveness of public investment in this educational sector (HM Treasury, 2021). A provider whose graduates demonstrate consistently high results in the labor market is considered to be of higher quality. In addition, this data is used to inform prospective students and allows providers to adjust the content of VET programs in collaboration with employers. Thus, the comprehensive use of data – from subjective satisfaction to objective employment indicators – creates a reliable, results-oriented VET quality assurance system in Great Britain, at the center of which is the success of each individual.

A key trend in ensuring VET quality in Great Britain is the increased attention to the professional development of teaching staff in VET institutions. Recognizing that even the most perfect standards cannot be implemented without highly qualified teachers and trainers, the VET quality system views the teacher as a central agent of change. This trend is realized through the development of unified professional standards and the creation of an infrastructure for the continuous professional development of educators. The foundation for standardizing teaching quality is the professional standards developed by the Education and Training Foundation (2022). They outline three key areas of activity: professional values, knowledge, and skills, emphasizing the dual identity of the VET teacher as an expert in their professional field and in pedagogy. These standards serve as a benchmark for teacher education programs and as criteria for assessing teaching quality during Ofsted inspections.

An important mechanism for the formal recognition of teachers' qualifications is the "Qualified Teacher Learning and Skills" (QTLS) status, awarded by the Society for Education and Training (2023). Obtaining this status requires

teachers to gather evidence of compliance with professional standards and to engage in deep reflection on their own educational practice. QTLS status, legally equivalent to "Qualified Teacher Status" (QTS), enhances the prestige of VET teachers and creates a clear career path for them. Ensuring teaching quality is also impossible without a system of continuous professional development (CPD) for educators. The Education and Training Foundation develops a wide range of relevant programs, and a quality VET provider must have its own internal CPD strategy that includes mentoring, training, and support for participation in various activities. The effectiveness of this system is one of the key aspects assessed during an Ofsted inspection under the "Leadership and Management" criterion, where it is checked whether the leadership of the VET institution creates a culture of professional growth for teachers and whether the CPD system has a real impact on improving the quality of teaching (Ofsted, 2019).

Conclusions. The quality of VET in Great Britain is a multidimensional concept that goes beyond traditional academic criteria. It is primarily defined by the system's ability to ensure that students achieve sustainable positive results in their learning, personal development, and professional activities. The central element of this approach is a focus on final outcomes that meet the expectations of employers, the state, and society as a whole. A fundamental condition for quality is the alignment of standards with the current demands of the labor market, which is achieved through the systemic participation of employers in their development, as well as by external effectiveness, confirmed by the successful employment of graduates and the satisfaction of all social partners.

Overall, the key trends in the development of the VET quality assurance system in Great Britain demonstrate a fundamental shift towards creating a market-oriented, transparent, and accountable ecosystem. The main goal of this transformation is to ensure that VET is as relevant as possible to the needs of the economy, and that its results are objectively measurable and trustworthy for both students and employers. This system is based on several key principles: transferring control over the content of education from the state to employers through institutions like IfATE, which ensures the alignment of standards with real market requirements; introducing independent control mechanisms, such as the two-tier system of regulators (Ofsted and Ofqual) and the independent

end-point assessment of learning outcomes (EPA), which eliminates conflicts of interest and increases objectivity; shifting the focus from analyzing the learning process to the independent assessment of graduate competencies, using data on their employment and satisfaction with their studies as key indicators of VET quality. The success of these reforms is supported by continuous investment in improving the professionalism of teaching staff and the active implementation of digital tools for monitoring and assessing VET quality.

The results of the analysis of key trends in the development of the VET quality assurance system in Great Britain allow for the formulation of a number of practical recommendations for Ukraine, aimed at creating a more flexible, transparent, and labor market-oriented vocational education system, which is critically important for the country's post-war recovery:

- **firstly**, *it is recommended to create a two-tier system of external quality assurance for vocational education based on institutional audit and validation of qualifications.* For this, it is advisable to consider the possibility of strengthening the activities of two independent agencies analogous to the British institutions Ofsted and Ofqual. The division of powers between them would look as follows: one agency would conduct inspections and evaluate the quality of educational activities and management processes in vocational education institutions; the second agency would focus on the development, validation, and monitoring of the compliance of professional standards and qualifications with labor market requirements. Such a model would ensure the objectivity of control, eliminate potential conflicts of interest, and form a comprehensive accountability system in which the quality of the educational process and the quality of qualifications are separate but interrelated objects of evaluation;

- **secondly**, *the leading role of employers in increasing the relevance of vocational education to labor market demands, and in the awarding and conferring of qualifications, should be institutionalized.* For vocational education in Ukraine to meet the dynamic demands of the labor market, a systemic transition is necessary: to transfer decisive powers in shaping the content of training and standards directly to employers. This is not just about involving business in discussions, but about creating permanent institutional mechanisms where industry representatives themselves determine what a modern specialist should be. A key step should be

the creation in Ukraine of an independent agency or sectoral councils for professional qualifications, analogous to the British Institute for Apprenticeships and Technical Education (IfATE). Representatives from business must play a leading role in the management and decision-making of such a structure. These bodies should have the authority to develop and approve professional standards that will become a mandatory basis for the development of all educational programs in vocational education institutions. The activities of such agencies will guarantee that graduates will possess the very skills that are in demand in the modern labor market, not those that have been traditionally taught for years. In parallel, the system of awarding and conferring qualifications must also be reformed. A gradual but steady transition to a model of independent awarding of qualifications is recommended, especially for key skilled trades. This means that the examination will be conducted not by the vocational education institution itself, but by an independent qualification center, accredited with the participation of employers. This will increase trust in educational documents, unify assessment standards nationwide, and avoid potential conflicts of interest.

- **thirdly**, *it is proposed to stimulate the integration of modern digital tools into the management of the educational process and the assessment of learning outcomes.* A key role in this is played by the use of virtual learning environments (VLEs) and, especially, e-portfolios, which ensure transparency and authenticity in monitoring learning progress. This approach allows for the systematization of evidence of students' mastery of practical skills in multimedia formats, thus creating an objective and verifiable database. This digital trail is a reliable basis for conducting both internal and external audits of the quality of vocational education;

- **fourthly**, *it is necessary to introduce a comprehensive system for monitoring the quality of vocational education based on data analysis.* It is proposed to create a nationwide system for the systematic collection and analysis of information covering the educational experience of learners and their subsequent career trajectories. The mechanism will include regular surveys on graduate satisfaction with the quality of educational services and monitoring of their employment indicators in the long term (over several years). The publication of aggregated data in open access will perform three key functions: for applicants: it will provide an

opportunity to make a more informed choice of educational and professional trajectory; for vocational education institutions: it will create an incentive for the continuous improvement of educational programs and increase their competitiveness; for the state: it will provide objective criteria for evaluating the effectiveness of investments in the field of vocational education;

- *fifthly, it is advisable to intensify the processes of standardization and professional development for vocational training teachers.* It is

recommended to develop and approve at the national level professional standards for teachers and industrial training masters of vocational education institutions. These standards should become the normative basis that defines an exhaustive list of competencies necessary for successful professional activity. Based on the approved standards, a transparent and logical certification system should be built, and programs for the continuous professional development of vocational training teachers should be developed.

List of references

Di Silvestro, F., & Nadir, H. (2021). *The power of ePortfolio development to foster reflective and deeper learning in an online graduate adult education program*. *Adult Learning*, 32(4), 154–164. <https://doi.org/10.1177/1045159520977735>

CDI. (2021). *Briefing Paper - The Skills for Jobs White Paper Implications for career development*. https://www.thecdi.net/CDI/media/Write/Documents/CDI_Briefing-Skills_for_Jobs_FINAL.pdf

Cedefop. (2004). *Vocational education and training in the United Kingdom*. PDF. https://www.cedefop.europa.eu/files/5159_en.pdf

Cedefop. (2005). *Vocational education and training in the United Kingdom*. https://www.cedefop.europa.eu/files/5159_en.pdf

Centre for Vocational Education Research. (n.d.). *The impact of the Apprenticeship Levy on Apprenticeships and other training outcomes*. <https://cver.lse.ac.uk/textonly/cver/pubs/cverdp034.pdf>

Department for Education. (2019). *Essential digital skills framework*. GOV.UK. <https://www.gov.uk/government/publications/essential-digital-skills-framework>

Department for Education. (2023). *Introduction of T Levels*. GOV.UK. <https://www.gov.uk/government/publications/introduction-of-t-levels>

Department for Education. (2024). *Apprenticeship funding rules*. GOV.UK. <https://www.gov.uk/guidance/apprenticeship-funding-rules>

Department for Education. (2024). *T Level industry placements: Delivery guidance*. GOV.UK. <https://www.gov.uk/government/publications/t-level-industry-placements-delivery-guidance>

Department for Education. (2023). *Employer skills survey: 2022*. GOV.UK. <https://www.gov.uk/government/statistics/employer-skills-survey-2022>

Dixit-Bajpai, P. (2023). *The impact of Vocational Education on Economic Growth and Development across the G20 Countries*. https://www.researchgate.net/publication/376810889_The_impact_of_Vocational_Education_on_Economic_Growth_and_Development_across_the_G20_Countries

Edge Foundation. (n.d.). *Ofsted inspection in the general further education and skills sector in England*. <https://www.edge.co.uk/research/projects/research-reports/ofsted-inspection-in-the-general-further-education-and-skills-sector-in-england/>

Education and Training Foundation (ETF). (2022). *Professional Standards for Teachers and Trainers in Education and Training*. ETF. <https://www.et-foundation.co.uk/professional-standards/>

Esteves, et al. (2020). *No experience, no employment: The effect of vocational education* ScienceDirect. <https://www.sciencedirect.com/science/article/pii/S0272775720305513>

Ferguson, R. (2012). *Learning analytics: Drivers, developments and challenges*. *International Journal of Technology Enhanced Learning*, 4(5/6), 304–317. <https://doi.org/10.1504/IJTEL.2012.051816>

Fuller, A., & Unwin, L. (2012). *Apprenticeship and the concept of expansive learning*. In M. Malloch, L. Cairns, K. Evans, & B. O'Connor (Eds.), *The SAGE handbook of workplace learning* (pp. 133–144). SAGE Publications Ltd. <https://doi.org/10.4135/9781446200940.n9>

- Johnston, L., & Johnston, A. (2024). Reforming vocational education in the UK: The role of vocational education. *Forum for Education Studies*, 2(3), Article 1488. <https://doi.org/10.59400/fes.v2i3.1488>
- Gatsby Charitable Foundation. (2025). *Exploring Quality Assurance for Technical Education*. <https://www.gatsby.org.uk/education/latest/exploring-quality-assurance-for-technical-education>
- Gibbons, S., & Silva, O. (2011). School quality, child wellbeing and parents' satisfaction. *Economics of Education Review*, 30(2), 312-331. <https://doi.org/10.1016/j.econedurev.2010.11.001>
- GOV.UK. (2014). *Apprenticeships, Skills, Children and Learning Act 2009*. <https://assets.publishing.service.gov.uk/media/5a7dff8ae5274a2e8ab452d2/bis-14-710-statement-of-support-for-vocational-qualifications.pdf>
- GOV.UK. (n.d). *Pay Apprenticeship Levy*. <https://www.gov.uk/guidance/pay-apprenticeship-levy>
- Chang, B. (2019). *Reflection in learning*. *Online Learning Journal*, 23(1), 96–109. <https://files.eric.ed.gov/fulltext/EJ1210944.pdf>
- HEPI. (2024). *Lunchtime Reading: Does the Apprenticeship Levy need reforming?*. <https://www.hepi.ac.uk/2024/05/29/lunchtime-reading-does-the-apprenticeship-levy-need-reforming/>
- HM Treasury. (2021). *Spending Review 2021: A stronger economy for the British people*. GOV.UK. https://assets.publishing.service.gov.uk/media/61c49602e90e07196a66be73/Budget_AB2021_Web_Accessible.pdf
- House of Commons Library. (2023). *Apprenticeship Levy (CBP-7708)*. <https://commonslibrary.parliament.uk/research-briefings/cbp-7708/>
- IMZO. (2022). *Всеукраїнський семінар «Особливості професійної освіти: сучасні виклики в умовах дії воєнного стану»*. <https://imzo.gov.ua/events/vseukrains-kyu-seminar-osoblyvosti-profesiynoi-osvity-suchasni-vyklyky-v-umovakh-dii-voiennoho-stanu/>
- Department for Education. (2021, April 23). *Strategic guidance to the Institute for Apprenticeships and Technical Education 2021 to 2022*. IfATE. https://assets.publishing.service.gov.uk/media/66703020fed5bd09e5195ace/Strategic_Guidance_to_the_Institute_for_Apprenticeships_and_Technical_Education_2021-22.pdf
- Department for Education. (2023, July 6). *Introduction of T Levels*. GOV.UK. <https://www.gov.uk/government/publications/introduction-of-t-levels/introduction-of-t-levels>
- Institute for Apprenticeships and Technical Education (IfATE). (2022). *External Quality Assurance Framework*. IfATE. <https://www.instituteforapprenticeships.org/quality/external-quality-assurance/>
- Institute for Apprenticeships and Technical Education (IfATE). (2021). *Developing and revising apprenticeship standards*. IfATE. <https://www.instituteforapprenticeships.org/developing-apprenticeships/developing-and-revising-apprenticeship-standards/>
- Institute for Apprenticeships and Technical Education. (2021, February 24). *Apprenticeships standards versioning: release of the revisions status report*. GOV.UK. <https://www.gov.uk/government/publications/how-to-use-the-apprenticeships-standards-revision-status-report/apprenticeships-standards-versioning-release-of-the-revisions-status-report/>
- Institute for Apprenticeships and Technical Education. (2022). *T Levels: What they are*. <https://www.instituteforapprenticeships.org/t-levels/>
- British Council. (2018). *Disabled people's inclusion within UK Technical and Vocational Education and Training (TVET)*. British Council. https://www.britishcouncil.org/sites/default/files/disabled_peoples_inclusion_within_uk_tviet.pdf
- Lain, D., & Maginn, A. (2003). Labour market involvement in quality assurance in vocationally/professionally oriented higher education in Europe: Final report, England (Report 411). *Institute for Employment Studies*. <https://www.employment-studies.co.uk/system/files/resources/files/411.pdf>
- Institute for Fiscal Studies. (2025). *Adult education and skills*. Retrieved from <https://ifs.org.uk/education-spending/adult-education-and-skills>
- Jisc. (n.d.). *Building digital capabilities framework: The six elements defined*. Jisc. Retrieved August 19, 2024. <https://digitalcapability.jisc.ac.uk/what-is-digital-capability/individual-digital-capabilities/>
- Sluijsmans, D. M. A., Straetmans, G. J. J. M., & van Merriënboer, J. J. G. (2008). *Integrating authentic assessment with competence-based learning: The Protocol Portfolio Scoring*. *Journal of Vocational Education & Training*, 60(2), 157–172. <https://www.tandfonline.com/doi/abs/10.1080/13636820802042438>

King's College London. (n.d.). *Re-engineering the UK education system to fill the technical skills gap*. <https://www.kcl.ac.uk/news/spotlight/re-engineering-the-uk-education-system-to-fill-the-technical-skills-gap-1>

NAO (2025). T-level qualifications still less popular and more expensive than BTec s, watchdog finds. *The Guardian*. <https://www.theguardian.com/education/2025/mar/28/t-level-qualifications-still-less-popular-and-more-expensive-than-btecs-watchdog-finds>

Price, M., O'Donovan, B., & Rust, C. (2007). *Assessment standards: A manifesto for change*. *Assessment & Evaluation in Higher Education*. https://www.academia.edu/77583644/Assessment_standards_a_manifesto_for_change

Office of Qualifications and Examinations Regulation (2021). *Vocational and technical qualifications contingency regulatory framework, COVID-19 Conditions and Requirements*. GOV.UK. <https://www.gov.uk/government/publications/vocational-and-technical-qualifications-contingency-regulatory-framework/vocational-and-technical-qualifications-contingency-regulatory-framework-covid-19-conditions-and-requirements--2>

Ofqual. (2021). Vocational and technical qualifications contingency regulatory framework [PDF]. Ofqual. <https://www.gov.uk/government/publications/vocational-and-technical-qualifications-contingency-regulatory-framework>

Department for Education. (2021, July 29). *End-point assessment organisation guide to delivering high-quality assessment of apprenticeships*. Department for Education. <https://www.gov.uk/government/publications/end-point-assessment-organisation-guide-to-delivering-high-quality-assessment-of-apprenticeships>

Ofqual. (2022). *Ofqual handbook: General conditions of recognition*. The Office of Qualifications and Examinations Regulation. <https://www.gov.uk/guidance/ofqual-handbook>

Ofsted. (2019). *Education inspection framework*. Office for Standards in Education, Children's Services and Skills. <https://www.gov.uk/government/publications/education-inspection-framework>

Ofsted. (2023). *T-level thematic review: Final report*. <https://www.gov.uk/government/publications/t-level-thematic-review-final-report/t-level-thematic-review-final-report>

Parliament of the United Kingdom. (2009). *Apprenticeships, Skills, Children and Learning Act 2009* (c. 22). <https://www.legislation.gov.uk/ukpga/2009/22>

Policy and Society. (2014). *Academic resistance to quality assurance processes in higher education in the UK*. <https://academic.oup.com/policyandsociety/article/33/3/215/6422288>

Productivity.ac.uk. (n.d.). *How will reforms to England's skill system affect productivity?*. Retrieved from <https://www.productivity.ac.uk/news/how-will-reforms-to-englands-skill-system-affect-productivity/>

Quality Assurance Agency. (2023). Diversity, inclusivity and accessibility resources. <https://www.qaa.ac.uk/sector-resources/teaching-learning-and-assessment/diversity-inclusivity-and-accessibility>

Society for Education and Training (SET). (2023). *Qualified Teacher Learning and Skills (QTLS)*. SET. <https://set.et-foundation.co.uk/professionalism/qtls/>

Powell, A., & Foley, N. (2020, February 7). *Effectiveness of the apprenticeship levy* (Debate Pack No. CDP-2020-0024). House of Commons Library. <http://researchbriefings.files.parliament.uk/documents/CDP-2020-0024/CDP-2020-0024.pdf>

United Kingdom Government. (2008). *Education and Skills Act 2008*. <https://www.legislation.gov.uk/ukpga/2008/25/contents>

Legislation.gov.uk. (2008). *Education and Skills Act 2008*. <https://www.legislation.gov.uk/ukpga/2008/25/contents>

United Kingdom. (2000). *The Learning and Skills Act 2000*. London: The Stationery Office. <https://www.legislation.gov.uk/ukpga/2000/21/contents>

Vseosvita.ua. (n.d.). *В Україні пропонують реформувати професійно-технічну освіту*. <https://vseosvita.ua/c/news/post/108384>

Wolf, A. (2011). *Review of Vocational Education – The Wolf Report*. Department for Education. <https://www.gov.uk/government/publications/review-of-vocational-education-the-wolf-report>

Державна служба якості освіти, (2023). Україна на шляху до Європейського Союзу: адаптація системи освіти. <https://sqe.gov.ua/ukraine-eu-eea/>

Конфедерація роботодавців України. (2022). *Про нові виклики професійної освіти на сучасному етапі*. <https://employers.org.ua/news/id2396>

МОН. (2021). *Забезпечення якості професійної (професійно-технічної) освіти*. <https://mon.gov.ua/static-objects/mon/sites/1/pto/2021/Konf-Osv.mozhl-novi.horyz.P-PT-O.Ukr.08-09.2021/Panel.dysk-Zmist.i.yakist.profosv/Serhiy.Posternak-Zmist.i.yakist.profosv.pdf>

МОН. (2025). *Верховна Рада підтримала в першому читанні проєкт Закону України «Про професійну освіту»*. <https://mon.gov.ua/news/verkhovna-rada-pidtrymala-v-pershomu-chytanni-proiekt-zakonu-ukrainy-pro-profesiinu-osvitu>

Національне агентство кваліфікацій. (n.d.a). *Праці Національного агентства кваліфікацій 2020-2022 роки: анотований покажчик*. https://www.researchgate.net/publication/367409671_Praci_Nacionalnogo_agentstva_kvalifikacij_2020-2022_roki_anotovaniy_pokazcik

Радкевич, В., & Єршова, Л. (2022). Стан готовності системи професійної освіти до протидії реальним і потенційним загрозам національній безпеці та національним інтересам України в умовах зовнішніх і внутрішніх викликів. *Професійна педагогіка*, 1(24), 4-17. <https://doi.org/10.32835/2707-3092.2022.24.4-17>

Translated & Transliterated

Di Silvestro, F., & Nadir, H. (2021). *The power of ePortfolio development to foster reflective and deeper learning in an online graduate adult education program*. *Adult Learning*, 32(4), 154–164. <https://doi.org/10.1177/1045159520977735>, [in English].

CDI. (2021). *Briefing Paper - The Skills for Jobs White Paper Implications for career development*. https://www.thecdi.net/CDI/media/Write/Documents/CDI_Briefing-Skills_for_Jobs_FINAL.pdf, [in English].

Cedefop. (2004). *Vocational education and training in the United Kingdom*. PDF. https://www.cedefop.europa.eu/files/5159_en.pdf, [in English].

Cedefop. (2005). *Vocational education and training in the United Kingdom*. https://www.cedefop.europa.eu/files/5159_en.pdf, [in English].

Centre for Vocational Education Research. (n.d.). *The impact of the Apprenticeship Levy on Apprenticeships and other training outcomes*. <https://cver.lse.ac.uk/textonly/cver/pubs/cverdp034.pdf>, [in English].

Department for Education. (2019). *Essential digital skills framework*. GOV.UK. <https://www.gov.uk/government/publications/essential-digital-skills-framework>, [in English].

Department for Education. (2023). *Introduction of T Levels*. GOV.UK. <https://www.gov.uk/government/publications/introduction-of-t-levels>

Department for Education. (2024). *Apprenticeship funding rules*. GOV.UK. <https://www.gov.uk/guidance/apprenticeship-funding-rules>, [in English].

Department for Education. (2024). *T Level industry placements: Delivery guidance*. GOV.UK. <https://www.gov.uk/government/publications/t-level-industry-placements-delivery-guidance>, [in English].

Department for Education. (2023). *Employer skills survey: 2022*. GOV.UK. <https://www.gov.uk/government/statistics/employer-skills-survey-2022>, [in English].

Dixit-Bajpai, P. (2023). *The impact of Vocational Education on Economic Growth and Development across the G20 Countries*. https://www.researchgate.net/publication/376810889_The_impact_of_Vocational_Education_on_Economic_Growth_and_Development_across_the_G20_Countries, [in English].

Edge Foundation. (n.d.). *Ofsted inspection in the general further education and skills sector in England*. <https://www.edge.co.uk/research/projects/research-reports/ofsted-inspection-in-the-general-further-education-and-skills-sector-in-england/>, [in English].

Education and Training Foundation (ETF). (2022). *Professional Standards for Teachers and Trainers in Education and Training*. ETF. <https://www.et-foundation.co.uk/professional-standards/>, [in English].

Esteves, et al. (2020). *No experience, no employment: The effect of vocational education*. ScienceDirect. <https://www.sciencedirect.com/science/article/pii/S0272775720305513>, [in English].

Ferguson, R. (2012). Learning analytics: Drivers, developments and challenges. *International Journal of Technology Enhanced Learning*, 4(5/6), 304–317. <https://doi.org/10.1504/IJTEL.2012.051816>, [in English].

Fuller, A., & Unwin, L. (2012). Apprenticeship and the concept of expansive learning. In M. Malloch, L. Cairns, K. Evans, & B. O'Connor (Eds.), *The SAGE handbook of workplace learning* (pp. 133–144). SAGE Publications Ltd. <https://doi.org/10.4135/9781446200940.n9>, [in English].

Johnston, L., & Johnston, A. (2024). Reforming vocational education in the UK: The role of vocational education. *Forum for Education Studies*, 2(3), Article 1488. <https://doi.org/10.59400/fes.v2i3.1488>, [in English].

Gatsby Charitable Foundation. (2025). *Exploring Quality Assurance for Technical Education*. <https://www.gatsby.org.uk/education/latest/exploring-quality-assurance-for-technical-education>, [in English].

Gibbons, S., & Silva, O. (2011). School quality, child wellbeing and parents' satisfaction. *Economics of Education Review*, 30(2), 312–331. <https://doi.org/10.1016/j.econedurev.2010.11.001>, [in English].

GOV.UK. (2014). *Apprenticeships, Skills, Children and Learning Act 2009*. <https://assets.publishing.service.gov.uk/media/5a7dff8ae5274a2e8ab452d2/bis-14-710-statement-of-support-for-vocational-qualifications.pdf>, [in English].

GOV.UK. (n.d). *Pay Apprenticeship Levy*. <https://www.gov.uk/guidance/pay-apprenticeship-levy>, [in English].

Chang, B. (2019). *Reflection in learning*. *Online Learning Journal*, 23(1), 96–109. <https://files.eric.ed.gov/fulltext/EJ1210944.pdf>, [in English].

HEPI. (2024). *Lunchtime Reading: Does the Apprenticeship Levy need reforming?*. <https://www.hepi.ac.uk/2024/05/29/lunchtime-reading-does-the-apprenticeship-levy-need-reforming/>, [in English].

HM Treasury. (2021). *Spending Review 2021: A stronger economy for the British people*. GOV.UK. https://assets.publishing.service.gov.uk/media/61c49602e90e07196a66be73/Budget_AB2021_Web_Accessible.pdf, [in English].

House of Commons Library. (2023). *Apprenticeship Levy (CBP-7708)*. <https://commonslibrary.parliament.uk/research-briefings/cbp-7708/>, [in English].

IMZO. (2022). *Всеукраїнський семінар «Особливості професійної освіти: сучасні виклики в умовах дії воєнного стану»*. <https://imzo.gov.ua/events/vseukrains-kyy-seminar-osoblyvosti-profesiynoi-osvity-suchasni-vyklyky-v-umovakh-dii-voiennoho-stanu/>, [in English].

Department for Education. (2021, April 23). *Strategic guidance to the Institute for Apprenticeships and Technical Education 2021 to 2022*. IfATE. https://assets.publishing.service.gov.uk/media/66703020fed5bd09e5195ace/Strategic_Guidance_to_the_Institute_for_Apprenticeships_and_Technical_Education_2021-22.pdf, [in English].

Department for Education. (2023, July 6). *Introduction of T Levels*. GOV.UK. <https://www.gov.uk/government/publications/introduction-of-t-levels/introduction-of-t-levels>, [in English].

Institute for Apprenticeships and Technical Education (IfATE). (2022). *External Quality Assurance Framework*. IfATE. <https://www.instituteforapprenticeships.org/quality/external-quality-assurance/>, [in English].

Institute for Apprenticeships and Technical Education (IfATE). (2021). *Developing and revising apprenticeship standards*. IfATE. <https://www.instituteforapprenticeships.org/developing-apprenticeships/developing-and-revising-apprenticeship-standards/>, [in English].

Institute for Apprenticeships and Technical Education. (2021, February 24). *Apprenticeships standards versioning: release of the revisions status report*. GOV.UK. <https://www.gov.uk/government/publications/how-to-use-the-apprenticeships-standards-revision-status-report/apprenticeships-standards-versioning-release-of-the-revisions-status-report/>, [in English].

Institute for Apprenticeships and Technical Education. (2022). *T Levels: What they are*. <https://www.instituteforapprenticeships.org/t-levels/>, [in English].

British Council. (2018). *Disabled people's inclusion within UK Technical and Vocational Education and Training (TVET)*. British Council.

- https://www.britishcouncil.org/sites/default/files/disabled_peoples_inclusion_within_uk_tviet.pdf, [in English].
- Lain, D., & Maginn, A. (2003). Labour market involvement in quality assurance in vocationally/professionally oriented higher education in Europe: Final report, England (Report 411). *Institute for Employment Studies*. <https://www.employment-studies.co.uk/system/files/resources/files/411.pdf>, [in English].
- Institute for Fiscal Studies. (2025). *Adult education and skills*. Retrieved from <https://ifs.org.uk/education-spending/adult-education-and-skills>, [in English].
- Jisc. (n.d.). *Building digital capabilities framework: The six elements defined*. Jisc. Retrieved August 19, 2024. <https://digitalcapability.jisc.ac.uk/what-is-digital-capability/individual-digital-capabilities/>, [in English].
- Sluijsmans, D. M. A., Straetmans, G. J. J. M., & van Merriënboer, J. J. G. (2008). *Integrating authentic assessment with competence-based learning: The Protocol Portfolio Scoring*. *Journal of Vocational Education & Training*, 60(2), 157–172. <https://www.tandfonline.com/doi/abs/10.1080/13636820802042438>, [in English].
- King's College London. (n.d.). *Re-engineering the UK education system to fill the technical skills gap*. <https://www.kcl.ac.uk/news/spotlight/re-engineering-the-uk-education-system-to-fill-the-technical-skills-gap-1>, [in English].
- NAO (2025). T-level qualifications still less popular and more expensive than BTec s, watchdog finds. *The Guardian*. <https://www.theguardian.com/education/2025/mar/28/t-level-qualifications-still-less-popular-and-more-expensive-than-btecs-watchdog-finds>, [in English].
- Price, M., O'Donovan, B., & Rust, C. (2007). *Assessment standards: A manifesto for change*. *Assessment & Evaluation in Higher Education*. https://www.academia.edu/77583644/Assessment_standards_a_manifesto_for_change, [in English].
- Office of Qualifications and Examinations Regulation (2021). *Vocational and technical qualifications contingency regulatory framework, COVID-19 Conditions and Requirements*. GOV.UK. <https://www.gov.uk/government/publications/vocational-and-technical-qualifications-contingency-regulatory-framework/vocational-and-technical-qualifications-contingency-regulatory-framework-covid-19-conditions-and-requirements--2>, [in English].
- Ofqual. (2021). *Vocational and technical qualifications contingency regulatory framework* [PDF]. Ofqual. <https://www.gov.uk/government/publications/vocational-and-technical-qualifications-contingency-regulatory-framework>, [in English].
- Department for Education. (2021, July 29). *End-point assessment organisation guide to delivering high-quality assessment of apprenticeships*. Department for Education. <https://www.gov.uk/government/publications/end-point-assessment-organisation-guide-to-delivering-high-quality-assessment-of-apprenticeships>, [in English].
- Ofqual. (2022). *Ofqual handbook: General conditions of recognition*. The Office of Qualifications and Examinations Regulation. <https://www.gov.uk/guidance/ofqual-handbook>, [in English].
- Ofsted. (2019). *Education inspection framework*. Office for Standards in Education, Children's Services and Skills. <https://www.gov.uk/government/publications/education-inspection-framework>, [in English].
- Ofsted. (2023). *T-level thematic review: Final report*. <https://www.gov.uk/government/publications/t-level-thematic-review-final-report/t-level-thematic-review-final-report>, [in English].
- Parliament of the United Kingdom. (2009). *Apprenticeships, Skills, Children and Learning Act 2009* (c. 22). <https://www.legislation.gov.uk/ukpga/2009/22>, [in English].
- Policy and Society. (2014). *Academic resistance to quality assurance processes in higher education in the UK*. <https://academic.oup.com/policyandsociety/article/33/3/215/6422288>, [in English].
- Productivity.ac.uk. (n.d.). *How will reforms to England's skill system affect productivity?*. Retrieved from <https://www.productivity.ac.uk/news/how-will-reforms-to-englands-skill-system-affect-productivity/>, [in English].
- Quality Assurance Agency. (2023). *Diversity, inclusivity and accessibility resources*. <https://www.qaa.ac.uk/sector-resources/teaching-learning-and-assessment/diversity-inclusivity-and-accessibility>, [in English].

Society for Education and Training (SET). (2023). *Qualified Teacher Learning and Skills (QTLS)*. SET. <https://set.et-foundation.co.uk/professionalism/qtls/>, [in English].

Powell, A., & Foley, N. (2020, February 7). *Effectiveness of the apprenticeship levy* (Debate Pack No. CDP-2020-0024). House of Commons Library. <http://researchbriefings.files.parliament.uk/documents/CDP-2020-0024/CDP-2020-0024.pdf>, [in English].

United Kingdom Government. (2008). *Education and Skills Act 2008*. <https://www.legislation.gov.uk/ukpga/2008/25/contents>

Legislation.gov.uk. (2008). *Education and Skills Act 2008*. <https://www.legislation.gov.uk/ukpga/2008/25/contents>, [in English].

United Kingdom. (2000). *The Learning and Skills Act 2000*. London: The Stationery Office. <https://www.legislation.gov.uk/ukpga/2000/21/contents>

Vseosvita.ua. (n.d.). V Ukraini proponuiut reformuvaty profesiino-tekhnichnu osvitu [Ukraine proposes to reform vocational education]. <https://vseosvita.ua/c/news/post/108384>, [in Ukrainian].

Wolf, A. (2011). Review of Vocational Education – The Wolf Report. Department for Education. <https://www.gov.uk/government/publications/review-of-vocational-education-the-wolf-report>, [in Ukrainian].

Derzhavna sluzhba yakosti osvity [State Service for Education Quality], (2023). *Ukraina na shliakhu do Yevropeiskoho Soiuzu: adaptatsiia systemy osvity* [Ukraine on the Path to the European Union: Adaptation of the Education System]. <https://sqe.gov.ua/ukraine-eu-eea/>, [in Ukrainian].

Konfederatsiia robotodavtsiv Ukrainy [Confederation of Employers of Ukraine]. (2022). Pro novi vyklyky profesiinoi osvity na suchasnomu etapi [On new challenges of vocational education at the present stage]. <https://employers.org.ua/news/id2396>, [in Ukrainian].

MON [Ministry of Education and Science of Ukraine]. (2021). Zabezpechennia yakosti profesiinoi (profesiino-tekhnichnoi) osvity [Ensuring the quality of vocational (vocational and technical) education]. <https://mon.gov.ua/static-objects/mon/sites/1/pto/2021/Konf-Osv.mozhl-novi.horyz.P-PT-O.Ukr.08-09.2021/Panel.dysk-Zmist.i.yakist.profosv/Serhiy.Posternak-Zmist.i.yakist.profosv.pdf>, [in Ukrainian].

MON [Ministry of Education and Science of Ukraine]. (2025). Verkhovna Rada pidtrymala v pershomu chytanni proiekt Zakonu Ukrainy «Pro profesiinu osvitu» [The Verkhovna Rada supported the draft Law of Ukraine “On Vocational Education” in the first reading]. <https://mon.gov.ua/news/verkhovna-rada-pidtrymala-v-pershomu-chytanni-proiekt-zakonu-ukrainy-pro-profesiinu-osvitu>, [in Ukrainian].

Natsionalne ahentstvo kvalifikatsii. (n.d.a) [National Qualifications Agency. (n.d.a)]. Pratsi Natsionalnoho ahentstva kvalifikatsii 2020-2022 roky: anotovanyi pokazhchyk [National Qualifications Agency. (n.d.a). Proceedings of the National Qualifications Agency 2020-2022: Annotated Index]. https://www.researchgate.net/publication/367409671_Praci_Nacionalnogo_agentstva_kvalifikacij_2020-2022_roki_anotovaniy_pokazcik, [in Ukrainian].

Radkevych, V., & Yershova, L. (2022). Stan hotovnosti systemy profesiinoi osvity do protydii realnym i potentsiinym zahrozam natsionalnii bezpetsi ta natsionalnym interesam Ukrainy v umovakh zovnishnikh i vnutrishnikh vyklykiv [Status of preparedness of vocational education system to counter real and potential threats to national security and national interests of Ukraine in the conditions of external and internal challenges.]. *Profesiina pedahohika* [Professional Pedagogics], 1(24), 4-17. <https://doi.org/10.32835/2707-3092.2022.24.4-17>, [in Ukrainian].

КЛЮЧОВІ ТЕНДЕНЦІЇ РОЗВИТКУ СИСТЕМИ ЗАБЕЗПЕЧЕННЯ ЯКОСТІ ПРОФЕСІЙНОЇ ОСВІТИ І ПІДГОТОВКИ У ВЕЛИКІЙ БРИТАНІЇ

Валентина Радкевич

доктор педагогічних наук, професор, академік Національної академії педагогічних наук України,
<https://orcid.org/0000-0002-9233-5718>, e-mail: mrs.radkevich@gmail.com

Реферат:

Актуальність у статті здійснено комплексний аналіз ключових тенденцій розвитку системи забезпечення якості професійної освіти і підготовки (далі – ПОП) у Великій Британії. Особливу увагу приділено дослідженню збалансованого функціонування зовнішніх регуляторних органів контролю та внутрішніх інституційних механізмів забезпечення якості ПОП, що робить вивчення досвіду Великої Британії важливим для вдосконалення системи забезпечення якості професійної освіти в Україні.

Метою статті є визначення й аналіз ключових тенденцій розвитку системи забезпечення якості ПОП у Великій Британії та на основі отриманих результатів формування практичних рекомендацій для вдосконалення системи забезпечення якості професійної освіти в Україні.

Методи: аналіз нормативно-правових актів британського уряду з 2000 по 2025pp., стратегічних документів, звітів провідних регуляторних органів (Ofsted, Ofqual, Institute for Apprenticeships and Technical Education), а також наукових публікацій провідних британських та європейських дослідників у галузі освітньої політики – для систематизації даних щодо забезпечення якості ПОП; синтез – для встановлення цілісного уявлення про ключові тенденції забезпечення якості ПОП у Великій Британії шляхом поєднання теоретичних і практичних підходів; узагальнення – для формування комплексних висновків і підготовки практичних рекомендацій щодо врахування прогресивних ідей британського досвіду у вдосконаленні системи забезпечення якості професійної освіти в Україні.

Результати: на основі аналізу нормативно-правових актів британського уряду, стратегічних документів, звітів провідних регуляторних органів, а також наукових публікацій провідних дослідників у галузі освітньої політики визначено й проаналізовано ключові тенденції розвитку системи забезпечення якості ПОП у Великій Британії та на цій основі сформульовано практичні рекомендації для вдосконалення системи забезпечення якості професійної освіти в Україні.

Висновки: британська система забезпечення якості ПОП перебуває у постійному розвитку, адаптуючись до змінних економічних і соціальних умов із чіткою орієнтацією на компетентнісний підхід та задоволення потреб роботодавців. Це відображено у таких ключових тенденціях: запровадження інституційно закріпленого механізму незалежного зовнішнього контролю якості ПОП; посилення інкорпорації роботодавців у процеси розроблення технічних кваліфікацій і незалежного оцінювання результатів навчання та компетентностей випускників; цифровізація процесів моніторингу та оцінювання якості ПОП; здійснення систематичного збору та аналізу даних про освітній досвід, працевлаштування та подальшу кар'єрну траєкторію випускників; посилена увага до професійного розвитку педагогічного персоналу закладів ПОП. Для вдосконалення системи забезпечення якості професійної освіти в Україні рекомендується: створення дворівневої системи зовнішнього контролю якості професійної освіти на основі інституційного аудиту та валідації кваліфікацій; інституціоналізація провідної ролі роботодавців у підвищенні релевантності професійної освіти вимогам ринку праці, присудженні та присвоєнні кваліфікацій; стимулювання інтеграції сучасних цифрових інструментів в управління освітнім процесом та оцінювання результатів навчання; запровадження комплексної системи моніторингу якості професійної освіти на основі аналізу даних; активізація процесів стандартизації та професійного розвитку педагогів професійного навчання.

Ключові слова: акредитація, Велика Британія, забезпечення якості, оцінювання, професійна освіта і підготовка, ринок праці, стандарти, тенденції.

Manuscript received 27.01.2025

Accepted for publication after peer review 28.05.2025

Published 03.07.2025



MODERN TRENDS IN QUALITY ASSURANCE OF VOCATIONAL EDUCATION AND TRAINING IN FRANCE

Volodymyr Kryachko

PhD in Sociology, Senior Research Scientist of the Department of Foreign Systems of Vocational Education of the Institute of Vocational Education of the National Academy of Educational Sciences of Ukraine, <https://orcid.org/0000-0002-2869-7490>, e-mail: volodymyr.kryachko@gmail.com

Abstract

Relevance of the article is explicated via the need to study, identify and analyze the modern trends in ensuring the quality of vocational education and training in France in order to take them into account when creating the evaluative tools for assessing the quality of vocational education in Ukraine, which can be based on evaluators, methods and criteria for assessing the quality of vocational education and training in France.

The goal was to identify and characterize the main modern trends in ensuring the quality of vocational education and training in France, as well as to clarify the possibilities of their consideration in the Ukrainian practice of ensuring the quality of vocational education in Ukraine.

The methods included the study of scientific sources, legislative, regulatory and legal documents, empirical data on ensuring the quality of vocational education and training in France – to identify the state of the research problem; theoretical analysis and synthesis, generalization of views on the research problem – to determine the main trends in ensuring the quality of vocational education and training in France, as well as to form the conclusions.

The results were based on the analysis of modern legislative, regulatory and legal documents, scientific and information sources, the main modern trends, features, criteria and methods of ensuring the quality of vocational education and training in France.

Conclusions. The main current trends in quality assurance of vocational education and training in France are explicated: the educational reforms in France implemented in recent years have contributed to strengthening the quality assurance framework for vocational education and training, as well as the overall national qualifications system; the flagship of the quality assurance system for training providers is the “Qualiopi” certification, created by the French Ministry of Labor; the methodology used by “France Competences” for certification processes is itself a quality assurance mechanism; stricter control over training providers registered on the CPF marketplace platform has reduced their number from over 25,500 in 2019 to less than 15,000 by the end of 2023; as a result of increased registration requirements, the withdrawal of obsolete qualifications and the restructuring of higher education qualifications, the number of active qualifications in the RNCP has decreased from 10,000 in the previous system to around 5,000 in the current one; following the 2018 reform of the management and financing of continuing education and vocational training in France, a new body Skills operators (OPCO) was created; the French Ministry of Labour carries out a national forecasting of skills needs for the future development of vocational qualifications, which significantly contributes to improving the quality assurance of vocational education and training in France.

Keywords: *trends, quality, vocational education, training, France.*

Introduction. As is known, vocational education in France is aimed at providing applied training to young people who have completed

college. To achieve this goal, France has three main pathways for vocational education: the first pathway is preparation for a certificate of professional

aptitude (CAP, certificat d'aptitude professionnelle), the second is a certificate of vocational education (BEP, brevet d'études professionnelles), and the third is a four-year preparation for a professional baccalaureate and a technician's certificate (BT, brevet de technicien). Interestingly, professional diplomas are regularly updated after consultations with representatives of professional fields, and the work of the advisory professional commission culminates in a document that corresponds to the diploma. We should recall that the certificate of professional aptitude is a leading specialized professional diploma (CAP) that prepares individuals for specific tasks and is aimed at rapid professional integration. To obtain it, students undergo professional training periods of 12 to 16 weeks. In France, there are about 250 specializations that grant a certificate of professional aptitude in the industrial, commercial, or service sectors. The certificate of vocational education and the certificate of professional aptitude can be obtained in two years. The certificate of vocational education provides a broader qualification and allows for further study, for example, to obtain a professional or technological baccalaureate. It certifies training that provides the qualification of a skilled worker or employee. The training program includes 50% technological and professional training and 50% general education subjects, as well as on-the-job training (from 4 to 8 weeks). The professional baccalaureate is a level IV graduation diploma, which had five specializations when it was created in 1985, and currently includes over 60 specializations and offers various opportunities for professional integration. The professional nature of the training is demonstrated through company-based training (an average of 16 weeks), which is distributed over the first and final years of study. Graduates with CAP and BEP diplomas are eligible to obtain a BT. At the same time, older individuals in France can receive vocational education at apprentice training centers (CFA) through specially designed training schemes (Popel, 2022).

It is also worth noting that the French National Professional Qualifications Framework (NPQF) is based on the European Qualifications Framework (EQF), which makes qualifications more understandable across different countries and systems (EQF). In 2018, an eight-level NPQF was

introduced with three level descriptors: complexity of knowledge; level of expertise; and degree of responsibility and autonomy. The level descriptors reflect national specifics, which is a positive aspect of foreign experience that can be used to improve vocational education in Ukraine. For example, the term "expertise" in France is used instead of the term "skills," emphasizing the importance of "assessing competencies and the desire to give an operational dimension" to qualification levels. Furthermore, the contextualization of qualifications is a crucial element (Cedefop, 2023).

The French National Professional Qualifications Framework includes general qualifications from full secondary, vocational, and higher education, as well as qualifications obtained outside of formal education and training. In 2002, the National Register of Professional Qualifications (Repertoire national des certifications professionnelles, RNCP) was created, which covers professionally-oriented qualifications, including higher education qualifications. The RNCP was linked to the EQF in 2010. In 2021, the NPQF was linked to the EQF and self-certified against the Qualifications Framework of the European Higher Education Area (QF-EHEA), which, in turn, somewhat indicates the latter's autopoietic educational trends (France), which, along with the contextualization of qualifications, can be considered positive aspects of foreign experience that can be used to improve vocational education in Ukraine.

Sources. Current trends, features, main criteria, and methods of quality assurance in vocational education in the countries of the European Union, and France in particular, are the subject of research by various social actors and organizations, including: the European Centre for the Development of Vocational Training (Cedefop), the Ministry of National Education, Youth and Sports, the Ministry of Labour, and other state institutions of France, as well as Ukrainian scholars. Specifically, the monograph "Quality Assessment Systems for Vocational Education and Training in European Union Countries" (Radkevych, ed., 2018) provides an overview of the features of the development of the quality assurance system for vocational education and training (VET) in France, and also conducts a comparative analysis between

some instruments of VET quality assurance systems in France and Ukraine (for example, between French professional licenses and Ukrainian ordinary licenses), highlights some principles of the regular national procedure for evaluating the activities of vocational education institutions, educational programs, and their certification, etc. Moreover, the work states that external quality assessment of VET in France covers all activities of vocational education institutions: administration, management, educational programs, teaching methods, social activities, and research. Of considerable interest is the fact that at the regional level, local councils involved in organizing practical training and vocational preparation for young people and adults have adopted "Quality Charters," which are signed by professional institutions representing specific sectors of the economy, or by training organizations that have concluded agreements with the region to provide workplaces for students of vocational education institutions. At the same time, there is some need to continue further research-based crystallization of the current trends in quality assurance of vocational education in France. Thus, N. Popel (2022) analyzed vocational education and training in France as components of the lifelong learning system, which contributes to the formation of the foundations of human resource optionality and the potential of the modern economy, and also ensures the strengthening of the position of social actors in professional activities. At the same time, the modern trends of vocational education in France are characterized superficially in her work, so this aspect in our work required further information and source research, refinement, and clarification. V. Joseph (2024) in his work quite clearly outlined the prospects for implementing European priorities in the field of vocational education and training in France: ensuring flexibility, innovation, attractiveness, inclusiveness, and quality of national vocational education and training. At the same time, the unresolved part of the general problem to which this work is dedicated is precisely the modern trends in quality assurance of vocational education in France.

Objective: to identify and characterize the current trends in quality assurance of vocational education in France, and to clarify the possibilities of taking them into account in the domestic practice

of quality assurance of vocational (vocational-technical) education.

Methods: study of scientific sources, legislative, legal and regulatory documents, empirical data on quality assurance of vocational education in France – to identify the state of the research problem; theoretical analysis and synthesis, generalization of views on the researched problem – to determine the main trends in quality assurance of vocational education in France, and to formulate conclusions.

Results and Discussion. As the 2018 reform emphasized transparency and efficiency through new obligations for all training providers using mutual funds to inform and monitor their training activities, a number of new trends can be observed in the quality assurance of vocational education and training in France. As is known, the flagship of the quality assurance system for training providers is the "Qualiopi" certification, created by the French Ministry of Labour. The certification has a dual role: to guarantee the quality of the training offer and its transparency for both companies (which contribute to training activities for their employees) and beneficiaries. The Qualiopi quality label is awarded for 3 years by certification bodies accredited or authorized by the French Accreditation Committee (Comité français d'accréditation, Cofrac), according to a national reference system covering seven criteria: the training offer is publicly available and accessible to all audiences; the training offer is adapted to the target group of beneficiaries; learners are supported at every stage of the learning process; an attractive and supportive learning environment; teacher training; links with the local economy; and continuous improvement of services) and 32 indicators, ensuring the same quality standards for all providers. Competencies, according to the legislation, can also be recognized by labeling bodies (instances de labellisation). Training institutions or individuals submit a request to a labeling body, sign a contract with this body, and undergo two audits during the labeling period for monitoring and renewal. All training organizations, including apprentice training centers, must have a quality certificate if the training they offer is financed by public and mutual funds. Regarding initial vocational education (IVET), providers applying for or renewing the "Lycée des métiers"

(vocational lyceum) label must define and establish an organizational structure that meets the quality criteria according to the "Qualéduc" tool, which is used for self-assessment and continuous improvement of public IVET institutions.

"France Compétences" is the governance and monitoring body for the implementation of vocational education and is financially responsible for the quality of vocational training and education. It evaluates the actions carried out by skills operators, the dynamics of costs, and can also alert the state to possible malfunctions and monitors the implementation of quality measures. The methodology used for certification processes is in itself a quality assurance mechanism. For example, ministries develop standards for professional diplomas in consultation with professionals/experts, define examination regulations, award diplomas, offer various types of training in their institutions, hire, train, and pay teachers, monitor the quality of training and report on results and resources used. The need for a training organization to be accredited or recognized by the body issuing the certificate is considered an important element of quality. The state label Qualiopi is awarded either by a certification body accredited by the French Accreditation Committee (Cofrac) or by 8 bodies accredited (for the period 2023-2025) by "France Compétences" (Cedefop, 2024).

In the context of implementing the French National Innovation Plan, it is worth noting that changes have occurred regarding the personal training account (CPF), which is used to finance certification training, skills assessment, or support for VAE: the regulation of training has been strengthened with the introduction of a law to combat abusive commercial advertising and fraud, adopted in December 2022. As of 2022, the state body Caisse des Dépôts, which manages the CPF scheme, has introduced a series of regulatory measures to better control the training offer registered on the CPF marketplace platform. Stricter control over registered training providers has reduced their number from over 25,500 in 2019 to less than 15,000 by the end of 2023. Among the most important regulatory measures taken to clean up the catalogue of training programs eligible for CPF is the requirement, introduced in 2022, for training organizations to obtain accreditation from the

certifier responsible for awarding the professional qualification. In addition, training providers are required to obtain quality certification through the Qualiopi quality certificate. Also, France Compétences, which is responsible for the Specific Directory (Répertoire spécifique), has carried out a significant update of this directory, resulting in the non-renewal of a large portion of the certificates previously listed in it. In December 2023, a decree for the application of this law was published, aimed, in particular, at defining the maximum level of subcontracting for training courses sold on the CPF platform by training service providers. Regarding the Qualiopi quality label for the certification of training service providers, a decree adopted in May 2023 contains a series of measures aimed at strengthening the quality assurance of the certification system. In particular, it defines the procedure that auditors must follow when auditing training organizations applying for the label – initial audit, follow-up audit, and surveillance audit – as well as the harmonization of audit practices between certification bodies (Joseph, 2024).

We should add that the quality assurance tool in vocational education and training, "Qualéduc," was developed in accordance with the principles and methodology proposed by "EQAVET" (European Quality Assurance in Vocational Education and Training) with the aim of establishing and strengthening quality assurance mechanisms in initial education and training. It exists in school management, is an integral part of education reforms, and is also used for the quality labeling of vocational-technical educational institutions (vocational-technical schools, professional technical colleges), campuses for trades and qualifications (these campuses bring together secondary and higher vocational education (VET), research centers, and companies to strengthen the link between education and business, and to make VET one of the leading training pathways, i.e., it is a French initiative representing a new model for organizing vocational education and training of skilled personnel), campuses of excellence, and the EDUFORM quality label for providers offering professional training programs for adults. The fact that the Qualéduc guide, published in 2020, includes 31 thematic areas touching upon the reform of the vocational education pathway in upper secondary

school, teaching methods, pedagogy, and the school environment seems to be a positive trend (Cedefop, 2022).

Let us recall that within the EQAVET framework, for the purpose of ensuring the quality of vocational education and training (VET), a methodology was proposed based on: 1) the quality cycle (PDCA Cycle), which consists of four phases (setting goals and strategic planning; rules and regulations for implementation, continuous monitoring and measurement of results, according to predetermined goals; analysis of factors contributing to quality and change management considering the achieved results; control - begins a new cycle of continuous improvement, and therefore new strategic planning and goal setting, adapted to new developments); 2) quality criteria and indicative descriptors for each phase of the cycle; 3) common indicators for assessing goals, methods, procedures, and learning outcomes.

Furthermore, we note that in the expanded version of the "CEDEFOP" Centre's definition, the concept of "quality assurance" refers to "activities that include planning, implementation, evaluation, reporting, and quality improvement, which are carried out to ensure that all education and training (program content, curricula, assessment outcomes, and validation of learning outcomes, etc.) meet the quality requirements expected by stakeholders." Moreover, the European reference framework for quality assurance in vocational education and training is designed to promote the improvement of VET in the EU by providing authorities with common tools for quality management. To illustrate the nature of quality assurance, it uses the concept of a "quality cycle," which contains four distinct stages of the quality assurance process: planning (setting clear and realistic goals), implementation (defining the necessary structure to achieve the goals), evaluation (developing mechanisms for collecting and evaluating information to determine if goals are being met), and review (assessing results and making necessary adjustments or changes). Thus, one can notice that it has much in common with "Kolb's Learning Cycle," known from learning theory. These stages conditionally "wedge" into one another, meaning the results of one determine the actions of another. At the same time, they are also separate stages in a timeframe, and this determines

the specifics of data collection (Quality Assessment Systems, 2018).

It is also worth adding that the "EDUFORM" label is a quality assessment process available to public and private institutions of continuing vocational education and training (CVET) that offer vocational education and training, apprenticeship programs, and VAE (validation of acquired experience) to obtain a professional qualification, awarded by the Ministry of Education, Youth and Sports. Validation of acquired experience (VAE) is a procedure that allows for the recognition and certification of knowledge and skills acquired through work, volunteering, or other professional activities. It enables individuals to obtain part or all of a professional qualification, such as a diploma or certificate, without undergoing traditional training. The "EDUFORM" label is issued by the ministry for 3 years after a national labeling audit and a positive recommendation from the national labeling committee. It provides visibility of the training offer to beneficiaries and the automatic award of the "Qualiopi" certificate, issued by the French Ministry of Labour.

The School Evaluation Council (Conseil d'évaluation de l'école), established in 2020, acts as an independent state body to ensure coherence between national and international assessments in education. It develops the methodological framework for the self-evaluation and external evaluation of schools (including vocational schools) and produces a summary report on the various exercises for evaluating student achievement, education systems, and institutions. In the higher education sector, programs comply with the Bologna Process and the ECTS credit system. The development and updating of curricula and qualifications provided by various institutions (universities and other public or private higher education institutions and technological institutes) has an internal quality assurance mechanism. Quality assurance has been strengthened by enshrining in law the role of various committees that must be consulted during the development, updating, or removal of higher education qualifications legally registered in the National Register of Professional Qualifications (RNCP, Répertoire National des Certifications Professionnelles), a state register that contains

information on professional qualifications and diplomas recognized in France. Qualifications listed in the RNCP have state status and are recognized throughout the country and in Europe.

As the reform of the continuing education and vocational training system in France was aimed at increasing the transparency and efficiency of the system, it introduced new obligations for all training service providers that use mutual funds to inform and monitor their training activities. Now, all providers of vocational education services (including vocational training centers and individuals) who offer training leading to the acquisition of new competencies must undergo quality certification if they conduct training activities financed by public or pooled funds. Such forms of training are established by law: training activities, skills audits, VAE processes, and vocational training.

Since 2019, the inclusion of certificates in the national register of professional qualifications (*repertoire national des certifications professionnelles*, RNCP) and the specific register of accreditations and certificates for qualifications (*répertoire spécifique des certifications et des habilitations*, RS) has been carried out by France compétences (the French Competencies agency) and its certification commission. All RNCP certificates are linked to a qualification level (levels 3-8 of the European Qualifications Framework) and are structured by units/blocks of competencies. In 2023, for example, over 4,500 certificates were listed in the RNCP and were considered "active," meaning they comply with the registration process and are evaluated (Cedefop, 2024). At the same time, as a result of increased registration requirements, the removal of outdated qualifications, and the restructuring of higher education qualifications, the number of active qualifications in the RNCP has decreased from 10,000 in the previous system to approximately 5,000 (Cedefop, 2022).

France compétences oversees the quality assurance of vocational education and training through the national qualifications system and the implementation of quality mechanisms for the inclusion of qualifications in the RNCP and RS. It has absorbed the functions and responsibilities of the national reference point for quality assurance, which has been responsible for the operation of the RNCP

since 2014. Today, regardless of the training path or process used to obtain a professional qualification or certificate, its inclusion in the RNCP and the specific register is a sign of nationwide recognition of the labor market relevance and quality of a particular qualification. The registration process, which takes place after receiving the consent of interministerial advisory committees, ensures consistency between qualifications issued by different ministries in the same professional sector.

In addition, qualifications issued by other public or private bodies can be registered on demand after review by the certification committee established within the French Commission for Professional Certification (*Commission de la certification professionnelle*), where representatives of ministries, regional education councils, and social partners work together. Nine criteria are applied for registration on demand: 1) a sufficient number of jobs in the target profession; 2) an analysis of the impact in terms of providing access or re-entry to the labor market and in relation to other qualifications in similar or related professions; 3) the quality of the qualification, assessment, and professional standards; 4) ensuring a monitoring procedure for all assessment tests; 5) consideration of all legal and regulatory constraints; 6) availability of the qualification through VAE; 7) consistency between the units/blocks of competencies of the given qualification and the assessment methods used; 8) where possible, consistency of (partial or full) equivalence with similar qualifications offered at the same level, and with their respective blocks of competencies; 9) for sectoral qualifications (CQPs), the participation of joint committees on employment and vocational training in the development or approval of qualification standards. The maximum registration period is 5 years (three years for rapidly changing or evolving qualifications), to ensure the training offer meets the needs of the economy. At the same time, certification bodies must provide, at least every 2 years, statistical data on the professional integration of holders of RNCP qualifications and inform France compétences of any training, assessment, or awarding tasks/duties they delegate to other organizations (Cedefop, 2022).

In the context of our article's theme, the quintessence would be to note that in France, the

Ministry of Labour conducts skills needs forecasting at the national level, primarily through the Directorate for Research, Studies and Statistics Coordination (Direction de l'animation de la recherche, des études et des statistiques, Dares), as well as France Stratégie, an autonomous institution under the Prime Minister. The Ministry of Labour partially funds research at the sectoral and regional levels through prospective study contracts. In 2021, France Stratégie and Dares jointly conducted a forecast of skills needs and the dynamics of jobs, training, and qualifications required in the labor market by 2030. Through its participation in the jobs and skills network (réseau emplois compétences, REC), managed by France Stratégie, the state, social partners, regions, and professional sector observatories work together on job needs and skills forecasting. France compétences contributes to the identification and analysis of skills needs in these sectors by publishing and promoting the work of the observatories on occupations and qualifications, which are managed by professional sectors (observatoires prospectifs des métiers, et des qualifications, OPMQ); each year, it establishes a list of new or rapidly evolving occupations (métiers émergents ou en forte évolution).

Following the 2018 reform on the governance and financing of continuing education and vocational training, a new body was created in France – the Skills Development Operators (Opérateur de Compétences, OPCO), managed by social partners. State representatives (from the Ministry of Labour) are members of their boards and sign agreements with them regarding objectives and resources (Cedefop, 2023). The Skills Development Operators support the forecasting of labor market needs by helping companies and professional sectors to build forward-looking management of jobs and skills, and assisting professional sectors in developing qualifications. They provide support to companies in planning apprentice training and help small and medium-sized enterprises to identify their skills and training needs. Regional observatories of employment and training provide regional systems for analyzing and researching the relationship between employment, training, and qualification requirements. Using data provided by national and regional stakeholders in vocational education and training, they conduct research and provide

expertise to forecast economic changes and future skills. They focus on training needs, employment trends; the links between employment and training; sectoral approaches, professional mobility, and economic development (Cedefop, 2022).

Conclusions. Thus, the educational reforms in France, introduced in recent years, have contributed to strengthening the framework for quality assurance in vocational education, as well as the overall national qualification system. The flagship of the quality assurance system for training service providers is the "Qualiopi" certification, created by the French Ministry of Labour. The methodology used by "France Compétences" for certification processes is in itself a quality assurance mechanism. In 2023, over 4,500 certificates were listed in the RNCP and were considered "active," meaning they comply with the registration process and are evaluated. On the other hand, as a result of increased registration requirements, the removal of outdated qualifications, and the restructuring of higher education qualifications, the number of active qualifications in the RNCP has decreased from 10,000 in the previous system to approximately 5,000 in the current one. Stricter control over training service providers registered on the CPF marketplace platform has reduced their number from over 25,500 in 2019 to less than 15,000 by the end of 2023. Following the 2018 reform on the governance and financing of continuing education and vocational training, a new body was created in France – the Skills Development Operators (Opérateur de Compétences, OPCO). The Qualéduc guide, published in 2020, includes 31 thematic areas touching upon the reform of the vocational education pathway in upper secondary school, teaching methods, pedagogy, and the school environment. The fact that the French Ministry of Labour conducts skills needs forecasting at the national level for the future formation of vocational education qualifications, primarily through the Directorate for Research, Studies and Statistics Coordination, as well as France Stratégie, an autonomous institution under the Prime Minister, which significantly contributes to improving the quality assurance of vocational education and training in France, also appears to be a positive trend. Thus, the level descriptors that reflect the national specifics of France and the forecasting of

skills needs are the system-elements of positive foreign experience in quality assurance of vocational education and training in France, which can

optionally serve as promising directions for further scientific research and practice for the improvement of vocational education in Ukraine.

List of references

Крячко, В. І. (2025). Сучасні методи оцінювання якості професійної освіти і підготовки у країнах Європейського Союзу. Інноваційна професійна освіта. 1(22), 54-59. Розвиток професійної освіти в умовах війни, повоєнного відновлення та євроінтеграції України: матеріали XIX Всеукраїнської науково-практичної (звітної) конференції Інституту професійної освіти НАПН України. В.О. Радкевич (Ред.), М.А. Пригодій (Ред.). ІПО НАПН України. <https://doi.org/10.32835/2786-619X.2025.1.22.54-59>

Попель, Н. (2022). Система професійної освіти у Франції. Scientific Collection «InterConf+», (20(105), 137–142. <https://doi.org/10.51582/interconf.19-20.04.2022.012>

Радкевич В. О. (Ред.), Пуховська Л. П., Бородієнко О. В. (Ред.), Радкевич О. П., та ін. (2018). Системи оцінювання якості професійної освіти і навчання в країнах Європейського Союзу: монографія. Полісся.

Cedefop, & Centre for the Development of Information on Continuing Training (Centre Inffo). (2023). Vocational education and training in Europe – France: system description. In Cedefop, & ReferNet. (2024). Vocational education and training in Europe: VET in Europe database – detailed VET system descriptions [Database]. <https://www.cedefop.europa.eu/en/tools/vet-in-europe/systems/france-u3>

Cedefop (2023). European Inventory of National Qualifications Frameworks 2022 – France. <https://www.cedefop.europa.eu/en/country-reports/france-european-inventory-nqfs-2022>

Cedefop (2022). Vocational education and training in France: short description. Luxembourg: Publications Office of the European Union. <http://data.europa.eu/doi/10.2801/204196>

EQF – Європейська рамка кваліфікацій. <https://nqa.gov.ua/blog/eqf-evropejska-ramka-kvalifikacij-ce-osnova-na-akij-buduetsa-vsa-sistema-kvalifikacij/>

France. <https://www.cedefop.europa.eu/it/countries/france#1>

French education system: vocational schools, colleges, IUTs <https://gogofrance.com/en/blog/vocational-schools-in-france/>

Joseph, V. (2024). Implementing European priorities in VET: making national VET agile, flexible, innovative, attractive, inclusive and quality-assured: France. Cedefop Refernet thematic perspectives. <https://www.cedefop.europa.eu/en/country-reports/implementing-european-priorities-vet-france-2024>

Translated & Transliterated

Kryachko, V. I. (2025). Suchasni metody otsiniuvannia yakosti profesiinoi osvity i pidhotovky u krainakh Yevropeiskoho Soiuzu [Modern methods of assessing the quality of vocational education and training in the countries of the European Union]. Innovatsiina profesiina osvita [Innovative professional education], 1(22), 54-59. Rozvytok profesiinoi osvity v umovakh viiny, povoiennoho vidnovlennia ta yevrointehratsii Ukrainy: materialy XIX Vseukrainskoi naukovo-praktychnoi (zvitnoi) konferentsii Instytutu profesiinoi osvity NAPN Ukrainy [Development of vocational education in the conditions of war, post-war reconstruction and European integration of Ukraine: materials of the XIX All-Ukrainian scientific and practical (reporting) conference of the Institute of Vocational Education of the National Academy of Educational Sciences of Ukraine]. Radkevych V. (Red.), Pryhodi M. (Red.). IVE of the NAES of Ukraine. <https://doi.org/10.32835/2786-619X.2025.1.22.54-59>

Popel, N. (2022). Systema profesiinoi osvity u Frantsii [The vocational education system in France]. Scientific Collection «InterConf+», (20(105), 137–142. <https://doi.org/10.51582/interconf.19-20.04.2022.012>

Radkevych V. (Red.), Pukhovska L., Borodienko O. (Red.), Radkevych O., ta in. (2018) Systemy otsiniuvannia yakosti profesiinoi osvity i navchannia v krainakh Yevropeiskoho Soiuzu: monohrafiia [Systems

for assessing the quality of vocational education and training in the countries of the European Union: monograph]. Polissia.

Cedefop, & Centre for the Development of Information on Continuing Training (Centre Inffo). (2023). Vocational education and training in Europe – France: system description. In Cedefop, & ReferNet. (2024). Vocational education and training in Europe: VET in Europe database – detailed VET system descriptions [Database]. <https://www.cedefop.europa.eu/en/tools/vet-in-europe/systems/france-u3>

Cedefop (2023). European Inventory of National Qualifications Frameworks 2022 – France. <https://www.cedefop.europa.eu/en/country-reports/france-european-inventory-nqfs-2022>

Cedefop (2022). Vocational education and training in France: short description. Luxembourg: Publications Office of the European Union. <http://data.europa.eu/doi/10.2801/204196>

EQF – Yevropeiska ramka kvalifikatsii [European Qualifications Framework]. <https://nqa.gov.ua/blog/eqf-evropejska-ramka-kvalifikacij-ce-osnova-na-akij-buduetsa-vsa-sistema-kvalifikacij/>

France. <https://www.cedefop.europa.eu/it/countries/france#1>

French education system: vocational schools, colleges, IUTs <https://gogofrance.com/en/blog/vocational-schools-in-france/>

Joseph, V. (2024). Implementing European priorities in VET: making national VET agile, flexible, innovative, attractive, inclusive and quality-assured: France. Cedefop Refernet thematic perspectives, 12–13 p. <https://www.cedefop.europa.eu/en/country-reports/implementing-european-priorities-vet-france-2024>

DOI: <https://doi.org/10.32835/2707-3092.2025.31.21-30>

СУЧАСНІ ТЕНДЕНЦІЇ ЗАБЕЗПЕЧЕННЯ ЯКОСТІ ПРОФЕСІЙНОЇ ОСВІТИ У ФРАНЦІЇ

Володимир Крячко

кандидат соціологічних наук, старший науковий співробітник відділу зарубіжних систем професійної освіти Інституту професійної освіти НАПН України, <https://orcid.org/0000-0002-2869-7490>, e-mail: volodymyr.kryachko@gmail.com

Реферат:

Актуальність статті зумовлюється необхідністю виявлення й аналізу сучасних тенденцій забезпечення якості професійної освіти у Франції для їх урахування при створенні евалюативних інструментів оцінювання якості професійної (професійно-технічної) освіти в Україні.

Мета: виявити і схарактеризувати сучасні тенденції забезпечення якості професійної освіти у Франції, а також з'ясувати можливості їх врахування у вітчизняній практиці забезпечення якості професійної (професійно-технічної) освіти.

Методи: вивчення наукових джерел, законодавчих, нормативно-правових документів, емпіричних даних щодо забезпечення якості професійної освіти у Франції – для виявлення стану проблеми дослідження; теоретичний аналіз і синтез, узагальнення поглядів щодо досліджуваної проблеми – для визначення основних тенденцій забезпечення якості професійної освіти у Франції, формулювання висновків.

Результати: проаналізовано сучасні нормативно-правові документи, наукові та інформаційні джерела з проблем забезпечення якості професійної освіти у Франції, виявлено й охарактеризовано відповідні тенденції.

Висновки: освітні реформи у Франції, запроваджені в останні роки, сприяли зміцненню рамки забезпечення якості професійної освіти, а також загальної національної системи кваліфікації; флагманом системи забезпечення якості для постачальників навчальних послуг є сертифікація «Qualiopi», створена Міністерством праці Франції; методологія, що використовується «France Competences» для процесів сертифікації, сама по собі є механізмом забезпечення якості; суворіший контроль за зареєстрованими на маркетплейс-платформі CPF постачальниками навчальних послуг скоротив їхню кількість з понад 25 500 у 2019 році до менш ніж 15 000 до кінця 2023 року; в результаті підвищених вимог до реєстрації, вилучення застарілих кваліфікацій та реструктуризації кваліфікацій вищої освіти кількість активних кваліфікацій у RNCP зменшилася

з 10 000 у попередній системі до приблизно 5 000 у нинішній; після реформи 2018 року щодо управління та фінансування безперервного навчання та професійного навчання у Франції був створений новий орган – оператори з розвитку навичок (ОРСО); французьким Міністерством праці на національному рівні для майбутнього формування кваліфікацій професійно-технічної освіти здійснюється прогнозування потреб у навичках, що значно сприяє покращенню забезпечення якості професійної освіти та підготовки у Франції.

Ключові слова: *тенденції, якість, професійна освіта, підготовка, Франція.*

Manuscript received 21.03.2025

Accepted for publication after peer review 03.07.2025

Published 04.08.2025



This publication was prepared as part of the research project conducted by the Department of Professional Pre-Tertiary Education at the Institute of Vocational Education of the National Academy of Educational Sciences of Ukraine, titled "Theoretical and Methodological Foundations for the Development of Professional Competence of Pedagogical Staff in Professional Colleges under Pandemic, Wartime, and Post-War Conditions" (State Registration Number: 0123U100602), implemented during 2023–2025.

PROBLEM-BASED LEARNING TECHNOLOGY AS A MEANS OF ACTIVATING THE COGNITIVE ACTIVITY OF LEARNERS

Lidiia Humenna

Junior Researcher, Department of Professional Pre-Higher Education, Institute of Vocational Education of the National Academy of Educational Sciences of Ukraine, <http://orcid.org/0000-0003-3813-5894>, e-mail: red-ipto@ukr.net

Abstract

Relevance: In the context of the full-scale war caused by the armed aggression of the Russian Federation, the Ukrainian education system is undergoing profound transformations, particularly in the sphere of training future specialists for economic recovery and sustainable development. The task of forming learners capable of critical thinking, independent action, making informed decisions, and adapting to rapidly changing conditions is gaining particular importance. In this context, the implementation of learning technologies that meet the challenges of Industry 4.0 and promote the activation of cognitive activity becomes relevant. Problem-based learning, focused on setting learning tasks that require search and analytical work, proves to be an effective means of developing professional-critical competencies of vocational pre-higher education learners.

Aim: To investigate problem-based learning technology as a tool for activating the cognitive activity of vocational pre-higher education learners in the context of preparing for professional activities in conditions of digital transformation and societal challenges.

Methods: Theoretical methods (analysis and generalization – for processing scientific and pedagogical sources on problem-based learning, identifying leading approaches to its organization); comparative analysis – for studying modern pedagogical practices in vocational pre-higher education institutions, comparing traditional and innovative teaching models; systematization of empirical data from educational practice – for substantiating the conditions for the effective use of problem-based learning, considering the needs of learners and the realities of martial law.

Results: It has been proven that the use of problem-based learning technology ensures an increase in motivational interest, the development of reflective thinking, and the formation of the ability to independently solve educational and production tasks. The structural components of the technology are analyzed, and the conditions for its effective application in the training of new generation specialists are determined.

Conclusions: Problem-based learning contributes to the realization of the educational goal in the field of vocational pre-higher education – the training of competitive, mobile, critically thinking specialists capable of acting effectively in the conditions of Industry 4.0 and taking an active part in the restoration of the state during wartime and post-war transformations.

Keywords: *pedagogical technologies, problem-based learning, cognitive activity, professional pre-higher education, critical thinking, Industry 4.0.*

Introduction. In the contemporary conditions of the educational environment's transformation, driven by digitalization, automation, and changes in the labor market, the reorientation of educational technologies toward the development of students' cognitive activity and independence is becoming particularly relevant (Kremen, 2021). Institutions of professional pre-higher education are called upon to provide not only professional training but also to cultivate graduates' ability to act effectively in the context of Industry 4.0, where competencies related to analytical thinking, flexibility, and the ability to solve complex production and organizational tasks are of special importance. At the same time, traditional teaching approaches, which focus mainly on the reproductive recall of knowledge, are increasingly failing to meet the needs of modern production and the knowledge society. Consequently, there is a growing need to implement educational technologies that would activate students' cognitive activity, promote the development of critical thinking, argumentation skills, reflection, and independent decision-making (Pavlenko, 2013; Ihnatenko, 2015). One of the effective pedagogical technologies capable of achieving the aforementioned goals is problem-based learning. Its essence lies in creating problem situations that require inquiry-based activities, hypothesizing, and justifying solution options. This approach contributes to the formation of both general and professional competencies in students, which are necessary for productive professional activity in a high-tech environment. Sources. The problem of activating students' cognitive activity within formal education has been a subject of long-standing scientific interest in both Ukrainian and foreign pedagogy. Recent years have been marked by increased attention to interactive technologies that foster the development of critical thinking, independence, and the ability to analyze information under unpredictable external circumstances, particularly war and digital transformation. In this context, the conceptual approaches to organizing the educational process proposed by O. Humennyi and

O. Fedorenko are a valuable contribution to the development of effective pedagogical strategies aimed at shaping an active, responsible, and intellectually mobile student (Humennyi & Fedorenko, 2023). Research indicates that problem-based learning has the potential not only to activate mental activity but also to promote the formation of transversal competencies necessary for work in the Industry 4.0 era. Pedagogical developments of recent years confirm the effectiveness of using the problem-based approach in institutions of professional pre-higher education as a means of forming a reflective, responsible, and adaptive personality (Lementarenko, 2012). As a result of reviewing contemporary pedagogical research (Pukhovska, L., 2011; Tesliuk, Luzan, & Shovkun, 2010; Karpushyna, 2018), it has been established that problem-based learning has significant potential for activating cognitive activity and forming transversal competencies necessary for effective professional activity in the context of Industry 4.0. In the practice of professional pre-higher education institutions, this technology has proven its effectiveness in developing critical thinking, reflexivity, responsibility, and adaptability. The author shares the researchers' position, emphasizing the expediency of systematically implementing the problem-based approach in the educational process as one that meets the modern challenges of digital transformation and the state of war in Ukraine. As the next stage of this direction, the integration of problem-based learning with elements of STEM education, project activities, and gamification is proposed for the comprehensive development of students' professional agency. Separate studies focus on the methodological aspects of implementing problem-based learning, particularly on the development of learning situations that involve inquiry-based activities, analytical information processing, and the formulation of substantiated conclusions (Filatova, 2021). These works emphasize the didactic mechanisms for creating an intellectually enriched educational environment in which students not only reproduce knowledge but

also actively participate in its creation. The author of this article supports such a methodological orientation, viewing it as an effective tool for forming independent thinking, information literacy, and the ability to make decisions in a real professional environment. Research also highlights the need to update the training of pedagogical staff for the implementation of active-type technologies in the educational process, which is especially important in the context of reforming professional pre-higher education. This refers to the need for developing modern methodological competencies in teachers, the ability to design a dynamic learning environment, and the use of tools aimed at developing students' cognitive activity. The author of the article shares the position on the relevance of teachers' professional growth as a prerequisite for the quality implementation of innovative educational technologies, including problem-based learning, into the practice of training future specialists. At the same time, the specifics of implementing problem-based learning technology specifically in professional pre-higher education under wartime conditions, considering the challenges of digitalization, the growing autonomy of students, and the need to develop their professional agency, have not been sufficiently covered. In this regard, this scientific inquiry is focused on studying the potential of problem-based learning as a factor in forming the cognitive activity of students in colleges and vocational schools that prepare future specialists for the innovative recovery of the country. The purpose of the article is the theoretical substantiation and methodological analysis of problem-based learning technology as an effective means of activating the cognitive activity of students in professional pre-higher education in the context of training competitive specialists capable of acting under the conditions of digital transformation, the challenges of Industry 4.0, and social instability caused by the war in Ukraine. Within the scope of the research, the tasks were to analyze the degree of scientific development of the problem, to identify the potential of problem-based learning for the development of transversal competencies, and also to outline the conditions for its effective implementation in the educational process of professional pre-higher education institutions. Methods. Theoretical methods were

used in the research process, including the analysis and generalization of scientific and pedagogical sources on the problem of problem-based learning, which allowed for the determination of leading approaches to its organization and its pedagogical potential in professional education. A comparative analysis of modern pedagogical practices in institutions of professional pre-higher education was also used, which made it possible to compare traditional and innovative teaching models. The method of systematizing empirical data from educational practice was applied to substantiate the conditions for the effective use of problem-based learning, taking into account the needs of students and the realities of the state of war. Results and Discussion. Problem-based learning technology is considered one of the most effective means of activating students' cognitive activity, especially at the professional pre-higher level. It belongs to the group of active-type educational technologies aimed at developing a high level of cognitive tension, research skills, and the ability of students to independently construct knowledge. Its didactic essence lies in organizing the learning process in such a way that the teacher does not simply transmit ready-made information but creates situations of intellectual complexity for students that require searching for non-standard solutions, logical analysis, synthesis, evaluation, and reflection. The central structural unit of this technology is the problem-based task—a learning situation that involves a contradiction, uncertainty, or informational insufficiency that the student must overcome independently or in the process of group interaction. In pedagogical practice, such a situation stimulates intellectual activity, mobilizes the individual's internal resources, and encourages the independent search for knowledge. The author has developed a model (Fig. 1) that reflects the logic of implementing problem-based learning technology as a means of activating the cognitive activity of students in professional pre-higher education. Its goal is to stimulate intellectual development, form the ability for independent thinking, and make decisions under conditions of uncertainty. The objective of the model is to prepare a student capable of effectively acting in professional situations that meet the challenges of digital transformation and the requirements of Industry 4.0. Five main stages are

distinguished in the structure of the model: 1. Creating a problem situation (problem awareness); 2. Actualization of prior knowledge and search for solution directions; 3. Formulation of hypotheses and solution options; 4. Analysis, verification of hypotheses, and justification of solutions; 5. Reflection and generalization of the experience gained (Fig. 1). These stages are implemented in conjunction through the functional actions of the teacher (facilitation, moderation, stimulation of cognitive interest) and the active engagement of the student, which includes analysis, critical thinking, idea formulation, and the application of knowledge in new situations. The objectives of the technology are to create a problem-based learning environment,

activate inquiry-based activities, and form skills of analysis, hypothetical thinking, and reflection. The expected results of implementing PBL include the development of critical thinking, an increase in cognitive motivation, the formation of research skills, and an increased readiness for professional activity in complex conditions. The context for the application of the model is professional pre-higher education, oriented towards training highly qualified specialists for fields undergoing rapid changes, such as agroengineering, veterinary medicine, and electric power engineering, in accordance with labor market demands and the conditions of wartime and post-war recovery of the country.

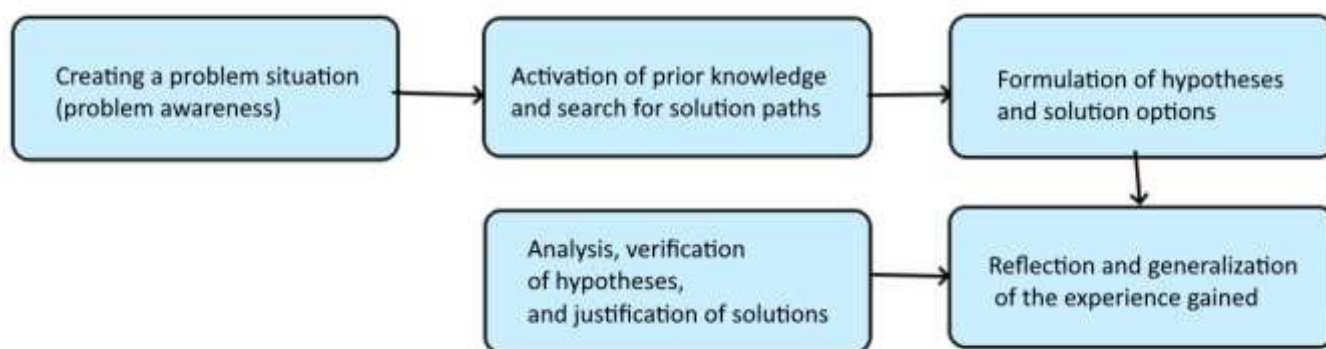


Figure 1. Model of problem-based learning technology

In this context, the role of the teacher is transformed: they act not as a source of ready-made knowledge, but as a facilitator and organizer of cognitive activity, who creates conditions for intellectual growth and internal motivation. At the same time, the student acts as an active subject of the educational process, capable of independently establishing logical connections, drawing conclusions, and applying knowledge in new situations. Scientific sources (Humennyi & Fedorenko, 2023; Kankovskyi, 2009) testify that problem-based learning ensures: the formation of critical and creative thinking; the development of research skills; an increase in the level of motivational engagement in the learning process; the ability to make informed decisions under uncertainty; the integration of knowledge from different subject areas. In professional pre-higher education, this technology is particularly effective because it combines the mastery of theoretical

material with the solution of practice-oriented tasks. The use of educational case studies, situational modeling, and interdisciplinary problem-based modules contributes to the formation of professional readiness, flexibility of thought, and the ability to act responsibly in the rapidly changing environment of Industry 4.0. That is why it is advisable to consider problem-based learning as a leading means of developing the intellectual potential of students, their cognitive independence, and competitiveness in the modern labor market. The study examined the implementation of problem-based learning technology in the educational process of VSP "Nemishaieve Vocational College of NUBiP of Ukraine," one of the leading institutions of professional pre-higher education in the agricultural sector, which trains specialists for the agro-industrial complex, veterinary medicine, agroengineering, ecology, and forestry. An analysis of the college's internal educational practices,

particularly the implementation of complex production and technological tasks in the form of situational modeling, showed that the use of a problem-based approach contributes not only to an increase in motivation for learning but also to a deeper engagement of students in the process of analyzing professional tasks. In the transition to Industry 4.0 technologies, where automated systems, digital platforms, precision agriculture, and biotechnologies play a key role, not only knowledge but also competencies in critical thinking, adaptability, and solving non-standard production situations become necessary. Problem-based learning, as proven by the results of the analysis of the college's practices, provides an appropriate level of cognitive tension and creates conditions for the formation of an analytical style of thinking, which is crucial for specialists in the agricultural sector in the context of digital transformation. The study of the implementation of problem-based learning technology in the educational process of VSP "Nemishaieve Vocational College of NUBiP of Ukraine" analyzed its application in a number of disciplines, including:

1. Agroengineering: students solved practical tasks on the operation and technical maintenance of agricultural machinery, which contributed to the development of technical thinking and skills for solving real production problems. Within the study of the discipline "Operation and Repair of Agricultural Machinery," students were involved in solving problem situations that were modeled by analogy with real production conditions. Example:

Case 1. Identifying malfunctions in the hydraulic system of the MTZ-82 tractor. Students were asked to model a situation where unstable operation of the mounted mechanism is detected during fieldwork. The students independently analyzed technical documentation, diagnosed malfunctions, and proposed optimal ways to eliminate the breakdown, taking into account available resources. Case 2. Developing a technological map for the technical maintenance of the SZ-3.6 seed drill. The task was to analyze the maintenance regulations according to the factory instructions, assess the operating conditions on specific soil, and create a step-by-step maintenance plan with the selection of appropriate tools and consumables. The work was carried out in groups with a subsequent presentation of the solutions. Case 3. Determining the economic feasibility of replacing a unit on the "Niva SK-5" combine harvester. Students analyzed the wear conditions of the header, compared options for major repair versus replacement with a new unit, calculated costs, and made a decision based on economic efficiency. The task was complicated by the fact that the constraints of wartime conditions—availability of supplies, logistics, and repair facilities—had to be taken into account. The use of such cases in problem-based learning allowed for the formation of a systemic vision of production processes in students, combined theoretical knowledge with practical skills, and developed the ability to make informed decisions in a real professional context.

Table 1

DYNAMICS OF CHANGES IN INDICATORS OF EDUCATIONAL ACTIVITY OF STUDENTS IN THE DISCIPLINE "AGROENGINEERING" BEFORE AND AFTER THE IMPLEMENTATION OF PROBLEM-BASED LEARNING TECHNOLOGY

Indicator	Before implementation	After implementation
Average level of technical thinking (on a 5-point scale)	3.1	4.3
Independence in solving production tasks (%)	58.0	83.0
Quality of practical work performance	65.0	89.0
Motivation for learning (on a 5-point scale)	3.4	4.6
Academic performance (average grade in the discipline)	3.2	4.4

The results of the comparative analysis (Table 1) show a positive dynamic for all evaluated

indicators after the implementation of problem-based learning in the "Agroengineering" discipline.

The most pronounced growth is observed in the sphere of qualitative characteristics of cognitive activity and professional thinking. In particular, the average level of technical thinking increased from 3.1 to 4.3 points (a growth of 38.7%), which indicates a significant deepening of understanding of technological processes and the ability to critically evaluate them. The indicator of independence in solving production tasks increased from 58% to 83%, i.e., by almost a third. This confirms an increase in the level of initiative, decision-making ability, and the readiness of students to act autonomously within the framework of modeling professional situations. The quality of practical work performance increased from 65% to 89%, which indicates an increase not only in the motivational but also in the operational component of educational activity—students not only understand the material better but also apply it more effectively in specific practice-oriented tasks. The motivation for learning indicator also showed significant improvement—from 3.4 to 4.6 points, which indicates a strengthening of students' internal interest in the learning process and an increase in their emotional and value-based attitude towards professional training. The final level of academic performance (in the form of the average grade) increased from 3.2 to 4.4, which confirms the overall improvement in the results of mastering the educational material. The empirical data confirm that the implementation of problem-based learning in the educational process positively influences the development of cognitive, motivational, and practical components of the

educational activity of professional pre-higher education students in the field of agroengineering. 2. Veterinary Medicine: the use of case methods for analyzing clinical cases allowed students to develop clinical reasoning and make informed decisions under conditions of uncertainty. Within the study of the effectiveness of problem-based learning in the educational process of Nemishaieve Vocational College of NUBiP of Ukraine, special attention was paid to the specialty "Veterinary Medicine," which requires students to have not only knowledge of the theoretical foundations of anatomy, pathology, and pharmacology but also a high level of professional reflection, rapid decision-making in clinical situations, and the ability to act under uncertainty. Taking into account the specifics of professional training, case methods were integrated into the educational process as one of the forms of implementing problem-based learning technology. Students worked with clinical cases that modeled real veterinary situations—acute mastitis in a cow, postpartum paresis, intracellular parasites in dogs, etc. They had to independently analyze the symptomatology, make a diagnosis, justify their actions, and develop a treatment plan. This approach stimulated the development of clinical reasoning, formed the ability for a rapid and well-founded response, and also contributed to an awareness of responsibility for the decisions made. To evaluate the results of implementing the case methods, the changes in the main indicators of students' educational activity were analyzed. The dynamics of these changes are shown in (Fig. 2).

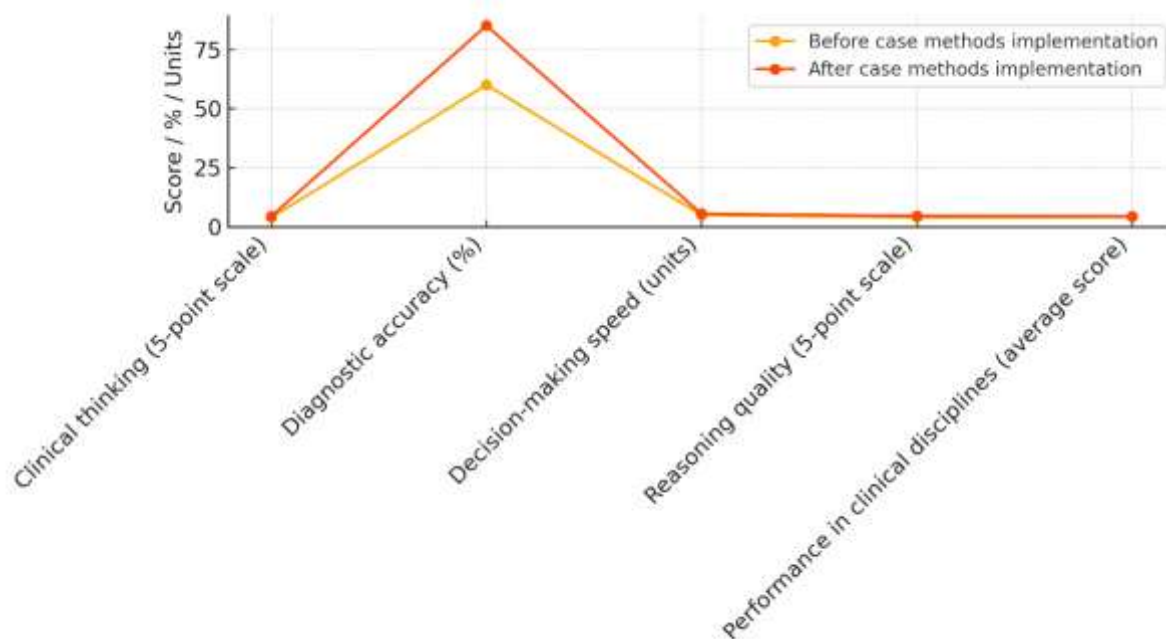


Figure 2. Dynamics of indicators of educational activity in veterinary medicine

Analysis of the data presented in Fig. 2 demonstrates a significant improvement in the key indicators of students' educational activity after the implementation of case methods within veterinary disciplines. The most indicative is the growth in the level of clinical reasoning—from 3.2 to 4.5 points, which testifies to the development of students' ability to comprehensively understand symptomatology, construct a diagnostic hypothesis, and justify treatment decisions. The diagnostic accuracy indicator increased from 60% to 85%, which can be attributed to a more systematic approach to analyzing clinical data, the formation of analytical thinking, and a better understanding of the logic of the veterinary process. At the same time, the speed of decision-making almost doubled (from 2.5 to 4.0 arbitrary units), indicating an increase in students' confidence in their own knowledge and skills to apply them in modeled real situations. An improvement in the justification of decisions made is also observed—from 3.3 to 4.6 points, which demonstrates not only the mechanical assimilation of information but also the formation of the logic of professional reasoning. The final academic performance indicator in clinical disciplines increased from 3.4 to 4.5 points, confirming an overall increase in the quality of educational achievements. The positive dynamics of all analyzed parameters show that the use of case methods as a

form of problem-based learning in veterinary education is an effective tool for forming professionally important competencies, which is particularly relevant in the context of the growing complexity and responsibility of veterinary practice in the 21st century. 3. Electric Power Engineering, Electrical Engineering, and Electromechanics: the application of a problem-based approach to the study of electrical systems contributed to a deeper understanding of their operating principles and the development of design skills, specifically—when studying topics related to the construction of control circuits for asynchronous motors, students were given problem tasks that required independent analysis of technical conditions, selection of equipment, calculation of network parameters, and creation of schematic electrical diagrams. Some cases were based on real production situations, for example: developing an emergency power supply system for a farm or optimizing greenhouse lighting with energy efficiency in mind. The use of this approach provided for the interdisciplinary integration of knowledge from electrical engineering, basics of automation, energy conservation, and labor protection. Students not only better assimilated the theoretical material but also formed practical skills in project thinking, planning, and the technical and economic justification of the proposed solutions. This became

the foundation for the development of an engineering style of thinking, oriented towards the real challenges of Industry 4.0. The application of problem-based learning in these disciplines positively influenced the formation of students' critical thinking, the ability to make independent decisions, and adaptation to changing working conditions, which are key competencies in the context of Industry 4.0. For the further improvement of the educational process, it is advisable to develop methodological recommendations for the integration of problem-based learning into other disciplines and to ensure the training of pedagogical staff for the application of this technology. Conclusions. The results of the conducted research confirmed the achievement of the set goal—problem-based learning technology proved to be an effective tool for activating the cognitive activity of students in professional pre-higher education under the conditions of digital transformation and the growing professional challenges associated with social instability and the needs of Industry 4.0. Based on theoretical analysis and empirical observations, it was established that the implementation of a problem-based approach in the

educational process contributes to the development of a number of transversal competencies, including: critical and clinical thinking, the ability to make independent decisions, the justification of actions, analytical skills, and practical readiness to solve professional situations. The application of problem-based learning in specialties such as agroengineering, veterinary medicine, electric power engineering, and electromechanics made it possible to combine the assimilation of theoretical knowledge with the modeling of real cases, which increased the level of motivation, academic performance, and practical readiness of students for work in high-tech production environments. Promising directions for further scientific research include the development of methodological models for integrating problem-based learning with other active educational technologies, particularly STEM education, elements of gamification, dual education, and digital simulation. Also requiring in-depth study are the issues of professional training for pedagogical staff to implement problem-based learning in a blended educational environment and with remote access, which is particularly relevant during the period of martial law.

List of references

- Валентьєва, Т, Смолянюк, Ю., & Семянюк, Ю. (2021). Проблемне навчання у закладах вищої освіти як засіб формування професійної компетентності майбутніх педагогів. *Актуальні питання гуманітарних наук*, 49(1), 130-139. <https://epub.chnpu.edu.ua/jspui/bitstream/123456789/7744/1/Проблемне%20навчання%20у%20закладах%20вищої%20освіти%20як%20засіб%20формування%20професійної%20компетентності%20майбутніх%20педагогів.pdf>
- Гуменний, О. Д., & Федоренко, О. І. (2023). Інтеграція цифрових технологій в освітній процес: Smart EcoSystem як унікальне цифрове середовище для персоналізованого фахового навчання. *Інформаційно-комунікаційні технології в освіті*. <https://doi.org/10.5281/zenodo.15067293>
- Ігнатенко, Н. (2015). Методика застосування технології проблемного навчання при вивченні історії у вищому навчальному закладі. *Україна–Європа–Світ. Міжнародний збірник наукових праць. Серія: Історія*, міжнародні відносини, (16[1]), 201–205. http://nbuv.gov.ua/UJRN/Ues_2015_16%281%29_24
- Каньковський, І. Є. (2009). Генезис розвитку поняття «педагогічна система». *Проблеми інженерно-педагогічної освіти: зб. праць*. Харків: УПА, 24–25, 25–35. <https://elar.khmnu.edu.ua/items/9ab4765b-3ece-47a1-9a2d-8766b9398b5b>
- Карпушина, М. (2018). Теоретичні основи технології проблемного навчання студентів у закладах вищої освіти. *Педагогічний дискурс*, (24), 47–51. <https://doi.org/10.31475/ped.dys.2018.24.07>
- Кремень, В. Г. (Ред.). (2021). *Енциклопедія освіти*. Київ: Юрінком Інтер. [Електронна версія доступна за посиланням: https://elibrary.kubg.edu.ua/39233/1/Енциклопедія%20освіти_.pdf]

Лементаренко, М. Д. (2012). Технологія проблемного навчання. ред. Романовський, О. Г., & Панфілов, Ю. І. (ред.). *Сучасні педагогічні технології в освіті : зб. наук.-метод. пр.* (с. 127-134). Харків : НТУ «ХПІ». <https://repository.kpi.kharkov.ua/handle/KhPI-Press/437>

Павленко, В. В. (2013). Проблемне навчання: становлення, сутність, перспективи. У В. О. Огнев'юк (ред.), *Цілі та результати освітніх реформ: українсько-польський діалог: матеріали Міжнародної науково-практичної конференції, 15–16 травня 2013 р., м. Київ* (с. 126–134). Київ: Київський університет імені Б. Грінченка. <http://eprints.zu.edu.ua/12538/1/11.pdf>

Павлюк, Є. О. (2015). Проблемне навчання як основа фахової підготовки майбутніх тренерів-викладачів. *Educational Dimension*, 44, 104–109. <https://doi.org/10.31812/educdim.v44i0.2659>

Пуховська, Л., 2011. Теоретичні засади професійного розвитку вчителів: рух до концептуальної карти. *Порівняльна професійна педагогіка : наук. журнал*. Київ; Хмельницький: ХНУ, 1. 97-107. <https://core.ac.uk/download/pdf/32306377.pdf>

Рябуха, Т. В., & Гостіщева, Н. О. (2020). Проблемне навчання у процесі формування іншомовної аудитивної компетенції студентів-філологів. *Herald Pedagogiki. Nauka i Praktyka*. https://www.researchgate.net/publication/340065742_Problemne_navchanna_u_procesi_formuvanna_insomovnoi_auditivnoi_kompetencii_studentiv-filologiv

Теслюк, В. М., Лузан, П. Г., & Шовкун, Л. М. (2010). *Основи педагогічної майстерності: навчальний посібник*. Київ: ДАККиМ. <https://rep.dnuvs.ukr.education/server/api/core/bitstreams/024adb4d-5fa6-4ecb-9d8c-9df7e5d16f0b/content>

Філатова, Л. С. (2021). *Педагогічна майстерність : навчальний посібник для здобувачів вищої освіти педагогічних університетів за спеціальностями 013 Початкова освіта; 016 Спеціальна освіта*. Харків: ХНПУ. <http://library.megu.edu.ua:8180/jspui/handle/123456789/2621>

Філімонова, Т. В., Тарнавська, С. В., Орищенко, І. О., Антонова, О. Є., & Березівська, Л. Д. (Ред.). (2015). *Сучасні технології в освіті. Ч. 1. Сучасні технології навчання: наук.-допом. бібліогр. покажч. Вип. 2. НАПН України, ДНПБ України ім. В. О. Сухомлинського*. https://lib.iitta.gov.ua/id/eprint/11087/1/Suchasyi_tekhnologii_navchania_Ch_%201_N_%202.pdf

Translated & Transliterated

Valentieva, T, Smolianko, Yu., & Semianko, Yu. (2021). Problemne navchannia u zakladykh vyshchoi osvity yak zasib formuvannia profesiinoi kompetentnosti maibutnikh pedahohiv [Problem-based learning in higher education institutions as a means of developing the professional competence of future teachers]. *Aktualni pytannia humanitarnykh nauk* [Current issues in the humanities]. <https://epub.chnpu.edu.ua/jspui/bitstream/123456789/7744/1/Problemne%20navchannia%20u%20zakladykh%20vyshchoi%20osvity%20iak%20zasib%20formuvannia%20profesiinoi%20kompetentnosti%20maibutnikh%20pedahohiv.pdf>

Humennyi, O. D., & Fedorenko, O. I. (2023). *Intehratsiia tsyfrovyykh tekhnolohii v osvittii protses: Smart EcoSystem yak unikalne tsyfrove seredovyshche dlia personalizovanoho fakhovoho navchannia* [Integration of digital technologies into the educational process: Smart EcoSystem as a unique digital environment for personalized vocational learning]. *Informatsiino-komunikatsiini tekhnolohii v osviti* [Information and communication technologies in education]. <https://doi.org/10.5281/zenodo.15067293> [in Ukrainian].

Ihnatenko, N. (2015). *Metodyka zastosuvannia tekhnolohii problemnoho navchannia pry vyvchenni istorii u vyshchomu navchalnomu zakladi* [Methodology of applying problem-based learning technology in history teaching at higher education institution]. *Ukraina–Ievropa–Svit. Mizhnarodnyi zbirnyk naukovykh prats. Serii: Istoriia, mizhnarodni vidnosyny* [Ukraine–Europe–World. International collection of scientific works. Series: History, international relations], (16[1]), 201–205. http://nbuv.gov.ua/UJRN/Ues_2015_16%281%29_24 [in Ukrainian].

Kankovskyi, I. Ye. (2009). *Henezys rozvytku poniattia “pedahohichna systema”* [Genesis of the concept of “pedagogical system”]. *Problemy inzhenerno-pedahohichnoi osvity: Zbirnyk prats* [Problems of engineering and pedagogical education: collection of works], (24–25), 25–35. Kharkiv: UIPA, [in Ukrainian].

Karpushyna, M. (2018). *Teoretychni osnovy tekhnolohii problemnoho navchannia studentiv u zakladykh vyshchoi osvity* [Theoretical foundations of problem-based learning technology in higher education institutions].

Pedahohichnyi dyskurs [Pedagogical Discourse], (24), 47–51. <https://doi.org/10.31475/ped.dys.2018.24.07> [in Ukrainian].

Kremen, V. H. (Ed.). (2021). *Entsyklopediia osvity [Encyclopedia of education]*. Kyiv: Yurinkom Inter. https://elibrary.kubg.edu.ua/39233/1/Entsyklopediia%20osvity_.pdf [in Ukrainian].

Lementarenko, M. D. (2012). *Tekhnolohiia problemnoho navchannia [Technology of problem-based learning]*. In O. H. Romanovskiy & Yu. I. Panfilov (Eds.), *Suchasni pedahohichni tekhnolohii v osviti: Zbirnyk nauково-metodychnykh prats [Modern pedagogical technologies in education]* (pp. 127–134). Kharkiv: NTU «KhPI», [in Ukrainian].

Pavlenko, V. V. (2013). *Problemne navchannia: stanovlennia, sutnist, perspektyvy [Problem-based learning: Formation, essence, prospects]*. In V. O. Ohneviuk (Ed.), *Tsili ta rezultaty osvitnikh reform: Ukrainsko-polskyi dialoh: Materialy mizhnarodnoi nauково-praktychnoi konferentsii, 15–16 travnia 2013 r., m. Kyiv [Goals and results of educational reforms: Ukrainian-Polish dialogue: materials from the International Scientific and Practical Conference, 15–16 May 2013, Kyiv]* (pp. 126–134). Kyiv: Kyivskiy universytet imeni B. Hrinchenka [Kyiv University named after V. Grinchenko]. <http://eprints.zu.edu.ua/12538/1/11.pdf>, [in Ukrainian].

Pukhovska, L. (2011). *Teoretychni zasady profesiinoho rozvytku vchyteliv: Rukh do kontseptualnoi karty [Theoretical foundations of teachers' professional development: Moving toward a conceptual map]*. *Porivnialna profesiina pedahohika: Nauk. Zhurnal [Comparative Professional Pedagogy: Scientific Journal]*, 1, 97–107. Kyiv–Khmelnytskyi: KhNU, [in Ukrainian].

Tesliuk, V. M., Luzan, P. H., & Shovkun, L. M. (2010). *Osnovy pedahohichnoi maisternosti: Navchalnyi posibnyk [Fundamentals of pedagogical mastery: A textbook]*. Kyiv: DAKKiM, [in Ukrainian].

Filatova, L. S. (2021). *Pedahohichna maisternist: Navchalnyi posibnyk dlia zdobuvachiv vyshchoi osvity pedahohichnykh universytetiv za spetsialnostiamy 013 “Pochatkova osvita”; 016 “Spetsialna osvita” [Pedagogical mastery: A textbook for students of pedagogical universities majoring in 013 Primary Education and 016 Special Education]*. Kharkiv: KhNPU, [in Ukrainian].

Filimonova, T. V., Tarnavska, S. V., Oryshchenko, I. O., Antonova, O. Ye., & Berezivska, L. D. (Eds.). (2015). *Suchasni tekhnolohii v osviti. Ch. 1. Suchasni tekhnolohii navchannia: nauk.-dopom. bibliohr. pokazhch. Vyp. 2. NAPN Ukrainy [Modern technologies in education. Part 1. Modern teaching technologies: scientific and auxiliary bibliographic index. Issue 2. National Academy of Pedagogical Sciences of Ukraine]*. DNPB Ukrainy im. V. O. Sukhomlynskoho [V. O. Sukhomlynsky National Scientific Pedagogical Library of Ukraine]. https://lib.iitta.gov.ua/id/eprint/11087/1/Suchasyi_tekhnologii_navchania_Ch_%201_N_%202.pdf, [in Ukrainian].

DOI: <https://doi.org/10.32835/2707-3092.2025.31.31-41>

ТЕХНОЛОГІЯ ПРОБЛЕМНОГО НАВЧАННЯ ЯК ЗАСІБ АКТИВІЗАЦІЇ ПІЗНАВАЛЬНОЇ ДІЯЛЬНОСТІ ЗДОБУВАЧІВ ОСВІТИ

Лідія Гуменна

молодший науковий співробітник відділу фахової передвищої освіти, Інститут професійно-технічної освіти НАПН України, <http://orcid.org/0000-0003-3813-5894>, e-mail: red-ipto@ukr.net

Реферат:

Актуальність: в умовах повномасштабної війни, спричиненої збройною агресією російської федерації, українська система освіти зазнає глибоких трансформацій, зокрема у сфері підготовки майбутніх фахівців для економіки відновлення та сталого розвитку; особливій ваги набуває завдання формування здобувачів освіти, здатних мислити критично, діяти самостійно, ухвалювати обґрунтовані рішення та адаптуватися до швидкозмінних умов; у цьому контексті актуальним стає впровадження технологій навчання, які відповідають

викликам Індустрії 4.0 та сприяють активізації пізнавальної діяльності; проблемне навчання, орієнтоване на постановку навчальних завдань, що вимагають пошукової та аналітичної роботи, виявляється ефективним засобом розвитку професійно-критичних компетентностей здобувачів фахової передвищої освіти.

Мета – дослідити технологію проблемного навчання як інструмент активізації пізнавальної діяльності здобувачів фахової передвищої освіти в контексті підготовки до професійної діяльності в умовах цифрової трансформації та суспільних викликів.

Методи: теоретичні (аналіз і узагальнення – для опрацювання науково-педагогічних джерел з проблеми проблемного навчання, визначення провідних підходів до його організації); порівняльний аналіз – для вивчення сучасних педагогічних практик у закладах фахової передвищої освіти, зіставлення традиційних та інноваційних моделей викладання; систематизації емпіричних даних з освітньої практики – для обґрунтування умов ефективного використання проблемного навчання з урахуванням потреб здобувачів освіти та реалій воєнного стану.

Результати: доведено, що використання технології проблемного навчання забезпечує зростання мотиваційної зацікавленості, розвиток рефлексивного мислення та формування здатності до самостійного вирішення навчальних і виробничих завдань; проаналізовано структурні компоненти технології, визначено умови її ефективного застосування у підготовці фахівців нової генерації.

Висновки: проблемне навчання сприяє реалізації освітньої мети у сфері фахової передвищої освіти – підготовці конкурентоздатного, мобільного, критично мислячого фахівця, здатного діяти ефективно в умовах Індустрії 4.0 та брати активну участь у відновленні держави в період воєнних і післявоєнних трансформацій.

Ключові слова: педагогічні технології, проблемне навчання, пізнавальна активність, фахова передвища освіта, критичне мислення, Індустрія 4.0.

Manuscript received 16.02.2025

Accepted for publication after peer review 01.07.2025

Published 11.08.2025



ASSESSING THE QUALITY OF PROFESSIONAL TRAINING OF SPECIALISTS IN ECONOMIC COLLEGES: TECHNOLOGICAL ASPECT

Dmytro Nahlyi

PhD Student of the Institute of Vocational Education of the National Academy of Educational Sciences of Ukraine, Kyiv, <https://orcid.org/0009-0004-1456-316X>, e-mail: dimadimanaglui@ukr.net

Abstract

Relevance: In the context of globalization and labor market transformation, the demand for highly qualified specialists in the economic field is increasing. This necessitates a rethinking of approaches to students' professional training, particularly in terms of assessing the quality of their knowledge, skills, and competencies. The technologization of the educational process and the implementation of innovative assessment methods are becoming key factors in ensuring training quality.

Aim: To substantiate and design a technology for assessing the quality of professional training of specialists in economic colleges, taking into account modern pedagogical requirements and labor market needs.

Methods: The study employed a set of interrelated methods: theoretical (analysis, synthesis, generalization, systematization); modeling and design; empirical (observation, document analysis, study of teaching practices); and comparative analysis of traditional and innovative assessment methods.

Results: A step-by-step technology for assessing the quality of professional training in economic colleges was developed. It includes: defining benchmark learning outcomes; identifying structural components of professional skills; creating diagnostic tools; organizing the assessment procedure; and analyzing the results.

The technology involves the use of both traditional and interactive assessment methods, which contribute to the development of self-control, self-assessment, and the formation of individual educational trajectories.

Conclusions: The proposed technology is a comprehensive system that ensures objectivity, reliability, and validity of assessment. Its implementation enhances the effectiveness of professional training, supports the development of students' competencies, and contributes to the formation of competitive specialists. Future research should focus on studying the impact of this technology on the quality of professional training of future economists in experimental educational environments.

Keywords: *technology; quality assessment; professional training; economic colleges; competencies; stages.*

Introduction. In the contemporary conditions of economic globalization and labor market transformation, the demand for economics specialists capable of effectively adapting to new challenges is growing. Significant changes have emerged in the professional training of economics specialists today, the most important of which are the formation of new scientific knowledge and the application of skills and practical experience for successful employment. This necessitates a rethinking of approaches to the professional training

of students, particularly in assessing the quality of their knowledge, skills, and competencies. The technologization of the educational process, the implementation of innovative teaching and assessment methods, and the personalization of educational trajectories are all becoming key factors in ensuring the high quality of training for future economists. In this context, the development and implementation of an effective assessment technology that not only records the level of

professional skills formation but also promotes their further development becomes particularly relevant.

Consideration of the methodological foundations of modern pedagogy and the analysis of approaches to assessing the quality of professional training have made it possible to construct a theoretical model and move on to designing a technology for assessing the quality of professional training for specialists in economic colleges.

Sources of the study. The research process utilized a wide range of sources, covering both theoretical and practical aspects of assessing the quality of professional training for specialists. The source base was primarily composed of scientific works by domestic and foreign researchers in the fields of pedagogy, vocational education, and pedagogical measurements (I. Bulakh, L. Darling-Hammond, L. Wentworth, L. Dybkova, L. Hrynevych, A. Kalenskyi, O. Lokshyna, P. Luzan, N. Moiseiuk, M. Seifried, P. Polentz, O. Titova, et al.). Their scientific contributions form the basis for understanding the conceptual approaches to assessing the quality of the educational process.

It is widely accepted among scholars that pedagogical assessment serves multiple purposes. It can be used to determine students' learning achievements; establish the effectiveness of teaching methods and forms of organization; analyze the impact of pedagogical strategies on the quality of the educational process; determine the effectiveness of an educational institution's activities; determine the effectiveness of a substantiated teaching method or educational technology; and evaluate the impact of specific pedagogical innovations on the learning process.

In the context of our research, we focus on an assessment that has a developmental and corrective nature, meaning it is aimed at the development, improvement, and enhancement of students' competency-based achievements, particularly their professional training (Luzan et al., 2021b). Such an approach focuses not only on stating the level of competency formation but also on identifying areas for growth and planning further educational actions.

The purpose of the article is to substantiate and design a technology for assessing the quality of professional training for specialists in economic colleges, taking into account modern pedagogical requirements and labor market needs.

Research methods. To achieve the research goal, a complex of interconnected theoretical and

empirical methods was used, including: analysis, synthesis, generalization, and systematization – to study and systematize scientific sources, and to define the essence of pedagogical technologies and approaches to assessing the quality of specialist training; modeling – to create an algorithm for assessing the quality of professional training for specialists in economic colleges and to build a corresponding theoretical model; design – to develop the structure and determine the implementation stages of the specified technology; observation, document analysis, and study of teachers' experience – to examine the existing experience of assessing the quality of professional training of students in colleges; comparative analysis – to compare traditional and innovative methods of assessing the quality of professional training for future specialists.

Results and discussion. A necessary condition for achieving high and guaranteed quality of professional training for specialists in economic colleges is the technologization of the process of assessing the level of competency formation (Luzan et al., 2024). In the Dictionary-Reference on Professional Pedagogy, the concept of "technology" is defined as "a set of methods, <...> a way for people to implement a specific complex process by dividing it into a system of interconnected procedures and operations that are performed more or less unambiguously and aim to achieve high efficiency" (Semyonova, ed., 2006, p. 187). However, recently the technologization of human activity has become one of the trends in pedagogical education as well: digitalization, personalization, subjectivization of learning, upbringing, and development of the student based on individual trajectories, etc. (Bykov, Spirin, & Pinchuk, 2020; Zavalna, 2017; Lokarieva, & Bazhmina, 2021). Pedagogical technology is a systematic method of creating, applying, and defining the entire process of teaching and knowledge acquisition, taking into account technical and human resources and their interaction, which aims to optimize forms of education (UNESCO) (UNESCO, 2022).

From a pedagogical perspective, the term "technology" has been examined in the works of O. Antonova (2015), P. Luzan and I. Pechkovska (2015), N. Navolokova (2009), M. Nosko, S. Harkusha, and H. Tsyhura (2020), I. Prokopenko (2018), and others, so there is no need to dwell on its substantive characteristics again. We will only note that despite all the differences in approaches to

explaining the essence and content of pedagogical technology, they are all aimed at creating optimal conditions for solving practical problems. In our research, the definition given by P. Luzan and I. Pechkovska (2015) is taken as a basis, where pedagogical technology is "a purposeful organization of the pedagogical process, which reflects a scientifically substantiated project of a logically structured system of pedagogical interaction for the guaranteed achievement of planned learning outcomes."

For successful application in the educational process, a pedagogical technology must meet a number of methodological requirements that determine its quality and effectiveness. Among the key criteria underlying the construction of pedagogical technologies are conceptual soundness, systematicity, manageability, effectiveness, and reproducibility (Antonova, 2015; Luzan, & Pechkovska, 2015). To the listed main qualitative characteristics of pedagogical technologies, we have added communicativeness in the form of providing feedback between the teacher and the students. The leading feedback mechanisms in the technology for assessing the level of a graduate's competency formation, which ensure the receipt of reliable information about changes that have occurred in the context of education quality at the institution, are pedagogical interaction and systematic monitoring of achievements in all structural components of the educational process according to defined criteria.

Thus, the assessment process, as a component of learning, is manageable and technological. The technological nature of the assessment process is manifested in its goal-setting, planning, design, phasing, and variation of means and methods. The quality of reproducibility is also valuable – the ability to be applied in other similar educational institutions by other educators.

The technology for assessing the quality of professional training for specialists in economic colleges provides for a guaranteed result; its implementation is carried out in a psychologically comfortable environment, taking into account not only the individual and age characteristics of students but also their level of learning. Thus, the most significant provisions for designing the technology for assessing the quality of professional training for economics specialists should be noted:

- the technology for assessing the quality of professional training for specialists is a specific way of achieving the learning goal in an economic college to improve the quality of training for future specialists;

- the essence of this method lies in the step-by-step implementation of activities;

- operations are developed based on the analysis and consideration of the requirements of the educational standard and the EPP for the discipline;

- the development of assessment tools and the determination of the volume of controlled information are carried out taking into account the students' level of learning and the specifics of each of these levels, which allows each student to form an individual learning trajectory;

- the technology for assessing the quality of professional training for specialists is considered as a project for organizing the assessment system and the activities of the teacher and student, built in accordance with this project;

- the specified technology can itself act as an element of any pedagogical technology.

The technology for assessing the quality of professional training for specialists in economic colleges is implemented sequentially through the following stages (Fig. 1):

Stage 1. Identification of program (benchmark) learning outcomes as normative requirements for the training of specialists in an economic college based on the analysis of regulatory documents.

At this stage, the State Classifier of Professions, the specialist's qualification characteristics, professionogram, professional standard, educational standard, and the educational and professional program (EPP) for the training of specialists in specialty 051 "Economics" are analyzed to establish the benchmark results that graduates and students must demonstrate upon mastering certain educational components. In particular, there are 17 such learning outcomes in the EPP profile for these specialists: from "1. To know their rights and obligations as a member of society, the values of a civil society, the rule of law, and the rights and freedoms of man and citizen in Ukraine" to "17. To search, collect, process, and analyze necessary information to develop or improve a strategy for future professional growth."

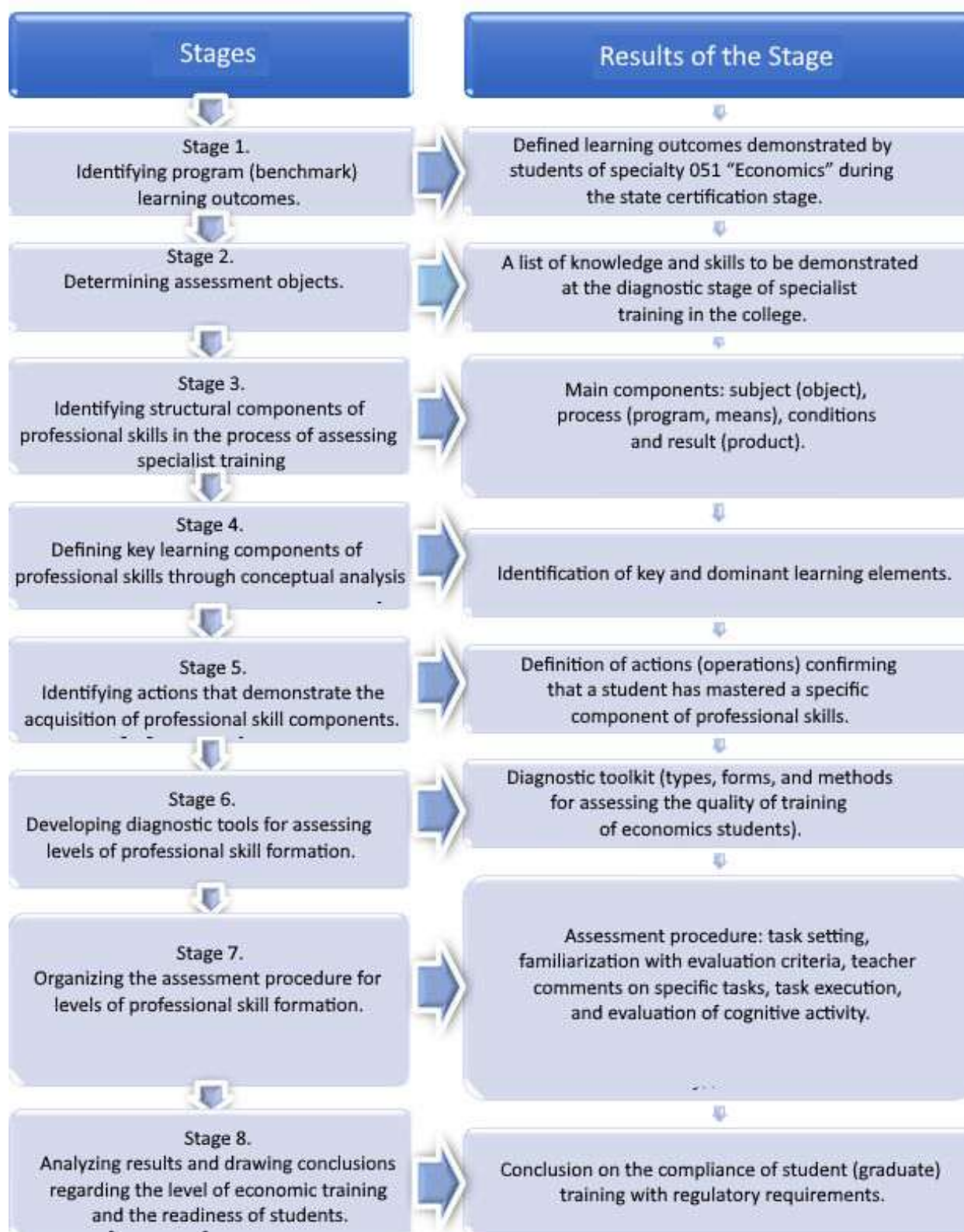


Fig. 1. The structure of the technology for assessing the quality of professional training for specialists in economic fields (developed by the author)

Stage 2. Determining the objects of assessment (a list of knowledge and skills that should be present at a certain stage of diagnosing the quality of specialist training in college).

The content of the controlled information is specified in the assessment objects. For the designed technology, it is important to identify assessment objects that correspond to the goals and objects of learning in general. This will ensure the

effectiveness and efficiency of the technology, as the assessment will correspond directly to the object being checked. At this stage, the benchmark learning outcomes are specified depending on the goals of assessing the quality of specialist training. It is worth emphasizing that learning achievements act as a kind of marker of the gradual formation of a student's competencies. Educators formulate them both for the educational program as a whole and for each individual learning unit (discipline or module) (Luzan et al., 2021a, p. 42).

Stage 3. Identification of the structural components of professional skills in the process of assessing the training of specialists.

In the structure of "professional action," researchers identify five main components, namely: the subject (object), the process (procedure), the means, the conditions, and the result (product) (Luzan et al., 2021a, p. 42). The description of each structural element of a skill should be as detailed as possible to avoid discrepancies in understanding the object of the action, its components, and characteristics; the content and sequence of operations that make up the action; the means, devices, and tools necessary for its execution; the conditions under which the action is performed; and the expected results. The formation of a professional skill is determined by the following criteria: regarding the subject (object of action) – the ability to recognize (select) the necessary object from among others or to name its characteristic features; regarding the process (procedure) – the ability to list the operations provided for by the procedure, determine their sequence, or perform the corresponding practical actions on a given object; regarding the means – the ability to name the necessary devices, tools, equipment, select them, and demonstrate skills in using them; regarding the conditions – the ability to determine the conditions necessary for performing the action and to assess their sufficiency for carrying out the operations; regarding the result (product) – the ability to assess the compliance of the obtained result with the established requirements based on certain signs.

Stage 4. Identification of the main learning components of a professional skill through conceptual and content analysis.

Assessing a student's complete mastery of all components of a professional action is a complex task. To identify the key, dominant learning elements, it is advisable to analyze them from the point of view of their interconnection: to what extent knowledge of one element indicates an

understanding of simpler, related elements. Expert assessment can be the most objective in this process. Of course, not all knowledge within a topic is rigidly connected. Sometimes, mastering one concept does not guarantee the assimilation of others. However, the learning material is often structured in such a way that to understand the next part, it is necessary to know the previous one. In other cases, this connection is less obvious: a student may have a deep understanding of some issues of the topic but have gaps in others. At this stage, the following occurs: analysis of the professional skill – its content is revealed through the concepts, processes, and actions that compose it; identification of the main (dominant) learning elements – the key knowledge, skills, and abilities that are most important for the formation of this professional skill are determined; structuring of the skill – the content is divided into separate learning elements for further targeted learning and assessment.

Stage 5. Identification of operations that demonstrate the mastery of a component of a professional skill.

The identification of actions (operations) that indicate a student's mastery of a specific component of a professional skill is a key stage in the development of an effective assessment system. These actions must be clearly formulated, observable, and measurable, as well as simultaneously related to the specific content being assessed. To determine an economics student's mastery of the component of a professional skill for performing calculations, specific actions (operations) that they must demonstrate should be clearly executed. The assessment is based not only on the final result but also on the process of completing the task, which allows for determining the student's understanding of the economic essence of the calculations.

It is important to achieve a certain level of complexity and depth of skill mastery at different stages of learning. In the initial stages, a student may demonstrate the ability to perform individual operations under the guidance of a teacher, while in the later stages, they should be able to integrate these operations into complex tasks and use independent solutions. Therefore, the definition of actions should be dynamic and adapted to the student's progress in learning. A detailed definition of these actions makes it possible to create objective assessment criteria and provide feedback, which improves the quality of professional training.

Stage 6. Creation of a diagnostic toolkit for assessing the levels of formation of a professional skill.

This stage of the technology for assessing the quality of training for future economists consists of creating tools and methods that allow for an objective assessment of how well students have mastered the necessary professional skills. The main goal of this stage is to ensure an accurate and reliable measurement of students' competency levels.

The diagnostic toolkit contains two components – an assessment tool and a scale on which the scores of the measured construct are recorded (points). The assessment tool is understood as a set of standardized tasks that have the necessary system-forming statistical characteristics and ensure the receipt of reliable, valid, and authentic results of the measured construct (Annenkova, 2021). The tasks themselves may include questions, exercises, learning problems, and situations for which statistical estimates of characteristics are determined – difficulty and the ability to differentiate (shows how well the task can distinguish between respondents with high and low levels of preparation). The second component of the diagnostic toolkit is the scale on which the scores of the variable are plotted, which is the goal of the measurement. These scores can relate to both quantitative and qualitative levels of measurement. The scaling procedure is aimed at expanding the possibilities of interpreting and comparing scores.

The defining aspects of the stage of creating a diagnostic toolkit for assessing the levels of formation of a professional skill are: defining clear criteria by which the level of students' mastery of professional skills will be assessed (characteristics of the student's response; quality of knowledge; degree of skill formation; level of mastery of cognitive operations; experience of creative activity); developing assessment tools (creating tests to check students' theoretical knowledge; developing practical tasks that allow for assessing students' ability to apply knowledge in practice; creating projects that include the analysis of real economic data and the development of plans, etc.); applying different assessment methods (formative, summative, and other assessment methods).

The technology for assessing the quality of training for specialists in economic colleges covers various types, forms, and methods of assessment. The use of assessment tools occurs at different control points of the educational process, in particular, at the preliminary, current, thematic,

midterm, final, and concluding stages of student assessment. For each control point, a mechanism for applying assessment tools is defined, which includes: assessment goals, planned results, indicators of competency formation, assessment tools, and indicators of their application in the form of achieved results. In the process of comparing the planned and achieved results, the levels of achievement are determined: low, medium, sufficient, or high.

An analysis of works on the problem of pedagogical measurements (Annenkova, 2021; Dybkova, 2016; Kanivets, 2018; Luzan et al., 2022; Luzan et al., 2024) made it possible to conclude that domestic and foreign scientists have created toolkits capable of accurately and objectively measuring the quality of student training. The desire to give an objective quantitative assessment of knowledge is associated with the search for reliable methods and forms – tools for measuring learning outcomes.

Traditional diagnostic methods used by educators to measure the quality of students' learning achievements are aimed at identifying the level of knowledge, skills, and abilities to solve typical tasks. Innovative methods of pedagogical diagnostics, which are becoming more widespread among educators, are focused on identifying and assessing the level of competence, education, and readiness to solve creative and practical tasks.

A properly constructed system (selection) of diagnostic methods for assessing the learning of professional knowledge, skills, and abilities allows for: overcoming the contradiction between the objective need for continuous updating of methods for assessing the quality of training for future specialists and the pedagogical requirements for their stability; improving the quality of training a competitive specialist who is in high demand in society and independently manages their own choice of action and field of application. The modernization of the educational process is aimed at forming students' responsibility for their own learning and developing self-control through self-educational and self-assessment activities while performing various tasks.

In the study, special attention is paid to the implementation of traditional and innovative methods of teaching and assessing the quality of training for future specialists, which include components for conducting self-assessment of results by students of economic specialties. Self-assessment of completed work is important for the development of the personal qualities of future

specialists, the ability to analyze, make generalizations, etc. (Dybкова, 2016, p. 341).

The analysis of publications conducted in the context of the study showed that domestic and foreign scientists understand the concept of "assessment tools for diagnosing competencies and their components" not only as a fund (base) of existing control tasks but also as a "detailed description of the procedures necessary to determine the quality of students' mastery of the learning material" (Luzan et al., 2022), a description of criteria, indicators, and an assessment scale. The assessment tools include: an interview (individual or group oral questioning); a colloquium; tests (entrance, current, thematic, mid-term and final certification tests; homogeneous, heterogeneous, standardized with a creative task); multi-level tasks and assignments; case tasks; a control work; a laboratory work; an essay and other creative works; a report, a summary, an annotation; a portfolio (a set of individual learning achievements of the student); a workbook; a glossary; a round table, a discussion, a polemic, a dispute, a debate; business, role-playing games, and other game technologies; a research project (a presentation, a report, a communication); technical means of control (computer testing programs, educational tasks, complex situational tasks, simulators, virtual laboratory works); a course work; a report (on internships, laboratory works, student research work, etc.); an exam (in a discipline, a module), a final state exam; a final qualifying work.

In the conditions of the dynamic development of the economy and the growing demands on specialists in the economic sphere, traditional methods of assessing the knowledge and skills of future economists often prove to be insufficiently effective, as they do not always allow for a full assessment of the level of formation of professional competencies, analytical abilities, the ability to work in a team, and to apply theoretical knowledge in practice. That is why the use of interactive assessment methods is becoming increasingly relevant, which can provide a deeper and more comprehensive assessment of the quality of training for future economists, as they create conditions for demonstrating not only theoretical knowledge but also practical skills, the ability to think critically, to argue one's position, and to solve problems jointly. The use of such methods makes it possible to assess the readiness of future economists to perform professional tasks. According to experts, in the context of a competency-based approach, the

most promising interactive assessment methods are: the case method, business, role-playing games, and other game technologies, the assessment method in "flipped learning," etc.

Thus, the full implementation of the technology for assessing the quality of professional training for specialists in economic colleges involves the creation of a bank of didactic assessment tools that ensure the statement of the level of learning achievements and are aimed at improving the quality of training.

Stage 7. Organization of the procedure for assessing the levels of formation of the components of a professional skill.

The assessment procedure is understood as the direct implementation of the assessment using certain tools to perform operational tasks, taking into account specific assessment objects. The procedure for assessing the levels of formation of the components of a professional skill of future economists includes a systematic process of collecting, analyzing, and interpreting data to determine the quality, effectiveness, or compliance with certain standards or criteria. This involves adhering to the principle of optimality, which means the sufficiency of control procedures to obtain quality information. In the process of assessing students' learning achievements, it is necessary to adhere to certain rules based on the provisions of the theory of knowledge control. The organization of the assessment procedure includes the following stages: setting the task (the teacher determines the task and familiarizes the students with the content of the assessment); presenting the didactic tool that will be used at this stage; familiarization with the assessment method; the teacher's comments on the specifics of the work at each level of learning; completing the tasks; checking the tasks (the teacher checks the correctness of the tasks and presents a sample of their completion); assessing the students' educational and cognitive activities. The sequence of operations of the proposed algorithm for performing the assessment procedure was determined taking into account the general logic of conducting the assessment as a component of the integral pedagogical process based on the analysis of pedagogical literature and the data of the conducted pedagogical experiment.

Stage 8. Analysis of the results and conclusions about the quality of training for future economists at a certain stage of students' mastery of the EPP.

This stage of the technology includes the activities of the teacher and the student in analyzing the results of assessing the quality of professional training. The teacher primarily pays attention to the level of task completion and, based on this, makes a judgment about the level of mastery of the learning material by the group as a whole. In addition, the educator analyzes the most typical mistakes and difficulties in the course of completing the control tasks. Students also analyze their own activities, taking into account not only the mistakes made but also the difficulties that arise in the process of conducting the assessment procedures in the learning material.

We support the opinion of P. Luzan, who states that "based on the results of checking students' competency-based achievements by applying several methods and assessment tools, a conclusion is made about the compliance of the students' (graduates') preparedness with the normative requirements" (Luzan, 2021).

The designed technology makes it possible to organize a phased and stimulating adoption of a well-considered decision on the state of the quality of training and its improvement based on the received, processed, and comprehended information

aimed at ensuring the effectiveness of the educational process, to correct the educational process, to identify "gaps," and to make appropriate changes.

Conclusions. The proposed technology for assessing the quality of professional training for specialists in economic colleges is integral, phased, and systemic, covering all key components of the educational process – from determining the benchmark learning outcomes to analyzing the achieved results and correcting the educational trajectory. Its implementation makes it possible to ensure the objectivity, reliability, and validity of the assessment, promotes the development of self-control and self-assessment in students, and also increases the overall effectiveness of professional training. Taking into account the individual characteristics of students, the use of modern diagnostic tools, and interactive assessment methods creates conditions for the formation of a competitive specialist capable of independent decision-making and professional growth.

Prospects for further research lie in studying the impact of the implemented technology on learning outcomes in an experimental educational environment.

List of references

- Анненкова, І. П. (2021). *Основи педагогічних вимірювань: навчально-методичний посібник*. Одеса: Одеський національний університет імені І. І. Мечникова. URL: http://dspace.onu.edu.ua:8080/bitstream/123456789/31335/1/osnovy_pedagog_vymir.pdf
- Антонова, О. Є. (2015). Педагогічні технології та їх класифікація як наукова проблема. У *Сучасні технології в освіті. Частина 1. Сучасні технології навчання: науково-допоміжний бібліографічний показник* (Вип. 2, с. 8–15). НАПН України, ДНПБ України імені В. О. Сухомлинського.
- Биков, В., Спірін, О., Пінчук, О. (2020). Сучасні завдання цифрової трансформації освіти. *UNESCO Chair Journal Lifelong Professional Education in the XXI Century*. 27-36. DOI: [https://doi.org/10.35387/ucj.1\(1\).2020.27-36](https://doi.org/10.35387/ucj.1(1).2020.27-36)
- Дибкова, Л. М. (2016). *Теоретико-методичні засади системи оцінювання результатів навчальної діяльності студентів економічних спеціальностей*. (Дис. докт. пед. наук). Київ: Інститут педагогіки НАПН України.
- Завальна, І. (2017). Інформатизація освіти як чинник розвитку інформаційного суспільства. *Вісник Національного університету «Львівська політехніка»*. Серія: Юридичні науки, 865, 211-214.
- Канівець, Т. М. (2018). *Основи педагогічного оцінювання: навчально-методичний посібник*. Ніжин: Видавець Л. П. Лисенко М. М.
- Локарьова, Г. В., & Бажміна, Е. А. (2021). Персоналізація в освіті: управління студентами власною траєкторією навчання засобами цифрових технологій. *Information Technologies and Learning Tools*, 86(6), 187-207. <https://doi.org/10.33407/itlt.v86i6.4103>
- Лужан, П. Г. (2021). Технологія оцінювання якості підготовки фахівців у закладах фахової передвищої освіти. *Тенденції забезпечення якості освіти: матеріали Міжнародної науково-*

практичної конференції (Дніпро, 22 січня 2021 р.), (с. 117-120). Дніпро: Міжнародний гуманітарний дослідницький центр.

Лузан, П. Г., Каленський, А. А., Пащенко, Т. М., Мося, І. А., & Ямковий, О. Ю. (2021a). *Методичні основи оцінювання якості підготовки фахівців у закладах фахової передвищої освіти: методичний посібник*. Житомир: «Полісся».

Лузан, П. Г., Лапа, О. В., Каленський, А. А., Пащенко, Т. М., Мося, І. А., Ваніна, Н. М., Остапенко, А. В., Ямковий, О. Ю., & Курок, Р. (2024). Методичні засади оцінювання якості підготовки фахівців у закладах фахової передвищої освіти: монографія. *Інноваційна професійна освіта*, 8(21). Київ: ПО НАПН України.

Лузан, П. Г., Лапа, О. В., Пащенко, Т. М., Мося, І. А., Ваніна, Н. М., Ямковий, О. Ю., & Каленський, А. А. (2022). П. Г. Лузан (Ред.), *Оцінювання якості підготовки фахівців у закладах фахової передвищої освіти аграрної, будівельної та машинобудівної галузей: практичний посібник*. Київ: ПО НАПН України.

Лузан, П. Г., & Печковська, І. М. (2015). Суть та дефініція поняття «педагогічна технологія». *Науковий вісник Національного університету біоресурсів і природокористування України. Серія: Педагогіка, психологія, філософія*, 220, 100-108.

Лузан, П. Г., Тітова, О. А., Мося, І. А., & Пащенко, Т. М. (2021b). Методика оцінювання якості підготовки фахівців у закладах фахової передвищої освіти. *Професійна педагогіка*, 1(22), 169-184. <https://doi.org/10.32835/2707-3092.2021.22.169-184>.

Наволокова, Н. П. (2009). *Енциклопедія педагогічних технологій та інновацій*. Харків: Вид. група «Основа».

Носко, М. О., Гаркуша, С. В., Цигура, Г. О. (2020). Педагогічні технології: поняття, структура та зміст. *Вісник Національного університету «Чернігівський колегіум» імені Т. Г. Шевченка. Серія: Педагогічні науки*, 8, 3-11. <https://doi.org/10.5281/zenodo.3905524>

Прокопенко, І. Ф. (Ред.). (2018). *Педагогічні технології в підготовці вчителів: навчальний посібник* (3-є вид., допов. і переробл.). Харків: ХНПУ.

Семьонова, А. В. (Ред.). (2006). *Словник-довідник з професійної педагогіки*. Пальміра.

UNESCO. (2022). Basic texts, 2022 edition; including texts and amendments adopted by the General Conference at its 41st session (Paris, 9–24 November 2021). UNESCO Publishing.

Translated & Transliterated

Annyenkova, I. P. (2021). *Osnovy pedahohichnykh vymiriuvan: navchalno-metodychnyi posibnyk [Fundamentals of pedagogical measurements: a teaching and methodological guide]*. Odesa: Odeskyi natsionalnyi universytet imeni I. I. Mechnikova. http://dspace.onu.edu.ua:8080/bitstream/123456789/31335/1/osnovy_pedagog_vymir.pdf, [in Ukrainian].

Antonova, O. Ye. (2015). Pedahohichni tekhnolohii ta yikh klasyfikatsiia yak naukova problema [Pedagogical technologies and their classification as a scientific problem]. In *Suchasni tekhnolohii v osviti. Chastyna 1. Suchasni tekhnolohii navchannia: nauково-dopomizhnyi bibliohrafichnyi pokazhchyk* (Vyp. 2, pp. 8–15). NAPN Ukrainy, DNPB Ukrainy imeni V. O. Sukhomlynskoho, [in Ukrainian].

Bykov, V., Spirin, O., & Pinchuk, O. (2020). Suchasni zavdannia tsyfrovoy transformatsii osvity [Modern tasks of digital transformation of education]. *UNESCO Chair Journal Lifelong Professional Education in the XXI Century*, 1(1), 27-36. [https://doi.org/10.35387/ucj.1\(1\).2020.27-36](https://doi.org/10.35387/ucj.1(1).2020.27-36), [in Ukrainian].

Dybko, L. M. (2016). *Teoretyko-metodychni zasady systemy otsiniuvannia rezultativ navchalnoi diialnosti studentiv ekonomichnykh spetsialnostei: doktorska dysertatsiia [Theoretical and methodological principles of the system for assessing the results of educational activities of students of economic specialties: doctoral dissertation]*. Kyiv: Instytut pedahohiky NAPN Ukrainy, [in Ukrainian].

Zavalna, I. (2017). Informatyzatsiia osvity yak chynnyk rozvytku informatsiinoho suspilstva [Informatization of education as a factor in the development of the information society]. *Visnyk Natsionalnoho universytetu «Lvivska politehnika». Seriia: Yurydychni nauky*, (865), 211-214. [in Ukrainian].

Kanivets, T. M. (2018). *Osnovy pedahohichnoho otsiniuvannia: navchalno-metodychnyi posibnyk [Fundamentals of pedagogical assessment: a teaching and methodological guide]*. Nizhyn: Vydavets L. P. Lysenko M. M., [in Ukrainian].

Lokariova, H. V., & Bazhmina, E. A. (2021). Personalizatsiia v osviti: upravlinnia studentamy vlasnoi traiektoriiei navchannia zasobamy tsyfrovyykh tekhnolohii [Personalization in education: students' management of their own learning trajectory using digital technologies]. *Information Technologies and Learning Tools*, 86(6), 187-207. <https://doi.org/10.33407/itlt.v86i6.4103>, [in Ukrainian].

Luzan, P. H. (2021). Tekhnolohiia otsiniuvannia yakosti pidhotovky fakhivtsiv u zakladakh fakhovoi peredvyshchoi osvity [Technology for assessing the quality of specialist training in institutions of professional pre-higher education]. In *Tendentsii zabezpechennia yakosti osvity: materialy Mizhnarodnoi naukovo-praktychnoi konferentsii* (Dnipro, January 22, 2021) (pp. 117-120). Dnipro: Mizhnarodnyi humanitarnyi doslidnytskyi tsentr, [in Ukrainian].

Luzan, P. H., Kalenskyi, A. A., Pashchenko, T. M., Mosia, I. A., & Yamkovyi, O. Yu. (2021a). *Metodychni osnovy otsiniuvannia yakosti pidhotovky fakhivtsiv u zakladakh fakhovoi peredvyshchoi osvity: metodychnyi posibnyk* [Methodological foundations of quality assessment of specialists' training in institutions of professional pre-higher education: methodological guide]. Zhytomyr: Polissia, [in Ukrainian].

Luzan, P. H., Lapa, O. V., Kalenskyi, A. A., Pashchenko, T. M., Mosia, I. A., Vanina, N. M., Ostapenko, A. V., Yamkovyi, O. Yu., & Kurok, R. (2024). *Metodychni zasady otsiniuvannia yakosti pidhotovky fakhivtsiv u zakladakh fakhovoi peredvyshchoi osvity: monohrafiia* [Methodological principles of quality assessment of specialists' training in institutions of professional pre-higher education: monograph]. *Innovatsiina profesiina osvita*, 8(21). IPO NAPN Ukrainy, [in Ukrainian].

Luzan, P. H., Lapa, O. V., Pashchenko, T. M., Mosia, I. A., Vanina, N. M., Yamkovyi, O. Yu., & Kalenskyi, A. A. (2022). P. H. Luzan (Ed.), *Otsiniuvannia yakosti pidhotovky fakhivtsiv u zakladakh fakhovoi peredvyshchoi osvity ahrarnoi, budivelnoi ta mashynobudivnoi haluzei: praktychnyi posibnyk* [Assessment of the quality of specialist training in institutions of professional pre-higher education in the agricultural, construction, and machine-building industries: a practical guide]. IPO NAPN Ukrainy, [in Ukrainian].

Luzan, P. H., & Pechkovska, I. M. (2015). Sut ta definitsiia poniattia «pedahohichna tekhnolohiia» [The essence and definition of the concept of "pedagogical technology"]. *Naukovyi visnyk Natsionalnoho universytetu bioresursiv i pryrodokorystuvannia Ukrainy. Seriia: Pedahohika, psykholohiia, filosofiia*, (220), 100-108, [in Ukrainian].

Luzan, P. H., Titova, O. A., Mosia, I. A., & Pashchenko, T. M. (2021b). *Metodyka otsiniuvannia yakosti pidhotovky fakhivtsiv u zakladakh fakhovoi peredvyshchoi osvity* [Methodology for assessing the quality of specialist training in institutions of professional pre-higher education]. *Profesijna pedahohika*, 1(22), 169-184. <https://doi.org/10.32835/2707-3092.2021.22.169-184>, [in Ukrainian].

Navolokova, N. P. (2009). *Entsyklopediia pedahohichnykh tekhnolohii ta innovatsii* [Encyclopedia of pedagogical technologies and innovations]. Kharkiv: Vyd. hrupa «Osnova», [in Ukrainian].

Nosko, M. O., Harkusha, S. V., & Tsyhura, H. O. (2020). Pedahohichni tekhnolohii: poniattia, struktura ta zmist [Pedagogical technologies: concept, structure and content]. *Visnyk Natsionalnoho universytetu «Chernihivskiy kolehium» imeni T. H. Shevchenka. Seriia: Pedahohichni nauky*, (8), 3-11. <https://doi.org/10.5281/zenodo.3905524>, [in Ukrainian].

Prokopenko, I. F. (ed.). (2018). *Pedahohichni tekhnolohii v pidhotovtsi vchyteliv: navchalnyi posibnyk* [Pedagogical technologies in teacher training: a textbook] (3rd ed., enl. and rev.). KhNPU, [in Ukrainian].

Semionova, A. V. (Ed.). (2006). *Slovyk-dovidnyk z profesiinoi pedahohiky* [Dictionary-handbook on professional pedagogy]. Palmira. [in Ukrainian].

UNESCO. (2022). Basic texts, 2022 edition; including texts and amendments adopted by the General Conference at its 41st session (Paris, 9–24 November 2021). UNESCO Publishing. [in English].

ОЦІНЮВАННЯ ЯКОСТІ ПРОФЕСІЙНОЇ ПІДГОТОВКИ ФАХІВЦІВ В ЕКОНОМІЧНИХ КОЛЕДЖАХ: ТЕХНОЛОГІЧНИЙ АСПЕКТ

Дмитро Наглий

аспірант Інституту професійної освіти НАПН України, Київ, <https://orcid.org/0009-0004-1456-316X>,
e-mail: dimadimanaglui@ukr.net

Реферат:

Актуальність у сучасних умовах глобалізації економіки та трансформації ринку праці зростає потреба у висококваліфікованих фахівцях економічного профілю; це зумовлює необхідність переосмислення підходів до професійної підготовки студентів, зокрема в частині оцінювання якості їхніх знань, умінь і компетентностей; технологізація освітнього процесу та впровадження інноваційних методів оцінювання стають ключовими чинниками забезпечення якості підготовки.

Мета: обґрунтувати та спроектувати технологію оцінювання якості професійної підготовки фахівців економічних коледжів із урахуванням сучасних педагогічних вимог і потреб ринку праці.

Методи: аналіз, синтез, узагальнення, систематизація – для вивчення й систематизації наукових джерел, визначення сутності педагогічних технологій і підходів до оцінювання якості підготовки фахівців; моделювання – для створення алгоритму оцінювання якості професійної підготовки фахівців економічних коледжів, побудови відповідної теоретичної моделі; проектування – для розроблення структури й визначення етапів реалізації зазначеної технології; спостереження, аналіз документації, вивчення досвіду викладачів – для вивчення наявного досвіду оцінювання якості професійної підготовки здобувачів освіти в коледжах; порівняльний аналіз – для зіставлення традиційних та інноваційних методів оцінювання якості професійної підготовки майбутніх фахівців.

Результати: розроблено поетапну технологію оцінювання якості професійної підготовки фахівців в економічних коледжах, яка містить: визначення еталонних результатів навчання; ідентифікацію структурних компонентів професійних умінь; створення діагностичного інструментарію; організацію процедури оцінювання; аналіз результатів.

Висновки: запропонована технологія є цілісною системою, що забезпечує об'єктивність, надійність та валідність оцінювання. Її впровадження сприяє підвищенню ефективності професійної підготовки, розвитку компетентностей студентів та формуванню конкурентоспроможного фахівця. Перспективи подальших досліджень полягають у вивченні впливу цієї технології на якість професійної підготовки майбутніх фахівців-економістів в умовах експериментального освітнього середовища.

Ключові слова: професійна підготовка; фахова передвища освіта; економічні коледжі; технологія оцінювання якості професійної підготовки фахівців економічних коледжів.

Manuscript received: 26.02.2025

Accepted for publication after peer review: 09.07.2025

Published: 18.08.2025



PROFESSIONAL ACTIVITY OF THE HEAD OF A PRESCHOOL EDUCATION INSTITUTION UNDER THE CONDITIONS OF DIGITAL TRANSFORMATION OF THE EDUCATIONAL ENVIRONMENT

Olga Orlova¹, Larysa Familiarska²

- 1 Candidate of Pedagogical Sciences, Senior Lecturer of the Department of Social Sciences and Humanities Communal Institution "Zhytomyr Regional Institute of Postgraduate Pedagogical Education" of the Zhytomyr Oblast Council, <https://orcid.org/0000-0002-6730-3044>, e-mail: orlovazhit2016@gmail.com
- 2 Candidate of Pedagogical Sciences, Senior Lecturer of the Department of Pedagogy and Andragogy Communal Institution "Zhytomyr Regional Institute of Postgraduate Pedagogical Education" of the Zhytomyr Oblast Council, <https://orcid.org/0000-0002-5801-8057>, e-mail: familyarskaya_la@ukr.net

Abstract

Relevance. digital technologies and artificial intelligence are transforming society, imposing new demands on the educational paradigm, especially in managerial activities; this actualizes the need to develop relevant competencies among heads of educational institutions; the integration of artificial intelligence into the management of an educational institution optimizes processes and ensures competitiveness in line with modern challenges; in preschool education, the potential of generative artificial intelligence requires managers to be flexible and adaptive in solving professional tasks.

Objective: systematization of approaches to updating the professional activities of the head of a preschool education institution using the capabilities of artificial intelligence.

Methods: theoretical analysis of the regulatory and legal framework, scientific literature, and digital resources – to clarify the state of the researched problem, identify the transformation of managerial activities under the conditions of artificial intelligence integration into education; analysis, synthesis, comparison, and generalization – to systematize the features of implementing artificial intelligence technologies into the practice of the head of a preschool education institution; survey – to assess the level of adaptability and digital competence of heads of preschool education institutions in the Zhytomyr region; graphical representations – for visual illustration, interpretation, and comparison of the survey results.

Results: a survey of heads of preschool education institutions was conducted to identify their attitudes towards artificial intelligence; the levels of professional competence and directions for developing targeted professional development programs were determined.

Conclusions: the implementation of artificial intelligence technologies in preschool education optimizes organizational and pedagogical processes, automates routine administrative tasks, reduces the specialist's workload, and increases the efficiency of managerial activities; the integration of artificial intelligence includes using the ChatGPT model for developing instructions and schedules and Google's NotebookLM as an effective tool for working with documents; the work of the head of a preschool education institution requires updating managerial tasks (strategic planning of digital education, monitoring partnership interaction data, organizing training and data protection); adaptive competence is key to coordinating processes using digital tools and artificial intelligence, ensuring a balance between traditional values and modern technologies.

Keywords: artificial intelligence, digital technologies, managerial activity, preschool education, innovative processes.

Introduction. The current stage of societal development is characterized by dynamic transformational processes in all spheres, driven by the active implementation of digital technologies and the expanding capabilities of artificial intelligence technology in various areas of human activity. The intensive improvement of algorithmic solutions and functional characteristics of artificial intelligence (AI) technology is shaping fundamentally new requirements for the educational paradigm, particularly in managerial activities. The transformation of managerial practices in education within the context of digitalization highlights the need for developing competencies in educational institution leaders that are relevant to contemporary societal challenges.

In the modern world, digitalization has ceased to be merely a trend—it has become a necessary condition for development, especially for the education sector, and it holds a special place in the work of the head of a preschool education institution (PEI).

Sources. The integration of artificial intelligence technologies into the managerial activities of educational organizations is driven by the need to optimize administrative processes and ensure competitiveness in the global digital environment. The prerequisite in Ukraine is the implementation of the "Artificial Intelligence Regulation" roadmap (Roadmap for the Regulation of Artificial Intelligence in Ukraine, 2023), the Council of Europe Framework Convention on Artificial Intelligence (hereinafter: AI), Human Rights, Democracy and the Rule of Law (Framework Convention on Artificial Intelligence and Human Rights, 2025), and the approved "Concept of Digital Hygiene for Preschool Children" (On the Approval of the Concept of Digital Hygiene for Preschool Children, 2025). These documents provide for the development of specialists' skills in working with AI. Consequently, the development of skills for the critical use of AI is a necessary component of a modern manager's digital competence, aligning with the European framework of digital competencies for educators (Digital Competence Framework for Teachers and Academic Staff, 2021).

Ukrainian and foreign scholars are actively researching the transformation of managerial practices in response to new legislative initiatives in the education sector. At the same time, this is a response to the challenges posed by the legal regime of martial law in the country (Yershova, Zakatnov, & Titova, 2022). Researchers are studying the adaptation mechanisms of educational institution leaders to the updated requirements of the management process, analyzing the effectiveness of using digital platforms to coordinate the activities of teaching staff and interact with parents and the community, as well as issues of cybersecurity and personal data protection in the e-governance system of educational institutions (Henriksen, Mishra, & Stern, 2024; Kurkan, & Çetin, 2024; Marrone, Taddeo, & Hill, 2022).

Many studies have been devoted to the adaptive capacity of the individual. For instance, H. Spencer (1998) substantiates the importance of human adaptation not only to the environment but also to the social surroundings. His monograph outlines the essence of the idea that the human mind is devoid of limitations, which ensures the most adequate adaptation of the individual to environmental conditions.

A. Giddens (1999) characterizes social adaptation through the "individual–social environment" system, as a state of adjustment or a process of adaptation (of an individual, social group, organization, community, society, etc.) to internal and external changes.

A number of scholars (Renzulli, 2020; Orsi Koch Delgado, de Azevedo Fay, Sebastiany, & Cortina Silva, 2020) note that modern educational models are changing in response to the active implementation of AI in the educational process. Adaptive technologies based on machine learning algorithms allow for the creation of personalized learning trajectories that consider the individual characteristics of the child.

Undoubtedly, current research in educational management emphasizes that the effective digitalization of the environment depends not only on the competence of educators but, first and foremost, on the digital leadership competence of the institution's head (UNESCO, 2024; UNESCO, 2025). Consequently, digital literacy and an

individual's adaptability to change become fundamental for the modern head of a preschool education institution, enabling an understanding of computer system principles, strategic management, data interpretation for managerial decision-making, critical assessment of information resources, personal data protection, integration of digital tools within the institution's environment considering age-specific characteristics, interaction with stakeholders, and more. The role of the PEI head is crucial in shaping development strategies, creating a comfortable environment, fostering professional development, and promoting community self-governance (Reipolska, 2023; Bondarenko, Hryboiedova, 2023).

The aforementioned necessitates the transformation of established concepts of educational institution management, primarily in the sphere of preschool education. The potential of artificial intelligence technologies, particularly generative AI, modifies the capabilities of an educational organization's managerial environment. Thus, in the management of a preschool institution, there arises a need to develop one's own flexibility towards dynamic transformations through the implementation of modern technologies.

Objective: To systematize approaches to updating the professional activities of the head of a preschool education institution using the capabilities of artificial intelligence. The main tasks of the research are: to conduct a comprehensive analysis of the regulatory and legal framework, scientific literature, and digital resources within the context of the researched problem; to identify the specific features of transformational processes in the managerial activities of an educational institution amid the integration of artificial intelligence; to substantiate and systematize the specific features of implementing artificial intelligence technologies into the managerial practice of the head of a preschool education institution.

Methods: theoretical analysis of the regulatory and legal framework, scientific literature, and digital resources—to ascertain the state of the problem under study, identify the transformation of managerial activities in the context of integrating artificial intelligence into education; analysis, synthesis, comparison, and generalization—to

systematize the specific features of implementing artificial intelligence technologies into the practice of the head of a preschool education institution; survey to assess the level of adaptability and digital competence of heads of preschool education institutions in the Zhytomyr region; graphical representations for visual illustration, interpretation, and comparison of the survey results.

Results and Discussion. Successful management of a preschool institution in modern conditions requires adapting record-keeping methods, creating a safe environment, fostering partnership among participants in the educational process, and supporting academic integrity (Bondarenko, & Hryboiedova, 2023). However, it should be noted that adapting to new technological opportunities requires leaders to possess not only technical knowledge but also the ability to think strategically and react quickly to changes.

Let us consider and analyze the potential of implementing digital technologies by the head of a preschool education institution, considering the dynamic transformations of the educational environment. This requires modernizing approaches to solving tasks and adapting the leader's professional activities to current contemporary challenges.

The adaptive competence of a preschool institution head is understood as the ability to effectively coordinate communication processes with all participants in educational activities using various digital tools and artificial intelligence. The development of adaptability occurs in the process of implementing pedagogical partnership, which encompasses behavioral, cognitive, and socio-emotional components (Karaevli, & Hall, 2006; Moroz, 2024). This ability of the leader is fundamental to ensuring a balance between traditional managerial values (orientation towards safety, inclusivity, the child's personal development) and the implementation of modern approaches driven by technological trends, which requires the leader to possess strategic thinking and the capacity for active network communication.

It should be noted that the implementation of artificial intelligence technologies in preschool education allows for the significant optimization of organizational and pedagogical processes. These

include: the automation of routine administrative tasks (e.g., documentation, attendance monitoring, analysis of educational data), which leads to a reduced workload for the institution's staff and improves the institution's management efficiency.

Expanding the possibilities of integrating AI into the managerial activities of a preschool education institution may include the use of the ChatGPT model. It is used for developing or updating job descriptions, daily routines, daily or

monthly report forms, descriptions of a specialist's main duties and tasks; creating class schedules; analyzing children's attendance, processing applications and reports, and more. Another practical tool for digitalizing the managerial activities of a PEI head is NotebookLM by Google (Fig. 1). Up to 50 sources (texts, PDFs, Google Docs, websites, audio recordings, or YouTube videos) can be uploaded to a single NotebookLM notebook.

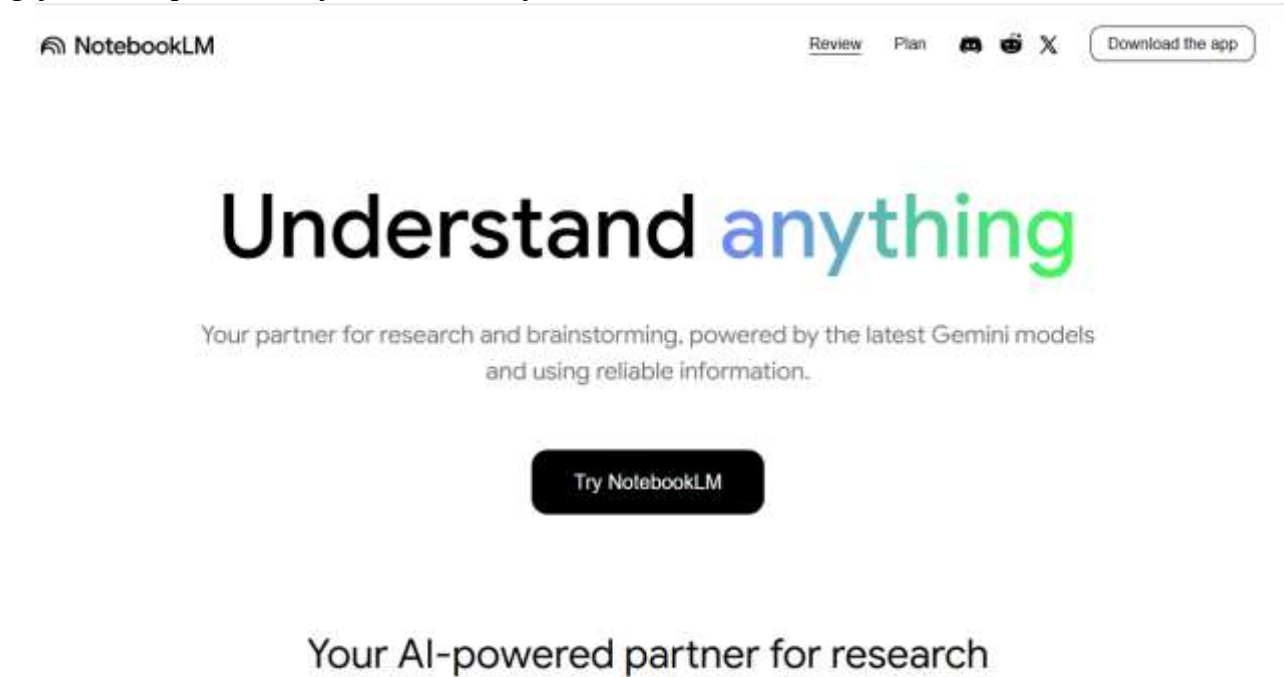


Fig. 1. Initial page of the NotebookLM environment

Note that in NotebookLM, users can create separate notebooks for different projects or topics. Each notebook functions as an isolated workspace

where documents can be uploaded and analyzed. Up to 50 documents can be added to the source list, each with a maximum length of 500,000 words (see Fig. 2).

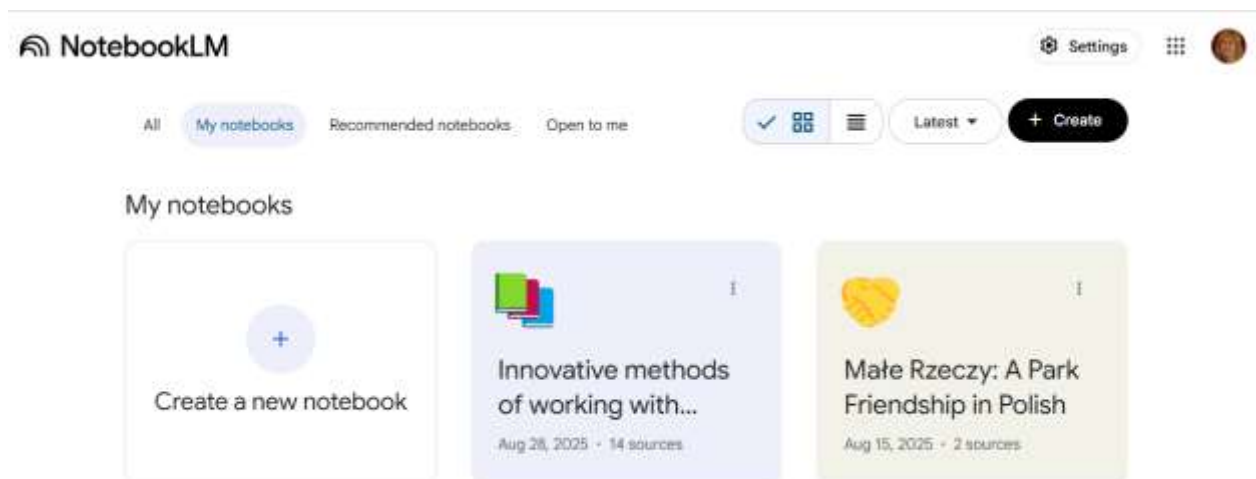


Fig. 2. Notebooks for different projects

Thus, NotebookLM provides functionality for analyzing uploaded materials, such as books, lectures, and handwritten notes, to obtain answers to specific questions with references to the source from the used list. In addition, the service allows for the creation of mind maps to visualize connections between concepts, generate study guides, short methodological guides, glossaries, and self-assessment questions based on the selected sources in the notebook. It is also possible to convert uploaded files into podcasts with two AI hosts for the auditory perception of information. There is an option to create up to three free video overviews per day with diagrams and graphics based on the sources.

Therefore, NotebookLM is a tool for a manager to optimize tasks. Working with files of various formats allows one to obtain detailed information or a list of aspects on which to focus attention. Using different formats: text, images, audio activates several channels of perception, and the brain memorizes faster.

To assess the current level of adaptability and digital competence, as well as to determine the professional development needs of heads of PEIs in the Zhytomyr region, a survey (191 respondents) was conducted (Fig. 3).

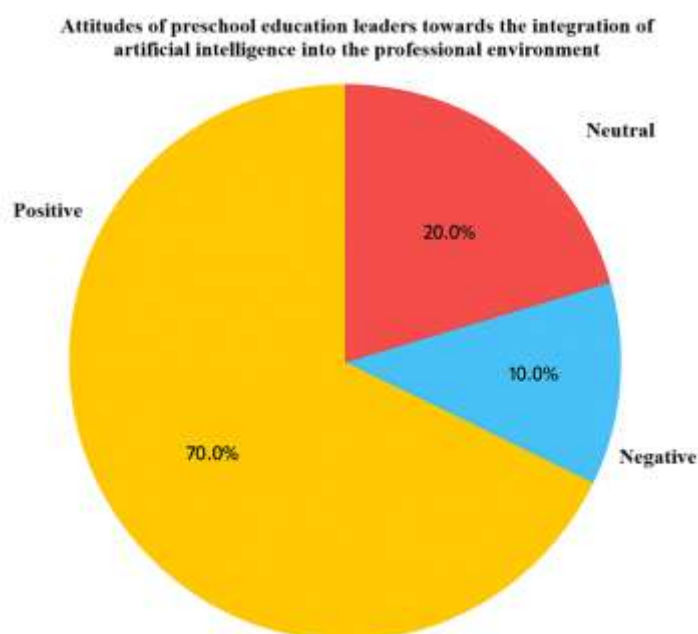


Fig. 3. Survey results regarding attitudes towards AI

The identified ratio of positive, negative, and neutral attitudes of managers towards the implementation of AI helps to understand the general mood in the professional environment and to identify potential barriers.

The results of the interviews conducted with respondents made it possible to identify which specific skills require the most development and to create targeted professional development programs.

To assess the effectiveness of professional activity, the following list of indicators demonstrating adaptability to challenges, as an important quality of a modern head of a preschool education institution, was used: the presence of an approved digitalization strategy; implementation of at least 1 (≥ 1) project per year; conducting

audits/comparative analyses of platforms; concluding agreements with stakeholders; the presence of a dashboard with key indicators of child development; regular corrective measures based on data, use of dashboards to monitor child development, educator effectiveness, and institution workload; approval of a data retention/deletion policy; absence of unauthorized data access; development and implementation of at least 3 (≥ 3) digital scenarios/year in accordance with screen time recommendations; the presence of at least ($\geq$) 80% of educators who have completed a basic digital literacy course and created their own e-portfolio; the presence of regular reports to parents, initiation of new partnerships, etc.

AI is changing how we work, accelerating the design of technology use policies in educational institutions, and automating routine processes, monitoring of AI use, document management, and data visualization, which optimizes managerial activity because it provides instant access to necessary information without redundant searching, and reduces the time spent on making informed decisions without the need to reread a document in paper form.

The successful implementation of such technologies depends on the ability of the educational institution's head to adapt to changes and effectively manage innovative processes in the preschool institution, to recognize the need for adaptation to the digital era, the desire to increase the efficiency of managerial processes, reduce the administrative burden, and promote the professional development of the institution's specialists.

Thus, the digitalization of management in education is a complex process that requires a strategic approach, the development of digital competencies, and adaptation to new technologies. It is effective, but it requires addressing issues of resources, staff training, and ensuring equal access. Consequently, modern management of preschool education requires the head of the institution to possess a wide range of qualities, particularly adaptation to changes and optimization of work in the educational environment.

Conclusions. Based on the analysis of contemporary scientific works and own research, the potential of applying artificial intelligence in managerial processes, particularly in PEIs, which extend beyond the mechanical execution of standardized procedures, was systematized. The significance of adaptability in the context of digital transformation, which includes managerial variability, technological competence, and ethical awareness, was determined. The ability of the PEI head to critically rethink traditional methods regarding the effective use of technological tools to achieve specific results provides a strategic advantage through the optimization of routine operations, particularly the automation of report preparation, summarization of meeting results, identification of discrepancies in document circulation, as well as the generation of conceptual ideas for project activities and the formation of recommendations for improving managerial practice. The manager's capacity to consider multiple perspectives, including the position of the teaching staff, the parent community, and digital transformation specialists, will ensure improved development of an adaptive strategy for the institutional development of a modern preschool education institution.

The prospect for further research involves investigating the possibilities of using GeminiLive in managerial activities.

List of references

Бондаренко, Н., & Грибоедова, Т. (2023). Деякі проблеми успішного управління дошкільним навчальним закладом у сучасних умовах. *Освіта та педагогічні науки*. [https://doi.org/10.12958/2227-2747-2023-3\(184\)-3-13](https://doi.org/10.12958/2227-2747-2023-3(184)-3-13).

Гіденс, Е. (1999). Соціологія (В. Шовкун, А. Олійник, пер.). Київ: Основи.

Міністерство цифрової трансформації України. (2023). *Дорожня карта з регулювання штучного інтелекту в Україні*. https://cms.thedigital.gov.ua/storage/uploads/files/page/community/docs/Дорожня_карта_з_регулювання_ШІ_в_Україні_compressed.pdf.

Єршова, Л., Закатнов, Д., & Тітова, О. (2022). Визначення педагогічних умов організації консультування з молодіжного підприємництва у закладах професійної (професійно-технічної) освіти. *Професійна педагогіка*, 2(25), 58-65. <https://doi.org/10.32835/2707-3092.2022.25.58-65>

Мороз, Є. (2024). Структурно-функціональна модель соціально-емоційних навичок молодших школярів. *Педагогічні науки: теорія, історія, інноваційні технології*, 4(138), 33-45. <https://repository.sspu.edu.ua/server/api/core/bitstreams/a26aa187-0312-467d-a098-369b55056760/content>

Розпорядження Кабінету Міністрів України «Про схвалення Концепції цифрової гігієни дітей дошкільного віку» (2025, 2 травня). <https://zakon.rada.gov.ua/laws/show/432-2025-%D1%80#Text>

Портал «Дія». (2021). *Рамка цифрової компетентності педагогічних й науково-педагогічних працівників*. https://osvita.diia.gov.ua/uploads/0/2900-2629_frame_pedagogical.pdf

Міністерство цифрової трансформації України. (2025). *Рамкова конвенція про штучний інтелект та права людини*. <https://ai.thedigital.gov.ua/news/Safe%20AI%20for%20millions%20of%20Ukrainians:%20Ukraine%20signs%20the%20Framework%20Convention%20on%20Artificial%20Intelligence%20and%20Human%20Rights>

Рейпольська, О. (2023). Моніторинг управлінської діяльності керівника закладу дошкільної освіти. *Теоретичні та методичні проблеми виховання дітей та учнівської молоді*, 27 (2). <https://doi.org/10.32405/2308-3778-2023-27-2-163-173>.

Спенсер, Г. (1998). Досліди наукові, політичні та філософські: монографія. Мінськ: 1407 с.

UNESCO. (2025). *AI and the future of education: Disruptions, dilemmas and directions*. Paris: UNESCO, (p. 165). <https://unesdoc.unesco.org/ark:/48223/pf0000395236/PDF/395236eng.pdf.multi>

UNESCO. (2024). *AI competency framework for teachers*. Paris: UNESCO, (p. 52). <https://unesdoc.unesco.org/ark:/48223/pf0000391104>

Henriksen, D., Mishra, P. & Stern, R. (2024). Creative Learning for Sustainability in a World of AI: Action, Mindset, Values. *Sustainability*, 16(11), 44-51. <https://doi.org/10.3390/su16114451>

Karaevli, A., & Hall, D. (2000). How career variety promotes the adaptability of managers: A theoretical model, *Journal of Vocational Behavior*, 69 (3), 359-373. <https://doi.org/10.1016/j.jvb.2006.05.009>.

Kurkan, G., & Çetin, M. (2024). The Perceptions Of Educational Administrators Towards Digital Leadership In The Age Of Artificial Intelligence: A Qualitative Study. *International Journal of Contemporary Educational Research*, 11(3), 425-439. <https://doi.org/10.52380/ijcer.2024.11.3.602>

Marrone R., Taddeo V. & Hill, G. (2022). Creativity and Artificial Intelligence – A Student Perspective. *Journal of Intelligence*, 10(3), 65. <https://doi.org/10.3390/jintelligence10030065>

Orsi Koch Delgado, H., de Azevedo Fay, A., Sebastiany, M. J., & Cortina Silva, A.D. (2020). Artificial intelligence adaptive learning tools: The teaching of English in focus. *BELT – Brazilian English Language Teaching Journal*, 11(2). e38749. <https://doi.org/10.15448/2178-3640.2020.2.38749>

Renzulli, J. (2020). The Catch-A-Wave Theory of Adaptability: Core Competencies for Developing Gifted Behaviors in the Second Machine Age of Technology. *International Journal for Talent Development and Creativity*, 8(1-2), 79-95. <https://doi.org/10.7202/1076749ar>

Translated & Transliterated

Bondarenko, N., & Hryboiedova, T. (2023). *Deiaki problemy uspishnoho upravlinnia doshkilnym navchalnym zakladom u suchasnykh umovakh*. [Some problems of successful management of preschool educational institutions in modern conditions]. *Osvita ta pedahohichni nauky*. [https://doi.org/10.12958/2227-2747-2023-3\(184\)-3-13](https://doi.org/10.12958/2227-2747-2023-3(184)-3-13), [in Ukrainian].

Hidens, E. (1999). *Sotsiologhiia [Sociology]* (V.Shovkun, A.Oliinyk, trans.). Kyiv: Osnovy, [in Ukrainian].

Ministerstvo tsyfrovoy transformatsii Ukrainy. (2023). *Dorozhnia karta z rehuliuвання shtuchnoho intelektu v Ukraini*. [Road map for regulating artificial intelligence in Ukraine. Ministry of Digital Transformation of Ukraine.] https://cms.thedigital.gov.ua/storage/uploads/files/page/community/docs/Дорожня_карта_з_регулювання_ШІ_в_Україні_compressed.pdf, [in Ukrainian].

Yershova, L., Zakatnov, D., & Titova, O. (2022). Vyznachennia pedahohichnykh umov orhanizatsii konsultuvannia z molodizhnoho pidpriemnytstva u zakladakh profesiinoi (profesiino-tekhnichnoi) osvity. [Determining the pedagogical conditions for organizing counseling on youth entrepreneurship in vocational (vocational-technical) educational institutions]. *Profesiina pedahohika*, 2(25), 58-65. <https://doi.org/10.32835/2707-3092.2022.25.58-65>, [in Ukrainian].

Moroz, Ye. (2024). Strukturno-funktsionalna model sotsialno-emotsiinykh navychok molodshykh shkoliariv. [Structural-functional model of social-emotional skills of primary school pupils]. *Pedahohichni nauky: teoriia, istoriia, innovatsiini tekhnologii*, (138), 33-45. <https://repository.sspu.edu.ua/server/api/core/bitstreams/a26aa187-0312-467d-a098-369b55056760/content>, [in Ukrainian].

Rozporiadzhennia Kabinety Ministriv Ukrainy «Pro skhvalennia Kontseptsii tsyfrovoy hihiieny ditei doshkilnoho viku» (2025, 2 travnia). [On approval of the Concept of Digital Hygiene for Preschool Children]. <https://zakon.rada.gov.ua/laws/show/432-2025-%D1%80#Text>, [in Ukrainian].

Portal «Diia». (2021). *Ramka tsyfrovoy kompetentnosti pedahohichnykh y naukovo-pedahohichnykh pratsivnykiv*. [Framework for the digital competence of pedagogical and scientific-pedagogical workers. Portal "Diia"]. https://osvita.diia.gov.ua/uploads/0/2900-2629_frame_pedagogical.pdf, [in Ukrainian].

Ministerstvo tsyfrovoy transformatsii Ukrainy. (2025). *Ramkova konventsiiia pro shtuchnyi intelekt ta prava liudyny*. [Framework Convention on Artificial Intelligence and Human Rights. Ministry of Digital Transformation]. <https://ai.thedigital.gov.ua/news/Safe%20AI%20for%20millions%20of%20Ukrainians:%20Ukraine%20signs%20the%20Framework%20Convention%20on%20Artificial%20Intelligence%20and%20Human%20Rights>, [in Ukrainian].

Reipolska, O. (2023). *Monitorynh upravlinskoï diialnosti kerivnyka zakladu doshkilnoi osvity*. [Monitoring the managerial activities of the head of a preschool education institution. Theoretical and methodological issues in the education of children and young people]. *Teoretychni ta metodychni problemy vykhovannia ditei ta uchnivskoi molodi*, 27 (2). <https://doi.org/10.32405/2308-3778-2023-27-2-163-173>, [in Ukrainian].

Spenser, H. (1998). *Doslidy naukovy, politychni ta filosofski* [Scientific, political, and philosophical experiments]: monohrafiia. Minsk, [in Ukrainian].

UNESCO. (2025). *AI and the future of education: disruptions, dilemmas and directions*. Paris. UNESCO. P. 165. <https://unesdoc.unesco.org/ark:/48223/pf0000395236/PDF/395236eng.pdf.multi>

UNESCO. (2024). *AI competency framework for teachers*. Paris. UNESCO. P. 52. <https://unesdoc.unesco.org/ark:/48223/pf0000391104>

Henriksen, D., Mishra, P., & Stern, R. (2024). *Creative Learning for Sustainability in a World of AI: Action, Mindset, Values. Sustainability*, 16(11), 4451. <https://doi.org/10.3390/su16114451>

Karaevli, A., Hall, D. (2000). How career variety promotes the adaptability of managers: A theoretical model. *Journal of Vocational Behavior*, 69 (3), 359-373. <https://doi.org/10.1016/j.jvb.2006.05.009>.

Kurkan, G., & Çetin, M. (2024). The Perceptions Of Educational Administrators Towards Digital Leadership In The Age Of Artificial Intelligence: A Qualitative Study. *International Journal of Contemporary Educational Research*, 11(3), 425-439. <https://doi.org/10.52380/ijcer.2024.11.3.602>

Marrone R., Taddeo V. & Hill, G. (2022). Creativity and Artificial Intelligence – A Student Perspective. *Journal of Intelligence*, 10(3), 65. <https://doi.org/10.3390/jintelligence10030065>

Orsi Koch Delgado, H., de Azevedo Fay, A., Sebastiany, M. J., & Cortina Silva, A.D. (2020). Artificial intelligence adaptive learning tools: The teaching of English in focus. *BELT – Brazilian English Language Teaching Journal*, 11(2), e38749. <https://doi.org/10.15448/2178-3640.2020.2.38749>

Renzulli, J. (2020). The Catch-A-Wave Theory of Adaptability: Core Competencies for Developing Gifted Behaviors in the Second Machine Age of Technology. *International Journal for Talent Development and Creativity*, 8(1-2), 79-95. <https://doi.org/10.7202/1076749ar>

ПРОФЕСІЙНА ДІЯЛЬНІСТЬ КЕРІВНИКА ЗАКЛАДУ ДОШКІЛЬНОЇ ОСВІТИ В УМОВАХ ЦИФРОВОЇ ТРАНСФОРМАЦІЇ ОСВІТНЬОГО СЕРЕДОВИЩА

Ольга Орлова¹, Лариса Фамілярська²

- 1 кандидат педагогічних наук, старша викладачка кафедри суспільно-гуманітарних наук Комунального закладу «Житомирський обласний інститут післядипломної педагогічної освіти» Житомирської обласної ради, <https://orcid.org/0000-0002-6730-3044>, e-mail: orlovazhit2016@gmail.com
- 2 кандидат педагогічних наук, старша викладачка кафедри педагогіки й андрагогіки Комунального закладу «Житомирський обласний інститут післядипломної педагогічної освіти» Житомирської обласної ради, <https://orcid.org/0000-0002-5801-8057>, e-mail: familyarskaya_la@ukr.net

Реферат:

Актуальність: цифрові технології та штучний інтелект трансформують суспільство, висуваючи нові вимоги до освітньої парадигми, особливо в управлінській діяльності; це актуалізує потребу формування у керівників освітніх установ релевантних компетентностей; інтеграція штучного інтелекту в управління закладом освіти оптимізує процеси та забезпечує конкурентність відповідно сучасним викликам; у дошкільній освіті потенціал генеративного штучного інтелекту вимагає від управлінців гнучкості та адаптивності до вирішення професійних завдань.

Мета: систематизація підходів до оновлення професійної діяльності керівника закладу дошкільної освіти з використанням можливостей штучного інтелекту.

Методи: теоретичний аналіз нормативно-правової бази, наукової літератури та цифрових ресурсів – для з'ясування стану досліджуваної проблеми, виявлення трансформації управлінської діяльності в умовах інтеграції штучного інтелекту в освіту; аналіз, синтез, порівняння й узагальнення – для систематизації особливостей впровадження технологій штучного інтелекту в практику керівника закладу дошкільної освіти; опитування – для оцінювання рівня адаптивності та цифрової компетентності керівників закладів дошкільної освіти Житомирської області; графічні зображення – для наочного ілюстрування, інтерпретації та порівняння результатів опитування.

Результати: проведено опитування керівників закладів дошкільної освіти з метою виявлення їхнього ставлення до штучного інтелекту; визначено рівні професійної компетентності і напрями розроблення цільових програм професійного розвитку.

Висновки: впровадження технологій штучного інтелекту в дошкільній освіті оптимізує організаційні та педагогічні процеси, автоматизує рутинні адміністративні завдання, зменшує навантаження на фахівця та підвищує ефективність управлінської діяльності; інтеграція штучного інтелекту включає використання моделі ChatGPT для розробки інструкцій і розкладу та NotebookLM від Google як ефективного інструменту для роботи з документами; робота керівника закладу дошкільної освіти потребує оновлення управлінських завдань (стратегічне планування цифрової освіти, моніторинг даних партнерської взаємодії, організація тренінгів та захисту даних); адаптивна компетентність є ключовою для координації процесів із використанням цифрових засобів та штучного інтелекту, забезпечує баланс між традиційними цінностями та сучасними технологіями.

Ключові слова: штучний інтелект, цифрові технології, управлінська діяльність, дошкільна освіта, інноваційні процеси.

Manuscript received: 08.04.2025

Accepted for publication after peer review: 18.07.2025

Published: 18.08.2025



The publication was prepared within the framework of the research tasks of the Department of Digital Educational Resources of the Institute of Vocational Education and Training of the National Academy of Educational Sciences of Ukraine, titled "Methodological Principles for the Development and Application of a Digital Platform for the Vocational Training of Skilled Workers in the Mechanical Engineering Sector" (State Registration Number 0124U000491, 2024–2025).

COMPETITIVE EVENTS AS A FORM OF DEVELOPMENT THE TEACHERS' PROFESSIONAL ACTIVITY (ON THE EXAMPLE OF THE "PLANET IT" COMPETITION)

Mykola Pryhodii¹, Liliia Luparenko²

- 1 Doctor of Pedagogical Sciences, Professor, Deputy Director for Scientific Work, Institute of Vocational Education of the NAES of Ukraine, <https://orcid.org/0000-0001-5351-0002>, e-mail: prygodii@ukr.net
- 2 PhD in Education, Senior Researcher, Head of Department of Digital Educational Resources, Institute of Vocational Education of the NAES of Ukraine, <https://orcid.org/0000-0002-4500-3155>, e-mail: lisoln1@gmail.com

Abstract

The *relevance* of the study is determined by the need to increase the professional activity of teaching staff in the context of the digitalisation of education and the introduction of innovative approaches to the learning process. Competitions, in particular «Planet IT», are an effective mechanism for stimulating the development of digital competence, creativity, and initiative among teachers. They contribute not only to the professional growth of teachers, but also to the modernisation of the educational environment, which is in line with the strategic objectives of reforming Ukrainian education and ensuring the training of competitive specialists.

Objective: to substantiate and reveal the features of competitive events as an effective form of developing the teachers' professional activity by determining priorities in the development of digital educational resources for competitive selection using the example of the "Planet IT" competition.

Methods: *analysis* of psychological, pedagogical, scientific, and methodological literature to identify the positive and negative aspects of competitive events as a form of stimulating professional activity among educators; *processing* of competition entries submitted via Google Forms to quantitatively represent the affiliation, positions and geography of participants and distribution of works by nominations; *generalisation* – to formulate conclusions about the priorities of teachers in preparing digital materials for submission to the competition.

Results: The significance of competitive events as a form of development of professional activity among teaching staff in the context of the digitalisation of education is considered. It is emphasised that modern teachers are not only bearers of knowledge, but also active participants in innovative processes related to the creation of digital resources, methodological and research activities. It has been proven that competitions perform motivational and innovative functions but require proper organisation to avoid the risks of excessive competition. Particular attention is paid to the All-Ukrainian competition «Planet IT», which contributes to the improvement of teachers' digital competence and the modernisation of the educational environment. The article analyses the results of applications for the competition in terms of dynamics, professional composition of participants, geography, and nominations.

Conclusion: Competitive events are a significant factor in the development of professional activity among teaching staff, as they contribute to the formation of motivation for professional growth, the development of

methodological competence, innovation, and communication skills. At the same time, the risks of formalism, stress, and the effect of limitation without proper post-competition support cannot be ruled out.

An analysis of digital educational resources submitted to the «Planet IT» competition in 2025 shows that teachers prioritise the development of educational websites, blogs, platforms, electronic manuals, and video lessons. Teachers pay significantly less attention to the development of electronic dictionaries, reference books and textbooks.

Keywords: *competitive events; professional activity; teaching staff; «Planet IT»; digital educational resources.*

Introduction. In conditions of rapid digitalisation of the education environment and transition to new forms of learning organisation, the role of teaching staff is becoming particularly important. Teachers are no longer limited to the role of knowledge transmitters but are active participants in innovative processes that involve the creation of teaching materials, the use of digital technologies, and participation in research, methodological and project activities (Radkevych et al., 2023). The teacher's professional activity is manifested through their initiative, creative approach, critical thinking, and desire for self-improvement. These characteristics are becoming important factors in improving the quality of educational services, developing professional potential, and shaping competitive graduates who can work effectively in the modern labour market. (Pryhodii et al., 2023).

Various incentive mechanisms play a significant role in professional and pedagogical activities, where competitive events occupy a special place. They are aimed not only at assessing and identifying professional skills, but also at motivating teachers to implement innovative practices, master modern digital technologies, develop new educational resources and improve their professional competence (Titova et al., 2023).

Contests aimed at developing digital educational resources deserve special attention. A striking example is the All-Ukrainian competition «Planet IT» (<https://ivet.edu.ua/planeta-it-2025/>), which aims to involve teaching staff from vocational and pre-higher education institutions in the creation of digital teaching materials, the formation of an innovative content library and the improvement of teachers' digital competence (Fig. 1) (Instytut profesiinoi osvity NAPN Ukrainy, 2025).



Fig. 1. Page of the «Planet IT» competition on the Institute of Vocational Education of the NAES of Ukraine website

Participation in such events allows teachers not only to demonstrate their professional achievements, but also to actively participate in the modernisation of the educational environment, which is one of the key tasks of modern Ukrainian education.

In the context of reforming Ukraine's education system, research into the role of competitive events in the development of teachers' professional activity is particularly relevant. The order of the Ministry of Education and Science of Ukraine «On Amendments to the Regulations on the Certification of Teaching Staff» emphasises the importance of competitive events as one of the mechanisms for stimulating teachers' professional activity. Participation in competitions is recognised as an official basis for extraordinary certification, which contributes to the development of professional skills, motivation to implement innovative practices and improve the professional competence of teaching staff. (Ministerstvo osvity i nauky Ukrainy, 2024).

At the same time, competitive practices contribute to raising the prestige of the teaching profession, forming internal motivation among teachers, and creating conditions for integrating innovative approaches into the educational process. Therefore, research into competitive events as a factor in the manifestation and development of professional activity among teaching staff, particularly using the example of the «Planet IT» competition, is extremely relevant.

Sources. Professional activity is interpreted as the teacher's ability to continuously improve their own work, initiate innovations, and take responsibility for the results of the educational process. Researchers emphasise that professional activity is not limited to the performance of official duties, but also involves initiative, independence, and readiness for professional challenges (Andriushchenko, 2023).

In this context, competitive events are particularly valuable because they create conditions for the manifestation of these characteristics – the demonstration of pedagogical skills, the development of original methodologies, and the justification of one's own position.

In pedagogical science, competitions are viewed not only as a mechanism for selection or competition, but also as a specific form of professional development (Petrenko, et al., 2021). It should also be emphasised that participation in competitions contributes to the formation of reflection skills, the development of creative potential, and the mastery of modern educational technologies (Masterkova, 2023).

International research shows that any form of professional training, including competitive training, will only be effective if it is integrated into systematic professional development (Tang & Shao, 2014). This requires duration, practical focus, collegiality, quality feedback (Darling-Hammond et al., 2017), as well as preparation, implementation, and evaluation (Şahinoğlu & Sağlam Arslan, 2023). Practical actions, analysis of practices, observation, and reflection, which can be integrated into the competitive activities of teachers, play a key role in the above.

Psychological and pedagogical studies indicate that competitions have significant motivational potential. It has been experimentally proven that competition increases attention, promotes better memorisation and increases activity levels. In the pedagogical environment, this manifests itself in the desire of teachers to improve their methodological practices, seek new technologies, and engage in discussion of results (DiMenichi & Tricomi, 2015).

At the same time, research (Buunk & Brenninkmeijer, 2022) shows that competition among teachers has not only stimulating but also problematic potential. In particular, the introduction of a teacher ranking system causes anxiety, unwanted competition, and a decrease in cooperation between colleagues. An analysis of reforms aimed at increasing competition between educational institutions has revealed that competition often does not lead to an improvement in the quality of education, but rather creates additional pressure on teachers and negatively affects other aspects of educational activity (Ladd & Fiske, 2003). Excessive competition in the educational environment can not only stimulate professional activity, but also undermine trust and a culture of cooperation among teachers.

Thus, the motivational effect of competitions is twofold: it can contribute to the development of professional activity, but only if it is constructively organised and supported by participants.

Scientific discourse highlights several areas of professional growth for teachers through participation in competitions:

a) development of methodological skills (development of original lessons, methodological materials, use of ICT);

b) gaining experience in reflection (the ability to analyse one's own activities, justify pedagogical decisions);

c) improving communication skills (participation in public speeches, discussions, defending one's own position);

d) developing innovation (searching for non-standard solutions, testing new methods).

To apply the innovative teaching practices in the classroom, rather than remaining at the level of individual training sessions or individual teachers, post-training support is necessary (Leshin et al., 2024). So, it can be assumed that without systematic post-competition support, the achieved results often remain at the level of individual achievements and do not spread to the wider educational space.

Theoretical generalisation allows to conclude that competitions can be considered a component of the professional development system for teachers, if they are integrated into broader strategies for continuous learning, ensure high-quality feedback, and institutional recognition of results. The results of the materials submission for competitions allows to describe teachers' priorities in the preparation of digital materials, determine which categories are most popular, and track which ones are a priority for teachers.

Research objective: to substantiate and reveal the features of competitive events as an effective form of developing the teachers' professional activity by determining priorities in the development of digital educational resources for competitive selection using the example of the "Planet IT" competition.

Research methods. Analysis of psychological, pedagogical, scientific, and methodological literature to identify the positive and

negative aspects of competitive events as a mechanism for stimulating professional activity among educators; *processing* of competition entries submitted via Google Forms to quantitatively represent the affiliation, positions and geography of participants and distribution of works by nominations, *generalisation* – to formulate conclusions about the priorities of teachers in preparing digital materials for submission to the competition.

Results and Discussion. «Planet IT» is an All-Ukrainian competition for the best digital educational resource, which is founded and held annually at the Institute of Vocational Education of the NAES of Ukraine with the support of the Directorate of Vocational Education of the Ministry of Education and Science of Ukraine.

The purpose of the event is to a) identify the best practices in creating innovative educational products in the system of vocational and pre-higher education based on digital technologies; b) promote digital educational resources; c) actualise the intellectual and creative abilities of teaching staff in the system of vocational and pre-higher education.

In view of the above, the organisers identified several priority tasks:

- to increase the motivation of vocational education teachers to develop and use digital educational resources in the educational process;

- create a collection of such competition entries;

- ensure the availability of educational materials for students and teachers of vocational and pre-higher education institutions in Ukraine. (Instytut profesiinoi osvity NAPN Ukrainy, 2025).

On 15 September 2025, the first stage of the competition – the submission of applications – came to an end. In total, the organising committee received **214** entries in such categories as teaching aids, textbooks, electronic dictionaries and reference books, video lessons, educational websites, blogs, and platforms. The activity of teaching staff varied from month to month: 39 applications were submitted in May, 26 in June, 19 in July, and 22 in August. The largest number of contestants joined in September, with **108** applications (Fig. 2).

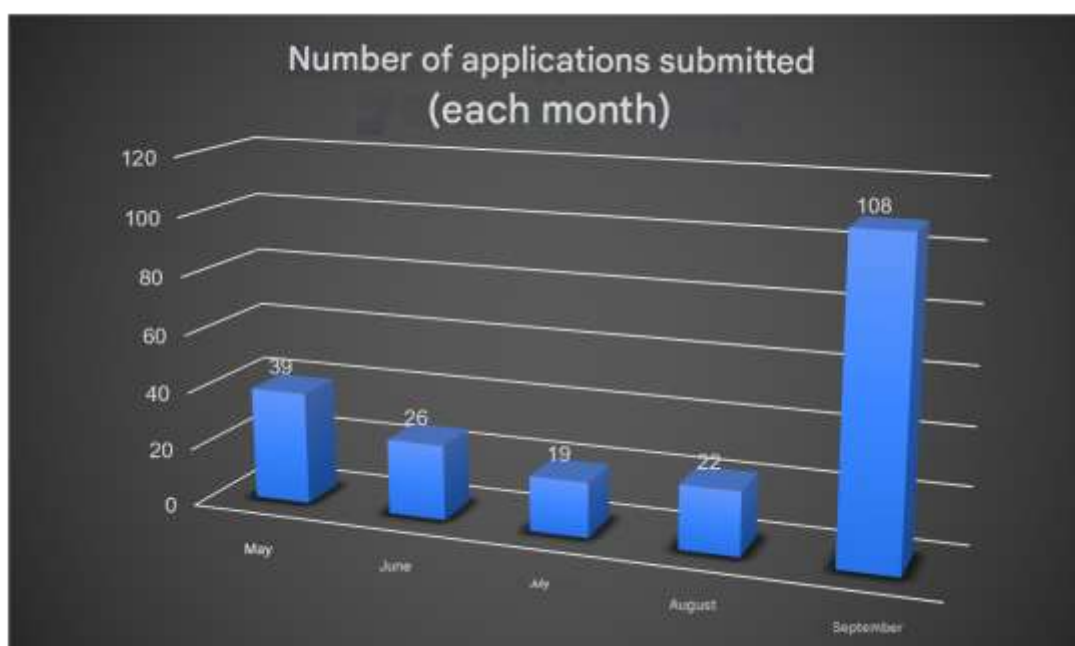


Fig. 2. Dynamics of submissions to the competition (May-September 2025)

The authors of the works were mainly teachers (186 people) from vocational education institutions (Fig. 3). Their work was also submitted

by vocational training instructors (31), methodologists (8), deputy directors (6), practical psychologists (4) and acting directors (1).

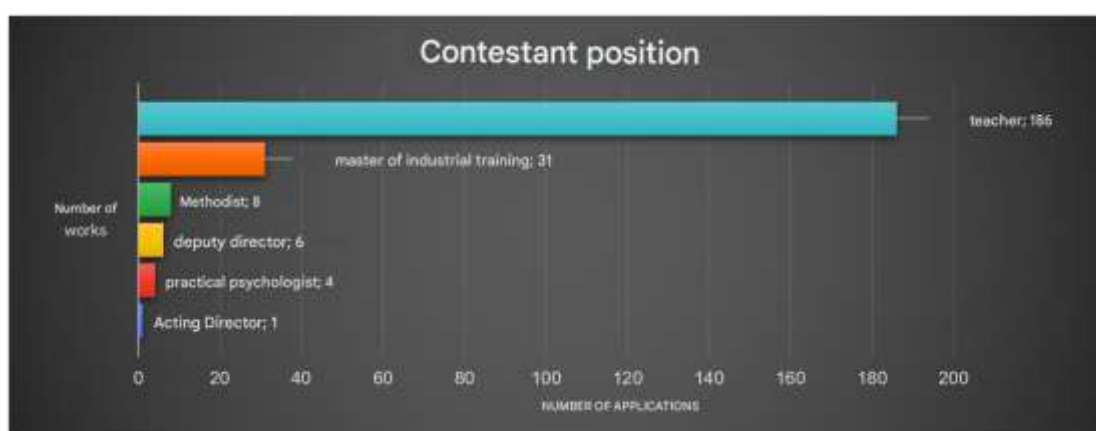


Fig. 3. Distribution of the number of works by the positions of contestants

In total, they represented more than 93 institutions of vocational and pre-higher education.

Institutions from which 3 or more applications were submitted are shown in the diagram in Fig. 4.

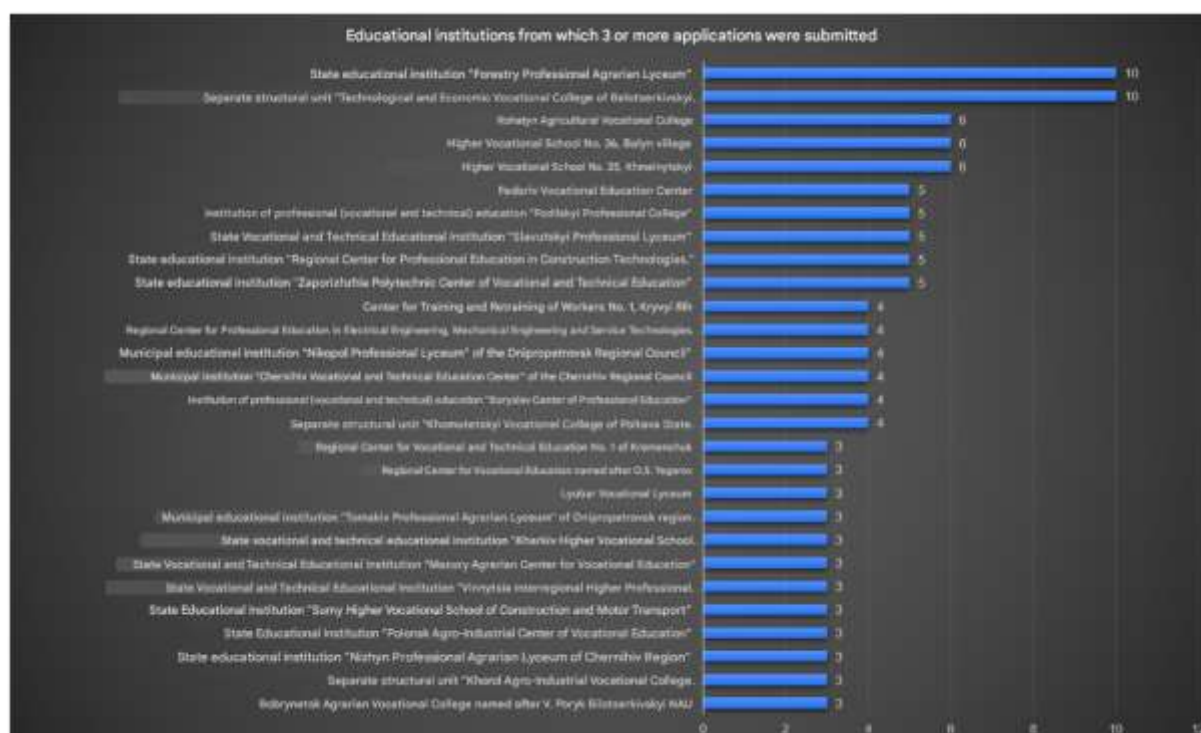


Fig. 4. Number of works submitted by vocational education institutions

The geography of participants covered various parts of Ukraine (Fig. 5), with the highest

activity observed in regions such as Khmelnytskyi (48 applications) and Dnipropetrovsk (22).

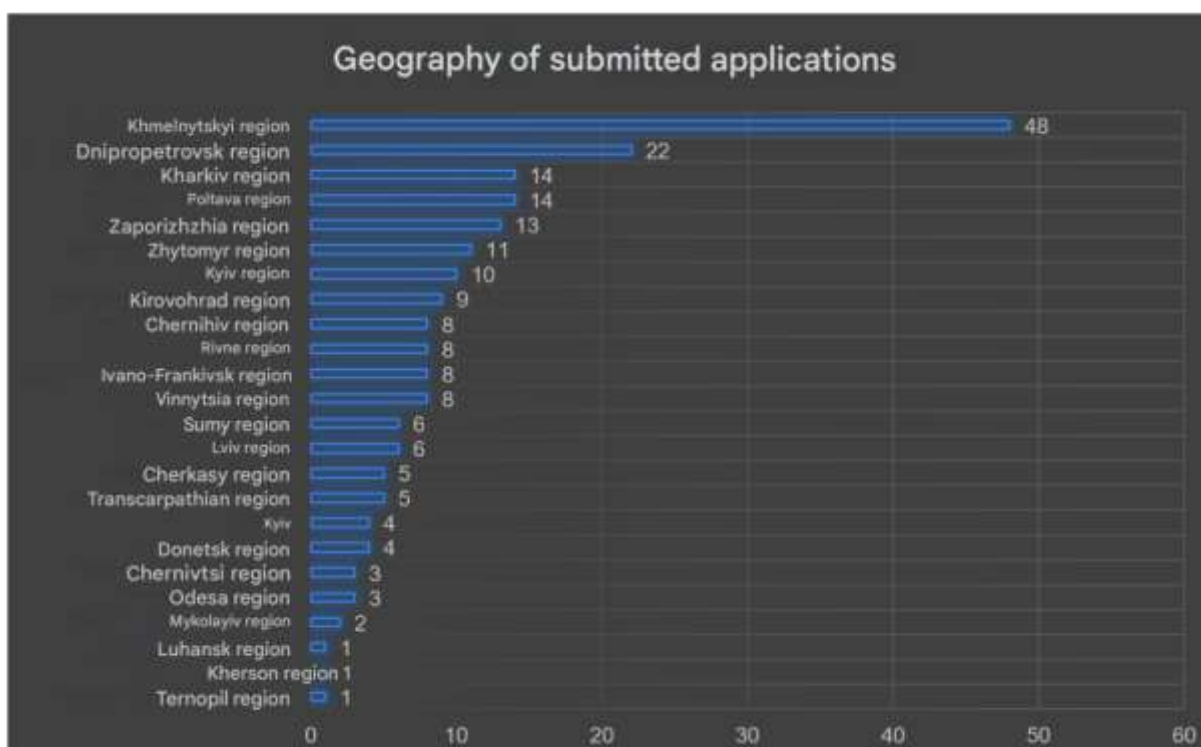


Fig. 5. Geography of contest participants

It is valuable that, despite the conditions of martial law, participants from Donetsk, Luhansk, Kherson, and Mykolaiv regions also joined.

Entries were received from more than 70 cities and towns across our country (Fig. 6). The largest number of entries were sent by teachers from

Khmelnyskyi, Kharkiv, Kryvyi Rih, Lisovsky and Bila Tserkva.

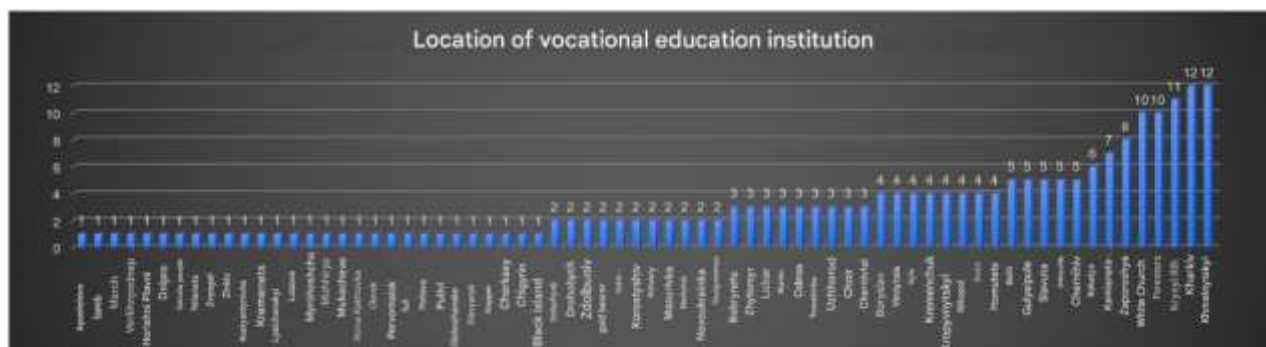


Fig. 6. Location of educational institutions participating in the competition

The distribution of works by category was as follows (Fig. 7):

- teaching aids – 74;
- textbooks – 4;
- electronic dictionaries and reference books – 19;
- video lessons – 38;

- educational websites, blogs, and platforms – 79.

It should be noted that, if necessary, the programme committee reserved the right to change the nomination of a work if its title, type, description, or content corresponded to it.

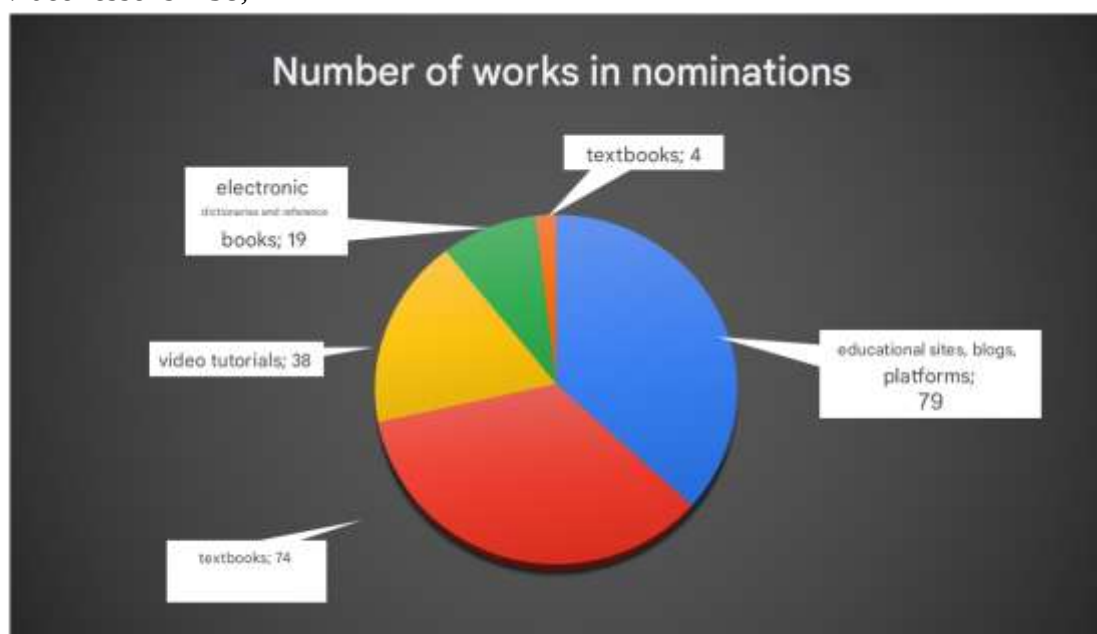


Fig. 7. Distribution of competition entries by category

The pedagogical design of each digital educational resource should reflect the author's information culture and multi-level imaginative pedagogical thinking, as well as its structure and content should meet the requirements of standards. (Institute of Vocational Education of the NAES of Ukraine, 2025).

A group of experts will then assess the importance, significance, demand, and potential for widespread use of each competition entry. The experts will consider the creative contribution of the

authors to the implementation of digital educational resources, the quality and complexity of technical execution, and the validity of the choice of digital technologies used. Considerable importance will be attached to the quality of visual design, the overall visual style, the design of the elements of the work, the user-friendliness of the interface, and ease of use.

The jury is headed by **Valentina Radkevych**, Director of the Institute of Vocational Education of the NAES of Ukraine, Doctor of Pedagogical Sciences, Professor, Full Member

(Academician) of the NAES of Ukraine. The high-quality experts team presented by 3 Doctors of Sciences, Professors, including two full members (academicians) of the NAES of Ukraine and 1 corresponding member of the NAES of Ukraine, 4 candidates of sciences, 2 Doctors of Philosophy, 2 research associates and 1 chief specialist of the Department of Education Content of the Directorate of Vocational Education of the Ministry of Education and Science of Ukraine.

Since 2025, at the request of contestants, all information about submitted educational websites, blogs, platforms, manuals, and video lessons, as well as webpages about their authors, will be posted on the website «**Pedagogue-Innovator**» (<https://innovation.ivet.edu.ua/>), created and maintained by specialists from the Institute of Vocational Education of the NAES of Ukraine as an innovative content library of digital educational resources. The best competition entries, which will receive first-degree diplomas, will be recommended for publication on the All-Ukrainian platform for distance and blended learning for students, «**Vocational Education Online**» (<https://profosvita.online/>), which was developed on behalf of the Ministry of Education and Science of Ukraine with the support of the International Labour Organization.

Conclusions. The analysis shows that competitive events are a significant factor in the

development of professional activity among teaching staff, as they contribute to the formation of motivation for professional growth, the development of methodological competence, innovation, and communication skills. Participation in competitions stimulates the formation of professional communities and the dissemination of pedagogical innovations. At the same time, studies point to the risks of formalism, stress, and limited effect without proper post-competition support.

An analysis of the digital educational resources submitted to the «Planet IT» competition in 2025 shows that the development of educational websites, blogs, platforms, manuals, and video lessons is a priority for teaching staff. Teachers pay significantly less attention to the development of electronic dictionaries, reference books and textbooks.

The prospects for further research are in the development of a system of criteria and indicators for evaluating the quality of each type of digital educational resource submitted to the competition, an evaluation matrix that allows the jury to assign scores (from 0 to 5) and form a final assessment taking into account the weighting coefficients of each indicator, as well as the formation of recommendations for teachers on the development of competition entries based on the results of the «Planet IT» competition in 2025.

List of references

Radkevych, V., Pryhodii, M., Kruchek, V., Voronina-Pryhodii, D., & Kravets, S. (2023). Standardisation of vocational teacher training in Ukraine. *Professional Pedagogics*, 1(26), 94–102. <https://doi.org/10.32835/2707-3092.2023.26.94-102>

Пригодій, М. А., Гуржій, А. М., Гуменний, О. Д., Голуб, І. І., Пригалінська, Т. Г., & Волошин, А. М. (2023). *Цифрові технології професійної підготовки майбутніх кваліфікованих робітників у воєнний та повоєнний час: навчально-методичний посібник*. ІПО НАПН України. <https://doi.org/10.32835/978-617-95325-9-7/2023>

Інститут професійної освіти НАПН України. (2025). *Планета «ІТ» – 2025*. <https://ivet.edu.ua/planeta-it-2025/>

Тітова, О. А., Лузан, П. Г., Пащенко, Т. М., Мося, І. А., Остапенко, А. В., & Ямковий, О. Ю. (2023). *Система розвитку професійної компетентності педагогічних працівників фахових коледжів в умовах пандемії, воєнного та повоєнного часу* (за наук. ред. О. А. Тітової). ІПО НАПН України. <https://lib.iitta.gov.ua/id/eprint/738694>

Міністерство освіти і науки України. (2024). *Про внесення змін до Положення про атестацію педагогічних працівників* (Наказ від 10 вересня 2024 р. № 1277). <https://mon.gov.ua/static-objects/mon/uploads/public/672c74/05e/672c7405eefb9919756625.pdf>

Андрющенко, Т. К. (ред.). (2023). *Професійний розвиток педагога в контексті викликів сьогодення: збірник наукових статей за матеріалами I Всеукраїнської науково-практичної конференції (м. Черкаси, 19 квітня 2023 р.)*. КНЗ «ЧОПООП ЧОР». <https://bit.ly/4gWb5yn>

Петренко, Л. М., Султанова, Л. Ю., Олешко, П. С., Купрієвич, В. О., Паздрій, В. Я., Антонюк, Л. А., Гуменний, О. Д., Савченко, С. О., & Фурман, О. М. (2021). *Професійний розвиток педагогічних і науково-педагогічних працівників в умовах відкритої освіти: освітні практики: методичні рекомендації* (за наук. ред. Л. М. Петренко). Волиньполіграф. <https://lib.iitta.gov.ua/id/eprint/725123>

Мастеркова, Т. В. (2023). Фахові конкурси як чинник розвитку професійної компетентності педагогів. *Імідж сучасного педагога*, 3(192), 15–19. [https://doi.org/10.33272/2522-9729-2020-3\(192\)-15-19](https://doi.org/10.33272/2522-9729-2020-3(192)-15-19)

Darling-Hammond, L., Hyler, M. E., & Gardner, M. (2017). *Effective teacher professional development* (with assistance from D. Espinoza). Learning Policy Institute. [https://learningpolicyinstitute.org/media/476/download?inline&file=Effective Teacher Professional Development REPORT.pdf](https://learningpolicyinstitute.org/media/476/download?inline&file=Effective_Teacher_Professional_Development_REPORT.pdf)

Tang, X., & Shao, F. (2014). On the evolution of a lesson: Group preparation for teaching contest as teacher professional development activity for Chinese elementary science teachers. *Journal of Science Education and Technology*, 23(2), 252–266. <https://doi.org/10.1007/s10956-013-9454-8>

Şahinoğlu, A., & Sağlam Arslan, A. (2023). Examining of teachers' practices supported by mentoring applications. *Continuing Professional Education: Theory and Practice*, 77(4), 66–87. <https://doi.org/10.28925/1609-8595.2023.4.6>

DiMenichi, B. C., & Tricomi, E. (2015). The power of competition: Effects of social motivation on attention, sustained physical effort, and working memory. *Frontiers in Psychology*, 6, Article 1282. <https://doi.org/10.3389/fpsyg.2015.01282>

Ladd, H. F., & Fiske, E. B. (2003). Does competition improve teaching and learning? Evidence from New Zealand. *Educational Evaluation and Policy Analysis*, 25(1), 97–112. <https://doi.org/10.3102/01623737025001095>

Buunk, A. P., & Brenninkmeijer, V. (2022). Burnout, social comparison orientation and the responses to social comparison among teachers in The Netherlands. *International Journal of Environmental Research and Public Health*, 19(20), 13139. <https://doi.org/10.3390/ijerph192013139>

Leshin, M., LaMar, T., & Boaler, J. (2024). Teachers' mixed implementation of mindset mathematics practices during and after a novel approach to teacher learning. *Education Sciences*, 14(11), 1229. <https://doi.org/10.3390/educsci14111229>

Translated & Transliterated

Radkevych, V., Pryhodii, M., Kruchek, V., Voronina-Pryhodii, D., & Kravets, S. (2023). Standardisation of vocational teacher training in Ukraine. *Professional Pedagogics*, 1(26), 94–102. <https://doi.org/10.32835/2707-3092.2023.26.94-102>, [in English].

Pryhodii, M. A., Hurzhii, A. M., Humennyi, O. D., Holub, I. I., Pryhalinska, T. H., & Voloshyn, A. M. (2023). *Tsyfrovi tekhnolohii profesiinoi pidhotovky maibutnikh kvalifikovanykh robitnykiv u voiennyi ta povoiennyi chas: navchalno-metodychnyi posibnyk [Digital technologies for the professional training of future skilled workers in wartime and post-war period: a teaching and methodological manual]*. IPO NAPN Ukrainy. <https://doi.org/10.32835/978-617-95325-9-7/2023>, [in Ukrainian].

Instytut profesiinoi osvity NAPN Ukrainy. (2025). *Planeta «IT» – 2025*. <https://ivet.edu.ua/planeta-it-2025/>, [in Ukrainian].

Titova, O. A., Luzan, P. H., Pashchenko, T. M., Mosia, I. A., Ostapenko, A. V., & Yamkovyi, O. Yu. (2023). *Systema rozvytku profesiinoi kompetentnosti pedahohichnykh pratsivnykiv fakhovykh koledzhiv v umovakh pandemii, voiennoho ta povoiennoho chasu [System of professional competence development of vocational college teachers in pandemic, wartime, and post-war conditions]* (O. A. Titova, Ed.). IPO NAPN Ukrainy. <https://lib.iitta.gov.ua/id/eprint/738694>, [in Ukrainian].

Ministerstvo osvity i nauky Ukrainy. (2024). *Pro vnesennia zmin do Polozhennia pro atestatsiiu pedahohichnykh pratsivnykiv [On amendments to the Regulation on the attestation of pedagogical workers]* (Nakaz vid 10 veresnia 2024 r. № 1277). <https://mon.gov.ua/static-objects/mon/uploads/public/672/c74/05e/672c7405eefb9919756625.pdf>, [in Ukrainian].

Andriushchenko, T. K. (Ed.). (2023). *Profesijnyi rozvytok pedahoha v konteksti vyklykiv siohodennia: zbirnyk naukovykh statei za materialamy I Vseukrainskoi naukovo-praktychnoi konferentsii* [Professional development of the teacher in the context of contemporary challenges: collection of scientific articles based on the materials of the first all-Ukrainian scientific and practical conference] (Cherkasy, 19 kvitnia 2023 r.). KNZ «CHOIPOP CHOR». <https://bit.ly/4gWb5yn>, [in Ukrainian].

Petrenko, L. M., Sultanova, L. Yu., Oleshko, P. S., Kuprievych, V. O., Pazdrii, V. Ya., Antonyuk, L. A., Humennyi, O. D., Savchenko, S. O., & Furman, O. M. (2021). *Profesijnyi rozvytok pedahohichnykh i nauково-pedahohichnykh pratsivnykiv v umovakh vidkrytoi osvity: osvitni praktyky: metodychni rekomendatsii* [Professional development of pedagogical and scientific-pedagogical workers in the context of open education: Educational practices: Methodological recommendations] (L. M. Petrenko, Ed.). Volynpolihraf. <https://lib.iitta.gov.ua/id/eprint/725123>, [in Ukrainian].

Masterkova, T. V. (2023). Fakhovi konkursy yak chynnyk rozvytku profesiinoi kompetentnosti pedahohiv [Professional competitions as a factor in the development of teachers' professional competence]. *Imidzh suchasnoho pedahoga* [Image of the Modern Teacher], 3(192), 15–19. [https://doi.org/10.33272/2522-9729-2020-3\(192\)-15-19](https://doi.org/10.33272/2522-9729-2020-3(192)-15-19), [in Ukrainian].

Darling-Hammond, L., Hyler, M. E., & Gardner, M. (2017). *Effective teacher professional development* (with assistance from D. Espinoza). Learning Policy Institute. https://learningpolicyinstitute.org/media/476/download?inline&file=Effective_Teacher_Professional_Development_REPORT.pdf, [in English].

Tang, X., & Shao, F. (2014). On the evolution of a lesson: Group preparation for teaching contest as teacher professional development activity for Chinese elementary science teachers. *Journal of Science Education and Technology*, 23(2), 252–266. <https://doi.org/10.1007/s10956-013-9454-8>, [in English].

Şahinoğlu, A., & Sağlam Arslan, A. (2023). Examining of teachers' practices supported by mentoring applications. *Continuing Professional Education: Theory and Practice*, 77(4), 66–87. <https://doi.org/10.28925/1609-8595.2023.4.6>, [in English].

DiMenichi, B. C., & Tricomi, E. (2015). The power of competition: Effects of social motivation on attention, sustained physical effort, and working memory. *Frontiers in Psychology*, 6, Article 1282. <https://doi.org/10.3389/fpsyg.2015.01282>, [in English].

Ladd, H. F., & Fiske, E. B. (2003). Does competition improve teaching and learning? Evidence from New Zealand. *Educational Evaluation and Policy Analysis*, 25(1), 97–112. <https://doi.org/10.3102/01623737025001095>, [in English].

Buunk, A. P., & Brenninkmeijer, V. (2022). Burnout, social comparison orientation and the responses to social comparison among teachers in The Netherlands. *International Journal of Environmental Research and Public Health*, 19(20), 13139. <https://doi.org/10.3390/ijerph192013139>, [in English].

Leshin, M., LaMar, T., & Boaler, J. (2024). Teachers' mixed implementation of mindset mathematics practices during and after a novel approach to teacher learning. *Education Sciences*, 14(11), 1229. <https://doi.org/10.3390/educsci14111229>, [in English].

КОНКУРСНІ ЗАХОДИ ЯК ФОРМА РОЗВИТКУ ПРОФЕСІЙНОЇ АКТИВНОСТІ ПЕДАГОГІЧНИХ ПРАЦІВНИКІВ (НА ПРИКЛАДІ КОНКУРСУ «ПЛАНЕТА ІТ»)

Микола Пригодій¹, Лілія Лупаренко²

- 1 доктор педагогічних наук, професор, заступник директора з наукової роботи Інституту професійної освіти НАПН України, <https://orcid.org/0000-0001-5351-0002>, e-mail: prygodii@ukr.net
- 2 кандидат педагогічних наук, старший дослідник, завідувач відділу цифрових освітніх ресурсів Інституту професійної освіти НАПН України, <https://orcid.org/0000-0002-4500-3155>, e-mail: lisoln1@gmail.com

Реферат:

Актуальність дослідження зумовлена потребою підвищення професійної активності педагогічних працівників в умовах цифровізації освіти та впровадження інноваційних підходів в освітній процес; конкурсний захід «Планета ІТ» виступає дієвим механізмом стимулювання розвитку цифрової компетентності, творчості та ініціативності викладачів; сприяє професійному зростанню педагогів, модернізації освітнього середовища, реалізації стратегічних завдань реформування української освіти, забезпеченню підготовки конкурентоспроможних фахівців.

Мета: обґрунтувати та розкрити особливості конкурсних заходів як ефективної форми розвитку професійної активності педагогічних працівників, зокрема шляхом визначення пріоритетів у розробленні цифрових освітніх ресурсів для конкурсного відбору на прикладі конкурсу «Планета ІТ».

Методи: аналіз психолого-педагогічної та науково-методичної літератури – для визначення позитивних і негативних аспектів конкурсних заходів як однієї з форм стимулювання професійної активності педагогів, опрацювання заявок учасників конкурсу, поданих через Google Forms – для кількісного представлення афіліації, посад й географії учасників та розподілу робіт за номінаціями, узагальнення – для формулювання висновків щодо пріоритетів педагогів у підготовці цифрових матеріалів для подання на конкурс.

Результати: розглянуто значення конкурсних заходів як форми розвитку професійної активності педагогічних працівників в умовах цифровізації освіти; з'ясовано, що сучасний викладач виступає не лише носієм знань, а й активним учасником інноваційних процесів, пов'язаних зі створенням цифрових ресурсів, методичною та науково-дослідною діяльністю; доведено, що конкурси виконують мотиваційну й інноваційну функції, однак потребують належної організації для уникнення ризиків надмірної конкуренції; приділено особливу увагу Всеукраїнському конкурсу «Планета ІТ», що сприяє підвищенню цифрової компетентності педагогів та модернізації освітнього середовища; подано аналіз результатів подання заявок на конкурс за динамікою, професійним складом учасників, географією та номінаціями.

Висновок: конкурсні заходи є значущим чинником розвитку професійної активності педагогічних працівників, оскільки сприяють формуванню мотивації до професійного зростання, розвитку методичної компетентності, інноваційності та комунікативних умінь; водночас не виключені ризики формалізму, стресових навантажень та ефекту обмеженості без належного післяконкурсного супроводу; аналіз поданих на конкурс «Планета ІТ» у 2025 р. цифрових освітніх ресурсів, вказує на пріоритети педагогічних працівників щодо розроблення навчальних сайтів, блогів, платформ, електронних посібників та відеороликів.

Ключові слова: форми розвитку професійної активності, конкурсні заходи, професійна активність; педагогічні працівники; «Планета ІТ»; цифрові освітні ресурси.

Manuscript received: 24.03.2025

Accepted for publication after peer review: 15.07.2025

Published: 18.08.2025



CRITERIA AND INDICATORS FOR ELECTRONIC ASSESSMENT OF PROFESSIONAL ACTIVITY OF TEACHING STAFF IN GENERAL SECONDARY EDUCATION INSTITUTIONS

Oleksandr Radkevych

Doctor of Pedagogical Sciences, Professor, Chief Research Fellow at the Department of Monitoring and Evaluation, Institute of Pedagogy of the National Academy of Educational Sciences of Ukraine, <https://orcid.org/0000-0002-2648-5726>, e-mail: mr.radkevych@gmail.com

Abstract

The relevance of the study is driven by the inadequacy of traditional teacher assessment methods in addressing the challenges of digital transformation in education. It is substantiated that the existing certification system is subjective, bureaucratic, and fails to reflect the specific nature of teachers' professional activities in the modern digital environment. This necessitates the development of a new, scientifically grounded model of electronic assessment capable of ensuring objective and evidence-based analysis.

Purpose: To develop and scientifically substantiate a system of criteria and indicators for electronic assessment of the professional activity of teaching staff in general secondary education institutions.

Methods: *analysis* – to critically examine official documents and scholarly sources on pedagogical assessment theory and digital transformation in education, forming the conceptual foundation of the study; *synthesis* – to integrate pedagogical, managerial, and technological aspects into the electronic assessment framework; *modeling* – to design a model of criteria and indicators that reflects the interaction of key components and describes the mechanisms of its functioning; *generalization* – to formulate comprehensive conclusions.

Results: A scientifically substantiated model of electronic assessment of teachers' professional activity has been developed, comprising four integral components: normative-target, criteria-indicator, instrumental-technological, and result-analytical. The core of the model is a system of criteria aligned with the labor functions defined in the Professional Standard for Teachers, along with corresponding measurable digital indicators. These indicators enable the collection and analysis of verifiable data ("digital footprints") from educational information systems (LMS, e-portfolios, e-journals, online survey results), transforming the assessment process into an objective and evidence-based procedure.

Conclusions: The implementation of the proposed model facilitates a shift from formal control to objective, multifaceted analysis based on the principles of evidence, transparency, multidimensionality (360-degree approach), and developmental orientation. The primary goal of such assessment is not control, but the provision of high-quality, substantiated feedback to the teacher, which stimulates professional reflection and serves as a foundation for designing an individual trajectory of continuous professional development, thereby turning assessment into an effective tool for managing education quality.

Keywords: *electronic assessment, professional development, teaching staff, criteria and indicators, model, digital transformation, digital footprints.*

Introduction. The relevance of the problem of developing criteria and indicators for the e-assessment of the professional activities of pedagogical workers at general secondary education institutions is driven by the

global digital transformation of society, which is radically changing the requirements for the education system and the teacher's professional competence. Under martial law and the COVID-19 pandemic, the Ukrainian educational

system made a forced but powerful leap towards digitalization, which highlighted the urgent need to modernize all managerial processes, including the system for assessing pedagogical workers. As noted by leading scholars, particularly V. Bykov (2019), digitalization is not just the implementation of technologies, but a fundamental restructuring of the educational landscape, requiring new approaches to measuring the effectiveness and quality of pedagogical work. Existing traditional attestation models, which are based predominantly on paper-based documentation and periodic face-to-face observations, are proving to be insufficiently flexible and objective for analyzing a teacher's activities in the modern digital educational environment. They do not make it possible to fully account for such aspects as proficiency with digital tools for teaching, the ability to organize blended and distance learning, skills in ensuring student cybersecurity, and the ability to create innovative digital content. Therefore, there is an acute need for a scientifically grounded system of criteria that would adequately reflect the multifaceted nature of a teacher's professional activity in the new reality, fostering their continuous professional development.

The need to develop new criteria and indicators for e-assessment is also dictated by the obvious obsolescence and insufficient effectiveness of the existing attestation system for pedagogical workers. Traditional approaches are often formal in nature, are excessively bureaucratized, and do not always contribute to the teacher's genuine professional growth, turning into a mechanism of control rather than development. Research in the field of educational management, particularly the work of N. Bilyk et al. (2023), emphasizes that a modern assessment system must be dynamic, formative, and diagnostic, aimed at identifying the educator's professional needs and constructing an individual educational trajectory. Electronic assessment, unlike paper-based assessment, opens unique opportunities for collecting and analyzing large datasets (Big Data) about a teacher's activities, allowing a transition from subjective judgments to objective, evidence-based conclusions. The analysis of the digital footprint, such as activity in an LMS, the quality of developed electronic resources, and the results of online surveys of students and parents, creates a comprehensive picture unattainable by traditional methods. However, without clearly defined, valid, and reliable criteria and indicators, this data remains merely a

collection of information, not an effective tool for education quality management.

An important aspect of this relevance is the need for the objectification of the assessment process and the minimization of the human factor, which is one of the key problems of traditional attestation. Electronic assessment, based on clear algorithms and measurable indicators, is capable of ensuring a higher level of transparency, fairness, and impartiality, which positively affects the psychological climate among the teaching staff and teacher motivation. As noted by Shyshkina et al. (Shyshkina et al., 2023), the implementation of information and communication technologies into managerial processes allows for the standardization of procedures and ensures a level playing field for all participants in the educational process. The development of a unified system of criteria for e-assessment will make it possible not only to analyze the activities of an individual teacher but also to conduct comparative analysis at the level of the educational institution, community, or even the entire country, identifying systemic problems and best practices. This, in turn, creates a scientific foundation for making informed managerial decisions in the sphere of educational policy, particularly regarding professional development programs and resource allocation. The creation of such a system is a response to the societal demand for increasing the accountability and effectiveness of the educational system.

The problem of researching criteria and indicators for the e-assessment of the professional activities of pedagogical workers at general secondary education institutions is highlighted by Ukraine's orientation towards European educational standards, where significant attention is paid to the digital competence of educators as a key element of their professional qualification. European framework documents, such as the Digital Competence Framework for Educators (DigCompEdu), establish clear benchmarks regarding the digital skills that a modern teacher must possess. The work of N. Morze and M. Hladun (2022) emphasizes the need to implement the provisions of these documents into the Ukrainian system of professional development and assessment for educators. A scientifically grounded system of indicators will make it possible not only to assess but also to purposefully develop the digital

competence of teachers, which is critically important for preparing competitive graduates capable of living and working in the digital economy. This task takes on special importance in the context of Ukraine's post-war reconstruction, where digital technologies and quality education will become drivers of the country's innovative development. Electronic assessment, unlike discrete attestation once every five years, can function in real-time, providing the teacher with constant feedback on their activities. Tools such as the electronic portfolio (e-portfolio) are becoming not just a repository for certificates, but a dynamic instrument for self-reflection and planning professional growth, as confirmed by research in the field of pedagogical andragogy. Such a system allows the teacher to see their strengths and areas for development, choose relevant professional development courses, and receive recognition for their achievements.

Sources. An analysis of the problem of developing criteria and indicators for the e-assessment of educators' professional activities is impossible without considering the current regulatory and legal framework and the scientific works of Ukrainian scholars. This analysis makes it possible to define the legislative frameworks, conceptual foundations, and existing scientific approaches that collectively outline the current state of the problem and identify existing gaps that need to be addressed.

The fundamental basis for modernizing the assessment system for pedagogical workers is the key educational laws of Ukraine. The Law of Ukraine "On Education" (2017) establishes the principles of educational activity, including the academic freedom of the educator, and defines their obligation regarding continuous professional development. Article 50 of this law, for the first time at the legislative level, enshrined such forms of professional development as attestation and certification. The Law of Ukraine "On Complete General Secondary Education" (2020) details these provisions, emphasizing pedagogical internships, supervision, and the need to create conditions for the professional growth of teachers. These laws create the legal field for the transition from outdated, formalized methods of control to stimulating and supportive assessment systems. Specific assessment mechanisms are regulated by by-laws.

The key document defining the substantive content of the assessment is the Professional Standard for the profession "Teacher of a General Secondary Education Institution" (Ministry of Education and Science of Ukraine, 2024). This standard describes in detail the general and professional competencies that an educator must possess. Of particular importance is the distinction of digital competence, which includes the ability to navigate the information space, use digital technologies in the educational process, and ensure student safety on the Internet. The standard effectively provides a framework for what exactly needs to be assessed. However, it does not answer the question of how to do this, and what specific measurable indicators might attest to the level of development of a particular competence, especially during its analysis via electronic systems (Professional standard "Teacher of general secondary education institution" approved, 2017).

The new Regulation on the Attestation of Pedagogical Workers (2022) is a significant step forward. It is aimed at the debureaucratization of the process, increasing objectivity, and accounting for the educator's activities during the inter-attestation period. Importantly, it provides for the possibility of using information technologies for document management, yet it does not contain clear criteria and indicators for assessing professional activity specifically in the digital environment. In parallel, there is a Regulation on the Certification of Pedagogical Workers (Resolution of the Cabinet of Ministers, 2019), which is a voluntary external assessment procedure. Certification actively uses digital tools, in particular, requiring the creation of an electronic portfolio, which indicates the state's policy towards the digitalization of assessing educators' professional activities. These two documents create a logical and mutually complementary tandem. The professional standard answers the question "WHAT" to assess, outlining the content of the teacher's professional competencies and labor functions. The Regulation on Attestation, in turn, answers the questions "HOW," "WHEN," and "BY WHOM" the assessment is conducted, establishing its procedure, periodicity, and subjects. Any e-assessment system must be fully aligned with these regulatory requirements to be legitimate and effective (Attestation 2024/2025, 2024).

The scientific discourse regarding criteria and indicators for assessing the professional activities of educators is multifaceted and is developing in several key directions, creating a theoretical foundation for the development of modern, particularly electronic, assessment systems. An analysis of these works makes it possible to trace the evolution of approaches from general concepts of professionalism to specific digital assessment tools. The basis for any assessment system is a clear understanding of the essence of the educator's professionalism and the strategic goals of educational reforms. A fundamental contribution to this field was made by O. Savchenko (2019), whose work became the conceptual basis for the New Ukrainian School. She not only defined but also substantiated in detail the content of the teacher's key competencies, which makes her work a starting point for the operationalization of assessment criteria. The ideas of the competence-based approach were also developed by N. Bibik (2004), who researched the connection between the level of development of a teacher's professional qualities and their ability to form key competencies in learners, which makes it possible to construct indicators of educator effectiveness through the prism of learners' academic achievements.

The context of modernizing the content of education, which directly affects assessment criteria, has been researched in the works of V. Kremen, O. Liashenko, T. Lukina, O. Topuzov, et al. In particular, the research by O. Liashenko and O. Topuzov emphasizes the need for educational outcomes to correspond to modern socio-economic challenges, which requires teachers to have new skills related to project-based activities, STEM education, and the development of critical thinking in students, and these skills must become an object of assessment (Liashenko & Topuzov, 2021). At the same time, O. Liashenko et al. (2017) laid the methodological foundations for education quality assessment, emphasizing that any assessment must be based on a clear philosophy, be systemic, transparent, and use valid indicators that preclude subjectivism. In developing these ideas, T. Lukina (2020) developed the theoretical and methodological foundations of educational monitoring, substantiating a multi-level system of indicators for tracking the quality of educational processes, which can be adapted to

analyze the activities of an individual educator. This conceptual block is completed by the human-centric approach, substantiated by V. Kremen (2023), according to which assessment must move away from a punitive-controlling function and transform into an instrument of support and development for the personality of both the student and the teacher.

The traditional attestation system has long been an object of scientific criticism. O. Dobosh (2019) analyzes in detail the shortcomings of this system, researching attestation as a tool for managing professional development and emphasizing the need for its transformation from a controlling procedure to a diagnostic tool that makes it possible to design an individual trajectory of professional growth. In the same context, L. Vashchenko analyzes the professional development of educators under reform conditions, linking the effectiveness of this process to systems of motivation and objective assessment at the level of the educational institution. Her work shows how assessment results can become the basis for forming professional development programs and providing targeted methodological support to teachers (Vashchenko et al., 2020).

The introduction of certification as an alternative, voluntary form of assessment has also been reflected in scientific works. Yu. Brusov (2024) analyzed the first results and challenges of pilot certification, viewing it as a mechanism of external independent assessment that could become a powerful stimulus for professional improvement. They examine in detail the stages of certification, including independent testing and the study of practical experience, which lays the foundation for developing criteria-oriented towards real pedagogical practices.

The key factor driving the need to review assessment criteria is the digitalization of education. Research from the Institute for Digitalisation of Education of the NAES of Ukraine, particularly the work of V. Bykov et al. (2019), comprehensively analyzes global experience and Ukrainian realities of digital transformation, substantiating the need to develop new assessment models adequate for the modern digital educational environment. O. Humennyi (2025) thoroughly analyzes the structure of digital competence, adapting European frameworks, particularly DigCompEdu, to the

Ukrainian context and proposing specific descriptors for measuring its components: from information literacy to digital content creation and cybersecurity. An important contribution to understanding the role of digital tools was made by Yu. Zhuk (2012), who researched information and communication competence and developed criteria for assessing the quality of electronic educational resources. His approach makes it possible to assess not only the teacher's ability to use ready-made programs but also their ability to create their own high-quality digital content.

A separate important direction is the development and analysis of specific digital assessment tools. The electronic portfolio (e-portfolio) technology is the most researched in this aspect, as it allows for a comprehensive presentation of evidence of professional growth. O. Isaieva and R. Aleksieieva (2021) view the e-portfolio as an effective means of authentic assessment, which captures not a static snapshot of knowledge, but the dynamics of competence development. Developing this direction, a team of scholars including M. Pryhodii, A. Hurzhii, O. Radkevych et al. (2022) proposed practice-oriented research, embodied in the methodological recommendations "Technology for Creating a Digital Portfolio for Vocational Education Learners." This work is important as it moves the discussion about e-portfolios from the theoretical to the applied plane, offering a specific, step-by-step technology for its development and implementation. And although these recommendations were developed for vocational education learners, the structural components of the portfolio proposed in them (informational, diagnostic, content, and reflective blocks), the criteria for content, and the technological solutions are universal. They can be extrapolated and adapted for developing an e-portfolio model for a pedagogical worker at a general secondary education institution, serving as a methodological basis for determining the relevant indicators of their professional activity. I. Voloshchuk (2012) analyzes the portfolio as a tool for developing reflection – a key ability of the modern educator for self-analysis and self-improvement. The practical aspects of implementing the e-portfolio in the attestation process are researched by S. Shevchuk (2019), revealing its advantages for demonstrating

professional achievements and emphasizing the need for clear criteria for assessing its content. At the same time, M.V. Marienko, M.P. Shyshkina, and O.A. Konoval (2019) study cloud-oriented technologies as the technical basis for creating large-scale, reliable, and secure e-assessment platforms capable of supporting the functioning of such systems at the national level.

The results of scientific research provide the theoretical foundation for developing e-assessment criteria. However, despite significant developments, there remains a need to create a holistic, scientifically grounded model that would integrate all these aspects into a unified system.

The purpose of the article is the development and scientific substantiation of a system of criteria and indicators for the e-assessment of the professional activities of pedagogical workers at general secondary education institutions.

Research methods: analysis – for a critical reflection on official documents and scientific sources on the theory of pedagogical assessment and the digital transformation of education, which made it possible to form the conceptual framework of the study; synthesis – to combine pedagogical, managerial, and technological aspects into e-assessment; modeling – to develop a model of criteria and indicators that reflects the interaction of key components and describes its functioning mechanisms; generalization – to form comprehensive conclusions.

Results and Discussion. Electronic assessment (e-assessment) of an educator's professional activity is a systemic process that involves the use of digital technologies to collect, analyze, interpret, and present data about various aspects of a teacher's work in order to make informed decisions regarding their professional suitability and further development. This concept goes far beyond the simple digitization of paper reports or attestation sheets. It marks a fundamental paradigm shift in assessment, a transition from a static "snapshot" to a dynamic, multidimensional, and contextualized "video feed" of professional practice. Unlike traditional approaches, e-assessment allows for the collection and analysis of a wide range of authentic digital artifacts: video recordings of lessons, teacher-developed interactive learning materials, analytics

from an LMS, samples of student work, results of online surveys, and much more (Malik et al., n.d.).

The development of an effective system for the professional development of pedagogical workers involves the creation of an objective and transparent basis for analyzing their professional activities. A key role in this process is played by the model of criteria and indicators for e-assessment, which provides the theoretical foundations that systematize all assessment elements into a single integrative framework, define the connections between them, and describe their interaction mechanisms. The foundation of such a model is the normative-target component, which defines the goal and objectives of the assessment. It is based on the requirements of the professional standard for teachers of general secondary education institutions (Ministry of Education and Science of Ukraine, 2024), which outlines the key labor functions (teaching learners subjects (integrated courses), partnership-based interaction with participants in the educational process, participation in organizing a safe and healthy educational environment, implementing the educational process, continuous professional development) and professional competencies (language and communication, subject-methodological, information and digital, psychological, emotional-ethical, pedagogical partnership competence, inclusive, health-promoting, project-design, prognostic, organizational, assessment-analytical, ability for lifelong learning (Ministry of Education and Science of Ukraine, 2024). It is the professional standard that serves as the source for forming criteria, and clearly defined goals – whether attestation for control or stimulating professional growth – set the vector for the entire process.

On this foundation, the core of the model is built – the criteria-indicator component, which directly specifies the object of assessment. Criteria, such as digital, methodological, or organizational competence, are generalized areas stipulated by the professional standard. They, in turn, are detailed based on specific and measurable indicators. For example, for the "digital competence" criterion, indicators might include the actual use of electronic educational resources, the creation of one's own digital learning materials, or the effectiveness of

communication with participants in the educational process on digital educational platforms.

The instrumental-technological component is responsible for collecting and analyzing data according to these indicators. It covers digital environments, such as the electronic portfolio or learning management systems (LMS), where the educator uploads evidence of their professional activity. Assessment tools include video recordings of lessons, student projects, results of self-assessment and expert conclusions, as well as the analysis of digital footprints of activity, which together form the evidence base.

The final element of the model is the resultant-analytical component, which ensures the interpretation of the collected data. Special mechanisms and analysis algorithms make it possible to correlate the provided evidence with the defined indicators and criteria, thus establishing the educator's level of professional development. The key result of this stage is not just a statement of fact, but the provision of high-quality feedback, namely, well-grounded information about strengths and areas for professional development.

The functioning of the model of criteria and indicators for e-assessment occurs as a sequential and logically connected process. First, the assessment goals are defined, after which the educator collects and uploads evidence of their professional activity to the electronic platform in accordance with the defined indicators. Next, experts or automated systems analyze these materials, correlating them with the criteria. Based on this analysis, a summary report is generated, containing not only conclusions but also personalized recommendations. It is these recommendations that become the basis for forming the teacher's individual professional development trajectory, transforming assessment from a formal procedure into a dynamic management tool.

The effective functioning of the model is based on adherence to a number of key principles: evidence-based, according to which all conclusions and decisions made in the assessment process are based not on general impressions or subjective judgments, but on specific, verified digital information and data collected from various sources. The teacher has the opportunity to confirm the results of their self-assessment with evidence that validates

their professional rating (Educator Self-Assessment and Professional Growth Key Method Self-Assessment of Professional Practice, n.d.); transparency, according to which all criteria, indicators, procedures, and assessment tools are clearly defined, open, and understandable to all participants in the educational process – teachers, administration, and members of attestation committees. This promotes trust in the system and eliminates the feeling of "unpredictability" or bias (Improving Teacher Evaluations with PowerSchool Perform. (2019, September 11); multifacetedness (360-degree approach), which prevents the assessment of professional activity from being one-sided. The system involves collecting and analyzing data from various sources, which makes it possible to obtain a comprehensive and balanced view of the teacher's work. This includes: educator self-assessment, expert assessment (observations by administration, mentor colleagues), as well as feedback from students and their parents (SurveyPlanet, 2025); development-orientation, according to which the main goal of the system is to identify the strengths of the teacher's professional development. The assessment results form the basis for developing an individual professional development plan and selecting appropriate forms of professional development. The system stimulates reflection and the desire for self-improvement (Teacher Evaluations, 2023); technological feasibility and flexibility, meaning the system is based on modern, accessible, and user-friendly digital platforms. At the same time, it is flexible enough to

be adapted to the specifics of a particular general secondary education institution, as well as to integrate new technological solutions based on artificial intelligence (Mikk Granström & Piret Oppi, 2025). Adherence to these principles will make it possible to transform the assessment process from a formal bureaucratic procedure into a powerful tool for education quality management and an effective mechanism for supporting the professional development of pedagogical workers.

In the context of the digital transformation of education, traditional methods of assessing teachers' professional activities, which largely rely on episodic observations and the analysis of paper documentation, are losing their effectiveness and objectivity. There is an urgent need to develop and implement a scientifically grounded e-assessment model based on the analysis of digital evidence and information systematically generated in the modern educational environment. Such a model makes it possible to move from subjective judgments to judgments based on reliable information and data, where conclusions about the educator's level of professional competence are formed based on verified data from information systems. The basis of the model consists of a system of criteria that correspond to the key labor functions of the teacher. For each criterion, specific digital indicators are defined, which capture the results of the teacher's professional activity in the electronic environment and can be confirmed by specific data from information systems (Table 1).

Table 1

Criteria, Indicators, and Digital Indicators for Assessing a Teacher's Professional Activity

Labor Function (Standard, 2024)	Assessment Criterion	Indicator	Digital Indicator	Data Source	Metric Type
Teaching learners subjects (integrated courses)	Application of modern educational approaches and technologies	Diversity of educational technologies and resources	• Number of types of digital resources used (video, tests, simulations, interactive exercises). • Frequency of using tools for collaboration (online whiteboards, shared documents).	LMS (lesson materials library)	Quantitative

		Implementation of individual educational trajectories	• Presence of differentiated homework assignments (yes/no, frequency). • Use of adaptive tests (yes/no, frequency).	LMS (task and testing modules)	Quantitative , qualitative
Partnership-based interaction with participants in the educational process	Effectiveness of communication	Quality and promptness of interaction with students	• Average response time to student inquiries in chat/forum. • Ratio of constructive/developmental feedback to summative (based on NLP analysis or expert assessment).	LMS (internal messenger, comments on tasks)	Quantitative , qualitative
		Systemic interaction with parents/guardians	• Regularity of informational newsletters for parents. • Frequency of information updates on the class page/blog.	Communication module with parents, e-daybook	Quantitative
Participation in organizing a safe and healthy educational environment	Creation of an inclusive and safe environment	Ensuring the accessibility of learning materials	• Presence of materials corresponding to universal design principles (e.g., video with subtitles) (in % of the total quantity).	LMS (materials library)	Quantitative
Implementation of the educational process	Effectiveness of planning and design	Systemic nature and quality of calendar-thematic planning (CTP)	• Timeliness of CTP completion (in % of the set deadline). • Completeness of CTP (in % of lessons with defined topics and types of work). • Presence of attached educational resources (in % of lessons).	E-journal (CTP module)	Quantitative , calculated
	Systemic nature and quality of assessment	Application of formative and summative assessment	• Ratio of the number of formative to summative assessments. • Diversity of assessment forms recorded in the e-journal (test, project, oral response, etc.).	E-journal	Quantitative , calculated
		Providing detailed feedback	• Percentage of grades accompanied by a text/audio comment. • Content analysis of comments (focus on advice for improvement).	E-journal, e-daybook (comments on grades)	Quantitative , qualitative
	Analysis and correction of the educational process	Use of assessment data for correction	• Frequency of teacher viewing analytical reports on performance. • Presence of notes in the CTP regarding correction	Analytical module of the platform, e-journal	Quantitative , qualitative

			based on assessment results.		
Continuous professional development	Systemic nature of professional development	Formal and non-formal education	• Number of professional development course hours during the inter-attestation period. • Presence of certificates confirming proficiency in new methodologies.	Teacher's digital portfolio	Quantitative
	Innovative and methodological activity	Dissemination of one's own pedagogical experience	• Number of original educational resources created and shared with colleagues. • Participation in professional communities, webinars, conferences (confirmed by uploaded documents).	LMS (resource library), digital portfolio	Quantitative, qualitative

Compiled by the author based on a synthesis of the sources used.

Metric type: quantitative – reflected in numbers, percentages, frequency, ratios. (e.g., number of types of digital resources, average response time, percentage of lessons with resources); qualitative – a descriptive characteristic that assesses quality, content, relevance (e.g., content analysis of comments, presence of differentiated tasks); calculated – obtained by calculation based on quantitative data. (e.g., ratio of formative to summative assessments, completeness of calendar-thematic planning (in %).

The criterion – teaching learners subjects (integrated courses) – assesses the teacher's ability to effectively design and implement the educational process using modern digital tools. The analysis not only of the final result but also of the learning process itself, which leaves numerous "digital footprints," becomes key. Unlike paper-based notes, electronic calendar-thematic and lesson plans, stored in cloud repositories or LMS, allow for the assessment of planning quality. Analysis of such plans makes it possible to see how deeply the teacher integrates digital educational resources (hereinafter – DER) into the lesson structure, whether they plan differentiated and individual work, and whether they use innovative pedagogical technologies. The effectiveness of using DER and online platforms is another important indicator. Modern educational platforms and LMS generate large volumes of data that can be used for assessment. The analytical

modules of these systems provide objective statistics on how often the teacher and students use certain resources, how much time they spend on tasks, and which types of content (video, simulations, interactive exercises) are most in demand. This data allows for assessing whether the use of technology is pedagogically justified and whether it contributes to increasing learner engagement. One of the greatest advantages of the digital environment is the ability to apply learning analytics to track learner progress. As researchers note, learning analytics is the measurement, collection, analysis, and reporting of data about learners and their learning outcomes for the purpose of understanding and optimizing the educational process (Siemens & Gasevic, 2012). Data from electronic gradebooks, supplemented by the results of regular online tests and diagnostic works, allow the teacher (and thus, the assessment system) to see the dynamics of each student's learning achievements, identify difficulties in a timely manner, and adjust the educational trajectory. This transforms assessment from summative to formative. Furthermore, the LMS provides unique opportunities for organizing differentiated learning: the teacher can create tasks of varying difficulty levels, form individual learning routes for students with different educational needs, which is easily verified based on the analysis of the subject's structure and electronic content.

Partnership-based interaction with participants in the educational process is a criterion for effective communication, which leaves a clear, documented trace in the digital environment. The effectiveness of digital communication with parents and students can be assessed not only by formal signs (number of messages) but also by content-related ones (promptness of feedback, quality of information). Analysis of communication in electronic daybooks, on school electronic platforms, or in messengers, supplemented by the results of anonymous online surveys of parents and students, provides an objective picture of the level of satisfaction with the interaction. An important indicator of this criterion is the teacher's ability to organize online interaction and collaboration among students, which is a key skill of the 21st century. The use of forums for discussions, organization of group projects using shared online documents (e.g., Google Docs, Miro, etc.), and the use of breakout rooms during video conferences – all these are verified evidence of the development of students' collaboration skills. The edit history of shared documents and activity logs in the LMS make it possible to assess the contribution of each student and the teacher's facilitative role. The teacher's professionalism is also manifested in their readiness for digital collegial collaboration. Active participation in virtual professional communities, joint development of educational materials with colleagues in cloud services, and exchange of experience in professional networks are indicators of openness to innovation and the ability to work in a team. These aspects are easily confirmed by hyperlinks to joint projects, analysis of activity in working groups, or on educational forums.

The criterion – organization of a safe and healthy educational environment – is inextricably linked to the digital space. For example, the teacher's activity in forming students' digital citizenship skills is critically important. An indicator of this work is systematic educational activity: posting high-quality, verified materials on cybersecurity, media literacy, digital ethics, and mental health on the course pages in the LMS or on the school website. The presence of such resources and their discussion with students is proof of the teacher's preventive work. In addition to education, the teacher is responsible for creating safe online spaces for

learning. This involves the clear formulation and dissemination of digital ethics rules during online classes and chat communication, as well as effective moderation of discussions to prevent cyberbullying. Chat and forum logs (in compliance with ethical norms and confidentiality) can serve as proof of both the establishment of rules and the teacher's adequate response to their violation. To diagnose the general state of affairs, an effective tool is the online monitoring of the psychological climate based on regular anonymous student surveys, which allow for honest feedback regarding the sense of safety and comfort in the educational environment created by the teacher.

As for the criterion – implementation of the educational process – it focuses on the managerial and reflective aspects of the professional activity of a teacher at a general secondary education institution. Accurate and timely maintenance of electronic documentation, particularly the electronic gradebook, is not just an administrative requirement, but an indicator of their professional responsibility and discipline. The correctness of data in information systems is the foundation for any further analytics and managerial decision-making.

The use of tools for formative assessment of students' learning outcomes is of particular importance. As researchers note, the main purpose of such assessment is not to assign a grade, but to obtain information for adjusting instruction (Black & Wiliam, 2009). The electronic environment provides a multitude of tools for this (Kahoot!, Google Forms, Mentimeter). However, the indicator is not the mere fact of their use, but the analysis of the data obtained: how the results of short surveys influence the teacher's subsequent actions, how they adapt the lesson in response to identified gaps in students' knowledge. The pinnacle of a teacher's professionalism is their ability for systematic digital reflection and self-analysis. The practice of maintaining an e-portfolio, where the teacher not just collects information about the results of their professional activity (certificates, developments), but also analyzes them, is a powerful tool for professional growth (Schön, 1983). In the e-portfolio, the teacher can post analytical notes on lessons conducted, links to their video recordings, analyze successes and failures, and set goals for further improvement. This makes the process of

professional reflection visible, structured, and available for analysis.

The criterion – continuous professional development – is key in the era of lifelong learning. The teacher's professional development e-portfolio becomes the central tool for recording and verifying this process. Unlike a paper folder, a digital portfolio allows for providing direct links to profiles on educational platforms (e.g., Coursera, Prometheus), and digital versions of certificates and credentials, which are easily verified. This ensures the transparency and reliability of information about professional development. An important indicator of this criterion is the teacher's readiness to disseminate their own experience online. Maintaining a professional blog, posting publications and methodological developments on educational portals, and speaking at online conferences and webinars testify not only to a high level of professional training but also to leadership qualities and the teacher's contribution to the development of the professional community. These activities are easily verified via hyperlinks and leave a lasting digital footprint. Finally, an indicator of a conscious approach to one's own professional growth is the formation of an individual educational trajectory. The existence of an individual professional development plan in electronic format, with clearly defined goals, resources, and expected outcomes, as well as a regular report on its implementation supported by digital evidence, demonstrates strategic thinking and the teacher's responsibility for their career development. The proposed e-assessment model is based on the analysis of digital evidence and creates conditions for an objective, comprehensive, and transparent analysis of the professional activities of teachers at general secondary education institutions. Its goal is not total control, but the provision of high-quality feedback to stimulate the continuous professional improvement of teachers in the digital society.

The implementation of the e-assessment model is impossible without the selection of adequate digital tools and platforms that allow for the collection, systematization, and analysis of evidence of the teacher's professional activity. The choice of specific tools depends on the assessment goals, available resources, and the level of digital

literacy of the participants. They can be conditionally divided into several groups:

first, platforms for creating e-portfolios, which are a central element of the system where the teacher can present their achievements. For its creation, the following can be used: website builders: Google Sites, Tilda, Wix. They allow for the creation of a personalized webpage with a flexible structure, integration of multimedia materials, and links to cloud services; blogging platforms: Blogger, WordPress for maintaining professional blogs that reflect the dynamics of the teacher's reflection and professional inquiry; specialized portfolio platforms: Mahara, Pathbrite. Although they are less common in Ukraine, they offer ready-made templates specifically oriented towards educational goals. Research by Ukrainian scientists confirms that the use of e-portfolios promotes the development of a teacher's reflective skills and makes the attestation procedure more transparent (Lytvynova & Burov, 2020);

second, LMS and online platforms. Systems such as Moodle, Google Classroom, Microsoft Teams, as well as the All-Ukrainian School Online, are not only an environment for organizing learning but also a powerful source of data for the e-assessment of the professional activity of a teacher at a general secondary education institution. Built-in analytics tools allow for tracking student activity, the dynamics of their success, the types of tasks the teacher uses, and the quality of the feedback provided. This makes it possible to indirectly assess their subject-methodological, organizational, and assessment-analytical competencies (Hladun, 2020);

third, tools for collecting feedback (360-degree assessment). To implement this e-assessment model, tools for conducting anonymous online surveys are necessary. The most accessible are Google Forms, Microsoft Forms, SurveyMonkey, and Mentimeter. They allow for the quick creation of questionnaires for students, parents, and colleagues, automatic processing of results, and their visualization in the form of diagrams, which ensures confidentiality and reduces the labor-intensiveness of data collection;

fourth, cloud services for storage and collaboration, in particular, services like Google Drive, OneDrive, and Dropbox are indispensable for

storing digital documents (lesson plans, presentations, videos) and organizing joint work on them, which can be proof of the teacher's capacity for pedagogical partnership;

fifth, platforms for professional development. The teacher's accounts on platforms for mass open online courses (Prometheus, EdEra, Coursera), educational portals ("Na Urok", "Vseosvita"), and participation in webinars are direct evidence of their capacity for lifelong learning. Information about completed courses and received certificates is easily integrated into the e-portfolio. The selection and integration of these tools into the e-assessment system for the professional activity of pedagogical staff is a complex managerial task that requires the development of clear regulations, methodological support for teachers, and the provision of the necessary digital infrastructure in the general secondary education institution.

Conclusions. Based on the analysis conducted, it can be stated that the implementation of e-assessment of a teacher's professional activity is a natural stage in the digital transformation of general secondary education, enabling a transition from episodic and subjective control methods to objective, evidence-based, and multifaceted analysis. The developed e-assessment, based on the professional standard of a teacher at a general secondary education institution, creates a holistic integrative framework that combines normative-target, criteria-indicator, instrumental-technological, and resultant-analytical components.

List of references

Black, P., & Wiliam, D. (2009). Developing the theory of formative assessment. *Educational Assessment, Evaluation and Accountability*, 21(1), 5–31. <https://doi.org/10.1007/s11092-008-9068-5>

Educator Self-Assessment and Professional Growth Key Method Self-Assessment of Professional Practice. (n.d.). https://ideaslms.aetn.org/pluginfile.php/211436/mod_resource/content/4/Educator%20Self-Assessment%20MC%20-%20updated%20Jan2024.pdf

Improving Teacher Evaluations with PowerSchool Perform. (2019, September 11). PowerSchool. <https://www.powerschool.com/case-studies/improving-teacher-evaluations-with-powerschool-unified-talent-perform/>

Malik, S., Ansari, A., & Ananga, E. (n.d.). Diego Luna-Bazaldúa Senior Education Specialist World Bank Namrata Tognatta Senior Education Specialist World Bank Lily Mulatu Bishop Lawrence Sarpong Deputy Registrar (Operations) National Teaching Council. Retrieved October 5, 2025.

The key core of the e-assessment model is the system of criteria corresponding to the main labor functions of the teacher, and their corresponding indicators and digital indicators. These indicators capture the real results of the teacher's activity in the electronic environment, based on the analysis of "digital footprints" and verified data from information systems. This approach ensures objectivity, as conclusions are based on authentic digital documents, such as analytics from LMS, e-portfolios, online survey data, and the history of digital interaction.

The effectiveness of the proposed e-assessment model is determined by adherence to fundamental principles: evidence-based, transparency, multifacetedness (360-degree approach), technological feasibility, and, most importantly, orientation towards development. The main goal of e-assessment is not control, but providing the teacher with high-quality, well-grounded feedback that stimulates their professional reflection and becomes the basis for designing an individual trajectory of professional development.

The practical implementation of the model necessitates the integration of various digital tools, including platforms for e-portfolios, learning management systems, services for collecting feedback, and cloud storage. Successful implementation of such a model transforms assessment from a formal bureaucratic procedure into an effective managerial mechanism aimed at improving the quality of general secondary education by supporting the continuous professional improvement of pedagogical staff.

<https://thedocs.worldbank.org/en/doc/a987c04e728fb8b09b315cb50f7842a4-0510022024/original/Classroom-based-assessment.pdf>

Mikk Granström, & Piret Oppi. (2025). Assessing teachers' readiness and perceived usefulness of AI in education: an Estonian perspective. *Frontiers in Education*, 10. <https://doi.org/10.3389/feduc.2025.1622240>

Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. Basic Books. https://raggeduniversity.co.uk/wp-content/uploads/2025/03/1_x_Donald-A.-Schon-The-Reflective-Practitioner_-How-Professionals-Think-In-Action-Basic-Books-1984_redactedaa_compressed3.pdf

Siemens, G., & Gasevic, D. (2012). Guest editorial - Learning and knowledge analytics. *Educational Technology & Society*, 15(3), 1–2. https://www.j-ets.net/ETS/journals/15_3/1.pdf

SurveyPlanet. (2025). *SurveyPlanet*. <https://surveyplanet.com/examples/education-surveys/teacher-surveys>

Teacher Evaluations. (2023). Ohio.gov. <https://sboe.ohio.gov/educator-standards-and-programs/educator-evaluations/teacher-evaluations/teacher-evaluations>

Атестація 2024/2025 (2024). Ptu.in.ua. <https://nvvpvpu.ptu.in.ua/atestaciya-20242025-nr-11-25-29-28-11-2024/>

Биков, В. Ю. (2019). Цифрова трансформація суспільства і розвиток комп'ютерно-технологічної платформи освіти і науки України. *Інформаційно-цифровий освітній простір України: трансформаційні процеси і перспективи розвитку*. https://lib.iitta.gov.ua/id/eprint/718692/1/Microsoft%20Word%20-%20%D0%91%D0%B8%D0%BA%D0%BE%D0%B2%20%D0%92_2019_2.pdf

Биков, В. Ю., Буров, О. Ю., Гуржій, А. М., Жалдак, М. І., Лещенко, М. П., Литвинова, С. Г., ... & Шишкіна, М. П. (2019). *Теоретико-методологічні засади інформатизації освіти та практична реалізація інформаційно-комунікаційних технологій в освітній сфері України*. Київ: Компрінт. <https://lib.iitta.gov.ua/id/eprint/718652/>

Бібік, Н. М. (2004). *Компетентнісний підхід у сучасній освіті: світовий досвід та українські перспективи*. Київ: К.І.С. <https://epdf.pub/-80b27f4fa559fddae6d2fd66ff669afc1001.html>

Білик, Н. І., Пилипенко, В. В., & Шостя, С. П. (2023). Розвиток цифрової компетентності педагогічних працівників у системі післядипломної освіти. *Імідж сучасного педагога*, (6(195), 15–20. [https://doi.org/10.33272/2522-9729-2020-6\(195\)-15-20](https://doi.org/10.33272/2522-9729-2020-6(195)-15-20)

Брусов, Ю. В. (2024). Особливості сертифікації педагогічних працівників у США. *Наукові записки молодих учених*, (13). <https://phm.cuspu.edu.ua/ojs/index.php/SNYS/article/download/2113/2158>

Ващенко, Л. С. (2020). Професійний розвиток педагогів в умовах реформ: мотивація та оцінювання. *Освітній простір України*, (45), 102–110.

Волощук, А. М. (2012). *Формування методичної компетентності майбутніх учителів гуманітарного профілю у процесі педагогічної практики*. (Дис. канд. пед. наук). Житомирський державний університет імені Івана Франка. http://eprints.zu.edu.ua/8192/1/Voloshchuk_autoref.pdf

Гладун, М. А. (2020). Використання аналітики навчальних даних у системах управління навчанням для моніторингу якості освітнього процесу. *Вісник Житомирського державного університету імені Івана Франка. Педагогічні науки*, 102, 23–32. [https://www.google.com/search?q=https://doi.org/10.35433/pedagogy.1\(102\).2020.23-32](https://www.google.com/search?q=https://doi.org/10.35433/pedagogy.1(102).2020.23-32)

Гуменний, О. (2025). Розвиток цифрової компетентності викладачів професійно-теоретичної підготовки в процесі використання цифрової платформи «smart ecosystem for students». *Професійна педагогіка*, 1(30), 221–230. <https://doi.org/10.32835/2707-3092.2025.30.221-230>

Добош, О. М. (2019). Атестація та сертифікація педагогів як аспект їх професійного розвитку та вид оцінювання. Мукачівський державний університет. http://dspace-s.msu.edu.ua:8080/bitstream/123456789/4191/1/Certification_and_certification_teachers_aspect_their_professional_development_and_type_assessment.pdf

Жук, Ю. О. (2012). Інформаційно-комунікаційна компетентність педагога: критерії оцінювання якості електронних освітніх ресурсів. *Інформаційні технології і засоби навчання*, 30(2), 12–19.

Закон України «Про освіту». (2017, 05 вересня). <https://zakon.rada.gov.ua/laws/show/2145-19#Text>

Закон України «Про повну загальну середню освіту». (2020, 16 січня). <https://zakon.rada.gov.ua/laws/show/463-20#Text>

Затверджено професійний стандарт «Вчитель закладу загальної середньої освіти.» (2024, 09 вересня). Міністерство освіти і науки України. <https://mon.gov.ua/news/informatsiine-povidomlennia>

Кремень, В. Г. (2023). Філософія людиноцентризму в системі сучасних цінностей. *Вісник Національної академії педагогічних наук України*, 5(1), 1-6. <https://visnyk.naps.gov.ua/index.php/journal/article/download/367/428>

Литвинова, С. Г., & Буров, О. Ю. (Ред.). (2020). *Технології хмаро орієнтованого навчального середовища в неперервній освіті*. ІТЗН НАПН України.

Лукіна, Т. О. (2020). *Управління якістю загальної середньої освіти: навчально-методичний посібник*. Київ: педагогічна думка. http://library.megu.edu.ua:8180/jspui/bitstream/123456789/3621/1/2020-%D0%9B%D1%83%D0%BA%D1%96%D0%BD%D0%B0_%D0%BF%D0%BE%D1%81%D1%96%D0%B1%D0%BD%D0%B8%D0%BA_New.pdf

Ляшенко, О. І., & Топузов, О. М. (2021). Науковий супровід модернізації змісту базової середньої освіти: проблеми і виклики. *Український педагогічний журнал*, 4, 29-36. <https://uej.undip.org.ua/index.php/journal/article/view/247/194>

Ляшенко, О. І., Лукіна, Т. О., Жук, Ю. О., Ващенко, Л. С., Гривко, А. В., & Науменко, С. О. (2017). Теоретико-методичні засади побудови моніторингових систем оцінювання якості загальної середньої освіти. Джерело???

Мар'єнко, М.В., Шишкіна, М. П., Коновал, О.А. (2019). Науково-методичні засади проектування хмаро орієнтованого освітньо-наукового середовища у закладі вищої освіти. <https://lib.iitta.gov.ua/id/eprint/731173/1/document.pdf>

Морзе, Н. В., & Гладун, М. А. (2022). Цифрові інструменти для оцінювання цифрової компетентності вчителів нової української школи. *Відкрите освітнє е-середовище сучасного університету*, (12), 107–118. <https://openedu.kubg.edu.ua/journal/index.php/openedu/article/view/514/464>

Наказ МОН України «Про затвердження Положення про атестацію педагогічних працівників». (2022, 09 вересня). <https://zakon.rada.gov.ua/laws/show/z1649-22#Text>

Наказ МОН України «Про затвердження професійного стандарту «Вчитель закладу загальної середньої освіти» (2024, 29 серпня). <https://mon.gov.ua/npa/pro-zatverdzhennia-profesiinoho-standartu-vchytel-zakladu-zahalnoi-serednoi-osvity>

Оксана Ісаєва, & Роксолана Алексєєва. (2021). Е-портфоліо вчителя середньої школи як технологія професійного зростання. *Молодь і ринок*, 2/188. <https://doi.org/10.24919/2308-4634.2021.230489>

Постанова Кабінету міністрів України «Деякі питання підвищення кваліфікації педагогічних і науково-педагогічних працівників» (2019, 21 серпня). <https://zakon.rada.gov.ua/laws/show/800-2019-%D0%BF#Text>

Пригодій М.А., Гуржій А.М., Радкевич О.П., Кононенко А.Г., Гуменний О.Д. (2022). *Технологія створення цифрового портфоліо здобувачів професійної освіти: методичні рекомендації*. Київ: ІТЗ НАПН України. – 81 с. <https://lib.iitta.gov.ua/id/eprint/733746>

Савченко, О. Я. (2019). *Нова українська школа: поради для вчителя*. Київ: Літера ЛТД. <https://uied.org.ua/wp-content/uploads/2020/07/nus-poradnyk.pdf>

Шевчук, С. С. (2019). Електронне портфоліо як інструмент оцінювання рівня професійної компетентності педагога вищої школи. *Імідж сучасного педагога*, 5 (188), 57-63. <https://isp.pano.pl.ua/article/download/182930/184747>

Шишкіна, М. П., Литвинова, С. Г., Мар'єнко, М. В., Носенко, Ю. Г., Коваленко, В. В. Лупаренко, Л. А., & Сухих, А. С.; Шишкіна, М. П. (ред.). (2023). *Хмаро орієнтовані системи відкритої науки у навчанні інпрофесійному розвитку вчителів : монографія*. Київ : ІТЗ НАПН України. <https://lib.iitta.gov.ua/id/eprint/738012>

Translated & Transliterated

Black, P., & Wiliam, D. (2009). Developing the theory of formative assessment. *Educational Assessment, Evaluation and Accountability*, 21(1), 5–31. <https://doi.org/10.1007/s11092-008-9068-5> [in English].

Educator Self-Assessment and Professional Growth Key Method Self-Assessment of Professional Practice. (n.d.). https://ideaslms.aetn.org/pluginfile.php/211436/mod_resource/content/4/Educator%20Self-Assessment%20MC%20-%20updated%20Jan2024.pdf [in English].

Improving Teacher Evaluations with PowerSchool Perform. (2019, September 11). PowerSchool. <https://www.powerschool.com/case-studies/improving-teacher-evaluations-with-powerschool-unified-talent-perform/> [in English].

Malik, S., Ansari, A., & Ananga, E. (n.d.). Diego Luna-Bazaldua Senior Education Specialist World Bank Namrata Tognatta Senior Education Specialist World Bank Lily Mulatu Bishop Lawrence Sarpong Deputy Registrar (Operations) National Teaching Council. Retrieved October 5, 2025. <https://thedocs.worldbank.org/en/doc/a987c04e728fb8b09b315cb50f7842a4-0510022024/original/Classroom-based-assessment.pdf> [in English].

Mikk Granström, & Piret Oppi. (2025). Assessing teachers' readiness and perceived usefulness of AI in education: an Estonian perspective. *Frontiers in Education*, 10. <https://doi.org/10.3389/feduc.2025.1622240> [in English].

Schön, D. A. (1983). The reflective practitioner: How professionals think in action. Basic Books. https://raggeduniversity.co.uk/wp-content/uploads/2025/03/1_x_Donald-A.-Schon-The-Reflective-Practitioner_-How-Professionals-Think-In-Action-Basic-Books-1984_redactedaa_compressed3.pdf [in English].

Siemens, G., & Gasevic, D. (2012). Guest editorial - Learning and knowledge analytics. *Educational Technology & Society*, 15(3), 1–2. https://www.j-ets.net/ETS/journals/15_3/1.pdf [in English].

SurveyPlanet. (2025). SurveyPlanet. <https://surveyplanet.com/examples/education-surveys/teacher-surveys> [in English].

Teacher Evaluations. (2023). Ohio.gov. <https://sboe.ohio.gov/educator-standards-and-programs/educator-evaluations/teacher-evaluations/teacher-evaluations> [in English].

Atestatsiia 2024/2025 [Certification 2024/2025]. (2024). Ptu.in.ua. <https://nvvp.pu.in.ua/atestaciya-20242025-nr-11-25-29-28-11-2024/>, [in Ukrainian].

Bykov, V. Yu. (2019). *Tsyfrova transformatsiia suspilstva i rozvytok kompiuterno-tekhnologichnoi platformy osvity i nauky Ukrainy* [Digital transformation of society and development of the computer-technological platform for education and science of Ukraine]. Informatsiino-tsyfrovyi osvittii prostir Ukrainy: transformatsiini protsesy i perspektyvy rozvytku [Information-digital educational space of Ukraine: transformation processes and development prospects]. https://lib.iitta.gov.ua/id/eprint/718692/1/Microsoft%20Word%20-%20%D0%91%D0%B8%D0%BA%D0%BE%D0%B2%20%D0%92_2019_2.pdf, [in Ukrainian].

Bykov, V. Yu., Burov, O. Yu., Hurzhii, A. M., Zhdak, M. I., Leshchenko, M. P., Lytvynova, S. H., ... & Shyshkina, M. P. (2019). *Teoretyko-metodolohichni zasady informatyzatsii osvity ta praktychna realizatsiia informatsiino-komunikatsiinykh tekhnolohii v osvittii sferi Ukrainy* [Theoretical and methodological principles of education informatization and practical implementation of information and communication technologies in the educational sphere of Ukraine]. Kyiv: Komprynt [Kyiv: Comprint]. <https://lib.iitta.gov.ua/id/eprint/718652/>, [in Ukrainian].

Bibik, N. M. (2004). *Kompetentnisnyi pidkhid u suchasni osviti: svitovi dosvid ta ukrainski perspektyvy* [Competence-based approach in modern education: world experience and Ukrainian prospects]. Kyiv: K.I.S. [Kyiv: K.I.S.]. <https://epdf.pub/-80b27f4fa559fddae6d2fd66ff669afc1001.html>, [in Ukrainian].

Bilyk, N. I., Pylypenko, V. V., & Shostia, S. P. (2023). Rozvytok tsyfrovoy kompetentnosti pedahohichnykh pratsivnykiv u systemi pisliadyplomnoi osvity [Development of digital competence of pedagogical workers in the system of postgraduate education]. *Imidzh suchasnoho pedahoha*, (6(195), 15–20. [https://doi.org/10.33272/2522-9729-2020-6\(195\)-15-20](https://doi.org/10.33272/2522-9729-2020-6(195)-15-20), [in Ukrainian].

Brusov, Yu. V. (2024). Osoblyvosti sertyfikatsii pedahohichnykh pratsivnykiv u SShA [Peculiarities of certification of pedagogical workers in the USA]. *Naukovi zapysky molodykh uchenykh* [Scientific notes of young scientists], (13). <https://phm.cuspu.edu.ua/ojs/index.php/SNYS/article/download/2113/2158>, [in Ukrainian].

Vashchenko, L. S. (2020). Profesiyni rozvytok pedahohiv v umovakh reform: motyvatsiia ta otsiniuvannia [Professional development of teachers in the context of reforms: motivation and assessment]. *Osvitnii prostir Ukrainy* [Educational space of Ukraine], (45), 102–110, [in Ukrainian].

Voloshchuk, A. M. (2012). *Formuvannia metodychnoi kompetentnosti maibutnikh uchyteliv humanitarnoho profilu u protsesi pedahohichnoi praktyky* [Formation of methodological competence of future teachers of humanitarian profile in the process of pedagogical practice]. (Dys. kand. ped. nauk) [PhD in Pedagogy dissertation]. Zhytomyrskyi derzhavnyi universytet imeni Ivana Franka [Zhytomyr Ivan Franko State University]. http://eprints.zu.edu.ua/8192/1/Voloshchuk_autoref.pdf, [in Ukrainian].

Hladun, M. A. (2020). Vykorystannia analityky navchalnykh danykh u systemakh upravlinnia navchanniam dlia monitorynhu yakosti osvitnoho protsesu [The use of learning analytics in learning management systems to monitor the quality of the educational process]. *Visnyk Zhytomyrskoho derzhavnoho universytetu imeni Ivana Franka. Pedahohichni nauky* [Zhytomyr Ivan Franko State University Journal. Pedagogical Sciences], 102, 23–32. [https://www.google.com/search?q=https://doi.org/10.35433/pedagogy.1\(102\).2020.23-32](https://www.google.com/search?q=https://doi.org/10.35433/pedagogy.1(102).2020.23-32), [in Ukrainian].

Humennyi, O. (2025). Rozvytok tsyfrovoi kompetentnosti vykladachiv profesiino-teoretychnoi pidhotovky v protsesi vykorystannia tsyfrovoi platformy «smart ecosystem for students» [Development of digital competence of teachers of professional-theoretical training in the process of using the digital platform "smart ecosystem for students"]. *Profesiina pedahohika* [Professional Pedagogics], 1(30), 221–230. <https://doi.org/10.32835/2707-3092.2025.30.221-230>, [in Ukrainian].

Dobosh, O. M. (2019). *Atestatsiia ta sertyfikatsiia pedahohiv yak aspekt yikh profesiinoho rozvytku ta vyd otsiniuvannia* [Attestation and certification of teachers as an aspect of their professional development and type of assessment]. Mukachivskyi derzhavnyi universytet [Mukachevo State University]. http://dspace-s.msu.edu.ua:8080/bitstream/123456789/4191/1/Certification_and_certification_teachers_aspect_their_professional_development_and_type_assessment.pdf, [in Ukrainian].

Zhuk, Yu. O. (2012). Informatsiino-komunikatsiina kompetentnist pedahoha: kryterii otsiniuvannia yakosti elektronnykh osvitnykh resursiv [Information and communication competence of a teacher: criteria for evaluating the quality of electronic educational resources]. *Informatsiini tekhnolohii i zasoby navchannia* [Information Technologies and Learning Tools], 30(2), 12–19, [in Ukrainian].

Zakon Ukrainy «Pro osvitu» [Law of Ukraine "On Education"]. (2017, 05 September). <https://zakon.rada.gov.ua/laws/show/2145-19#Text>, [in Ukrainian].

Zakon Ukrainy «Pro povnu zahalnu seredniu osvitu» [Law of Ukraine "On Complete General Secondary Education"]. (2020, 16 January). <https://zakon.rada.gov.ua/laws/show/463-20#Text>, [in Ukrainian].

Zatverdzheno profesiyni standart “Vchytel zakladu zahalnoi serednoi osvity” [The professional standard "Teacher of a general secondary education institution" has been approved]. (2024, 09 September). Ministerstvo osvity i nauky Ukrainy [Ministry of Education and Science of Ukraine]. <https://mon.gov.ua/news/informatsiine-povidomlennia>, [in Ukrainian].

Kremen, V. H. (2023). Filosofiia liudynotsentryzmu v systemi suchasnykh tsinnosti [Philosophy of humanocentrism in the system of modern values]. *Visnyk Natsionalnoi akademii pedahohichnykh nauk Ukrainy* [Bulletin of the National Academy of Educational Sciences of Ukraine], 5(1), 1–6. <https://visnyk.naps.gov.ua/index.php/journal/article/download/367/428>, [in Ukrainian].

Lytvynova, S. H., & Burov, O. Yu. (Eds.). (2020). *Tekhnolohii khmaro orientovanoho navchalnoho seredovyscha v neperervnii osviti* [Technologies of a cloud-oriented learning environment in continuous education]. IITZN NAPN Ukrainy [Institute of Information Technologies and Learning Tools of the NAPS of Ukraine], [in Ukrainian].

Lukina, T. O. (2020). *Upravlinnia yakistiu zahalnoi serednoi osvity: navchalno-metodychnyi posibnyk* [Quality management of general secondary education: a training manual]. Kyiv: Pedahohichna dumka [Kyiv: Pedagogical Thought]. http://library.megu.edu.ua:8180/jspui/bitstream/123456789/3621/1/2020-%D0%9B%D1%83%D0%BA%D1%96%D0%BD%D0%B0_%D0%BF%D0%BE%D1%81%D1%96%D0%B1%D0%BD%D0%B8%D0%BA_New.pdf, [in Ukrainian].

Liashenko, O. I., & Topuzov, O. M. (2021). Naukovyi suprovid modernizatsii zmistu bazovoi serednoi osvity: problemy i vyklyky [Scientific support for the modernization of the content of basic secondary education: problems and challenges].

education: problems and challenges]. *Ukrainskyi pedahohichnyi zhurnal* [Ukrainian Pedagogical Journal], 4, 29-36. <https://uej.undip.org.ua/index.php/journal/article/view/247/194>, [in Ukrainian].

Liashenko, O. I., Lukina, T. O., Zhuk, Yu. O., Vashchenko, L. S., Hryvko, A. V., & Naumenko, S. O. (2017). *Teoretyko-metodychni zasady pobudovy monitorynhovykh system otsiniuvannia yakosti zahalnoi serednoi osvity* [Theoretical and methodological foundations for constructing monitoring systems for assessing the quality of general secondary education]. *Dzherelo??? [Source???, [in Ukrainian].*

Marienko, M.V., Shyshkina, M. P., & Konoval, O.A. (2019). *Naukovo-metodychni zasady proiektuvannia khmaro oriientovanoho osvitno-naukovoho seredovyscha u zakladi vyshchoi osvity* [Scientific and methodological principles of designing a cloud-oriented educational and scientific environment in a higher education institution]. <https://lib.iitta.gov.ua/id/eprint/731173/1/document.pdf>, [in Ukrainian].

Morze, N. V., & Hladun, M. A. (2022). Tsyfrovi instrumenty dlia otsiniuvannia tsyfrovoi kompetentnosti vchyteliv novoi ukrainskoi shkoly [Digital tools for assessing the digital competence of teachers of the New Ukrainian School]. *Vidkryte osvितnie e-seredovyshe suchasnoho universytetu* [Open educational e-environment of a modern university], (12), 107–118. <https://openedu.kubg.edu.ua/journal/index.php/openedu/article/view/514/464>, [in Ukrainian].

Nakaz MON Ukrainy «Pro zatverdzhennia Polozhennia pro atestatsiiu pedahohichnykh pratsivnykiv» [Order of the Ministry of Education and Science of Ukraine "On the approval of the Regulation on attestation of pedagogical workers"]. (2022, 09 September). <https://zakon.rada.gov.ua/laws/show/z1649-22#Text>, [in Ukrainian].

Nakaz MON Ukrainy «Pro zatverdzhennia profesiinoho standartu «Vchytel zakladu zahalnoi serednoi osvity» [Order of the Ministry of Education and Science of Ukraine "On the approval of the professional standard "Teacher of a general secondary education institution"]. (2024, 29 August). <https://mon.gov.ua/npa/pro-zatverdzhennia-profesiinoho-standartu-vchytel-zakladu-zahalnoi-serednoi-osvity>, [in Ukrainian].

Isaieva, O., & Aleksieieva, R. (2021). E-portfolio vchytelia serednoi shkoly yak tekhnolohiia profesiinoho zrostantia [E-portfolio of a secondary school teacher as a technology for professional growth]. *Molod i rynek* [Youth and the Market], 2/188. <https://doi.org/10.24919/2308-4634.2021.230489>, [in Ukrainian].

Postanova Kabinetu ministriv Ukrainy «Deiaki pytannia pidvyshchennia kvalifikatsii pedahohichnykh i naukovo-pedahohichnykh pratsivnykiv» [Resolution of the Cabinet of Ministers of Ukraine "Some issues of professional development of pedagogical and scientific-pedagogical workers"]. (2019, 21 August). <https://zakon.rada.gov.ua/laws/show/800-2019-%D0%BF#Text>, [in Ukrainian].

Pryhodii M.A., Hurzhii A.M., Radkevych O.P., Kononenko A.H., & Humennyi O.D. (2022). *Tekhnolohiia stvorennia tsyfrovoho portfolio zdobuvachiv profesiinoy osvity: metodychni rekomendatsii* [Technology for creating a digital portfolio for applicants for vocational education: methodological recommendations]. Kyiv: IPO NAPN Ukrainy [Kyiv: IVE NAPS of Ukraine]. – 81 s. <https://lib.iitta.gov.ua/id/eprint/733746>, [in Ukrainian].

Savchenko, O. Ya. (2019). *Nova ukrainska shkola: poradnyk dlia vchytelia* [New Ukrainian School: a guide for teachers]. Kyiv: Litera LTD [Kyiv: Litera LTD]. <https://uied.org.ua/wp-content/uploads/2020/07/nus-poradnyk.pdf>, [in Ukrainian].

Shevchuk, S. S. (2019). Elektronne portfolio yak instrument otsiniuvannia rivnia profesiinoy kompetentnosti pedahoha vyshchoi shkoly [Electronic portfolio as a tool for assessing the level of professional competence of a higher school teacher]. *Imidzh suchasnoho pedahoha*, 5 (188), 57-63. <https://isp.pano.pl.ua/article/download/182930/184747>, [in Ukrainian].

Shyshkina, M. P., Lytvynova, S. H., Marienko, M. V., Nosenko, Yu. H., Kovalenko, V. V., Luparenko, L. A., & Sukhikh, A. S.; Shyshkina, M. P. (Ed.). (2023). *Khmaro oriientovani systemy vidkrytoi nauky u navchanni i profesiinomu rozvytku vchyteliv : monohrafiia* [Cloud-oriented open science systems in teacher training and professional development: monograph]. Kyiv : ITsO NAPN Ukrainy [Kyiv: ICD NAPS of Ukraine]. <https://lib.iitta.gov.ua/id/eprint/738012>, [in Ukrainian].

КРИТЕРІЇ ТА ПОКАЗНИКИ ЕЛЕКТРОННОГО ОЦІНЮВАННЯ ПРОФЕСІЙНОЇ ДІЯЛЬНОСТІ ПЕДАГОГІЧНИХ ПРАЦІВНИКІВ ЗАКЛАДІВ ЗАГАЛЬНОЇ СЕРЕДНЬОЇ ОСВІТИ

Олександр Радкевич

доктор педагогічних наук, професор, головний науковий співробітник відділу моніторингу та оцінювання Інституту педагогіки НАПН України, <https://orcid.org/0000-0002-2648-5726>,
e-mail: mr.radkevych@gmail.com

Реферат:

Актуальність дослідження зумовлена невідповідністю традиційних методів оцінювання педагогів викликам цифрової трансформації освіти. Обґрунтовано, що існуюча система атестації є суб'єктивною, бюрократизованою та не враховує специфіку професійної діяльності вчителя в сучасному цифровому середовищі. Це вимагає розроблення нової, науково обґрунтованої моделі електронного оцінювання, здатної забезпечити об'єктивний та доказовий аналіз.

Мета: розроблення та наукове обґрунтування системи критеріїв та показників для електронного оцінювання професійної діяльності педагогічних працівників закладів загальної середньої освіти.

Методи: аналіз – для критичного осмислення офіційних документів та наукових джерел з теорії педагогічного оцінювання та цифрової трансформації освіти, що дало змогу сформулювати концептуальну основу дослідження; синтез – для поєднання педагогічних, управлінських та технологічних аспектів в електронне оцінювання; моделювання – для розроблення моделі критеріїв та показників, що відображає взаємодію ключових складників та описує механізми її функціонування; узагальнення – для формування комплексних висновків.

Результати: розроблено та науково обґрунтовано електронне оцінювання професійної діяльності вчителя, що має цілісну чотирикомпонентну структуру: нормативно-цільовий, критеріально-показниковий, інструментально-технологічний та результативно-аналітичний складники; ядром моделі визначено систему критеріїв, що відповідають трудовим функціям Професійного стандарту вчителя, та відповідних їм вимірюваних цифрових показників; показано, що ці показники дозволяють фіксувати та аналізувати верифіковані дані («цифрові сліди») з інформаційних освітніх систем (LMS, електронні портфоліо, е-журнали, результати онлайн-опитувань), що перетворює процес оцінювання на об'єктивний і доказовий.

Висновки: впровадження запропонованої моделі забезпечує перехід від формального контролю до об'єктивного, багатогранного аналізу, що базується на принципах доказовості, прозорості, багатогранності (360-градусний підхід) та орієнтації на розвиток; головною метою такого оцінювання є не контроль, а надання вчителю якісного, обґрунтованого зворотного зв'язку, що стимулює його професійну рефлексію та стає основою для проєктування індивідуальної траєкторії безперервного професійного вдосконалення, перетворюючи оцінювання на дієвий інструмент управління якістю освіти.

Ключові слова: електронне оцінювання, професійний розвиток, педагогічні працівники, критерії та показники, модель, цифрова трансформація, цифрові сліди.

Manuscript received: 12.04.2025

Accepted for publication after peer review: 28.07.2025

Published: 28.08.2025



FEATURES OF QUALITY ASSURANCE IN VOCATIONAL EDUCATION AND TRAINING IN SWITZERLAND: AN ANALYSIS OF INSTITUTIONAL ARCHITECTURE AND PRACTICAL MECHANISMS

Julia Lulkova

Junior Researcher at the Laboratory of Foreign Systems of Vocational Education and Training of the Institute of Vocational Education of the National Academy of Educational Sciences of Ukraine, <https://orcid.org/0009-0008-4452-5104>, e-mail: julialulkova@gmail.com

Abstract

The relevance of this article stems from the need to substantiate the institutional architecture and specific tools for Quality Assurance (QA) in Vocational Education and Training (VET) in Switzerland. It aims to reveal the essence of the "collective partnership," the flexible two-level regulatory framework, and the comprehensive system for monitoring qualification compliance with labor market requirements as the foundation for successful VET quality management.

The aim of the article is to systematically analyze the institutional architecture, substantiate the effectiveness of practical VET QA mechanisms in Switzerland, and identify opportunities for their adaptation to improve the quality assurance system of vocational education in Ukraine.

Methods: theoretical analysis and generalization – to study analytical reports by the OECD and SERI; the normative-legal method – to characterize the Federal Act on Vocational and Professional Education and Training and sectoral VET ordinances; a systemic-structural approach – to examine the "collective partnership" mechanism and provider interaction; and comparative analysis – to highlight specific features of the Swiss QA model within the context of dual systems in other European countries.

Results: The study identified the specific features of VET quality assurance in Switzerland, namely: the functioning of the "collective partnership" institutional model, which delegates authority to the labor market to define training content; the use of a two-level regulatory framework to ensure VET system flexibility; and the application of a comprehensive control mechanism, independent qualification certification, and tools for academic permeability.

Conclusions: The quality of the Swiss VET system is achieved through an institutional architecture that harmoniously combines stable state regulation with the flexible definition of training content by the labor market. VET quality assurance is implemented through the initial licensing of providers, process monitoring of training at enterprises, vocational schools, and inter-company courses, as well as the use of self-assessment tools and the independent validation of learning outcomes.

Keywords: vocational education and training, dual VET system, quality assurance, Switzerland, collective partnership.

Introduction. The success of the Swiss Vocational Education and Training (VET) system, often referred to as the "gold standard," is the result of a complex, deeply integrated system based on three fundamental determinants: shared governance oriented toward the labor market; a flexible yet

standardized legal framework; and multi-level feedback mechanisms (ranging from company licensing to assessment tools and final qualification procedures). The direct link between the VET system and Switzerland's exceptional economic performance is undeniable. The country consistently

ranks first in the world for innovation, boasts one of the highest GDPs per capita, and maintains the lowest youth unemployment rates. Swiss economists, policymakers, and business leaders explicitly point to the dual VET system as a key factor in this economic success and competitiveness. This widespread societal and corporate conviction—that VET is a driver of national prosperity—functions in itself as a powerful, self-reinforcing quality assurance mechanism. The most potent mechanism of VET quality is not a law or an exam, but societal consensus and economic motivation.

The Swiss VET system evolves because companies believe in it. This belief motivates approximately 30% of all Swiss companies to actively participate in student training and to invest significant financial and human resources in this process. They invest around 5.8 billion francs annually in VET not out of altruism, but because it is their primary strategy for recruiting qualified personnel and ensuring their own competitiveness. These substantial investments create a self-reproducing cycle: investment, high productivity, and confirmation of belief. The premise is that companies invest time and money in apprentices, and having invested resources, they demand a high return. Companies actively participate in the development of VET ordinances (BiVo) and the conduct of final examinations (QV) to guarantee that graduates meet their high standards. Trained according to these standards, graduates become highly productive employees who generate innovation and profit for the companies.

Sources. To obtain objective conclusions regarding the effectiveness of the VET quality assurance system in Switzerland, three groups of studies were analyzed: comparative works on dual training systems, reports from international monitoring organizations, and national strategic documents. Works comparing the Swiss model with the German and Austrian models are of particular scientific value, as they allow for the isolation of unique features of the Swiss approach to VET quality. Specifically, the fundamental study "Germany's dual vocational training system: A model for other countries?" debunks the myth that the Swiss dual system is a monolithic construction. D. Euler analyzes differences in governance. In the

context of the research problem, this work is key to arguing the thesis of the "radical role of the market." The study proves that although Germany and Switzerland have a similar training structure, Swiss professional business organizations (OdA) have significantly broader powers in defining training content and forming qualification profiles than German Chambers of Commerce and Industry, which perform more administrative and supervisory functions (Euler, 2013). L. Graf's research results focus on the problem of "dead ends" in VET. The author analyzes in detail the mechanisms of hybridization—the combination of academic and vocational learning. This work serves as the basis for the "academic permeability" of VET and the "Federal Vocational Baccalaureate" (Berufsmaturität), as Switzerland, unlike Austria, has created the most institutionalized transition from VET to Universities of Applied Sciences, which is a critical factor in ensuring the high quality of entrants into the VET system (Graf, 2013).

Reports from international organizations regarding the external audit of VET quality in Switzerland—specifically the results of independent verification beyond national self-assessment—are of scientific interest. In particular, the OECD report (2021) analyzes the human capital potential of the VET system based on requirements for teachers and in-company trainers. The study reveals requirements for mandatory pedagogical training for trainers in the workplace (even for short-term roles), which are unique input quality criteria absent in many other countries. Data from the OECD report (2022) contain results of annual monitoring, providing statistical confirmation of the link between the dual system and the labor market; indicators such as youth unemployment rates and the percentage of the population with tertiary vocational education serve as empirical evidence of the economic efficiency of the VET quality assurance model in Switzerland. The report also critically reveals issues regarding the financing of higher vocational education. National strategic and regulatory documents, particularly those of the Swiss State Secretariat for Education, Research and Innovation (SERI), define mechanisms for adapting the educational system to dynamic changes. Studies of this document show exactly how the state provides the toolkit, while

industries use it to update BiVo, serving as evidence of the system's flexibility (State Secretariat for Education, Research and Innovation, 2018).

The results of the analysis of the Federal Act on Vocational and Professional Education and Training (The Federal Council, 2002) allowed for the identification of the specific legal basis for decentralized responsibility for VET quality. Furthermore, the structure of BiVo can be considered a typical document in which not only the result (qualification) is standardized, but also the process (distribution of hours among three learning locations), which is a unique characteristic of the Swiss VET standardization system. Approaches justifying that VET quality in Switzerland relies on the economic interest of employers (cost-benefit ratio), rather than state coercion, are disclosed in the study "Vocational Education and Training in Switzerland" (Berufsbildung Schweiz, 2024).

The aim of the article is to systematically analyze the institutional architecture, substantiate the effectiveness of practical mechanisms for ensuring VET quality in Switzerland, and clarify the possibilities for considering them in improving the quality assurance system of vocational education in Ukraine.

Methods: Theoretical analysis and generalization—to study analytical reports by the OECD and SERI; the normative-legal method—to characterize the Federal Act on Vocational and Professional Education and Training and industry-specific VET ordinances; the systemic-structural approach—to reveal the mechanism of "collective partnership" and provider interaction; and comparative analysis—to isolate specific features of the Swiss quality assurance model against the background of dual systems in other European countries.

Results and Discussion. The legal basis for the development of the entire VET system in Switzerland is the Federal Act on Vocational and Professional Education and Training (VPETA). This is a "framework" law without rigid detailing of educational content (The Federal Council, 2002). Instead, it defines the fundamental principles of the system: the roles of the three partners (Confederation, Cantons, Professional Associations/Business), the structure of the three

learning locations, the roles of partnership, requirements for apprenticeship contracts, the structure of QV exams, the general goals of the VET system, basic rights and duties of students, and general principles of qualification procedures. This approach leaves significant space for implementation and content formation by representatives of the Cantons, Professional Associations, and Organizations of the World of Work (OdA) themselves. From a quality assurance perspective, Article 8 of the Federal Act on Vocational and Professional Education and Training is key. This short but powerful article legally obliges all VET providers without exception to ensure and develop the quality of their services (Swiss Education System, n.d.-a). This represents a fundamental shift from a model of "external control" to a model of "internal responsibility." The law does not merely allow, but requires every participant in the VET system to be an active agent of quality, creating a decentralized but legally binding culture of improvement.

If VPETA is the "constitution" of the system, then the BiVo ordinances are its "executive laws." They are the heart of daily VET quality regulation. For each of the approximately 250 professions recognized at the federal level, there is a separate, detailed BiVo, developed by the relevant OdA and officially issued (and approved) by SERI (vocationaleducation.ch, n.d.). BiVo are extremely powerful instruments for ensuring VET quality, as they detail and legally regulate the entire educational process for a specific profession, clearly defining the subject, objectives, and duration of training (usually 3-4 years), occupational safety requirements, as well as minimum qualification requirements for instructors in enterprises (The Federal Council, 2002, Art. 45). Most importantly, BiVo contain a "Qualification Profile" (what competencies a graduate must possess) and a "Training Plan" that clearly distributes content and learning objectives among the three learning locations (company, vocational school, inter-company courses). They also describe in detail the assessment criteria and the weight of each component of the assessment structure, allowing the VET system to adapt instantly to labor market requirements (vocationaleducation.ch, n.d.).

When the labor market requires new skills (e.g., cybersecurity for IT specialists), the professional organizations (OdA) update the corresponding BiVo ordinance. This revision process takes on average 1–3 years, in contrast to the 5–10 years typical of centralized systems. Thus, the Federal Act on Vocational and Professional Education and Training (VPETA) guarantees stability, while the BiVo ensures relevance. This two-level structure allows the VET system to avoid the classic dilemma of "standardization versus flexibility." Specifically, VPETA ensures nationwide standardization of the VET quality assurance process, approval of diploma structures, and definition of students' legal rights, guaranteeing that a diploma obtained in Geneva holds the same weight as one from Zurich (SERI, n.d.-a). At the same time, the existence of approximately 250 separate BiVo ordinances allows for the "mass customization" of VET quality. Training content is flexibly adapted to the specific needs of each individual profession—from chemical laboratory technicians to e-commerce specialists. Since these BiVo are developed and updated by the OdA themselves (Berufsbildung Schweiz, 2024), they are "living documents" that are rapidly modernized (usually every 5–10 years) according to market needs, unlike the slow, monolithic state educational standards common in other countries.

Governance of the VET system is the shared responsibility of three equal partners: the Confederation (Federal Government), represented primarily by SERI; the Cantons (26 federal subjects/regional governments); and professional organizations (OdA). The key principle of this model is enshrined in legislation: no single party has the right to make decisions unilaterally. The entire system functions on the basis of constant dialogue, consensus-seeking, and cooperation. VET quality is maintained through a clear, albeit complex, division of powers. Specifically, the Confederation is responsible for strategic leadership and national standardization. Its role consists of overseeing the overall quality and systemic coherence.

SERI's main instruments include developing and adopting the national legal framework, financing innovative projects for quality development, and, most importantly, officially

approving and recognizing approximately 250 national BiVo ordinances and around 400 federal examination procedures. SERI ensures national consistency and international comparability of qualifications. Regional governments (Cantons) are the primary executors, responsible for implementing federal legislation at the local level and for licensing companies, i.e., granting them permission to train apprentices. Their critically important quality assurance function is the supervision of apprenticeship training and compliance with apprenticeship contracts. They finance and operate vocational schools. Professional organizations (OdA) are responsible for training content and its relevance to the labor market. They represent specific industries (e.g., mechanical engineering, healthcare, etc.), develop educational standards, define necessary competencies, and organize final qualification exams. Their instruments include drafting BiVo for each profession, defining standards and content for national QV exams, and organizing "inter-company courses." Constant dialogue and the balancing of partners' interests influence VET quality assurance: OdA guarantee that training is 100% relevant to labor market needs; Cantons ensure pedagogical quality and student protection; and the Confederation bears responsibility for the strategic development of the VET system.

The results of the analysis of this role distribution indicate that VET quality in Switzerland is not so much the result of control as it is a dynamic equilibrium of interests. The system operates on the basis of institutional checks and balances. For example, OdA cannot create an overly expensive or unrealistic curriculum, as the Cantons and the Confederation would not approve it. On the other hand, the state cannot impose outdated academic standards on business, because the OdA, which control BiVo content and provide 90% of apprenticeship positions, would simply not accept these standards and would not train according to them. This process of constant negotiation guarantees that the VET system is simultaneously financially viable (interest of the Cantons), nationally standardized (interest of the Confederation), and extremely market-relevant (interest of the OdA). The most radical and

distinctive feature of the Swiss VET system is the depth of authority delegated to the OdA. In most countries, ministries of education rigidly control the content of curricula. In Switzerland, the state, represented by SERI, has largely transferred responsibility for defining content, developing standards, and certification to the OdA themselves.

This ensures that the system is inherently market-oriented. Thus, the common problem of the skills gap is solved structurally, as the "customers" of skills (OdA) define the content of these skills themselves (Berufsbildung Schweiz, 2024). The visualization of this complex distribution of tasks is presented in (Table 1).

Table 1

Matrix of Responsibility for Quality Assurance in the VET System in Switzerland

Quality Assurance Aspect	Federal Government (Confederation)	Cantons	Professional Organizations (OdA and OWP)
1. Strategy and Legal Framework	Leadership through the development of ordinances and the VET 2030 development strategy	Adoption of cantonal VET laws	Participation in consultations
2. Training Content	Officially issues and recognizes VET ordinances (BiVo)	Management of curricula in vocational schools	Define content and training plans
3. Enterprises	Sets minimum standards for trainers	Issues licenses; conducts inspections	Provide tools to companies (e.g., QualiCarte)
4. Vocational Schools	Provides subsidies	Bear main costs; manage vocational schools	Influence content and curricula through quality commissions
5. Inter-company Courses	Minimal role	Help coordinate learning locations	Fully responsible for organization and content
6. Final Certification	Recognizes procedures and qualifications	Administratively organize and conduct QV (Qualification Procedures)	Define VET content and examination standards

Source: created by the author

The Swiss dual VET model is not merely a combination, but a deep integration of three main learning locations (Swiss Education System, n.d.-a). Approximately two-thirds of young people choose this path after completing compulsory schooling, which systematically combines: practical training at an enterprise (students spend 3–4 days a week at a "host company," where they are paid employees and acquire practical, company-specific skills under the supervision of qualified trainers); theoretical education at a vocational school (students attend a vocational school 1–2 days a week to study the theoretical foundations of the profession and general education subjects); and inter-company courses. This third location is critically important. Organized directly by the Organizations of the World of Work (OdA), these courses are a mandatory part of training and are used to compensate for market shortcomings. Many Swiss companies (especially small and medium-sized enterprises) are highly

specialized. They physically cannot teach students the full spectrum of skills prescribed in the VET ordinances (BiVo). Therefore, inter-company courses solve this problem. In these courses, students from different companies gather to learn fundamental practical skills (e.g., working with the latest equipment available in a training center but not at a small firm; basic safety techniques, etc.). This guarantees that all graduates, regardless of the host company's narrow specialization, possess the same level of fundamental competencies, which is critical for standardizing output quality (vocationaleducation.ch, n.d.-a). This triad creates a model distinctly oriented toward competencies, combining theoretical know-how with its immediate practical application (Swiss Agency for Development and Cooperation [SDC], 2014).

Learning is contextualized, allowing for the instant transformation of academic concepts into real skills. This dual structure itself functions as an

integral mechanism of VET quality assurance operating in real time. Unlike educational systems where theory is studied for years and then (often unsuccessfully) applied in practice, the Swiss model creates a weekly feedback loop. A student who learns theoretical material at a vocational school on Tuesday must apply it at the enterprise on Wednesday. If the theory taught in the vocational school is outdated or disconnected from reality, the enterprise (represented by the vocational trainer) will notice immediately. This feedback is quickly transmitted through the OdA, which exerts pressure on the vocational school and educational committees to update the curriculum. Conversely, if the practice at the enterprise is of poor quality or the company neglects the training plan, the student will be unable to complete assignments or pass module exams at the vocational school. This constant mutual validation between the three learning environments prevents both the excessive "academization" of theory and the technological obsolescence of practice.

The foundation of these relationships at the individual level is the legally binding apprenticeship contract. This document is a key quality assurance tool, as it formalizes and legally secures educational obligations (vocationaleducation.ch, n.d.-b). Its defining function establishes that the primary compensation the student receives from the company is not the wage (although it is paid), but the provision of professional training in accordance with standards. The contract is concluded between three parties: the host company, the student (or their legal representatives if a minor), and is approved by the cantonal authority (SERI, n.d.-b). This cantonal approval is a critical act of quality control. Before approving the contract, the cantonal VET office verifies whether the company holds an official training license (vocationaleducation.ch, n.d.-b). The contract legally obliges the company to train students according to the specific BiVo for the designated profession. This transforms training from an abstract goal into a concrete legal obligation, protecting students from exploitation as cheap labor and guaranteeing that the company bears responsibility specifically for the quality of the educational process.

The quality of practical training at the workplace, where the student spends the majority of

their time, is ensured by a three-level system: input control, internal monitoring, and external supervision. Specifically, the requirement for input control is the licensing of companies to conduct training activities. For this, the cantonal VET office verifies whether the company meets two key requirements: the presence of certified trainers who have completed a special didactic course (40–100 hours) and the availability of work tasks and infrastructure that allow for the fulfillment of the training plan prescribed by the BiVo for the given profession (vocationaleducation.ch, n.d.-b). Internal monitoring involves annual self-assessment by the company, helping it identify "potential for optimization." To do this, companies use a specific self-assessment tool, the so-called "Quality Card" (QualiCarte), developed by the cantons and the OdA. The card consists of approximately 28 clear quality indicators covering the entire training cycle: from planning and student onboarding to the learning process, company responsibility, and contract completion. At the same time, it has an external function: a cantonal inspector may request the completed QualiCarte during a site visit. The cantons bear formal responsibility for the external supervision of in-company training. Special inspectors (or "training consultants") visit companies to check conditions. However, research into these inspections indicates a significant gap between plan and implementation, characterizing the unique philosophy of VET quality assurance in Switzerland. This means that inspectors have high workloads and do not visit firms regularly. During visits, they prioritize "consulting over control." The legal procedure for revoking a training license is complex and rarely initiated. This indicates that the VET quality assurance system at the micro-level is not policing or punitive. It relies heavily on the intrinsic motivation of companies interested in qualified staff, self-regulation via tools like QualiCarte, and a general culture of trust. The role of the cantonal inspector is more that of a mediator and consultant, backed by the threat of sanctions rather than their frequent application.

The final and most important element of VET quality assurance is the Qualification Procedure (QV) – a nationally standardized system of final examinations. The uniqueness of the QV lies in the fact that exams are developed and conducted

by labor market experts, not merely by vocational school teachers (Berufsbildung Schweiz, 2024). Its distinctive feature is comprehensive, multi-level assessment. Key components of the QV ensuring quality include: practical work to assess real professional competence. This can be either *Individual Practical Work*—a complex project the student performs at their workplace, or *Prescribed Practical Work*—a standardized practical exam at a training center. The work is evaluated by independent experts provided by the Organizations of the World of Work (OdA); theoretical exams to assess professional and general knowledge acquired during training at the vocational school; and the "experience grade." This is not an exam grade, but a weighted average grade of the student's academic performance throughout the entire training period (3–4 years) at the vocational school. To obtain the Federal Diploma of Vocational Education and Training (EFZ) or the Federal Vocational Education and Training Certificate (EBA), a student must achieve an overall average grade of 4.0 (on a 6-point scale). The Swiss approach to certification lies in rejecting the idea of a single final exam as a sufficient measure of quality. The inclusion of the experience grade means that 3–4 years of consistent, stable learning at the vocational school carry the same (or even greater) weight as the final exam. This motivates students toward continuous learning rather than "cramming" for a test. Secondly, the requirement for final assessment means the student must demonstrate professional competence in a real workplace setting by solving a substantive production problem. Compared to other German-speaking countries, available comparative monitoring data demonstrate key differences in the functioning of the VET system in Switzerland. Specifically, Switzerland has a consistently higher percentage of youth participation in dual training compared to Germany and Austria. It also demonstrates a higher percentage of female participation in VET programs. Most significantly, Switzerland has a considerably higher success rate in final examinations—around 90–92% compared to Germany (88%) and especially Austria (80–82%) (State Secretariat for Education, Research and Innovation, 2023; Schrammel, 2019).

Conclusions. Generalizing the research results allows us to assert that the phenomenon of

Swiss VET quality is based on the unique institutional architecture of "collective partnership," which ensures effective synergy between the interests of the state, regions, and the labor market. The key success factor is not rigid centralized management, but a legally established distribution of powers, where the state guarantees strategic unity through VPETA, and business defines qualification content through flexible industry ordinances (BiVo). Such a model creates a system of institutional checks and balances that prevents the bureaucratization of the educational process and ensures its instant adaptation to technological changes. It is proven that the system's stability is based on a paradigm shift from external administrative control to a culture of internal responsibility and economic motivation of all participants in the educational process.

The practical implementation of VET quality policy is carried out through a comprehensive three-level mechanism covering strict provider licensing procedures, procedural monitoring, and final validation of learning outcomes. It is determined that the integration of the three learning locations (company, vocational school, inter-company courses) combined with the use of self-assessment tools allows for the identification and correction of educational deficits in real-time. The independent qualification procedure, which involves assessing competencies by external industry experts based on real production tasks rather than just theoretical knowledge, is of particular importance. This approach guarantees that the obtained diploma confirms not only academic success but also the specialist's ability to effectively integrate into the production process without additional adaptation. Thus, the researched system functions as a dynamic ecosystem where quality is generated "from the bottom up" thanks to stakeholder consensus, making this experience a critical benchmark for the modernization of vocational education.

Based on the analysis of the institutional architecture and applied mechanisms of the VET quality assurance system in Switzerland, the following recommendations are proposed for improving the vocational education quality assurance system in Ukraine: firstly, institutional transformation of governance: transition to real partnership: implement a legislative transition from a model of "consultation with employers" to a model

of delegation of authority. Grant Sectoral Councils for Professional Standards Development (analogous to Swiss OdA) the exclusive right to form and approve the content of professional standards and qualification requirements, leaving the state (Ministry of Education and Science of Ukraine) with functions of strategic oversight and methodological support; introduction of two-level regulatory regulation. Following the Swiss model (VPETA/BiVo), separate the legal framework into a stable framework law and flexible sectoral regulations. This will allow for updating training content for specific professions (e.g., in IT or energy) every 3–5 years under a simplified procedure, without the need to amend national legislation; secondly, modernization of the quality assurance system based on the "input – process – output" model: implementation of workplace training licensing, involving the development of clear criteria for admitting enterprises to dual education. The main requirement should be the presence of a certified mentor (master) who has completed a mandatory course of psychological and pedagogical training (analogous to the Swiss course for vocational trainers, 40–100 hours); to overcome the problem of narrow specialization of Ukrainian enterprises that cannot cover the entire professional standard, create a network of "inter-company training centers" (based on the best VET institutions or industry hubs). This will guarantee that every learner receives the full spectrum of fundamental skills, regardless of the technical equipment of the enterprise where they undergo practical training; adapt and implement a national analogue of the "Qualification Card" tool for internal monitoring of training quality at enterprises. This tool should be used not as a punitive inspection measure, but as a roadmap for identifying training deficits and

improving interaction between the educational institution and business; reformat the State Qualification Attestation (DKA) based on the principle of the Swiss QV procedure. Assessment should be conducted exclusively by independent commissions formed of industry representatives (practitioners), not by the institution's pedagogical staff. The key element of the exam should be the execution of a complex practical task (project) in real or simulated production conditions; thirdly, increasing prestige and ensuring "permeability" of the VET system: develop and legally secure an educational trajectory analogous to the Swiss "Professional Matura" (Federal Vocational Baccalaureate). This involves enhanced general education preparation parallel to vocational training, which would give VET graduates direct access to Higher Education institutions (particularly technical profiles) without the need to take the External Independent Evaluation (ZNO/NMT) on general grounds, or via a simplified procedure. This will allow for attracting motivated and academically strong youth to the system; fourthly, replace the rhetoric of "corporate social responsibility" with an economically grounded model of "investment in human capital." Conduct awareness campaigns among employers, demonstrating calculations that prove that training one's own specialist is more cost-effective than recruiting from the external market, as confirmed by the Swiss experience. The implementation of these recommendations will allow for the transformation of Ukraine's vocational education system from a "donor" of cheap labor into a powerful driver of economic recovery, where the quality of professional training is guaranteed not by state control, but by mutual responsibility and the economic interest of partners.

List of references

Swiss Agency for Development and Cooperation (SDC). (2014). Success factors of the Swiss vocational education and training system in the Western Balkans. SDC. https://www.dcdualvet.org/wp-content/uploads/2014_SDC_Success-Factors-of-the-Swiss-VET-System-in-the-Western-Balkans.pdf

Swiss Education System (n.d.-a). State Secretariat for Education, Research and Innovation. Retrieved from <https://www.sbfi.admin.ch/en/swiss-education-system>

Employment law: legal foundations. (n.d.-b). State Secretariat for Education, Research and Innovation. Retrieved from <https://www.kmu.admin.ch/kmu/en/home/concrete-know-how/personnel/employment-law.html>

- vocationaleducation.ch. (n.d.-a). *Inter-company courses*. Retrieved from <https://www.vocationaleducation.ch/en/basics/vocational-education-and-training-switzerland>
- vocationaleducation.ch. (n.d.-b). *Apprenticeship contract*. Retrieved from <https://www.vocationaleducation.ch/en/glossary/apprenticeship-contract>
- Berufsbildung Schweiz. (2024). *Collective governance*. Retrieved from <https://www.berufsbildung-schweiz.ch/en/collective-governance>
- Bundesgesetz über die Berufsbildung. (2002, December 13). SR 412.10. Retrieved from <https://www.fedlex.admin.ch/eli/cc/2003/674/de>
- OECD. (2021). *Education Policy Outlook: Switzerland*. OECD Publishing. Retrieved from <https://www.oecd.org/education/policy-outlook/country-profile-Switzerland-2021.pdf>
- OECD. (2022). *Investing in Youth: Switzerland*. OECD Publishing. Retrieved from https://www.oecd-ilibrary.org/education/investing-in-youth-switzerland_980d2716-en
- State Secretariat for Education, Research and Innovation. (2018). *Orientierungshilfe zur digitalen Transformation in der Berufsbildung*. Retrieved from https://berufsentwicklung.swiss/wp-content/uploads/2025/04/Orientierungshilfe_Digitale_Transformation_d.pdf
- Verordnung über die Berufsmaturität. (2003, December 11). SR 412.103.1. Retrieved from https://www.sbf.admin.ch/dam/de/sd-web/-HFoeE-AIOJR/04_de_Erl%C3%A4uterungen_bereinigt.pdf
- Schrammel, T. (2019). Die ersten Bewerbungen für Schüler und Studierende. *Ein persönlicher Ratgeber für Ausbildung, Gap-Jahr, (Duales) Studium und Praktika*, Wiesbaden.
- Euler, D. (2013). Germany's dual vocational training system: a model for other countries?.
- Graf, L. (2013). *The German dual system of vocational education and training*. In *The German Skills Machine* (pp. 53–83). Springer VS. https://doi.org/10.1007/978-3-658-00032-9_4
- The Federal Council. (2002). *Federal Act on Vocational and Professional Education and Training (VPETA)*. Retrieved from <https://www.fedlex.admin.ch/>
- vocationaleducation.ch. (n.d.). *VET ordinances*. Retrieved from <https://www.vocationaleducation.ch/en/glossary/vet-ordinances>

Translated & Transliterated

- Berufsbildung Schweiz. (2024). *Collective governance* [Колективне управління]. <https://www.berufsbildung-schweiz.ch/en/collective-governance>
- Bundesgesetz über die Berufsbildung [Federal Act on Vocational and Professional Education and Training]. (2002, December 13). SR 412.10. <https://www.fedlex.admin.ch/eli/cc/2003/674/de> [in German]
- Euler, D. (2013). *Germany's dual vocational training system: a model for other countries?* [Дуальна система професійного навчання Німеччини: модель для інших країн?]. Bertelsmann Stiftung. [in English].
- Graf, L. (2013). The German dual system of vocational education and training [Німецька дуальна система професійної освіти та навчання]. In *The German Skills Machine* (pp. 53–83). Springer VS. https://doi.org/10.1007/978-3-658-00032-9_4 [in English].
- OECD. (2021). *Education Policy Outlook: Switzerland* [Огляд освітньої політики: Швейцарія]. OECD Publishing. <https://www.oecd.org/education/policy-outlook/country-profile-Switzerland-2021.pdf> [in English].
- OECD. (2022). *Investing in Youth: Switzerland* [Інвестування в молодь: Швейцарія]. OECD Publishing. https://www.oecd-ilibrary.org/education/investing-in-youth-switzerland_980d2716-en [in English].
- Schrammel, T. (2019). *Die ersten Bewerbungen für Schüler und Studierende. Ein persönlicher Ratgeber für Ausbildung, Gap-Jahr, (Duales) Studium und Praktika* [Перші заявки для учнів та студентів. Особистий poradnik щодо навчання, року перерви, (дуального) навчання та стажування]. Wiesbaden: Springer Gabler. [in German].
- State Secretariat for Education, Research and Innovation. (n.d.-a). *Swiss Education System* [Швейцарська система освіти]. <https://www.sbf.admin.ch/en/swiss-education-system> [in English].
- State Secretariat for Education, Research and Innovation. (n.d.-b). *Employment law: legal foundations* [Трудове право: правові основи]. <https://www.kmu.admin.ch/kmu/en/home/concrete-know-how/personnel/employment-law.html> [in English].

State Secretariat for Education, Research and Innovation. (2018). *Orientierungshilfe zur digitalen Transformation in der Berufsbildung* [Орієнтир щодо цифрової трансформації у професійній освіті]. https://berufsentwicklung.swiss/wp-content/uploads/2025/04/Orientierungshilfe_Digitale_Transformation_d.pdf [in English].

Swiss Agency for Development and Cooperation (SDC). (2014). *Success factors of the Swiss vocational education and training system in the Western Balkans* [Фактори успіху швейцарської системи професійної освіти та навчання на Західних Балканах]. SDC. https://www.dcdualvet.org/wp-content/uploads/2014_SDC_Success-Factors-of-the-Swiss-VET-System-in-the-Western-Balkans.pdf [in English].

The Federal Council. (2002). *Federal Act on Vocational and Professional Education and Training (VPETA)* [Федеральний закон про професійну освіту та навчання]. <https://www.fedlex.admin.ch/> [in English].

Verordnung über die Berufsmaturität [Ordinance on the Federal Vocational Baccalaureate]. (2003, December 11). SR 412.103.1. https://www.sbfi.admin.ch/dam/de/sd-web/-HFoeE-AIOJR/04_de_Erl%C3%A4uterungen_bereinigt.pdf [in English].

vocationaleducation.ch. (n.d.-a). *Inter-company courses* [Міжгалузові курси]. <https://www.vocationaleducation.ch/en/basics/vocational-education-and-training-switzerland> [in English].

vocationaleducation.ch. (n.d.-b). *Apprenticeship contract* [Договір про навчання]. <https://www.vocationaleducation.ch/en/glossary/apprenticeship-contract> [in English].

vocationaleducation.ch. (n.d.-c). *VET ordinances* [Постанови про професійно-технічну освіту]. <https://www.vocationaleducation.ch/en/glossary/vet-ordinances> [in English].

DOI: <https://doi.org/10.32835/2707-3092.2025.31.91-101>

ОСОБЛИВОСТІ ЗАБЕЗПЕЧЕННЯ ЯКОСТІ ПРОФЕСІЙНОЇ ОСВІТИ І ПІДГОТОВКИ У ШВЕЙЦАРІЇ: АНАЛІЗ ІНСТИТУЦІЙНОЇ АРХІТЕКТУРИ ТА ПРАКТИЧНИХ МЕХАНІЗМІВ

Юлія Люлькова

молодший науковий співробітник лабораторії зарубіжних систем професійної освіти і навчання Інституту професійної освіти Національної академії педагогічних наук України. <https://orcid.org/0009-0008-4452-5104>, e-mail: julialulkova@gmail.com

Реферат:

Актуальність статті зумовлена необхідністю обґрунтування інституційної архітектури та конкретних інструментів забезпечення якості професійної освіти і підготовки (ПОП) у Швейцарії, розкриття суті «колективного партнерства», гнучкого дворівневого нормативного регулювання та наскрізної системи контролю відповідності кваліфікацій вимогам ринку праці як фундаменту успішного управління якістю ПОП.

Мета статті полягає у системному аналізі інституційної архітектури й обґрунтуванні дієвості практичних механізмів забезпечення якості ПОП у Швейцарії та з'ясуванні можливостей їх урахування в удосконаленні системи забезпечення якості професійної освіти в Україні.

Методи: теоретичний аналіз і узагальнення – для вивчення аналітичних звітів OECD та SERI; нормативно-правовий метод – для характеристики Федерального закону професійної освіти і підготовки та галузевих постанов про ПОП; системно-структурний підхід – для розкриття механізму «колективного партнерства» та взаємодії провайдерів; порівняльний аналіз – для виокремлення специфічних особливостей швейцарської моделі забезпечення якості на тлі дуальних систем інших європейських країн.

Результати: з'ясовано особливості забезпечення якості професійної освіти і підготовки у Швейцарії (функціонування інституційної моделі «колективного партнерства» з делегуванням повноважень ринку праці

щодо визначення змісту навчання, використання дворівневої нормативної бази для забезпечення гнучкості системи ПОП, застосування наскрізного механізму контролю, незалежної кваліфікаційної сертифікації та інструментів академічної проникності).

Висновки: якість швейцарської системи ПОП досягається завдяки інституційній архітектурі, що гармонійно поєднує стабільне державне регулювання із гнучким визначенням змісту навчання ринком праці; забезпечення якості ПОП реалізується шляхом вхідного ліцензування провайдерів, процесуального моніторингу навчання на підприємстві, у професійній школі, на міжфірмових курсах з використанням інструментів самооцінювання та незалежної валідації результатів навчання.

Ключові слова: *професійна освіта і підготовка, дуальна система навчання, забезпечення якості, Швейцарія, колективне партнерство.*

Manuscript received: 11.02.2025

Accepted for publication after peer review: 25.07.2025

Published: 11.09.2025



INTERDISCIPLINARY APPROACH TO DESIGNING COMPETENCY MODELS FOR HIGHER EDUCATION STUDENTS

Natalia Kulalaieva

Doctor of Pedagogical Sciences, Professor, Professor of the Department of Pedagogy and Psychology of the Kyiv National Economic University named after Vadym Hetman, <http://orcid.org/0000-0002-8613-1495>, e-mail: kulalaieva.nataliia@kneu.edu.ua

Abstract

Relevance: the paper analyzes the competency models of employees of modern companies, the design of which for higher education students should be carried out on the basis of an interdisciplinary approach. Practical recommendations have been prepared that should be taken into account when developing and implementing interdisciplinary educational programs in higher education institutions.

Objective. The objective of the paper is to highlight the essence, formats and principles of interdisciplinarity, analyze competency models of employees of modern companies and formulate practical recommendations for improving the process of developing and implementing interdisciplinary educational programs for training higher education students.

Methods: study of regulatory documents, scientific and journalistic sources - to clarify the essence, formats and principles of interdisciplinarity; theoretical analysis and synthesis - to present models of competence of employees of modern companies; generalization of scientific views on the problem under study - to formulate recommendations and conclusions.

Results: based on the analysis of scientific publications and analytical reports of leading researchers in the field of interdisciplinarity, the essence, formats and principles of interdisciplinarity are characterized, the strengths and weaknesses of various models of competence of employees of modern companies are analyzed and, based on this, appropriate practical recommendations are formulated.

Conclusions. Designing various models of competence of higher education students based on an interdisciplinary approach is a rather complex but promising process for meeting the future needs of the economy. Its coordination with regulatory documents and employer requirements will make it possible to train modern specialists capable of solving complex problems and responding in a timely manner to the rapidly changing conditions of the modern labor market

Keywords: *interdisciplinarity, interdisciplinary approach, competency models, modern companies, employees, higher education students, interdisciplinary educational programs.*

Introduction. The rapid development of modern technologies, the need to increase industrial efficiency, and the growth of Industry 4.0 place increasingly high demands on the quality of professional training and the level of competence of the future personnel of business entities. Therefore, today, increasing attention is focused on the "Da Vinci Effect" – the ability to create innovations by integrating knowledge and experience from various fields. An interdisciplinary approach is becoming the foundation for

adaptive thinking, integrated planning, and sustainable innovation (What Is the Importance ..., undated). Representatives of diverse subject areas and specialties view problems from different perspectives and solve them effectively. Such a balance of knowledge enhances the reliability of any project, as this approach increases the likelihood of identifying blind spots. By distributing tasks according to subject matter expertise, the time required for their completion is significantly reduced, and productivity is increased. By encouraging

interdisciplinary innovation, companies ensure the relevance and innovativeness of proposed solutions, thereby gaining competitive advantages. They can adapt more quickly to market changes, adjust their strategies, create revolutionary solutions, and satisfy broader customer needs. At the same time, their employees have the opportunity to engage with different ideas and workflows, which facilitates their adaptation and cross-training.

Sources. It is necessary to emphasize that modern companies recognize the immense value of employees who combine deep expertise in a specific field with a broad understanding of other disciplines. Such "T-shaped" specialists are adaptive, capable of collaboration, and adept at creating innovations. This enables them to be indispensable for ensuring team success and enterprise growth (The Ultimate Guide to Building T-Shaped ..., 2024). In this context, soft skills acquire particular significance: leadership, communication, emotional intelligence, cross-functional collaboration, adaptability and learning agility, strategic thinking, mentorship, and knowledge sharing. according to G. Baskoro (Baskoro, 2024), skills such as digital and business literacy, innovativeness, and a culture of change are also substantial for Industry 4.0.

K. Neeley and B. Steffensen, as a result of analyzing publications within the scientific discourse of the USA and Germany regarding the development of the T-shaped professional model, concluded that there are certain difficulties in its implementation (Neeley, & Steffensen, 2018). Thus, the issue arose regarding the development of soft skills that do not clearly correspond to the disciplinary structures of academic institutions or the expertise of faculty, particularly at the undergraduate level. Furthermore, interdisciplinary educational programs often lack integration, and parts of the programs (disciplinary spheres) remain separate columns of knowledge acquired in parallel.

In the Ukrainian educational landscape, an interdisciplinary approach is already being actively utilized, particularly in scientific-pedagogical research. Moreover, interdisciplinary educational programs are becoming widespread in higher education institutions (Order of the Ministry of Education and Science of Ukraine, 2025, March 21). These programs combine subject areas of two specialties within one or two fields of knowledge (joint interdisciplinary educational programs), select components of subject areas from three to five specialties within one or various fields of knowledge

(combined), or subject areas of all or part of the specialties within one field of knowledge (field-specific).

The aforementioned educational programs, which regulate the content and process of professional training for higher education learners, are developed on the basis of educational standards. It is in these standards that the set of general and special (professional) competencies and learning outcomes, which must be formed in learners according to the chosen specialties, is presented. When designing interdisciplinary educational programs, it is necessary to ensure the formation of competencies at the appropriate level of the National Qualifications Framework (Resolution of the Cabinet of Ministers of Ukraine, 2011, November 23). Additionally, some standards specify the mandatory nature of ensuring the formation of certain competencies and learning outcomes (Order of the Ministry of Education and Science of Ukraine, 2021, March 11). According to the requirements for interdisciplinary educational (scientific) programs, learners have the opportunity to freely choose elective courses constituting no less than 10% of the total volume of program credits (Order of the Ministry of Education and Science of Ukraine, 2025, March 21).

However, an established approach to the professional training of future specialists with interdisciplinary thinking, as well as to the design of competence models for higher education learners grounded in an interdisciplinary approach, has not yet been formed.

The purpose of the paper is to elucidate the essence, formats, and principles of interdisciplinarity, to analyze the competence models of employees in modern companies, and to formulate practical recommendations for improving the process of developing and implementing interdisciplinary educational programs for the training of higher education learners.

Methods. Examination of regulatory documents, scientific, and publicistic sources – to clarify the essence, formats, and principles of interdisciplinarity; theoretical analysis and synthesis – to present competence models of employees in modern companies; generalization of scientific views on the researched problem – to formulate recommendations and conclusions.

Results and discussion. The concept of interdisciplinarity was first addressed in the scientific sphere in the work of the Organization for

Economic Cooperation and Development (OECD) in 1972. The document stated that scientific activity within the bounds of a single discipline is incomplete and requires broader coverage, as it is impossible to solve any problem without crossing disciplinary boundaries. It also recognized the need to bridge the gap between education and research.

It should be emphasized that the concept of interdisciplinarity was interpreted in various ways throughout its study in the 20th century. It was viewed as a methodology, a concept, a way of knowing, a style of thinking, a philosophy, a reflexive ideology, a corresponding process, etc. Today, it is understood as an approach to integrating knowledge, methods, and concepts from two or more disciplines (fields of knowledge) to solve complex problems, generate new knowledge, or teach theories and ideas that cannot be fully understood using the tools of a single discipline (Chettiparamb, 2007). It is aimed at reducing gaps between disciplines, facilitating more effective solutions to problems that cannot be resolved within a single sphere of knowledge but require the use of unique strengths of different fields within a framework of mutual integration.

The level of integration of disciplines determines its formats: multidisciplinary, pluridisciplinarity, interdisciplinarity, cross-disciplinarity, and transdisciplinarity (Artiushyna, Kulalaieva, Lavrinenko, Petrenko, & Romanova, 2024, pp. 101-102). Multidisciplinary involves combining ideas from several disciplines, but their distinct boundaries are preserved, and no integration of their methodologies and concepts occurs. Pluridisciplinarity provides an opportunity for representatives of several disciplines to collaborate on solving a common problem without integrating their methodologies. Interdisciplinarity is classically understood as the synthesis and harmonization of diverse disciplinary perspectives into a single whole, which facilitates the creation of new ideas or structures for understanding complex problems. Cross-disciplinarity ensures a more fluid and dynamic crossing of boundaries between disciplines, paying greater attention to the use of methods from one discipline in another. Transdisciplinarity is the most integrative form of interdisciplinarity, crossing disciplinary boundaries and going beyond them, creating a unity of intellectual frameworks outside of disciplinary perspectives.

The general principles of interdisciplinarity include: methodological adaptability, problem orientation, and dynamic collaboration. Methodological adaptability ensures flexibility in creating methodological innovations and accepting different ways of knowing. Through the manifestation of creativity, new ideas are created and solutions are generated, which contributes to a comprehensive understanding of problems. Orientation towards their solution, or a problem-oriented approach, provides the opportunity to focus on specific issues and examine them from different points of view, engaging tools from various disciplines for their complex resolution. Dynamic collaboration involves combining diverse disciplinary views to generate a solution while observing mutual respect and mutual support within the team, and also enables the development of effective communication strategies for understanding disciplinary languages and cultures.

Furthermore, in foreign literature, the concept of interdisciplinary pedagogy is encountered (Chettiparamb, 2007). It is aimed at fostering in young people a sense of their own authorship, as well as a situational and prospective view of knowledge that can be applied when solving complex problems. The majority of educational approaches associated with interdisciplinarity are based on active learning strategies and facilitate the development of cognitive skills in learners. In particular, this concerns the development of higher-order critical thinking skills (analysis, synthesis, application, evaluation), which involves the use of problem-based and cooperative learning methods, as well as discovery-based learning.

Precisely such training will contribute to the formation of a special type of universality that combines deep knowledge in one field with a wide set of additional skills. In view of this, it is advisable to turn to the experience of international companies regarding their understanding of employee competence models. The most common among them is the T-shaped model, in which the vertical bar reflects the specialist's unique abilities and skills, as well as the depth of their knowledge in a specific field, while the horizontal bar reflects their ability to use these skills and abilities to collaborate with others across different fields of knowledge (Wale, undated). Specialists with a T-shaped competence model are experts in one field and have a broad worldview in related spheres and developed soft skills, which gives them the opportunity to form the

best interdisciplinary teams in a company. The I-shaped competence model characterizes the deep expertise of employees in a single field (Rahman, 2024). However, recently, due to the fact that user needs and technologies are changing with extraordinary speed, specialists with a Pi-shaped (\$\Pi\$-shaped) competence model are becoming increasingly in demand by employers. Such a competence format implies possessing deep expertise in two fields and broad awareness, flexibility, and, accordingly, the employee's capability to realize themselves in two directions (Herranz, 2023). Moreover, under conditions of uncertainty and multidimensional reality, professionals with several "verticals" of expertise, who are knowledgeable in several fields and possess skills for their integration, creation of innovations at the intersection of technologies, and the ability to generate holistic solutions, are gaining demand. By combining processes, people, and ways of thinking, they unlock value that cannot be realized by specialists with linear models (Weis, 2025). Specialists with a formed X-shaped competence model have deep expertise in several fields with an "intersection" in the form of experience; they are highly adaptive, can work well in several industries, and possess high-level interpersonal and managerial skills. According to T. Vipond, interpersonal skills should include: effective teamwork, empathy, communication skills, management and conflict resolution, constructive feedback, cognitive flexibility, adaptability, the ability to motivate others, networking capacity, public speaking and presentation skills, leadership, experience transfer, strategic thinking, tolerance, etc. (Vipond, undated). Such professionals can work with different people in different industries or areas of a company, and are also capable of uniting these different groups (indicated by the cross-section of the letter X) so that they can cooperate effectively (Wale, undated).

It is worth emphasizing that the classical training of higher education learners in Ukrainian universities was largely focused on forming an I-shaped competence model in them. However, the successful reform of Ukraine's higher education system, the opening of interdisciplinary educational programs, increased attention to the comprehensive development of the learners' personality, particularly their soft skills, the promotion of lifelong learning, etc., create conditions for the introduction of various competence models demanded by the modern labor market.

Conclusions. Based on the study of the essence, formats, and principles of interdisciplinarity and the results of the analysis of employee competence models in modern companies, the following practical recommendations were formulated to improve the process of developing and implementing interdisciplinary educational programs for the training of higher education learners:

- developers of educational programs (particularly interdisciplinary ones) should be familiarized with various competence models of higher education learners, and also involved in the systematic analysis of labor market needs for interdisciplinary specialists to determine the "intersection points" of disciplines most relevant for Ukraine (IT and medicine, education and economics, IT and agriculture, etc.);
- competencies and learning outcomes presented in higher education standards require harmonization with the knowledge, skills, and abilities that higher education learners must master to form corresponding competence models;
- during the direct design of interdisciplinary educational programs, special attention must be paid to the selection of educational components, which should correspond as closely as possible to the content component of the competence model (for the T-shaped competence model – disciplines of in-depth specialization, interdisciplinary courses, and soft skills training; for the Pi-shaped model – ensuring parallel study of educational components for two specialties, their integration, and the implementation of integrative courses);
- to ensure the effectiveness of the educational process, it is advisable to apply methods of problem-based and cooperative learning (projects with interdisciplinary tasks; cases requiring solutions involving knowledge from different disciplines), as well as discovery-based learning;
- with the aim of ensuring greater integration between faculties and departments, as well as employers, it is necessary to introduce infrastructural changes for university spaces: to create various hubs, laboratories, business incubators, etc., comprised of representatives from different departments and faculties and representatives of employer enterprises; to introduce internships for scientific-pedagogical staff in companies where interdisciplinary competencies are needed; to involve practitioners with

interdisciplinary experience in the educational process, etc.

Thus, the design of various competence models for higher education learners on the basis of an interdisciplinary approach is a rather complex process, but one that is promising for ensuring the future needs of the economy. Its alignment with regulatory documents and employer requirements

will make it possible to train modern specialists capable of solving complex problems and responding in a timely manner to the rapidly changing conditions of the modern labor market. In further scientific explorations, we envisage the direct development of T- and Pi-shaped competence models for higher education learners undergoing training in interdisciplinary educational programs.

List of references

- What Is the Importance of Multidisciplinary? (undated). (2025, June 24). BM Process Management. <https://bmprocess.nl/what-is-the-importance-of-multidisciplinary/>
- The Ultimate Guide to Building T-Shaped Skills at Work in 2025. (2024, December, 30). Edstellar. <https://www.edstellar.com/blog/building-t-shaped-skills-at-work>
- Baskoro, G. (2024). Towards the X-shaped Person, the Next (Industrial) Leader in the Era of Industry 4.0 and Society 5.0. *Jurnal Sains dan Aplikasi Keilmuan Teknik Industri (SAKTI)*, 4(2), 105-112. <https://doi.org/10.33479/sakti.v4i2.53>
- Neeley, K. A., & Steffensen, B. (2018). *The T-Shaped Engineer as an Ideal in Technology Entrepreneurship: Its Origins, History, and Significance for Engineering Education* Paper presented at 2018 ASEE Annual Conference & Exposition, Salt Lake City, Utah. 10.18260/1-2--31127. <https://peer.asee.org/the-t-shaped-engineer-as-an-ideal-in-technology-entrepreneurship-its-origins-history-and-significance-for-engineering-education>
- Наказ МОН України «Про внесення змін до Вимог до міждисциплінарних освітніх (наукових) програм». (2025, 21 березня). <https://zakon.rada.gov.ua/laws/show/z0537-25#Text>
- Постанова КМ України «Про затвердження Національної рамки кваліфікацій» (2011, 23 листопада). <https://zakon.rada.gov.ua/laws/show/1341-2011-%D0%BF#n12>
- Наказ МОН України «Про затвердження стандарту вищої освіти за спеціальністю 011 Освітні, педагогічні науки для другого (магістерського) рівня вищої освіти». (2021, 11 березня). <https://mon.gov.ua/npa/pro-zatverdzhennya-standartu-vishoyi-osviti-za-specialnistyu-011-osvitni-pedagogichni-nauki-dlya-drugogo-magisterskogo-rivnya-vishoyi-osviti>
- Chettiparamb, A. (2007). *Interdisciplinarity: a literature review*. The Interdisciplinary Teaching and Learning Group, Subject Centre for Languages, Linguistics and Area Studies, School of Humanities, University of Southampton. URL: https://oakland.edu/Assets/upload/docs/AIS/interdisciplinarity_literature_review.pdf
- Артюшина, М. В., Кулалаєва, Н. В., Лаврінченко, О. А., Петренко, Л. М., & Романова, Г. М. (Ред.). (2024). Розвиток професійної культури майбутніх фахівців: виклики, досвід, стратегії, перспективи : Збірник матеріалів VI Всеукраїнської науково-практичної конференції, 4 квітня 2024 року. Київ : ТОВ «Юрка Любченка». https://lib.iitta.gov.ua/id/eprint/740918/1/%D0%97%D0%B1.%20%D0%BA%D0%BE%D0%BD%D1%84.%D0%A0%D0%9F%D0%9A%D0%9C%D0%A4_2024.pdf
- Wale, H. (undated). T-Shaped Skills. CFI. <https://corporatefinanceinstitute.com/resources/management/t-shaped-skills/>
- Rahman, A. (2024, February, 18). The landscape of skill sets: T-shaped, X-shaped, and I-shaped professionals. LinkedIn. <https://www.linkedin.com/pulse/landscape-skill-sets-t-shaped-x-shaped-i-shaped-abdul-rahman-6mwqf/>
- Herranz, R. (undated). What Are Pi-Shaped Work Skills? ScrumAlliance. <https://resources.scrumalliance.org/Article/pi-shaped-work-skills>
- Weis, L. (2025, February, 10). Future of strategy 2025: Why M-shaped workers are the differentiators in the AI-era. WARC. <https://www.warc.com/newsandopinion/opinion/future-of-strategy-2025-why-m-shaped-workers-are-the-differentiators-in-the-ai-era/en-gb/7158>

Vipond, T. (undated). Interpersonal Skills. CFI.
<https://corporatefinanceinstitute.com/resources/management/interpersonal-skills/>

Translated & Transliterated

What Is the Importance of Multidisciplinary? (undated). (2025, June 24). BM Process Management.
<https://bmprocess.nl/what-is-the-importance-of-multidisciplinary/> [in English].

The Ultimate Guide to Building T-Shaped Skills at Work in 2025. (2024, December, 30). Edstellar.
<https://www.edstellar.com/blog/building-t-shaped-skills-at-work> [in English].

Baskoro, G. (2024). Towards the X-shaped Person, the Next (Industrial) Leader in the Era of Industry 4.0 and Society 5.0. *Jurnal Sains dan Aplikasi Keilmuan Teknik Industri (SAKTI)*, 4(2), 105-112.
<https://doi.org/10.33479/sakti.v4i2.53> [in English].

Neeley, K. A., & Steffensen, B. (2018). *The T-Shaped Engineer as an Ideal in Technology Entrepreneurship: Its Origins, History, and Significance for Engineering Education* Paper presented at 2018 ASEE Annual Conference & Exposition, Salt Lake City, Utah. 10.18260/1-2--31127.
<https://peer.asee.org/the-t-shaped-engineer-as-an-ideal-in-technology-entrepreneurship-its-origins-history-and-significance-for-engineering-education> [in English].

Nakaz MON Ukrainy «Pro vnesennia zmin do Vymoh do mizhdystsyplynarnykh osvity (naukovykh) prohram» [Order of the Ministry of Education and Science of Ukraine "On amendments to the Requirements for interdisciplinary educational (scientific) programs"]. (2025, 21 March).
<https://zakon.rada.gov.ua/laws/show/z0537-25#Text>, [in Ukrainian].

Postanova KM Ukrainy «Pro zatverdzhennia Natsionalnoi ramky kvalifikatsii» [Resolution of the Cabinet of Ministers of Ukraine "On Approval of the National Qualifications Framework"]. (2011, 23 November).
<https://zakon.rada.gov.ua/laws/show/1341-2011-%D0%BF#n12>, [in Ukrainian].

Nakaz MON Ukrainy «Pro zatverdzhennia standartu vyshchoi osvity za spetsialnistiu 011 Osvitni, pedahohichni nauky dlia druhoho (mahisterskoho) rivnia vyshchoi osvity» [Order of the Ministry of Education and Science of Ukraine "On approval of the standard of higher education in the specialty 011 Educational and pedagogical sciences for the second (master's) level of higher education"]. (2021, 11 March).
<https://mon.gov.ua/npa/pro-zatverdzhennya-standartu-vishoyi-osviti-za-specialnistyu-011-osvitni-pedagogichni-nauki-dlya-drugogo-magisterskogo-rivnya-vishoyi-osviti> [in Ukrainian].

Chettiparamb, A. (2007). *Interdisciplinarity: a literature review*. The Interdisciplinary Teaching and Learning Group, Subject Centre for Languages, Linguistics and Area Studies, School of Humanities, University of Southampton. URL:
https://oakland.edu/Assets/upload/docs/AIS/interdisciplinarity_literature_review.pdf [in English].

Artiushyna, M. V., Kulalaieva, N. V., Lavrinenko, O. A., Petrenko, L. M., & Romanova, H. M. (Red.). (2024). Rozvytok profesiinoi kultury maibutnykh fakhivtsiv: vyklyky, dosvid, stratehii, perspektyvy : Zbirnyk materialiv VI Vseukrainskoi naukovo-praktychnoi konferentsii, 4 kvitnia 2024 roku [Development of professional culture of future specialists: challenges, experience, strategies, prospects: Collection of materials of the VI All-Ukrainian Scientific and Practical Conference, 4 April, 2024.]. Kyiv : TOV «Iurka Liubchenka».
https://lib.iitta.gov.ua/id/eprint/740918/1/%D0%97%D0%B1.%20%D0%BA%D0%BE%D0%BD%D1%84.%D0%A0%D0%9F%D0%9A%D0%9C%D0%A4_2024.pdf [in Ukrainian].

Wale, H. (undated). T-Shaped Skills. CFI.
<https://corporatefinanceinstitute.com/resources/management/t-shaped-skills/> [in English].

Rahman, A. (2024, 18 February). The landscape of skill sets: T-shaped, X-shaped, and I-shaped professionals. LinkedIn. <https://www.linkedin.com/pulse/landscape-skill-sets-t-shaped-x-shaped-i-shaped-abdul-rahman-6mwqf/> [in English].

Herranz, R. (undated). What Are Pi-Shaped Work Skills? ScrumAlliance.
<https://resources.scrumalliance.org/Article/pi-shaped-work-skills> [in English].

Weis, L. (2025, 10 February). Future of strategy 2025: Why M-shaped workers are the differentiators in the AI-era. WARC. <https://www.warc.com/newsandopinion/opinion/future-of-strategy-2025-why-m-shaped-workers-are-the-differentiators-in-the-ai-era/en-gb/7158> [in English].

Vipond, T. (undated). Interpersonal Skills. CFI.
<https://corporatefinanceinstitute.com/resources/management/interpersonal-skills/> [in English].

МІЖДИСЦИПЛІНАРНИЙ ПІДХІД ДО ПРОЄКТУВАННЯ МОДЕЛЕЙ КОМПЕТЕНТНОСТІ ЗДОБУВАЧІВ ВИЩОЇ ОСВІТИ

Наталя Кулалаєва

доктор педагогічних наук, професор, професор кафедри педагогіки та психології Київського національного економічного університету імені Вадима Гетьмана, <http://orcid.org/0000-0002-8613-1495>, e-mail: kulalaieva.nataliia@kneu.edu.ua

Реферат:

Актуальність: у роботі проаналізовано моделі компетентності працівників сучасних компаній, проєктування яких для здобувачів вищої освіти має здійснюватися на підґрунті міждисциплінарного підходу. Підготовлено практичні рекомендації, котрі мають бути враховані під час розроблення та провадження міждисциплінарних освітніх програм у закладах вищої освіти.

Мета: полягає у висвітленні суті, форматів та принципів міждисциплінарності, аналізі моделей компетентності працівників сучасних компаній та формулюванні практичних рекомендацій для поліпшення процесу розроблення й провадження міждисциплінарних освітніх програм для підготовки здобувачів вищої освіти.

Методи: вивчення нормативних документів, наукових та публіцистичних джерел – для з'ясування суті, форматів та принципів міждисциплінарності; теоретичний аналіз та синтез – для представлення моделей компетентності працівників сучасних компаній; узагальнення наукових поглядів на досліджувану проблему – для формулювання рекомендації та висновків.

Результати: на підґрунті аналізу наукових публікації та аналітичних звітів провідних дослідників у сфері міждисциплінарності охарактеризовано суть, формати та принципи міждисциплінарності, проаналізовано сильні та слабкі сторони моделей компетентності працівників сучасних компаній та на основі цього сформульовано відповідні практичні рекомендації.

Висновки. Проєктування різноманітних моделей компетентності здобувачів вищої освіти на підґрунті міждисциплінарного підходу є доволі складним але перспективним для забезпечення майбутніх потреб економіки процесом. Його узгодження з нормативними документами та вимогами роботодавців дасть можливість підготувати сучасних фахівців, здатних вирішувати комплексні проблеми та вчасно реагувати на швидкозмінні умови сучасного ринку праці.

Ключові слова: *міждисциплінарність, міждисциплінарний підхід, моделі компетентності, сучасні компанії, працівники, здобувачі вищої освіти, міждисциплінарні освітні програми.*

Manuscript received: 20.03.2025

Accepted for publication after peer review: 07.08.2025

Published: 18.09.2025



APPLICATION OF CASE TECHNOLOGY FOR THE DEVELOPMENT OF PROFESSIONAL COMPETENCE OF PEDAGOGICAL STAFF OF PROFESSIONAL COLLEGES

Leonid Romanov

Candidate of Pedagogical Sciences, Senior Researcher, Head of the Scientific and Organizational Department, Researcher at the Department of Professional Pre-higher Education of the Institute of Vocational Education of the NAES of Ukraine, <https://orcid.org/0000-0002-1297-3331>, e-mail: leo-volga@ukr.net

Abstract

Relevance of the study is conditioned by the strategic need to modernize the system of professional development of pedagogical staff of professional colleges amidst transformational societal, social, and military challenges. This determines the necessity of purposefully forming professional flexibility, adaptability, and the ability to make substantiated, non-standard decisions in lecturers by implementing innovative interactive pedagogical technologies, particularly case technology.

Objective: to substantiate the theoretical and methodological foundations of applying case technology for the purposeful and complex formation of key components of the professional competence of pedagogical staff of professional colleges.

Methods: systemic analysis and synthesis of scientific sources – to substantiate theoretical provisions; the method of pedagogical modeling – to construct a mechanism of the synergistic influence of case technology on the structure of professional competence; as well as generalization and systematization – to determine and sequentially describe the steps of creating a high-quality educational case.

Results: it has been proven that case technology ensures a holistic synergistic influence on five mutually conditioned components of lecturers' professional competence: motivational-value, cognitive-informational, behavioral-activity, personal-reflective, and emotional-volitional. Five steps of the algorithm for developing an educational case, which ensure its didactic effectiveness, have been refined and structured (defining the goal, collecting material, formulating the problem, developing analytical questions, designing the assessment procedure), and the use of a methodological map as a tool for effective management of group dynamics at key stages of work on the case has been substantiated.

Conclusions: it has been determined that the systemic application of case technology is one of the most effective tools for developing the professional competence of lecturers of professional colleges; it has been proven that its effectiveness is based on the simulation modeling of real, multi-factor situations; a holistic and complex influence of case technology on the five-component structure of competence has been established; the creation of educational cases through a clear algorithm has been methodologically substantiated; it has been clarified that successful implementation depends on the quality of content and the effective organization of group work managed by a lecturer-moderator using a methodological map.

Keywords: *case technology, professional competence, college lecturers, case creation algorithm, methodological map of case work, professional development.*

Introduction. The development of the system of professional pre-higher education in Ukraine, amidst transformations and acute social and military challenges, requires the constant modernization of approaches to the professional development of pedagogical staff. This necessitates forming in the lecturer the ability for rapid adaptation, operative analysis of complex situations, critical thinking, and the adoption of non-standard yet effective decisions. Consequently, the professional competence of an educator extends beyond the sum of knowledge and skills, integrating into a quality that determines their readiness for effective activity in a volatile professional environment. The solution to this strategic task lies in the purposeful implementation of innovative interactive pedagogical technologies into the system of professional development for lecturers. One of the most effective technologies in this context is recognized to be case-study technology, which involves the use of educational situations (cases) for deep, multi-aspect analysis and the development of practical solutions.

Sources. The extent to which the problem of applying case technology in education has been studied is significant, yet it contains a number of unresolved aspects that necessitate further scientific research. The methodological foundations and substantiation of the case method for developing critical thinking and decision-making abilities are elucidated in the works of P. Luzan, N. Hordiienko, T. Pashchenko, and others. Researchers emphasize that the case method ensures an effective combination of theoretical knowledge with practical skills. The role of case technology as an interactive tool in the modernization of professional training is revealed by M. Artiushyna, L. Romanov, H. Romanova, and others. The particular relevance of the method under conditions of crisis challenges (pandemic, military) is argued in the monograph by O. Titova and a collective of authors (2023), who view it as a means of forming the resilience of educators.

Despite the significant body of work, insufficient attention has been paid to the systematic description of the synergistic mechanism of case technology's influence on the structure of professional competence of professional college lecturers; furthermore, there is no unified, detailed methodology for developing educational cases integrated directly

into the qualification enhancement process. The identification of these unresolved parts of the general problem determines the aim of this article.

The purpose of the article: to substantiate the theoretical and methodological foundations of applying case technology for the formation of professional competence of pedagogical staff of professional colleges.

Methods. In the process of the study, a complex of methods was employed to ensure the achievement of the set goal. Systemic analysis of scientific sources allowed for the theoretical substantiation of the role of case technology in the development of components of professional competence of professional college lecturers. The method of pedagogical modeling was applied to construct the mechanism of case technology's influence on each component of competence. Generalization and systematization were used to determine and sequentially describe the steps for creating a high-quality educational case that ensures its didactic effectiveness, as well as to develop a template for a methodological map for working on a case.

Results and discussion. Modern conditions (martial law, the post-war recovery period of Ukraine) and the continuity of changes in the sphere of education impose heightened demands on the professional training of an educator oriented towards innovative activity. It has been proven that in the structure of professional competence of pedagogical staff of a professional pre-higher education institution, it is worth considering five mutually conditioned components (Titova et al., 2023, p. 69): motivational-value, cognitive-informational, behavioral-activity, personal-reflective, and emotional-volitional. Furthermore, based on the results of structural-functional analysis of lecturers' professional activity, it is proposed to design content and select methods, forms, and technologies for the development of the researched personality trait in the context of educators performing educational, upbringing, methodological, subject-specific, information-digital, ecological, inclusive, research, and other activities.

Let us examine the key components of the structure. The motivational-value component encompasses the system of professional motives, value orientations, and a stable need for self-improvement and the achievement of high results in pedagogical activity. The cognitive-informational component includes specialized, psychological-

pedagogical, and methodological knowledge, as well as the ability to work with information resources necessary for the effective solution of professional tasks. The behavioral-activity component reflects the capacity for the practical implementation of pedagogical tasks: planning, organizing the educational process, utilizing educational technologies, and effective interaction. The personal-reflective component determines the ability for self-analysis, critical evaluation of one's own activity, correction of pedagogical actions, and planning of professional self-development. The emotional-

volitional component includes the capacity for self-control, emotional stability, stress management, and volitional efforts to achieve set goals.

Case technology is an interactive tool focused on the analysis of real or simulated professional situations. Due to its simulation nature and integrative character, case technology ensures a powerful synergistic influence on the development of all five aforementioned components of professional competence simultaneously, and also allows for the implementation of the andragogical approach in the system of continuing professional education (Table 1).

Table 1

Influence of Case Technology on the Development of Professional Competence of Professional College Lecturers

Competence Component	Essence of Influence
Motivational-value	Solving real professional problems stimulates interest in self-development, increases the significance of professional activity, and forms stable professional values and motivation to search for innovative solutions.
Cognitive-informational	Case analysis requires updating, searching for, systematizing, and practically applying knowledge from several subject areas, transforming them into an actionable information base for decision-making.
Behavioral-activity	The process of developing solution options, substantiating the choice of the optimal scenario, and planning its implementation directly forms design skills and the technological flexibility necessary for practical activity.
Personal-reflective	The mandatory stage of discussing case results stimulates self-criticism and strategy analysis. Case technology develops flexibility and dialecticity of thinking, increasing the level of awareness of educational problems.
Emotional-volitional	Working under conditions of uncertainty, searching for a solution, and defending it in a group trains emotional stability, self-control, and volitional qualities necessary for overcoming professional difficulties and managing conflicts.

Source: created by the author

Primarily, working with cases influences the **motivational-value** component of professional competence, as the lecturer realizes the social and ethical responsibility for the decisions made and immerses themselves in creative activity that requires non-standard, creative approaches.

Simultaneously, a powerful effect is exerted on the cognitive-informational component. Working with a case is paramount for the development of critical thinking and analytical skills. It requires the lecturer to independently process a large array of unordered information, determine its relevance, and conduct a multifaceted analysis of the situation (situational, problem-based, causal). Successfully solving a case requires the updating and integration of knowledge from related fields (pedagogy, psychology, regulatory framework), which

transforms theoretical knowledge into an operative tool of thinking.

The application of case technology is inextricably linked to the development of the behavioral-activity component of the educator's competence. The culmination of work on a case is the development of an optimal action plan, which corresponds to the essence of pedagogical design. Lecturers acquire the skills to model several alternative strategies, forecast their short-term and long-term consequences, taking into account the college's resources and students' needs. Furthermore, cases modeled on crisis situations train the adaptability of pedagogical design and the ability to develop flexible solutions. Each successfully resolved case becomes a ready-made behavioral scenario – a factual technological map for a similar

real-life situation. The implementation of case technology in group work also develops the ability to substantiate one's position (argumentation) and make a joint consensus decision, which is an important component of the activity.

The influence on the personal-reflective component of competence is significant. Work on a case always concludes with a cycle of reflection, where the educator compares their proposed solution with the decisions of colleagues and professional standards. This forms a habit of constant critical self-analysis and increases professional responsibility for consequences. In their study, W. Y. Liu and P. Chen (2019) state that the use of case technology in education is key for forming reflective skills, helping to bridge the gap between educational theory and practice.

Finally, the analysis of crisis and conflict cases directly develops the emotional-volitional component. Situations requiring decision-making under conditions of high uncertainty and subsequent substantiation contribute to the development of emotional stability and the capacity for self-control, which are critically important for effective functioning in stressful conditions and successful conflict management.

The effectiveness of this complex influence directly depends on the quality of the developed educational material. The algorithm for creating an effective educational case is a holistic methodological process that requires adherence to clear logic, reflected in the five key steps presented in Table 2.

Table 2

Algorithm for Developing an Effective Educational Case

No.	Steps	Developer's Activity	Key Requirements
1	Defining the goal and expected results	Clear definition of knowledge, skills, and specific competencies to be formed. Setting an operational goal.	The goal must be operational (e.g., "ability to develop a system of criteria for assessing a student's soft skills"). This requires a high level of synthesis and trains pedagogical design from goals to the final result.
2	Collecting material and structuring	Ensuring the reliability and realism of the material. Collecting facts, documents, and emotional context.	Reliability and realism of material gathered from actual practice. The case should contain not only dry facts but also the context of the situation: emotional dynamics, participants' positions.
3	Formulating the problem	Isolating an open, realistic, and inciting problem that lies at the core of the situation's contradiction.	The problem must be open (having no obvious answer), realistic, and inciting. This requires pedagogical modeling skills to reveal the true contradiction of the situation.
4	Developing analytical questions	Constructing a logical trajectory of thinking for analysis, development, and substantiation of the solution.	Questions build the lecturer's thinking trajectory: from understanding the situational context and analyzing causal links to developing and substantiating the optimal solution, serving as a "roadmap" for reflection.
5	Designing the assessment procedure	Determining transparent criteria for assessing both the final decision and the process of achieving it.	Assessment criteria must be transparent and cover not only the final decision (design result) but also the process of achieving it: depth of analysis (gnostic), logic of argumentation (communicative), and capacity for self-assessment (reflective).

Source: created by the author

The successful implementation of case technology is determined by two key factors: the quality of the content of the educational case itself and the effective organization of group work, in which the lecturer-moderator plays a vital role. Their functional purpose lies not in transmitting ready-

made knowledge, but in managing the educational process, stimulating critical discussion, and directing participants toward independently formulating conclusions. Optimal effectiveness of work on a case is achieved provided that the four key stages presented in Table 3 are strictly observed.

Template of the Methodological Map for Case Work

Case Solution Stages	Moderator's Activity	Education Learners' Activity
I. Introductory (Organizational)	Introduces the case, clearly formulates the learning task, rules of work, and assessment criteria. Creates an atmosphere of immersion in the problem.	Immerse themselves in the context of the situation, carefully study the input information and materials, and clarify organizational points.
II. Analytical (Group Work)	Organizes work in small groups (15–40 min.). Observes, provides assistance in case of an "impasse." Asks clarifying questions.	Discuss the case, analyze information (gnostic component), identify key problems, search for alternative solutions (design component), and develop a joint position.
III. Presentation (Public Defense)	Ensures the schedule of speeches. Organizes a Q&A session, encourages constructive criticism and discussion.	Publicly present their solution variant, argue for the chosen strategy (communicative-organizational component), answer audience questions, and oppose other groups.
IV. Final (Reflective)	Generalizes conclusions, summarizes the discussion. Provides feedback, reveals "author's" solutions. Helps to realize acquired competencies.	Compare their own solution with colleagues' decisions and the "author's" variant. Conduct self-analysis (reflective component): assess the effectiveness of their work and personal contribution.

Source: created by the author

The role of the lecturer-moderator is key and regulatory at all stages. At the introductory stage, they create the necessary emotional and organizational context so that participants feel part of the described situation. The longest part of the work is the analytical stage, where the moderator manages group dynamics without giving ready-made solutions, but using clarifying questions to stimulate critical thinking and joint searching. At the presentation stage, the moderator ensures the constructiveness of the discussion and adherence to the time limit. Finally, the concluding stage is key for reflection: the moderator generalizes conclusions, helps identify the strengths and weaknesses of approaches, and provides feedback, allowing participants to realize the acquired competencies and integrate the experience into professional practice.

Conclusions. The application of case technology is one of the most effective tools for developing the professional competence of professional college lecturers. Its effectiveness is based on the simulation modeling of real, multi-factor situations, allowing educators to gain experience in making substantiated decisions without the risk of negative consequences in the real educational process.

It has been established that case technology ensures a holistic and complex influence on the five-component structure of a lecturer's professional

competence, specifically stimulating the development of: the motivational-value component (through increasing the significance of the activity and its attractiveness); the cognitive-informational component (through critical analysis of multi-factor information); the behavioral-activity component (through the formation of design skills and modeling of alternative strategies); the personal-reflective component (through self-analysis and awareness of professional responsibility); and the emotional-volitional component (through training stability and self-control under conditions of uncertainty).

The methodologically substantiated creation of educational cases implies a clear algorithm of five key steps (defining the goal, collecting material, formulating the problem, developing analytical questions, designing the assessment procedure), each of which is a necessary condition for ensuring the high quality of the simulation and the maximum educational effect.

Successful implementation of case technology is determined by two key factors: the quality of the content of the educational case itself and the effective organization of group work, in which the key role belongs to the lecturer-moderator. Their functional purpose lies in managing the educational process, stimulating critical discussion, and directing participants toward independently formulating conclusions. Optimal work effectiveness

is achieved provided that the main stages presented in the methodological map are strictly observed, which ensures the full sequence of passing through all phases, from introductory familiarization and analytical research to public defense and final reflection, and guarantees high-quality management of group dynamics and maximum use of simulation modeling to transform educators' theoretical knowledge into practical, flexible skills.

Thus, the systemic implementation of case technology in the continuous professional

development system is strategically important for ensuring the resilience, mobility, and adaptability of pedagogical staff of professional pre-higher education amidst modern challenges.

Prospects for further scientific research are seen in the development of a typology of cases adapted to the needs of various specialties of professional colleges (technical, economic, humanitarian) and to the needs of the post-war recovery of the educational system.

List of references

Гордієнко, Н. (2017). Кейс-метод як засіб формування професійної компетентності майбутніх соціальних педагогів і соціальних працівників у вищій школі. *Людинознавчі студії. Серія: Педагогіка*, (4), 64–73. http://nbuv.gov.ua/UJRN/Lstud_2017_4_9

Пащенко, Т. М. (2018). Кейс-метод як технологія розвитку професійної компетентності педагогічних працівників у системі післядипломної освіти. У *Психолого-педагогічні засади розвитку професійної компетентності педагогічних працівників*: Матеріали Всеукраїнської науково-практичної конференції (Київ, 26 квітня 2018 р.) (с. 138–141). ДВНЗ «Університет менеджменту освіти» НАПН України. https://lib.iitta.gov.ua/id/eprint/735661/1/Тези_Пащенко.pdf

Романова, Г. М., Артющина, М. В., & Слатвінська, О. А. (2015). *Педагогічні технології у професійній підготовці кваліфікованих робітників: Довідник*. Інститут професійно-технічної освіти НАПН України. <https://lib.iitta.gov.ua/id/eprint/165884/1/ДОВІДНИК.pdf>

Тітова, О. А., Лузан, П. Г., Пащенко, Т. М., Мося, І. А., Остапенко, А. В., & Ямковий, О. Ю. (2023). *Система розвитку професійної компетентності педагогічних працівників фахових коледжів в умовах пандемії, воєнного та повоєнного часу* (О. А. Тітова, ред.). ІПО НАПН України. https://lib.iitta.gov.ua/id/eprint/738694/1/Монографія_Розвиток%20проф.комп.викладача_ІПО_2023.pdf

Філімонова, Т. В., Тарнавська, С. В., Орищенко, І. О., та ін. (Упоряд.). (2015). *Сучасні технології в освіті. Ч. 1. Сучасні технології навчання: Наук.-допом. бібліогр. покажч., вип. 2* (Л. Д. Березівська, наук. ред.). НАПН України; ДНПБ України ім. В. О. Сухомлинського. http://umo.edu.ua/images/content/biblioteka/suchasni_tehnolog_navch.pdf

Лузан, П. Г., Манько, В. М., Нестерова, Л. В., & Романова, Г. М. (2014). *Теорія і практика впровадження інноваційних технологій навчання у професійну підготовку кваліфікованих робітників* (Г. М. Романова, ред.). ТОВ «НВП Поліграфсервіс». https://lib.iitta.gov.ua/id/eprint/8012/1/Теорія%20і%20практика%20впровадження_Романова.pdf

Liu, W. Y., & Chen, P. (2019). The use of the case method to promote reflective thinking in teacher education. *Advances in Social Sciences Research Journal*, 6(7), 547–557. <http://dx.doi.org/10.14738/assrj.67.6831>

Translated & Transliterated

Hordiienko, N. (2017). Keis-metod yak zasib formuvannia profesiinoi kompetentnosti maibutnikh sotsialnykh pedahohiv i sotsialnykh pratsivnykiv u vyshchii shkoli [Case method as a means of professional competence formation for future social educators and social workers in higher education] . *Liudynoznavchi studii. Serii: Pedahohika* [Humanities Studies. Series: Pedagogy] , (4), 64–73. http://nbuv.gov.ua/UJRN/Lstud_2017_4_9 [in Ukrainian].

Luзан, P. H., Mańko, V. M., Nesterova, L. V., & Romanova, H. M. (2014). *Teoriia i praktyka vprovadzhenia innovatsiinykh tekhnolohii navchannia u profesiinu pidhotovku kvalifikovanykh robitnykiv* [Theory and practice of innovative learning technologies implementation in professional training of qualified workers] (H. M. Romanova, red.). TOV «NVP Polihrafservis».

https://lib.iitta.gov.ua/id/eprint/8012/1/Теорія%20і%20практика%20впровадження_Романова.pdf [in Ukrainian].

Pashchenko, T. M. (2018). Keis-metod yak tekhnolohiia rozvytku profesiinoi kompetentnosti pedahohichnykh pratsivnykiv u systemi pisliadyplomnoi osvity [Case method as a technology for the development of professional competence of pedagogical workers in the system of postgraduate education] . U *Psykhologo-pedahohichni zasady rozvytku profesiinoi kompetentnosti pedahohichnykh pratsivnykiv: Materialy Vseukrainskoi naukovo-praktychnoi konferentsii* (Kyiv, 26 kvitnia 2018 r.) (s. 138–141). DVNZ «Universytet menedzhmentu osvity» NAPN Ukrainy. https://lib.iitta.gov.ua/id/eprint/735661/1/Тези_Пашченко.pdf [in Ukrainian].

Romanova, H. M., Artiushyna, M. V., & Slatvinska, O. A. (2015). *Pedahohichni tekhnolohii u profesiinii pidhotovtsi kvalifikovanykh robotnykiv: Dovidnyk* [Pedagogical technologies in professional training of qualified workers: Handbook] . Instytut profesiino-tekhnichnoi osvity NAPN Ukrainy. <https://lib.iitta.gov.ua/id/eprint/165884/1/ДОВІДНИК.pdf> [in Ukrainian].

Titova, O. A., Luzan, P. H., Pashchenko, T. M., Mosia, I. A., Ostapenko, A. V., & Yamkovyi, O. Yu. (2023). *Systema rozvytku profesiinoi kompetentnosti pedahohichnykh pratsivnykiv fakhovykh koledzhiv v umovakh pandemii, voiennoho ta povoiennoho chasu* [The system of professional competence development for pedagogical workers of professional colleges in the conditions of the pandemic, wartime, and post-war period] (O. A. Titova, red.). IPO NAPN Ukrainy. https://lib.iitta.gov.ua/id/eprint/738694/1/Монографія_Розвиток%20проф.комп.викладача_ІПО_2023.pdf [in Ukrainian].

Filimonova, T. V., Tarnavska, S. V., Oryshchenko, I. O., ta in. (Uporiad.). (2015). *Suchasni tekhnolohii v osviti. Ch. 1. Suchasni tekhnolohii navchannia: Nauk.-dopom. bibliohr. pokazhch., vyp. 2* [Modern technologies in education. Part 1. Modern learning technologies: Scientific and auxiliary bibliographic index, issue 2] (L. D. Berezivska, nauk. red.). NAPN Ukrainy; DNPB Ukrainy im. V. O. Sukhomlynskoho. [in Ukrainian].

Liu, W. Y., & Chen, P. (2019). The use of the case method to promote reflective thinking in teacher education. *Advances in Social Sciences Research Journal*, 6(7), 547–557. <http://dx.doi.org/10.14738/assrj.67.6831> [in English].

DOI: <https://doi.org/10.32835/2707-3092.2025.31.109-116>

ЗАСТОСУВАННЯ KEYС-ТЕХНОЛОГІЇ ДЛЯ РОЗВИТКУ ПРОФЕСІЙНОЇ КОМПЕТЕНТНОСТІ ПЕДАГОГІЧНИХ ПРАЦІВНИКІВ ФАХОВИХ КОЛЕДЖІВ

Леонід Романов

кандидат педагогічних наук, старший дослідник, завідувач науково-організаційного відділу, науковий співробітник відділу фахової передвищої освіти Інституту професійної освіти НАПН України, <https://orcid.org/0000-0002-1297-3331>, e-mail: leo-volga@ukr.net

Реферат:

Актуальність дослідження зумовлена стратегічною потребою модернізації системи професійного розвитку педагогічних працівників фахових коледжів в умовах трансформаційних суспільних, соціальних та військових викликів. Це визначає необхідність цілеспрямованого формування у викладачів професійної гнучкості, адаптивності та здатності до прийняття обґрунтованих, нестандартних рішень шляхом впровадження інноваційних інтерактивних педагогічних технологій, зокрема кейс-технології.

Мета: обґрунтувати теоретико-методичні засади застосування кейс-технології для цілеспрямованого та комплексного формування ключових компонентів професійної компетентності педагогічних працівників фахових коледжів.

Методи: системний аналіз і синтез наукових джерел – для обґрунтування теоретичних положень; метод педагогічного моделювання – для побудови механізму синергетичного впливу кейс-технології на структуру професійної компетентності; а також узагальнення та систематизація – для визначення й послідовного опису кроків створення якісного навчального кейсу.

Результати: доведено, що кейс-технологія забезпечує цілісний синергетичний вплив на п'ять взаємозумовлених компонентів професійної компетентності викладачів: мотиваційно-ціннісний, когнітивно-інформаційний, поведінково-діяльнісний, особистісно-рефлексивний та емоційно-вольовий. Уточнено й структуровано п'ять кроків алгоритму розроблення навчального кейсу, що забезпечують його дидактичну результативність (визначення мети, збирання матеріалу, формулювання проблеми, розроблення аналітичних запитань, проєктування процедури оцінювання), а також обґрунтовано використання методичної карти як інструменту ефективного управління груповою динамікою на ключових етапах роботи над кейсом.

Висновки: визначено, що системне застосування кейс-технології є одним з найбільш ефективних інструментів для розвитку професійної компетентності викладачів фахових коледжів; доведено, що її ефективність базується на імітаційному моделюванні реальних, багатофакторних ситуацій; встановлено цілісний і комплексний вплив кейс-технології на п'ятикомпонентну структуру компетентності; методично обґрунтовано створення навчальних кейсів через чіткий алгоритм; з'ясовано, що успішна реалізація залежить від якості змістового наповнення та ефективної організації групової роботи, керованої викладачем-модератором за допомогою методичної карти.

Ключові слова: кейс-технологія, професійна компетентність, викладачі коледжів, алгоритм створення кейсів, методична карта роботи над кейсом, професійний розвиток.

Manuscript received: 09.05.2025

Accepted for publication after peer review: 04.09.2025

Published: 09.10.2025



INTERNATIONAL EXPERIENCE IN DEVELOPING THE INCLUSIVE COMPETENCE OF VOCATIONAL EDUCATION AND TRAINING STAFF

Alina Oparina

Institute of Vocational Education of the National Academy of Educational Sciences of Ukraine
<https://orcid.org/0000-0002-2183-9716>, e-mail: oparinaalina2@gmail.com

Abstract

Relevance: The need to analyse and scientifically synthesise international experience regarding the development of inclusive competence among vocational education and training (VET) staff is driven by contemporary educational transformations, wartime challenges, and the increasing number of learners with special educational needs (SEN) within VET institutions; ensuring equal access to education and adhering to the principle of barrier-free learning requires educators capable of operating effectively within inclusive environments and collaborating in multidisciplinary support teams.

Purpose: This study aims to analyse international experience in fostering the inclusive competence of vocational educators and to identify prospects for its implementation within Ukrainian VET institutions.

Methods: The study employed an analysis of academic literature to examine international experiences in developing the inclusive competence of teaching staff and to identify effective models for their professional development; furthermore, a comparison and synthesis of international and national regulatory documents and inclusive education practices were conducted to identify global trends in inclusive education and to determine pathways for adapting international experience into Ukrainian educational practice.

Results: The study provides a systematic review of experiences from European and North American countries regarding the development of educators' inclusive competence; it identifies key trends, including a focus on human rights and equal access to education, continuous professional development for teachers, individualised instruction, interprofessional collaboration, and the establishment of barrier-free educational environments; moreover, the research synthesises models for preparing vocational staff for inclusive activities that integrate regulatory, organisational-methodological, and practice-oriented components; finally, it substantiates the possibilities for adapting these models to the Ukrainian context, accounting for the specificities of learner training in VET institutions and the requirements of post-war recovery.

Conclusions: International experience confirms that developing the inclusive competence of vocational educators constitutes a strategic condition for enhancing educational quality and the social integration of learners with special educational needs; for VET institutions, systemic professional development for educators, the cultivation of psychological and pedagogical support teams, the individualisation of learning trajectories, and the creation of barrier-free environments are of paramount importance; ultimately, adapting effective international practices can significantly increase the efficacy of inclusive training for future specialists in Ukraine.

Keywords: *inclusive competence, vocational educators, vocational education and training (VET) institutions, international experience, inclusive education, professional training.*

Introduction. Since the 1970s, numerous countries worldwide have actively developed and implemented projects aimed at advancing inclusive education. Within a relatively short timeframe, substantial experience has been accumulated

regarding the creation of teaching and learning resources, the refinement of legislative mechanisms, and the establishment of economic and technological conditions necessary to execute inclusive approaches. This article analyses international experience in the

legal regulation of inclusive education and the practices of its implementation in leading European nations (Belgium, Spain, Italy, Germany), Canada, and the USA. Data reveal that key developmental trends in modern European educational systems include an intensified humanistic focus, increased attention to the spiritual and cultural development of the individual, and the expansion of access to high-quality education for all learners. The study highlights the evolutionary stages of inclusion since the 1970s–1980s, a period marked by a gradual increase in attention toward learners with special educational needs (SEN) and the intensification of their social integration processes. As scientific approaches to understanding special educational needs evolved, inclusive education assumed a more systemic character. Collaborative learning has become an integral component of the European Higher Education Area, although its models vary by country: for instance, Spain, Italy, Greece, and Portugal have almost entirely phased out special education institutions by integrating learners with SEN into mainstream educational environments.

Despite the diversity of educational structures and levels, the general secondary education systems of Western European countries remain vital elements of the modern social model, setting standards for equality, non-discrimination, and support. For post-Soviet countries, this experience serves as a benchmark for addressing pedagogical and social challenges associated with implementing inclusion, particularly within the VET sector. It is within this sector that the tasks of educational integration and preparing learners with SEN for successful professional and social realisation converge.

At the current stage of innovative educational development in Ukraine, state policy imposes new, rigorous requirements on the professional activities of VET teaching staff. This is particularly relevant amidst the war and its attendant social challenges, as the demand grows for creating safe, supportive, and inclusive learning environments for learners with diverse life experiences, including internally displaced persons, youth with traumatic experiences, individuals with health impairments, or those facing learning losses.

Vocational educators must be capable of implementing the core principles of state educational policy—namely the prioritisation of education,

democratisation, humanisation, equal access to quality learning, and the openness and flexibility of the educational system—while ensuring an unbreakable link between instruction and upbringing. In this context, developing an educator's inclusive competence becomes not merely a professional requirement but a critical condition for preserving the educational trajectory of every learner and supporting their personal and professional growth.

Contemporary transformation processes within Ukrainian society place heightened demands on the educational level, culture, and professional mastery of VET teaching staff. Notably, their activities largely determine the ability of the education system to provide not only vocational qualifications but also the personal development of youth, their social integration, and their readiness for life amidst constant challenges, specifically those related to the war.

Under these conditions, implementing the concepts of integrative and, primarily, inclusive education into the practical work of vocational institutions becomes exceptionally urgent. Simultaneously, a lack of readiness persists among some educators regarding work with learners who have special educational needs, have experienced loss or forced displacement, or possess health impairments and educational gaps. Identified difficulties include a deficit of necessary professional competencies, the presence of psychological barriers, and stereotypical perceptions regarding the potential of such learners.

In this light, the challenge of developing the inclusive competence of vocational education and training staff emerges as a pivotal condition for ensuring equal access to quality education and the successful socio-professional realisation of every learner.

In our view, one of the factors hindering the development of inclusive practice in vocational education and training (VET) institutions is the insufficient processing and systematisation of domestic and international experience regarding the preparation of teaching staff to work with learners with diverse educational needs, including those affected by war, forced displacement, or health impairments. The absence of synthesised approaches complicates the implementation of effective models for the support and professional development of educators.

Purpose of the article: To analyse international experience in fostering the inclusive

competence of vocational educators and to determine the prospects for its application within Ukrainian VET institutions.

Sources. The study draws upon a wide range of academic and regulatory works highlighting the establishment and evolution of inclusive education in Ukraine and abroad. Analytical reports and monographs (Alyokhina, 2011; Boychuk, Borodina, & Mykytyuk, 2015; Kolupayeva & Taranchenko, 2016; Fihol, 2020) outline the theoretical foundations of developing educators' inclusive competence. The works of N. Andriychuk (2017), T. Krystopchuk (2013), T. Pyatakova (2014), and L. Nakonechna (2021) reveal international experiences (Scandinavia, the EU, Switzerland, and Canada) that carry practical significance for preparing educators to work in inclusive environments. Research by M. Zakharchuk (2013) analyses the establishment of inclusive education in the USA, while I. Kalinichenko (2017) examines the specificities of professional training for teaching assistants. The regulatory framework is provided by the Law of Ukraine "On General Secondary Education" (1999), which defines the legal foundations for inclusive practice. Collectively, these sources facilitate the integration of national and international experience, which is pivotal for developing the inclusive competence of VET staff. The study establishes that particular attention is paid to how international approaches can enhance teacher preparation for working amidst war conditions, educational migration, and increasing learner diversity. Within the practice of European and North American countries, several key directions for working with diverse learner categories are identified:

1. Widening participation: Policies aimed at involving persons with disabilities, ethnic minorities, and socially vulnerable groups in education, implemented through agreements with educational institutions and financial incentives for programme participation.

2. Mainstreaming: Focuses on creating conditions for joint interaction among individuals with diverse needs, particularly within educational and extracurricular environments.

3. Integration: Involves including all learners in the instructional process while accounting for their individual capacities and needs.

4. Inclusion: Guarantees non-discriminatory education for individuals with diverse educational

needs alongside their peers, achieved through the modernisation of the educational space, curriculum improvement, and the application of flexible pedagogical approaches.

Results and Discussion. In the USA, the establishment of inclusive education is grounded in a series of legislative acts that ensured funding for special education and introduced individualised education plans (IEPs). The core principles include educating learners with special needs in the least restrictive environment (LRE); multi-vector support (assistants, consultants, support specialists); universal access to educational services and subsequent employment; and the adaptation of infrastructure and environments. Research indicates that implementing inclusion is a complex process requiring shifts in societal attitudes, teacher preparation, and the development of interprofessional collaboration (Zakharchuk, 2013).

Contemporary trends in inclusive education necessitate a readiness among VET staff for rapid and significant changes in approaches to organising instruction and learner support. This is particularly crucial during wartime, as the diversity of educational needs increases – including those related to traumatic experiences, forced displacement, or health impairments. Consequently, academic research focused on exploring professional development opportunities for educators, enhancing their qualifications, and building inclusive competence acquires special significance. The theoretical foundations and practical developments in inclusive education are presented in the works of domestic and international scholars (Fihol, 2020), who analyse teacher preparation for working with diverse learner categories, the organisation of supportive educational environments, and the overcoming of professional barriers and stereotypes (notably research by L. Idol, A. Bell, M. Winzer, J. Gallagher, N. Anastasion, Ch. Forlin, and D. Chambers, alongside Ukrainian scholars such as N. Nychkalo, V. Kremen, L. Pukhovska, O. Pryshlyak, and others).

The synthesis of competency-based, person-centred, activity-based, environmental, and partnership approaches allows for the conceptualisation of the inclusive competence of a VET educator as a vital component of professional mastery and the foundation for the high-quality

integration of learners into educational and social environments.

Studies by M. Zakharchuk (2013) and Kolupayeva (2016) on the preparation of US specialists for working in inclusive educational environments emphasise several characteristic features of this process. Primarily, these include the existence of clearly defined national qualification standards for educators and their alignment with the main directions of state educational policy. Professional training aims to enhance teachers' practical activities, increase instructional effectiveness, and ensure the accessibility of educational services for all learners. A significant role is assigned to the use of diverse teaching forms and methods, the implementation of modern information and communication technologies, the organisation of learning within innovative environments, and systemic support for the development of teacher professional autonomy. Particular attention is paid to cultivating teamwork skills and establishing partnership interactions with colleagues, parents, social service representatives, and employers – elements that are exceptionally vital for VET institutions.

Thus, the American experience demonstrates that developing educators' inclusive competence results from combining standardised requirements, practice-oriented training, and robust professional support mechanisms throughout the entirety of a teaching career.

An analysis of M. Zakharchuk's (2013) scholarly work indicates that American researchers devote significant attention to interprofessional collaboration in inclusive education. They emphasise the necessity of close interaction between general and special education teachers to ensure effective instruction and the individualisation of learning for students with special educational needs. The works of numerous scholars, including C. Bos, S. Vaughn, A. Gartner, D. Lipsky, and J. Schumm, highlight that superior outcomes are achieved when educators have the opportunity to systematically refine their skills through engagement in practice-oriented forms of professional development and mentorship.

The experience of Canada is illustrative, as teacher support within the inclusive classroom is institutionalised. Educators have access to high-quality methodological resources, diverse training sessions, and professional development programmes, as well as

the services of assistants and consultants. Consultative assistance addresses instructional organisation, communication, learners' physical and sensory development, and the creation of barrier-free, psychologically safe environments. Notably, such support is often provided directly within the educational process, allowing for the alignment of individual learner needs with educator capacities. For VET institutions, this experience is valuable as it demonstrates how systemic specialist collaboration and organised teacher support facilitate the development of inclusive competence and enhance the effectiveness of the educational process (Nakonechna, 2021).

In several Canadian provinces (Alberta, Manitoba, Nova Scotia), significant attention is devoted to the training of teaching assistants who work with children and youth with special educational needs (Boychuk, 2015). These courses are organised directly within educational institutions and aim to develop practical skills for supporting inclusive education. The curriculum covers issues of inclusive environment organisation, understanding learners' individual characteristics, ensuring a positive psycho-emotional climate, behaviour management, and adherence to professional ethics and team interaction standards. These provisions align with the findings of I. Kalinichenko's (2017) study, which analyses the specificities of training for teaching staff holding assistant positions in Canada. The researcher emphasises that such training must include the study of core inclusive education issues, familiarisation with the regulatory frameworks ensuring the right to education for children with disabilities and other learner categories, and an examination of the assistant's role, functions, and the development of individualised education plans. Issues of support, communication, and partnership among all participants in the educational process also constitute a critical component. The presented experience demonstrates that teaching assistant training is a vital element in building an inclusive educational environment, including within VET institutions, where team-based interaction determines the quality of learner support.

N. Andriychuk (2017) analysed the experience of Scandinavian countries regarding teacher preparation for inclusive classrooms and outlined general approaches to the organisation of teacher

vocational education within these systems. The researcher emphasises that Northern European countries occupy leading positions in international education quality rankings, a trend largely attributed to a sophisticated system of training and support for teaching staff. In her view, the Scandinavian model can serve as a benchmark for developing inclusive education and fostering the professional competencies of educators, including those operating within the VET system. An orientation towards equality of educational opportunity, partnership, and trust in the educator creates conducive conditions for integrating inclusive approaches into instructional practice. We concur with the position of N. Andriychuk (2017), who maintains that the professional preparation of educators for inclusive environments must ensure not only the mastery of methodologies but also the development of an ability to accurately determine educational priorities. This entails the capacity to perceive the specifics of instructional organisation both within and beyond the educational institution, timely identify potential difficulties an educator might face, and make informed decisions regarding the needs of the group as a whole and each individual learner. According to the researcher, working in an inclusive environment necessitates advanced communication and partnership skills; specifically, the teacher must establish constructive interaction among peers while maintaining contact with parents (or legal representatives), assistants, support specialists, and other participants in the educational process. Precisely such team interaction creates the conditions for the successful socialisation and professional development of learners, including those within VET institutions.

For over two decades, Scandinavian countries have implemented support programmes for learners with attention and behavioural disorders. In Norway, the right to an individual education plan is legally enshrined, thereby ensuring targeted support for every individual. Practice includes: informing parents and specialists; providing inclusive instructional forms for learners with various impairments; individualising tasks, pace, and work content; ensuring constant feedback and positive reinforcement; and fostering teacher partnerships with specialised professionals. Such an approach creates conditions for balanced support and the prevention of social isolation.

The study by T. Krystopchuk (2013) synthesises the experience of European Union

countries (Italy, Austria, Belgium, the Netherlands, Sweden, Germany, Poland, Slovakia, Hungary, etc.) regarding teacher preparation for working with various categories of learners requiring additional support. The training of such specialists is organised in academies of special pedagogy, professional improvement centres, special pedagogy centres, universities, and higher education institutions, which ensures the integrity and continuity of the educational process. Educators working with learners with SEN are required to hold relevant pedagogical or special pedagogical qualifications. Briefing and training on the organisation of the educational process, accounting for diverse individual needs and learning styles, constitute a mandatory stage. Several European countries maintain a differentiation of institutions by support profiles, which allows for the purposeful satisfaction of the educational needs of specific learner groups. This experience demonstrates that the development of educators' inclusive competence is grounded in clearly defined training standards and continuous professional improvement—approaches that remain highly relevant to the Ukrainian VET system.

According to T. Pyatakova (2013), the Swiss Confederation has accumulated significant theoretical and practical experience in preparing educators for inclusive educational environments. Primarily, these issues fall within the remit of university structures and postgraduate education institutes, which provide both basic and advanced specialist training. For instance, the Faculty of Education at the University of Bern implements Master's programmes aimed at managing educational processes in contexts of diversity. The University of Teacher Education Northwestern Switzerland offers a course dedicated to the integrated instruction of high-ability learners and those requiring additional support. The Federal University for Vocational Education and Training proposes a specialisation focused on instruments for implementing integration and inclusion within the VET system, complementing the educational management programme. According to Swiss professor P. Sieber, one of the most effective programmes for developing educators' inclusive competence is the Master of Advanced Studies in Inclusive Education (MAS), implemented by the University of Teacher Education Central Switzerland (Luzern). The programme is long-term and content-

rich, as it involves a significant volume of instructional and practical work (Pyatakova, 2013). This experience demonstrates that systemic, multi-level training and postgraduate education for teachers play a key role in fostering their inclusive competence, specifically within the VET context. The MAS programme in inclusive education is primarily oriented towards experienced educators seeking to become specialists in implementing inclusive approaches within mainstream educational institutions. Cantons play a vital role in its functioning, as independent educational structures that financially support teachers, create favourable conditions for their further education, and encourage the implementation of innovative practices. In addition to Master's programmes, numerous certification courses for teacher professional development operate in Switzerland. These provide varying credit volumes and cover areas such as mediation and consultancy, the organisation of integrated learning, didactic improvement, and teaching innovations. Postgraduate programmes in human rights have also gained significant traction, training educators to recognise cases of violence and discrimination, counteract racism and xenophobia, and cultivate a tolerant and safe educational environment. Synthesising this experience provides grounds to assert that in Switzerland, the inclusive competence of both prospective and practising educators is formed through the combination of innovative approaches to inclusive environment organisation with principles of collaborative pedagogy, tolerance, and multiculturalism. Updated educational programmes focus on person-centred and facilitative learning, which serves as a vital benchmark for the vocational education and training system in Ukraine.

Within the analysis of experience from countries transforming their educational systems following the collapse of the USSR, researchers emphasise the importance of the phased formation of national inclusive education models. Specifically, the works of T. Pyatakova, I. Kalinichenko, and N. Andriychuk focus on the developments in Armenia and Lithuania, where preparing teaching staff for inclusive environments combines national traditions with modern international approaches. Armenia implements state and partnership initiatives aimed at developing flexible educational programmes and preparing educators for inclusive learning, while Lithuania is gradually building a system of

professional development and special support for educators working with learners with special educational needs (Pyatakova, 2013; Kalinichenko, 2016; Andriychuk, 2018).

Scholars T. Pyatakova, I. Kalinichenko, and N. Andriychuk further highlight that particular attention is devoted to improving the activities of institutions responsible for teacher professional training, notably the National Institute of Education and the State Pedagogical University. Training is oriented towards fostering the capacity to work with diverse learner categories and providing them with individualised support. Lithuania, in turn, consistently develops a teacher professional improvement system focused on inclusion, accentuating regulatory provision, the training of support specialists, and the integration of inclusive approaches into teacher education programmes. Such experience is valuable for Ukraine, as it demonstrates the possibility of modernising teacher training without sacrificing national educational identity. In Armenia, professional development courses for educators already working in educational institutions necessarily account for inclusive education requirements. The National Institute of Education, subordinated to the Ministry of Education, organises this work. Significant attention is paid to training educators in the use of interactive methods and technologies that promote active learner participation and individualisation. Experience suggests that educators who neglect interactive approaches more frequently encounter difficulties in inclusive groups, whereas young specialists trained with inclusion in mind demonstrate greater flexibility and readiness for change. Specialised courses on inclusive education have been introduced in the country's higher pedagogical institutions, ensuring the formation of basic inclusive competence in future educators. In Lithuania, Siauliai University coordinates the staffing of inclusive and special education, where studying the "Special Pedagogy" course is mandatory across all pedagogical faculties. This approach ensures that educators working with diverse learner categories receive holistic knowledge regarding support organisation, partnership interaction, and the adaptation of educational programmes. The presented experience of Armenia and Lithuania demonstrates that inclusion is becoming an integral component of both basic teacher training and the system of their postgraduate development—a

factor that is exceedingly vital for Ukrainian VET institutions as well.

Simultaneously, instructors at Siauliai University emphasise that the limited number of classroom hours dedicated to special pedagogy—even when combined with practical sessions—does not ensure the full readiness of an educator to work with learners who have special educational needs (Pyatakova, 2012). Consequently, Lithuania actively maintains a robust system of postgraduate education, including various courses, seminars, and professional development programmes aimed at the continuous updating of educators' professional knowledge and skills. Furthermore, the country has introduced clear regulations regarding the staffing of inclusive education, where the number of support specialists depends on the total count of learners with special educational needs within the institution. Specifically, a certain threshold of such learners necessitates the employment of a special educator, while a larger cohort requires the involvement of speech therapists, tiflopedagogues, surdopedagogues, social educators, psychologists, and other specialists.

Analysis of international experience demonstrates that successful inclusive education relies upon: a clear regulatory framework, systemic teacher training and support, individualised instruction, partnerships with families and specialists, and the creation of a barrier-free environment. These provisions are particularly valuable for Ukrainian VET institutions, where inclusion converges with preparation for future professional activity and the social integration of learners.

This model of systemic inclusion highlights that success depends not only on the professional training of an individual educator but on the coordinated effort of a multidisciplinary team—an approach that should be considered when modernising the Ukrainian VET system. Despite the significant positive experience in developing educators' inclusive competence across various countries, its implementation within the Ukrainian reality faces several objective difficulties. Ukraine cannot mechanically replicate international models due to differences in economic capacities, cultural traditions, demographic situations, and the challenges precipitated by the war. Therefore, the national education system is forging its own path for developing inclusive learning and teacher training,

gradually adapting international approaches to domestic conditions.

As S. Alyokhina (2011) emphasises, the current state of specialist training for inclusive environments does not yet fully meet societal demand. Many institutions lack qualified support specialists – such as psychologists, speech therapists, and defectologists – while teaching assistant positions are often non-existent or lack financial backing. Educators are frequently overloaded, which reduces their readiness to engage with innovations and implement inclusive approaches. Additional barriers include the methodological and psychological unreadiness of some teaching staff, insufficient motivation, and limited opportunities for systemic professional development. For VET institutions, these challenges are even more pronounced, as they must integrate the tasks of vocational training, social adaptation, and support for learners with diverse educational needs, including those affected by the war. This necessitates a targeted development of vocational educators' inclusive competence, aligned with both national priorities and international benchmarks.

Inclusive education in Ukraine received systemic legislative support in 2010, when amendments to the Law of Ukraine "On General Secondary Education" granted educational institutions the right to officially establish inclusive and special classes for learners with special educational needs. Since this period, inclusion has been regarded as an integral component of state educational policy.

The further development of the legal foundations for inclusive education was ensured by the new Law of Ukraine "On Education" (05.09.2017 № 2145-VIII). Its final provisions clarified the requirements for the professional development of teaching staff: the total volume of training over a five-year period must not be less than 150 academic hours, with a mandatory portion specifically dedicated to improving the knowledge, skills, and practical techniques for working with learners with special educational needs. Thus, it is now legally established that effective inclusion is impossible without the targeted development of professional competence among educators – including those operating in vocational education and training institutions, where individual learner support is coupled with preparation for future professional careers.

At the current stage, Ukraine is gradually expanding its network of higher education institutions that provide specialist training under Specialty 016 "Special Education" and organise the retraining of teaching staff for integrated and inclusive learning environments. This expansion creates opportunities for the targeted formation of inclusive competence in both prospective educators and those already active in educational institutions.

The implementation of several training courses developed by scholars and practitioners into the postgraduate pedagogical education system represents a significant step forward. These include "Introduction to Inclusive Education" (A. Kolupayeva, S. Yefymenko), "Differentiated Instruction in the Inclusive Classroom" (O. Taranchenko, Yu. Nayda; edited by A. Kolupayeva), and "Professional Collaboration in an Inclusive Educational Institution" (A. Kolupayeva, E. Danilaviciute, S. Lytovchenko). These programmes focus on developing the ability to work with various learner categories, establishing effective interaction within a multidisciplinary team, and applying differentiated teaching methods—knowledge and skills that are particularly critical for VET educators.

Future educators in domestic higher education institutions now complete the "Basics of Inclusive Education" course, the teaching and learning resources for which were developed under the general editorship of A. Kolupayeva. This facilitates the acquisition of foundational knowledge regarding the organisation of an inclusive environment and the specifics of supporting learners with diverse educational needs.

Conclusions. As a result of this study, international experience regarding the development of the inclusive competence of teaching staff has been synthesised, revealing that it is grounded in a combination of a rights-based approach, continuous professional teacher training, the individualisation of

learning, and interprofessional interaction. Systemic analysis indicates that a key condition for successful inclusion is consistent support for educators at the institutional level, particularly through professional development, the functioning of support teams, and the creation of a barrier-free educational environment.

The synthesised models of teacher preparation in European and North American countries demonstrate the effectiveness of integrating regulatory, organisational-methodological, and practice-oriented components. Their adaptation to the Ukrainian context represents a promising direction for modernising the VET system, as it allows for the convergence of inclusive education with the preparation of learners for their future professional careers.

The findings confirm that developing the inclusive competence of vocational educators is a strategic condition for ensuring equal access to quality education and the social integration of learners with SEN. Further research should focus on developing assessment tools to measure the inclusive competence of VET staff and piloting models for its formation within the context of the post-war recovery of the Ukrainian educational system.

The development of the inclusive competence of teaching staff in Ukraine is a pivotal condition for the modernisation of the national education system. Given current challenges, notably the consequences of the war and the increasing diversity of learners, the need to prepare educators for inclusive environments has acquired exceptional urgency.

The implementation of proven international approaches, adapted to the Ukrainian context, can substantially enhance the quality of secondary, vocational, and postgraduate education, promote the professional growth of educators, and ensure more equitable and accessible educational opportunities for all learners, including those within the VET system.

List of references

- Альохіна, С. (2011). *Інклюзивна освіта в Україні: здобутки, проблеми та перспективи: резюме аналітичного звіту за результатами комплексного дослідження*. Київ. <http://www.twirpx.com/file/974948>
- Андрійчук, Н. М. (2017). *Професійна підготовка вчителя до роботи в інклюзивному середовищі: скандинавський досвід*. <http://eprints.zu.edu.ua/25944>
- Бойчук, Ю. Д., Бородіна, О. С., & Микитюк, О. М. (2015). *Інклюзивна компетентність майбутнього вчителя основ здоров'я: монографія*. Харків: ХНПУ ім. Г. С. Сковороди. <https://dspace.hnpu.edu.ua/bitstreams/265677f2-74bd-4c12-825c-fe1a7239e851/download>

- Захарчук, М. Є. (2013). *Становлення та розвиток інклюзивної освіти у США*: автореф. Канд. пед. наук. Тернопіль: ТНПУ ім. В. Гнатюка. URL: <http://dspace.tnpu.edu.ua/handle/123456789/3422>
- Закон України «Про загальну середню освіту» (1999, 13 травня). <https://zakon.rada.gov.ua/laws/show/651-14>
- Калініченко, І. О. (2017). Особливості підготовки асистента вчителя інклюзивного класу. *Імідж сучасного педагога*, 4/2(173), 44–46. <https://doi.org/10.2478/rpp-2018-0016>
- Колупаєва, А. А., & Таранченко, О. М. (2016). *Інклюзивна освіта: від основ до практики: монографія*. Київ: АТОПОЛ.
- Криstopчук, Т. (2013). Підготовка вчителів для роботи в системі інклюзивної освіти в країнах ЄС. <https://social-science.uu.edu.ua/article/1174>
- Наконечна, Л. (2021). Еволюційні стратегії освіти дітей з особливими потребами: досвід Канади. *Освіта осіб з особливими потребами: шляхи розбудови*, 1(13), 189–192. <https://doi.org/10.33189/epsn.v1i13.95>
- П'ятакова, Т. (2014). Розвиток інклюзивної компетентності вчителя: швейцарський досвід. *Studies in Comparative Education*, 1. <https://doi.org/10.31499/2306-5532.1.2012.18691>
- Фіголь, Н. А. (2020). Інклюзивна компетентність педагога: теоретичний аспект. *Педагогічні науки: реалії та перспективи*, 77(5), 44–54. <https://doi.org/10.31392/NPU-nc.series5.2020.77.44>

Translated & Transliterated

- Alyokhina, S. (2011). *Inklyuzyvna osvita v Ukraini: zdobutky, problemy ta perspektyvy: reziume analitychnoho zvituzha rezultatamy kompleksnoho doslidzhennia* [Inclusive education in Ukraine: Achievements, challenges and prospects. Summary analytical report]. Kyiv. <http://www.twirpx.com/file/974948> , [in Ukrainian].
- Andriichuk, N. M. (2017). *Profesiina pidhotovka vchytelia do roboty v inklyuzyvnomu seredovyschi: skandinavskiy dosvid* [Teacher professional training for work in an inclusive environment: Scandinavian experience]. <http://eprints.zu.edu.ua/25944> , [in Ukrainian].
- Boichuk, Yu. D., Borodina, O. S., & Mykytiuk, O. M. (2015). *Inklyuzyvna kompetentnist maibutnoho vchytelia osnov zdorovia: monohrafiia* [Inclusive competence of prospective health education teachers: A monograph]. Kharkiv: KhNPU. <https://dspace.hnpu.edu.ua/bitstreams/265677f2-74bd-4c12-825c-fe1a7239e851/download> , [in Ukrainian].
- Zakharchuk, M. Ye. (2013). *Stanovlennia ta rozvytok inklyuzyvnoi osvity u SSHA: avtoreferat dysertatsii* [Formation and development of inclusive education in the United States: Dissertation abstract]. Ternopil: TNPU. <http://dspace.tnpu.edu.ua/handle/123456789/3422> , [in Ukrainian].
- Закон України “Pro zahalnu seredniu osvitu” (1999, 13 travnia). [Law of Ukraine “On General Secondary Education”]. <https://zakon.rada.gov.ua/laws/show/651-14> , [in Ukrainian].
- Kalnichenko, I. O. (2017). Osoblyvosti pidhotovky asystenta vchytelia inklyuzyvnoho klasu [Specific features of training teacher assistants in inclusive classrooms]. *Imidzh suchasnoho pedahoha*, 4/2(173), 44–46. <https://doi.org/10.2478/rpp-2018-0016> , [in Ukrainian].
- Kolupaieva, A. A., & Taranchenko, O. M. (2016). *Inklyuzyvna osvita: vid osnov do praktyky: monohrafiia* [Inclusive education: From fundamentals to practice]. Kyiv: АТОПОЛ, [in Ukrainian].
- Krystopchuk, T. (2013). *Pidhotovka vchyteliv dlia roboty v systemi inklyuzyvnoi osvity v krainakh YeS* [Teacher preparation for working in inclusive education systems in EU countries]. <https://social-science.uu.edu.ua/article/1174> , [in Ukrainian].
- Nakonechna, L. (2021). Evoliutsiini stratehii osvity ditei z osoblyvymy potrebamy: dosvid Kanady [Evolutionary strategies of education for children with special needs: Canadian experience]. *Osvita osib z osoblyvymy potrebamy: shliakhy rozbudovy*, 1(13), 189–192. <https://doi.org/10.33189/epsn.v1i13.95> , [in Ukrainian].
- Piatakova, T. (2014). Rozvytok inklyuzyvnoi kompetentnosti vchytelia: shveitsarskyi dosvid [Developing teachers’ inclusive competence: Swiss experience]. *Studies in Comparative Education*, (1). <https://doi.org/10.31499/2306-5532.1.2012.18691> , [in Ukrainian].
- Fihol, N. A. (2020). Inklyuzyvna kompetentnist pedahoha: teoretychnyi aspekt [Inclusive competence of teachers: A theoretical framework]. *Pedahohichni nauky: realii ta perspektyvy*, 77(5), 44–54. <https://doi.org/10.31392/NPU-nc.series5.2020.77.44> , [in Ukrainian].

ЗАРУБІЖНИЙ ДОСВІД РОЗВИТКУ ІНКЛЮЗИВНОЇ КОМПЕТЕНТНОСТІ ПЕДАГОГІЧНИХ ПРАЦІВНИКІВ ЗАКЛАДІВ ПРОФЕСІЙНОЇ (ПРОФЕСІЙНО-ТЕХНІЧНОЇ) ОСВІТИ

Аліна Опаріна

здобувач вищої освіти ступеня доктора філософії Інституту професійної освіти НАПН України
<https://orcid.org/0000-0002-2183-9716>, e-mail: oparinaalina2@gmail.com

Реферат:

Актуальність: необхідність аналізу та наукового осмислення зарубіжного досвіду розвитку інклюзивної компетентності педагогічних працівників зумовлена трансформаціями сучасної освіти, воєнними викликами та зростанням кількості здобувачів освіти з особливими освітніми потребами у закладах професійної (професійно-технічної) освіти (далі: П(ПТ)О); забезпечення рівного доступу до освіти та дотримання принципу безбар'єрності в освіті потребує педагогів, здатних ефективно працювати в інклюзивному середовищі та взаємодіяти в мультидисциплінарних командах підтримки.

Мета: проаналізувати зарубіжний досвід формування інклюзивної компетентності педагогічних працівників та визначити перспективи його використання у закладах П(ПТ)О України.

Методи: аналіз наукових джерел – для вивчення зарубіжного досвіду формування інклюзивної компетентності педагогічних працівників і виявлення ефективних моделей їх професійного розвитку; порівняння й узагальнення міжнародних та вітчизняних нормативних документів і практик інклюзивної освіти – для виявлення зарубіжних тенденцій розвитку інклюзивної освіти та пошуку шляхів адаптації зарубіжного досвіду в освітній практиці України.

Результати: здійснено системний огляд досвіду країн Європи та Північної Америки щодо розвитку інклюзивної компетентності педагогів; визначено ключові тенденції (орієнтація на права людини та рівний доступ до освіти, безперервний професійний розвиток педагогів, індивідуалізація навчання, міжпрофесійна взаємодія, створення безбар'єрного освітнього середовища); узагальнено моделі підготовки педагогічних працівників до інклюзивної діяльності, що поєднують нормативно-правову, організаційно-методичну й практико-орієнтовану складові; обґрунтовано можливості їх адаптації до українського контексту з урахуванням специфіки підготовки здобувачів освіти у закладах П(ПТ)О та потреб повоєнного відновлення.

Висновки: зарубіжний досвід підтверджує, що розвиток інклюзивної компетентності педагогічних працівників є стратегічною умовою підвищення якості освіти й соціальної інтеграції здобувачів освіти з особливими освітніми потребами; для закладів П(ПТ)О особливо важливими є системне підвищення кваліфікації педагогів, розбудова команд психолого-педагогічного супроводу, індивідуалізація освітніх траєкторій та створення безбар'єрного середовища; адаптація ефективних міжнародних практик може суттєво підвищити результативність інклюзивної підготовки майбутніх фахівців в Україні.

Ключові слова: інклюзивна компетентність, педагогічні працівники, заклади професійної (професійно-технічної) освіти, зарубіжний досвід, інклюзивна освіта, професійна підготовка.

Manuscript received	15.04.2025
Accepted for publication after peer review	22.08.2025
Published	09.10.2025



THE POTENTIAL OF INNOVATIVE LEARNING TECHNOLOGIES IN PRESERVING THE EDUCATOR'S PROFESSIONAL HEALTH

Olena Antonova

Doctor of Pedagogical Sciences, Professor, Head of the Department of Professional-Pedagogical, Special Education, Andragogy and Management, Zhytomyr Ivan Franko State University, <https://orcid.org/0000-0002-3240-6297>, e-mail: olena.antonova2015@gmail.com

Abstract:

Relevance. Dynamic societal transformations and the rapid digitalization of the educational space impose new requirements on the personality of the educator, who must demonstrate cognitive flexibility, mobility, and the ability to implement innovative technologies. However, the intensification of professional activity, conditioned by the transition to distance and blended learning, creates risks for the teacher's psycho-emotional and physical state. In this context, the issue of preserving professional health arises as critically important as a holistic phenomenon encompassing intellectual, physical, mental, spiritual, and social components.

Objective: to theoretically substantiate and reveal the potential of modern innovative pedagogical technologies as a means of intensifying the educational process while simultaneously preserving the lecturer's professional health amidst modern challenges.

Methods: analysis of psychological-pedagogical and regulatory-legal literature for the definition of the concepts "pedagogical technology" and "professional health"; a systemic approach for structuring health components; generalization and synthesis to identify the health-preserving potential of specific innovative methodologies.

Results. The article demonstrates that the educator's professional health is the foundation of their productive activity and adaptation to the technogenic environment. It has been established that the transition from traditional reproductive methods to innovative ones changes the teacher's role to that of a mentor-coordinator, which allows for the rational distribution of time resources and the reduction of emotional strain. The effectiveness of immersive technologies and video cases in increasing student motivation without additional energy-consuming pressure on the educator is substantiated. Methodologies for developing creativity are detailed, which, through the principle of psychological distancing, allow the specialist to find non-standard solutions to complex problems while maintaining mental comfort and intellectual reserve.

Conclusions. The implementation of innovative technologies is not only a requirement of the modern educational paradigm but also a necessary condition for maintaining the teacher's professional longevity. The use of interactive methods, visualization tools, and learning personalization algorithms allows for the creation of an ergonomic educational environment. This ensures the stable achievement of projected learning outcomes with minimum permissible errors, while simultaneously strengthening the adaptive resources of the educator's organism and their socio-psychological well-being. The harmonization of technological progress with health culture is defined as a key component of modern pedagogical mastery.

Keywords: *pedagogical technology, professional health of the educator, innovations in education, health preservation, digitalization of education, professional burnout, creativity, psycho-emotional stability.*

Introduction. Global societal requirements for the effectiveness of educational transformations and the rapid growth of activity determine a high level of social expectations

regarding the personal qualities and professional trajectory of the modern educator. In today's realities, a specialist must demonstrate high adaptability and mobility, which implies not only the operative mastery of the latest formats of learning organization, such as distance and mixed interaction, but also masterful possession of digital tools of the globalized space. The professional path of an educator today is accompanied by a complex of systemic challenges, dominated by the intensive integration of information technologies into the didactic process, the necessity of implementing inclusive principles in working with heterogeneous groups of learners, and adaptation to economic factors, including the need for constant updating of professional competencies.

At the same time, fulfilling the educator's fundamental mission regarding the transmission of knowledge and the formation of relevant 21st-century skills requires a fundamentally new approach to the implementation of innovations—an approach based on the principles of health preservation and complying with the requirements of Article 54 of the Law of Ukraine "On Education" regarding the provision of proper and safe working conditions. The successful implementation of technological innovations is possible only under the condition of conscious control over the psychophysiological state of all subjects of learning, which correlates with the norms of the Sanitary Regulations for general secondary education institutions regarding the limitation of continuous work with technical means to prevent visual and nervous fatigue.

Sources. The problem of health preservation of the young generation is relevant in domestic and foreign pedagogical science. Scientists investigate various aspects of the health preservation problem, namely: theoretical foundations of forming a health-preserving environment (O. Vashchenko, L. Deminska, O. Dubohai, L. Sushchenko); theoretical foundations of health-preserving technologies (N. Beseda, L. Horiana, L. Popova, and others); separate aspects of forming health-preserving competence (O. Antonova, L. Hrytsiuk, D. Voronin, A. Marushkevych, V. Serhiienko); value orientations toward a healthy lifestyle (S. Lapaienko, V. Orzhekhovska, A. Solohub); factors of forming a health-preserving educational environment in

general secondary and higher educational institutions (S. Dudko, V. Zviekova, O. Klestova, K. Ohloblin, and others). The results of these studies have found significant dissemination in pedagogical theory and practice. The present day presents new challenges in researching the problem of health preservation – the preservation of the professional health of the educator themselves.

The article is based on the premise that the application of innovative technologies in the educational process must be based on the principles of ecological compatibility, which are researched in detail in the works of O. Vashchenko (2017), A. Marushkevych (2024), N. Polishchuk (2013; 2020), N. Sydorchuk (2024), and O. Spirina (2021). Important is the idea that digitalization should act as a tool for reducing cognitive strain, rather than as an additional stress factor (Antonova, 2015; Marushkevych 2024). The flexibility of the lecturer should manifest in the ability to build an ergonomic environment, which, according to experts' recommendations, is a guarantee for the prevention of professional burnout and the preservation of mental well-being (Kuchynska, 2019; 2021). Thus, the harmonious integration of technological progress and health culture, reinforced by compliance with occupational health and safety regulations, becomes a mandatory component of modern pedagogical mastery, allowing for the achievement of high educational results without detriment to the somatic and mental state of educators and education learners.

Objective: to theoretically substantiate and reveal the potential of modern innovative pedagogical technologies as a means of intensifying the educational process while simultaneously preserving the lecturer's professional health amidst modern challenges.

Methods. To achieve the set goal, we applied a complex of theoretical methods: analysis of psychological-pedagogical and regulatory-legal literature for the definition of the concepts "pedagogical technology" and "professional health"; a systemic approach for structuring health components; generalization and synthesis to identify the health-preserving potential of specific innovative methodologies.

Results and discussion. The training of a modern specialist in any sphere of activity involves

students mastering the necessary tools for the development of their professional competence, creativity, critical thinking, and cognitive flexibility. After all, modern specialists need skills that allow them to think outside the box and find new solutions to complex problems. At the same time, the traditional approach to organizing the educational process does not always provide the necessary environment for the development of such skills.

New opportunities for higher education learners to develop their creative potential are opened by the introduction of modern learning technologies into the educational process, which change the thinking of educators and students, open new possibilities, and ensure the transition from passive knowledge acquisition to interactive learning through practical experience. The central idea here is the creation of a stimulating educational environment that directly facilitates the development of creativity, critical thinking, and the ability to solve complex problems.

Significant transformations in the educational sphere are also caused by the digitalization of modern life, stimulating the widespread use and integration of modern technologies, interactive, and innovative teaching methods in teaching and learning, changing the traditional educational environment. An important advantage of digitalization is the possibility of deep personalization of the learning process based on intelligent algorithms and machine learning, which allow adapting educational content to the unique pace and style of each learner. A special role is played by virtual and augmented reality technologies, which, through immersion and simulation of real scenarios, increase the effectiveness of mastering complex concepts. An additional factor in the intensification of learning becomes gamification and the use of mobile technologies, which significantly increase the level of motivation, engagement, and collaboration skills.

Given the rapid development of technologies and the need to prepare students for future professional activity, it is currently extremely important to understand the potential advantages and limitations of integrating modern technologies into the educational process.

The term "pedagogical technology" within psychological-pedagogical science is viewed

through the prism of several approaches: as a specific vector of didactics; as a technologically structured system of learning; as a set of teaching methods and strategies; as a process of transforming didactic systems through a detailed analysis of their structural components. Currently, scientific attention focuses on two leading functions of this phenomenon: the application of systemic theoretical knowledge to solve applied problems and the active implementation of technical tools into the educational environment. At the same time, depending on the target orientations and the sphere of implementation, two levels of this concept are distinguished: pedagogical technology proper and learning technology. In particular, the first level involves identifying patterns and ways to improve the educational environment, including the design of methodologies, development of materials, and analysis of their effectiveness; the second level is oriented toward modeling systems of mass professional training.

In a broad scientific sense, pedagogical technology is understood as a holistic method of designing, implementing, and monitoring the process of knowledge acquisition, which integrates technical capabilities and human potential to optimize learning (Honcharenko, 1997). The most common understanding of pedagogical technology (from the Greek *technē* – art, skill, and *logos* – teaching) is as an ordered set of forms, methods, and means of teaching and upbringing, which are systemically implemented in educational practice based on defined psychological-pedagogical concepts, allowing for the stable achievement of planned learning outcomes with minimum permissible errors (Vashchenko, 2017).

The modern educational paradigm, based on intensive societal transformations, imposes high demands on the mobility and technological literacy of the educator; however, the effective realization of these requirements is impossible without the preservation of their professional health. According to the concept of L.F. Kuchynska (2021, pp. 8-9), the professional health of pedagogical staff should be viewed as a complex characteristic that determines the specialist's ability to adapt to professional environment factors thanks to the organism's sufficient functional reserve. This well-being manifests through the integrity of intellectual,

physical, mental, social, and spiritual components, which collectively ensure not only productive activity but also the successful organization of the health-preserving process for education learners. The implementation of innovative technologies, particularly distance and blended learning, must occur taking into account the structure of this health, where the intellectual component actualizes motives and knowledge regarding safe work in the digital space, and the physical component ensures the morphofunctional resistance of the organism to technogenic loads.

In the context of the technologization of education, the mental component of professional health acquires special significance, determining mental comfort and the adequacy of the educator's behavioral reactions under conditions of information overload. Spiritual and social aspects, in turn, allow the specialist to maintain value-motivational stability and harmonious relationships with society, despite economic challenges or the need to master new competencies.

In the context of the above, technologies aimed at developing the educator's creativity, realizing their need for self-improvement and full professional self-realization acquire special significance. In the modern world, the role of the teacher, lecturer, or educator has changed significantly. They are no longer merely carriers of knowledge but become mentors who help learners navigate the information space, develop critical thinking, and social skills.

The modern educator is a comprehensively educated personality who knows how to flexibly change the direction and content of their professional activity, constantly works on their own development, raising their educational and cultural level. They are capable of independently acquiring the necessary knowledge, skills, and abilities, thinking critically, have a formed system of motives and social needs, and know how to act actively and creatively. Thus, the modern teacher is primarily a person oriented toward creative search, experiment, research, and innovation, and not toward the simple reproduction of ready-made knowledge.

That is, the key quality of an educator becomes their capacity for creative pedagogical activity. Pedagogical creativity is interpreted by researchers as a special approach to teaching and

upbringing, which involves non-standard solutions to educational tasks, novelty, innovations, and the adaptation of the learning process to the needs of students. And this requires the educator's ability to possess and effectively use innovative pedagogical technologies, to purposefully implement new, original methods, techniques, and means of teaching that radically change its quality, increase the motivation of education learners, and ensure better results, covering the entire educational process from goals to results, and including digital, project-based, person-centered, game-based, and other approaches that renew the education system.

Let us characterize some technologies that can be considered innovative and such that simultaneously contribute to the preservation of the educator's professional health. Thus, the following have proven to be sufficiently effective: case-study, flipped classroom, mind maps, the SCAMPER creativity development methodology, "Bus, Bed, Bath", STEM education technologies, and others.

We have identified case-study as one of the promising learning technologies. It forms independence of thinking in students, combines theoretical knowledge with practice, develops critical reflection, and skills in analysis and problem-solving. In the process of training future teachers, case-study involves the description and analysis of real pedagogical situations, which allows students to gain experience in professional task solving. They work with proposed situations (in printed form, on a computer, via video, or dramatization), determine the main problem, propose solution variants, and choose the most effective one. Cases always rely on real material or are as close as possible to real conditions, which ensures the practical value and relevance of learning.

Recently, the multimedia presentation of cases has become increasingly popular. It combines text information with video imagery and creates an effect of immersing students in the real conditions of a school lesson. This format performs several important functions: it shows a real situation, illustrates methodological aspects, and demonstrates variants of teacher behavior that can be critically analyzed to achieve better results. The application of video cases in learning makes it possible to: immerse students in typical professional problem situations; increase the efficiency of material mastery thanks to

active methods and visualization; easily integrate practical examples into curricula thanks to their concreteness and brevity; form practical skills directly in the auditorium; substantiate various theoretical concepts, as a video case does not contain ready-made answers; shift the emphasis from knowledge transmission to the development of competencies and skills; make classes more interesting through the use of game elements. Thus, a video case is an effective tool combining educational practice with modern multimedia capabilities.

The "Flipped Classroom" methodology is based on the premise that the main processing of new material occurs at home, while classroom time is devoted to practical assignments, laboratory works, exercises, and consultations. The experience of its application has shown that student motivation increases: they independently master a significant part of the information, and in classes, they actively interact with the lecturer and among themselves, forming a space for discussions.

In such a model, the role of the teacher changes: they become a mentor and coordinator of collective work, organize the joint resolution of educational problems, stimulate activity outside of lessons, have the opportunity to pay more attention to the individual needs of students, develop their own ICT skills, and overcome the problem of time shortage during the class.

Students, in turn, get the opportunity to learn at their own pace, use high-quality electronic resources, improve ICT competencies, and develop self-education and teamwork skills using modern gadgets as learning tools.

The SCAMPER creativity development methodology is aimed at developing creativity through the sequential application of different types of changes to a task or object. Its main idea lies in the fact that the new is often a successfully modified version of the already known. The main steps of the methodology: **Substitute** – change individual elements, materials, or ways of interaction (e.g., replace face-to-face communication with video content); **Combine** – connect with other subjects or activities (integrated lessons, excursions); **Adapt** – add new elements (exercises, methodologies, morning meetings, mood indicators); **Modify** – change the form or organization of the process (e.g.,

rearrange desks in the classroom); **Put to Other Uses** – use material or methodology in another context or lesson; **Eliminate** – remove the unnecessary, simplify to the main point (lesson without homework, double periods); **Reverse** – change the order or find the opposite application (e.g., use drawings from an art lesson to compose math problems). Thus, SCAMPER helps to systemically search for new solutions, stimulates a creative approach, and allows seeing familiar things from a different angle.

The "Bus, Bed, Bath" methodology is based on the fact that productive ideas can arise anywhere and anytime – in transport, at home, or during rest. Its essence lies not in the forced search for a solution "here and now," but in creating conditions under which thoughts surface by themselves. The application of the method implies a certain sequence of actions: immerse in the problem and clearly define it; temporarily distance oneself from searching for the answer; return to the problem with a fresh look; record the idea that has arisen and refine it. Such an approach allows delaying the final decision, engaging the subconscious in the work, and returning to the task later, from a different perspective. Psychological distancing makes the idea generation process less exhausting and more productive. The method becomes especially effective in combination with the case approach.

The methodology of applying mind maps is based on the position that the linear presentation of information in the form of text does not fully utilize the capabilities of our brain, as only its left hemisphere works. However, information is memorized better the larger the volume of the cerebral cortex connected to its perception. Students are offered to write a key concept in the center of the sheet, and write all associations that need to be remembered on branches going from the main word. Ideas can also be drawn. Creating such a map helps to invent new associations, and the image of the map is much better remembered. When working with maps, the cortex of the right hemisphere of the brain, responsible for the perception of visual and color images and creative activity, is additionally included. Thanks to this, visualized information is perceived much faster and remembered longer.

Conclusions. Summarizing the above, it can be stated that the systemic implementation of

innovative pedagogical technologies acts not only as an effective tool for intensifying the educational process but also as a fundamental factor in preserving the educator's professional health. The application of these methods directly contributes to strengthening all components of the specialist's health, ensuring a harmonious balance between the high demands of modern education and the functional reserves of the organism. Video case and mind map technologies optimize the work of the intellectual component, allowing for the structuring of large arrays of information and engaging both hemispheres of the brain, which significantly reduces cognitive load and prevents mental fatigue. The "flipped classroom" methodology radically transforms the role of the educator from a knowledge reproducer to a coordinator-mentor, which frees up classroom time for creative interaction and solves the problem of "time deficit," thereby stabilizing the emotional state and strengthening the mental component of health.

Of special significance for maintaining psycho-emotional comfort are the creative methodologies SCAMPER and "Bus, Bed, Bath". Using the principle of psychological distancing and delayed decision-making allows the educator to avoid the stress of "instant responsibility," connect subconscious resources, and generate non-standard ideas with less energy expenditure. This strengthens the spiritual and social components of professional health, stimulating the need for self-improvement and ensuring a high level of satisfaction with one's own work.

Thus, mastering modern innovative technologies allows the educator to transition from exhausting reproductive activity to flexible, creative experimentation. This not only increases the motivation and effectiveness of education learners but also creates an ergonomic professional environment that minimizes risks of emotional burnout, supports adaptive resources, and ensures the teacher's long-term professional longevity under conditions of dynamic societal changes.

List of references

Антонова, О.Є. (2015). Педагогічні технології та їх класифікація як наукова проблема. In *Сучасні технології в освіті. Ч. 1. Сучасні технології навчання : наук.-допом. бібліогр. покажч. Вип. 2*, (с. 8-15). Київ: НАПН України, ДНПБ України ім. В. О. Сухомлинського.

Ващенко, О. М. (2017). Методологічні засади підготовки майбутнього вчителя до використання здоров'язберезувальних освітніх технологій в навчально-виховному процесі початкової школи. *Оновлення змісту, форм та методів навчання і виховання в закладах освіти*, 17, 240-244. http://nbuv.gov.ua/UJRN/Ozfm_2017_17_65.

Гончаренко, С. (1997). Український педагогічний словник. Київ: «Либідь».

Кучинська, Л.Ф. (2021). *Рекреалогічні засади збереження професійного здоров'я педагогічних працівників у системі методичної роботи закладів дошкільної освіти: автореферат*. Кандидат наук. Житомир: Житомирський державний університет імені Івана Франка.

Кучинська, Л. Ф. (2019). Збереження професійного здоров'я педагогічних працівників закладів дошкільної освіти як наукова проблема. *American Journal of Fundamental, Applied & Experimental Research*, 3 (14), 30-34.

Марушкевич, А. (2024). Здоров'язберезувальні освітні технології в навчанні студентів: необхідність забезпечення. *Вісник Київського національного університету імені Тараса Шевченка. Серія «Педагогіка»*, 2(18). <https://doi.org/10.17721/2415-3699.2023.18.09>

Поліщук, Н. М. (2013). *Підготовка вчителя в системі післядипломної педагогічної освіти до розвитку здоров'язберезувальної компетентності учнів основної школи: автореферат*. Кандидат наук. Житомир: Житомирський державний університет імені Івана Франка. <https://doi.org/10.32843/2663-6085/2020/29-2.15>

Поліщук, Н.М. (2020). Розвиток культури здоров'я педагогів в умовах реформування освіти. *Інноваційна педагогіка*, 29 (2), 80-83.

Сидорчук, Н. Г. (2024). Здоров'язбереження: сучасні концептуальні орієнтири. *Вісник науки та освіти*, 12 (30), 1133-1142. <https://eprints.zu.edu.ua/id/eprint/42240>

Спірін О. М. (2021). Цифровізація освіти, освітнього процесу In *Енциклопедія освіти*, (с.1099-1100). Київ: Юрінком Інтер.

Translated & Transliterated

Antonova, O.Ie. (2015). Pedahohichni tekhnolohii ta yikh klasyfikatsiia yak naukova problema [Pedagogical technologies and their classification as a scientific problem]. In *Suchasni tekhnolohii v osviti*. Ch. 1. Suchasni tekhnolohii navchannia : nauk.-dopom. bibliohr. pokazhch. Vyp. 2, (с. 8-15) [Modern technologies in education. Part 1. Modern technologies of education: scientific-auxiliary bibliography index. Issue 2]. Kyiv: NAPN Ukrainy, DNPB Ukrainy im. V. O. Sukhomlynskoho [NAPS of Ukraine, V. O. Sukhomlynskyi National Academy of Sciences of Ukraine – Kyiv], [in Ukrainian]

Vashchenko, O. M. (2017). Metodolohichni zasady pidhotovky maibutnoho vchytelia do vykorystannia zdoroviazberezhuvalnykh osvitnikh tekhnolohii v navchalno-vykhovnomu protsesi pochatkovoї shkoly [Methodological principles of training future teachers to use health-preserving educational technologies in the educational process of primary school]. *Onovlennia zmistu, form ta metodiv navchannia i vykhovannia v zakladakh osvity* [Updating the content, forms and methods of teaching and upbringing in educational institutions], 17, 240-244. http://nbuv.gov.ua/UJRN/Ozfm_2017_17_65, [in Ukrainian].

Honcharenko, S. (1997). *Ukrainskyi pedahohichnyi slovnyk* [Ukrainian pedagogical dictionary]. Kyiv: «Lybid», [in Ukrainian].

Kuchynska, L.F. (2021). Rekrealohichni zasady zberezhennia profesiinoho zdorovia pedahohichnykh pratsivnykiv u systemi metodychnoi roboty zakladiv doshkilnoi osvity: avtoreferat [Recreational principles of preserving the professional health of pedagogical workers in the system of methodological work of preschool educational institutions: abstract]. *Kandydat nauk. Zhytomyr: Zhytomyrskiy derzhavnyi universytet imeni Ivana Franka*, [in Ukrainian].

Kuchynska, L. F. (2019). Zberezhennia profesiinoho zdorovia pedahohichnykh pratsivnykiv zakladiv doshkilnoi osvity yak naukova problema [Preservation of professional health of pedagogical workers in preschool education institutions as a scientific problem]. *American Journal of Fundamental, Applied & Experimental Research*, 3 (14), 30-34, [in Ukrainian].

Marushkevych, A. (2024). Zdoroviazberezhuvalni osvitni tekhnolohii v navchanni studentiv: neobkhdnist zabezpechennia [Health-preserving educational technologies in student education: the need to ensure]. *Visnyk Kyivskoho natsionalnoho universytetu imeni Tarasa Shevchenka. Seriiia «Pedahohika»* [Journal of the Taras Shevchenko National University of Kyiv. Series "Pedagogy"], 2(18). <https://doi.org/10.17721/2415-3699.2023.18.09>, [in Ukrainian].

Polishchuk, N. M. (2013). Pidhotovka vchytelia v systemi pisliadyplomnoi pedahohichnoi osvity do rozvytku zdoroviazberezhuvanoi kompetentnosti uchniv osnovnoi shkoly: avtoreferat [Teacher training in the system of postgraduate pedagogical education for the development of health-saving competence of primary school students: abstract]. *Kandydat nauk. Zhytomyr: Zhytomyrskiy derzhavnyi universytet imeni Ivana Franka* [Ivan Franko Zhytomyr State University], [in Ukrainian].

Polishchuk, N.M. (2020). Rozvytok kultury zdorovia pedahohiv v umovakh reformuvannia osvity [Development of a health culture of teachers in the context of educational reform]. *Innovatsiina pedahohika* [Innovative Pedagogy], 29 (2), 80-83. <https://doi.org/10.32843/2663-6085/2020/29-2.15>, [in Ukrainian].

Sydorchuk, N. H. (2024). Zdoroviazberezhennia: suchasni kontseptualni oriiientyry [Health care: modern conceptual guidelines]. *Visnyk nauky ta osvity* [Bulletin of Science and Education], 12 (30), 1133-1142. <https://eprints.zu.edu.ua/id/eprint/42240>, [in Ukrainian].

Spirin O. M. (2021). Tsyfrovizatsiia osvity, osvitnoho protsesu [Digitalization of education, educational process]. In *Entsyklopediia osvity* [Encyclopedia of Education], (с.1099-1100). Kyiv: Yurinkom Inter, [in Ukrainian].

ПОТЕНЦІАЛ ІННОВАЦІЙНИХ ТЕХНОЛОГІЙ НАВЧАННЯ У ЗБЕРЕЖЕННІ ПРОФЕСІЙНОГО ЗДОРОВ'Я ПЕДАГОГА

Олена Антонова

доктор педагогічних наук, професор, завідувач кафедри професійно-педагогічної, спеціальної освіти, андрагогіки та управління, Житомирський державний університет імені Івана Франка,
<https://orcid.org/0000-0002-3240-6297>, e-mail: olena.antonova2015@gmail.com

Реферат:

Актуальність. Динамічні суспільні трансформації та стрімка цифровізація освітнього простору висувають нові вимоги до особистості педагога, який має демонструвати когнітивну гнучкість, мобільність та здатність до впровадження інноваційних технологій. Проте інтенсифікація професійної діяльності, зумовлена переходом до дистанційного та змішаного навчання, створює ризики для психоемоційного та фізичного стану вчителя. У цьому контексті критично важливим постає питання збереження професійного здоров'я як цілісного феномена, що охоплює інтелектуальний, фізичний, психічний, духовний та соціальний компоненти.

Мета: теоретично обґрунтувати та розкрити потенціал сучасних інноваційних педагогічних технологій як засобу інтенсифікації освітнього процесу та одночасного збереження професійного здоров'я викладача в умовах сучасних викликів.

Методи: аналіз психолого-педагогічної та нормативно-правової літератури для дефініції понять «педагогічна технологія» та «професійне здоров'я»; системний підхід для структурування компонентів здоров'я; узагальнення та синтез для виявлення здоров'язберезувального потенціалу конкретних інноваційних методик.

Результати. У статті доведено, що професійне здоров'я педагога є основою його продуктивної діяльності та адаптації до техногенного середовища. Встановлено, що перехід від традиційних репродуктивних методів до інноваційних змінює роль вчителя на наставника-координатора, що дозволяє раціонально розподіляти часовий ресурс та знижувати емоційну напругу. Обґрунтовано ефективність імерсивних технологій та відеокейсів у підвищенні мотивації студентів без додаткового енерговитратного тиску на педагога. Деталізовано методики розвитку креативності, які через принцип психологічного дистанціювання дозволяють фахівцеві знаходити нестандартні рішення складних проблем, зберігаючи при цьому душевний комфорт та інтелектуальний резерв.

Висновки. Впровадження інноваційних технологій є не лише вимогою сучасної парадигми освіти, а й необхідною умовою підтримання професійного довголіття вчителя. Використання інтерактивних методів, інструментів візуалізації та алгоритмів персоналізації навчання дозволяє створити ергономічне освітнє середовище. Це забезпечує стабільне досягнення прогнозованих результатів навчання з мінімально допустимими похибками, водночас зміцнюючи адаптаційні ресурси організму педагога та його соціально-психологічне благополуччя. Гармонізація технологічного прогресу з культурою здоров'я визначена як ключова складова сучасної педагогічної майстерності.

Ключові слова: педагогічна технологія, професійне здоров'я педагога, інновації в освіті, здоров'язбереження, цифровізація освіти, професійне вигорання, креативність, психоемоційна стійкість.

Manuscript received: 30.04.2025

Accepted for publication after peer review: 08.09.2025

Published: 16.10.2025



USING ENERGY-EFFICIENCY PEDAGOGICAL TECHNOLOGIES IN PROFESSIONAL TRAINING OF FUTURE CONSTRUCTION WORKERS: EU EXPERIENCE

Iryna Drozich

Candidate of Pedagogical Sciences, research fellow Department of content and technologies of vocational education of the Institute of Vocational Education and Training of NAES of Ukraine, <http://orcid.org/0000-0002-8881-9314>, e-mail: irina.drozich@ukr.net

Abstract

Relevance. The construction sector is central to Europe's climate and energy targets, while skilled workers are essential for delivering energy-efficient buildings. In Ukraine, integrating energy-efficiency pedagogical technologies (EEPT) into vocational education and training (VET) is urgent to support post-war reconstruction, align with EU standards, and strengthen national energy security.

Aim: To examine the use of EEPT in professional training of construction workers in the EU and explore how these approaches can be adapted and implemented in Ukraine's vocational education system.

Methods: A three-step comparative-adaptive approach was applied, including competence mapping of EU and Ukrainian VET standards, a review of EU teaching methods suitable for Ukrainian vocational schools, and analysis of implementation pathways through pilot projects, partnerships, and curriculum updates.

Results: Competence mapping revealed that EU energy-efficiency standards cover skills in building physics, envelope performance, energy-efficient system installation, diagnostics, and site organisation. Ukrainian VET currently provides limited practical experience in these areas. EU projects, such as ME_nS and VET4LEC, demonstrate that combining classroom instruction with hands-on practice and digital tools (BIM, VR, AR) enhances learner competence and engagement. Phased implementation in Ukraine, including teacher training, pilot projects, and curriculum modernisation, is feasible and can progressively align VET outcomes with European standards.

Conclusions: Adopting EU-based EEPT offers a pathway for modernising Ukrainian vocational education, fostering a workforce capable of delivering energy-efficient construction projects, supporting sustainable reconstruction, and promoting alignment with European best practices. Future research should assess the effectiveness of EEPT in Ukrainian schools to inform scalable implementation.

Keywords: energy efficiency, vocational education and training, construction workers, energy-efficiency pedagogical technologies, Ukraine, European Union, curriculum modernisation.

Introduction. The construction industry plays a significant role in achieving climate and energy goals in leading EU countries. Buildings account for a significant share of energy consumption and emissions, and skilled specialists are important agents for implementing comprehensive renovation, construction of Near-Zero Energy Buildings (NZEB), ensuring

airtightness, high-quality thermal insulation, and the implementation of smart management systems. In the context of Vocational Education and Training (hereinafter – VET), EU countries are systematically adapting educational programs, pedagogical approaches, and assessment systems to improve eco-oriented competencies as a primary outcome of the

professional training of future skilled workers in the construction industry (Cedefop, 2023).

For Ukraine, where construction is an important factor in economic recovery, the integration of eco-oriented pedagogical technologies into VET is particularly urgent. The country must simultaneously align its actions with the goals of the European Green Deal and strengthen its own energy security and resilience. The war has further underscored the need for rapid yet sustainable recovery, making energy-efficient construction skills critically important. The implementation of eco-oriented pedagogical technologies in the Ukrainian VET system can help form a modern workforce capable of meeting European standards and national priorities through the updating of educational programs, professional development of teachers, and partnerships with industry. Drawing on EU experience, Ukraine can accelerate reforms that are key to post-war recovery and long-term energy independence.

Sources. This article analyzes contemporary scientific sources to substantiate the integration of eco-oriented pedagogical technologies into the professional training of future skilled workers. At the European level, key policy frameworks, such as the Energy Performance of Buildings Directive (European Commission, 2024), the European Green Deal (European Commission, 2019), and the Renovation Wave Strategy (European Commission, 2020), set ambitious requirements for reducing emissions and improving the energy efficiency of buildings. These initiatives highlight the central role of skilled construction workers and serve as benchmarks for defining competencies in the fields of airtightness, thermal insulation quality, and the installation of modern building systems.

In Ukraine, legislative initiatives such as the Law "On Energy Efficiency" (Verkhovna Rada of Ukraine, 2021), the National Recovery Plan (Cabinet of Ministers of Ukraine, 2023), and obligations arising from EU integration are powerful drivers of reform. They emphasize a dual task: restoring damaged infrastructure and modernizing the VET system to comply with European standards.

The experience of European VET offers practical models for adaptation. Dual training systems, where theoretical learning is combined with practice in the workplace, demonstrate how

competencies can be strengthened through practical experience (Ertelt et al., 2021). Partnerships between educational institutions and industry, as well as workshops supported by manufacturers, show how effective collaboration can directly contribute to the creation and development of new digital technologies and learning materials (Esangbedo et al., 2024). Practice-based learning modules, such as pilot renovation projects, demonstrate how real construction sites can serve as learning laboratories (Schwede et al., 2025).

Conversely, the Ukrainian VET system currently faces a number of limitations. Many institutions operate under outdated curricula that do not reflect modern energy efficiency requirements (Herasymyk-Chernova et al., 2020). At the same time, the lack of technical equipment, such as airtightness testing systems, thermal imagers, and other diagnostic tools, limits opportunities for practical training. Furthermore, teachers need to upgrade their qualifications to teach competencies corresponding to European standards.

Finally, digital and didactic innovations, such as Building Information Modeling (BIM), Virtual and Augmented Reality (VR/AR) applications, and performance diagnostic systems, offer realistic tools to bridge these gaps (Elgewely et al., 2021). Their gradual implementation in Ukrainian VET education can visualize energy performance for students, providing a basis for aligning learning outcomes with European standards and supporting Ukraine's broader recovery and integration goals.

The purpose of the article is to research the use of eco-oriented pedagogical technologies in the professional training of future skilled workers in the construction industry in EU countries. The article outlines a competence map associated with key professional tasks, highlights effective teaching methods, and identifies favorable conditions for their application. Based on these findings, recommendations have been developed for the adaptation and implementation of such approaches in the VET system of Ukraine.

Research methods. The article applies a three-stage comparative-adaptive approach, including: 1) "mapping" of competencies according to EU and Ukrainian vocational education standards; 2) a review of eco-oriented pedagogical

technologies applied by European colleagues that can be implemented in Ukrainian vocational education and training institutions; 3) an analysis of pathways for their implementation through pilot projects, partnerships, and the updating of educational programs.

Results and discussion. The conducted comparative-adaptive analysis demonstrates important conclusions regarding the integration of eco-oriented pedagogical technologies into the professional training of future skilled workers in the construction industry in Ukraine. Studying EU practices allows identifying both gaps in the Ukrainian VET system and opportunities for targeted interventions that will facilitate the development of professional competencies in the field of energy-efficient construction.

Competence mapping proves that EU standards in the field of energy efficiency cover a wide range of skills, including building physics, building envelope characteristics, installation of energy-efficient systems, conducting diagnostic tests, and construction site organization (Kozlovska et al., 2023). In Ukraine, although certain theoretical knowledge is present in VET programs, practical competencies remain insufficiently developed, especially in the fields of airtightness testing, diagnostics using thermal imagers, and the integration of "smart" systems. These skills are critically important for ensuring the quality and efficiency of modern energy-efficient buildings.

For example, the EU-funded MEnS project developed specialized training for architects and engineers to retrofit housing stock in accordance with Near-Zero Energy Building (NZEB) standards (CORDIS, 2018). The initiative was aimed at equipping construction managers with practical skills in the design, operation, and maintenance of energy-efficient facilities, serving as a reliable model for adapting Ukrainian educational programs by combining theoretical and practical competencies in the sphere of energy efficiency. Such projects demonstrate that combining knowledge with practical skills significantly increases workforce readiness and supports broader sustainable development goals.

A review of pedagogical technologies reveals several EU approaches particularly suitable for integration into the VET system in Ukraine. Dual

training models, combining classroom learning with on-the-job practice, consistently ensure a high level of competence and skill retention among students (Pilz & Wiemann, 2021). Within the framework of the VET4LEC project, requirements for vocational education and elements of low-energy construction necessary for training a workforce capable of implementing NZEB projects were investigated (Janssen, 2019). In particular, such an initiative highlights the effectiveness of combining theoretical learning with practical experience, as students engaged in practical exercises gain a deeper understanding of energy-efficient construction principles.

Furthermore, digital tools, including Building Information Modeling (BIM), Virtual (VR), and Augmented (AR) Reality, facilitate the development of inquiry-based learning, enabling students to visualize building performance, simulate diagnostic procedures, and assess the impact of construction decisions in a controlled environment (Khan et al., 2024). The ENERGE framework regarding energy efficiency in schools demonstrates how these digital tools can be systematically integrated into VET, improving learning outcomes, increasing motivation, and ensuring the acquisition of skills corresponding to modern energy efficiency standards (Brychkov et al., 2023).

Implementation pathways for Ukraine envisage a phased and adaptive approach. In the short term, pilot projects can be implemented in selected VET institutions, supplemented by targeted teacher training and partnerships with construction companies and equipment manufacturers. Such collaboration will provide both technical expertise and access to modern equipment, allowing for practical training without the need for large initial investments. In the medium term, educational programs can be revised to integrate eco-oriented pedagogical technologies into relevant training courses, and assessment standards can be formalized in accordance with EU competence frameworks, ensuring that graduates are assessed against clear and measurable criteria. Over time, such interventions can gradually transform Ukrainian VET, creating a workforce capable of implementing energy-efficient construction projects that meet both national priorities and EU standards.

Overall, EU experience demonstrates that structured, practice-oriented, and technology-driven learning forms skilled professionals capable of effectively combining theoretical knowledge with practical skills. Through careful planning and strategic adaptation of these approaches, the Ukrainian VET system can replicate similar results, shaping a new generation of builders capable of supporting sustainable reconstruction, improving energy efficiency in the built environment, and bringing Ukraine's construction sector closer to European best practice standards.

Conclusions. The integration of eco-oriented pedagogical technologies into the VET system is necessary for forming a skilled workforce capable of meeting both Ukrainian and European construction standards. Competence mapping confirms that European standards cover a wide range of skills, particularly from building physics and building envelope characteristics to the installation of energy-efficient systems and conducting diagnostic tests. Currently, the VET system in Ukraine provides certain theoretical knowledge, but practical skills, especially in the fields of airtightness testing, thermal imaging diagnostics, and the integration of "smart" systems, require substantial improvement.

EU experience, particularly the MEnS and VET4LEC projects, shows that combining classroom learning with on-the-job practice, supported by digital tools such as BIM, VR, and AR, effectively develops professional competence in the field of energy-efficient construction. These approaches increase student engagement, knowledge retention, and readiness to apply skills in real-world conditions. The ENERGE framework additionally demonstrates how digital and inquiry-based methods can be systematically integrated into VET educational programs to enhance learning effectiveness.

For Ukraine, a phased and adaptive strategy for implementing eco-oriented pedagogical technologies is recommended. Short-term measures include pilot projects in selected VET institutions, targeted teacher training, and partnerships with

construction companies and equipment manufacturers to ensure expertise and access to modern tools. Medium-term actions involve revising educational programs to integrate eco-oriented pedagogical technologies into several courses and formalizing assessment standards in accordance with EU competence frameworks. Gradually, such measures can transform the Ukrainian VET system, creating graduates capable of implementing energy-efficient construction projects that correspond to both national priorities and European standards.

For the purpose of effective implementation of eco-oriented pedagogical technologies, it is proposed to: 1) modernize educational programs by including both theoretical and practical competencies in energy efficiency; 2) implement professional development programs for teachers to strengthen teaching methodology and the use of digital tools; 3) develop pilot projects and partnerships with industry to provide practical experience with modern construction technologies; 4) integrate digital technologies such as BIM, VR, and AR to simulate real-world energy-efficient construction scenarios; and 5) apply a phased approach with formalized assessment standards for monitoring and measuring student competencies.

Thus, the implementation of eco-oriented pedagogical technologies based on positive aspects of European experience offers a practical pathway for modernizing the Ukrainian vocational education system. By combining theory, practice, and technology-driven learning, Ukraine can form a workforce capable of supporting sustainable reconstruction, improving energy efficiency in the built environment, and bringing the construction sector closer to European best practices.

Prospects for further research lie in substantiating the effectiveness of eco-oriented pedagogical technologies in VET institutions in Ukraine, particularly in the context of the professional development of teachers, the implementation of digital tools, and the realization of relevant projects.

List of references

- Верховна Рада України. (2021). Закон України № 1818-IX «Про енергетичну ефективність». <https://zakon.rada.gov.ua/laws/show/1818-20#Text>
- Герасимик-Чернова, Т. П., & Хомич, А. В. (2020). Дуальна система освіти як один із методів реформування системи підготовки фахівців для будівельного сектору. В А. Б. Єрмоленко, В. С. Кулішов, & С. С. Шевчук (Eds.), *Інноваційні технології при підготовці фахівців будівельної галузі: електронний збірник матеріалів Всеукраїнської науково-практичної конференції* (С. 36–41). БІНПО ДЗВО УМО НАПН України. <https://lib.iitta.gov.ua/id/eprint/723148>
- Кабінет Міністрів України. (2023). План відновлення України. Офіційний портал. <https://recovery.gov.ua/>
- Brychkov, D., Goggins, G., Doherty, E., Romero, N., Roudil, N., Di Trani, A., Singh, A., Smit, S., McLoughlin, E., Lima, R. de C. R., Günbay, S. M., Delmonte, B. A., Hill, A., Domegan, C., & Clifford, E. (2023). A systemic framework of energy efficiency in schools: Experiences from six European countries. *Energy Efficiency*, 16(4), Article 21. <https://doi.org/10.1007/s12053-023-10099-4>
- Cedefop. (2023). *The future of vocational education and training in Europe: Synthesis report* (Cedefop reference series No. 125). Publications Office of the European Union. <https://doi.org/10.2801/08824>
- CORDIS. (2018, July 5). Developing energy-efficient competencies of tomorrow's building professionals. European Commission. <https://cordis.europa.eu/article/id/227568-developing-energyefficient-competencies-in-tomorrows-building-manager>
- Elgewely, M. H., Nadim, W., ElKassed, A., Yehiah, M., Talaat, M. A., & Abdennadher, S. (2021). Immersive construction detailing education: Building information modeling (BIM)–based virtual reality (VR). *Open House International*, 46(3), 359–375. <https://doi.org/10.1108/OHI-02-2021-0032>
- Ertelt, B.-J., Frey, A., Hochmuth, M., Ruppert, J.-J., & Seyffer, S. (2021). Apprenticeships as a unique shaping field for the development of an individual future-oriented “vocationality”. *Sustainability*, 13(4), Article 2279. <https://doi.org/10.3390/su13042279>
- Esangbedo, C. O., Zhang, J., Esangbedo, M. O., Kone, S. D., & Xu, L. (2024). The role of industry-academia collaboration in enhancing educational opportunities and outcomes under the digital driven Industry 4.0. *Journal of Infrastructure, Policy and Development*, 8(1), Article 2569. <https://doi.org/10.24294/jipd.v8i1.2569>
- European Commission. (2019). *The European Green Deal*. https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en
- European Commission. (2020). *Renovation Wave: A new EU strategy to improve the energy performance of buildings*. https://ec.europa.eu/commission/presscorner/detail/en/ip_20_1835
- European Commission. (2024). *Energy Performance of Buildings Directive*. https://energy.ec.europa.eu/topics/energy-efficiency/energy-performance-buildings/energy-performance-buildings-directive_en
- Janssen, B. N. (2019). VET4LEC: Inclusive vocational education and training for low energy construction. <https://beryljanssen.com/project/vet4lec/>
- Khan, S., Panuwatwanich, K., & Usanavasin, S. (2024). Integrating building information modeling with augmented reality: Application and empirical assessment in building facility management. *Engineering, Construction and Architectural Management*, 31(7), 2809–2828. <https://doi.org/10.1108/ECAM-12-2021-1146>
- Kozlovska, M., Petkanic, S., Vranay, F., & Vranay, D. (2023). Enhancing energy efficiency and building performance through BEMS-BIM integration. *Energies*, 16(17), Article 6327. <https://doi.org/10.3390/en16176327>
- Pilz, M., & Wiemann, K. (2021). Does dual training make the world go round? Training models in German companies in China, India and Mexico. *Vocations and Learning*, 14, 95–114. <https://doi.org/10.1007/s12186-020-09255-z>
- Schwede, J., Heisler, D., & Harteis, C. (2025). Integrating practice-based learning into formal education: Stakeholder perspectives on the challenges of learning location cooperation (LLC) in Germany's dual VET system. *Social Sciences*, 14(3), Article 117. <https://doi.org/10.3390/socsci14030117>

Верховна Рада України. (2021). *Закон України № 1818-IX «Про енергетичну ефективність»*. <https://zakon.rada.gov.ua/laws/show/1818-20#Text>

Герасимик-Чернова, Т. П., & Хомич, А. В. (2020). Дуальна система освіти як один із методів реформування системи підготовки фахівців для будівельного сектору. В А. Б. Єрмоленко, В. С. Кулішов, & С. С. Шевчук (Eds.), *Інноваційні технології при підготовці фахівців будівельної галузі: електронний збірник матеріалів Всеукраїнської науково-практичної конференції* (С. 36–41). БІНПО ДЗВО УМО НАПН України. <https://lib.iitta.gov.ua/id/eprint/723148>

Кабінет Міністрів України. (2023). *План відновлення України*. Офіційний портал. <https://recovery.gov.ua/>

Translated & Transliterated

Verkhovna Rada Ukrainy [Verkhovna Rada of Ukraine]. (2021). *Zakon Ukrainy № 1818-IX “Pro enerhetychnu efektyvnist”* [The Law of Ukraine “On Energy Efficiency” No 1818-IX]. <https://zakon.rada.gov.ua/laws/show/1818-20#Text>, [in Ukrainian].

Herasymyk-Chernova, T. P., & Khomych, A. V. (2020). Dualna systema osvity yak odyh iz metodiv reformuvannia systemy pidhotovky fakhivtsiv dlia budivelnoho sektoru [The dual education system as an approach to reforming specialist training in the construction sector]. In A. B. Yermolenko, V. S. Kulishov, & S. S. Shevchuk (Eds.), *Innovatsiini tekhnolohii pry pidhotovtsi fakhivtsiv budivelnoi haluzi: elektronnyi zbirnyk materialiv Vseukrainskoi naukovo-praktychnoi konferentsii* [Innovative technologies in training professionals for the construction sector: E-Proceedings of the All-Ukrainian Scientific and Practical Conference] (pp. 36–41). BINPO DZVO UMO NAPN Ukrainy. <https://lib.iitta.gov.ua/id/eprint/723148>, [in Ukrainian].

Kabinet Ministriv Ukrainy [The Cabinet of Ministers of Ukraine]. (2023). *Plan vidnovlennia Ukrainy. Ofitsiyni portal* [The Recovery Plan. An official portal]. <https://recovery.gov.ua/>, [in Ukrainian].

Brychkov, D., Goggins, G., Doherty, E., Romero, N., Roudil, N., Di Trani, A., Singh, A., Smit, S., McLoughlin, E., Lima, R. de C. R., Günbay, S. M., Delmonte, B. A., Hill, A., Domegan, C., & Clifford, E. (2023). A systemic framework of energy efficiency in schools: Experiences from six European countries. *Energy Efficiency*, 16(4), Article 21. <https://doi.org/10.1007/s12053-023-10099-4>, [in English].

Cedefop. (2023). *The future of vocational education and training in Europe: Synthesis report* (Cedefop reference series No. 125). Publications Office of the European Union. <https://doi.org/10.2801/08824>, [in English].

CORDIS. (2018, July 5). Developing energy-efficient competencies of tomorrow's building professionals. *European Commission*. <https://cordis.europa.eu/article/id/227568-developing-energyefficient-competencies-in-tomorrows-building-manager>, [in English].

Elgewely, M. H., Nadim, W., ElKassed, A., Yehiah, M., Talaat, M. A., & Abdennadher, S. (2021). Immersive construction detailing education: Building information modeling (BIM)–based virtual reality (VR). *Open House International*, 46(3), 359–375. <https://doi.org/10.1108/OHI-02-2021-0032>, [in English].

Ertelt, B.-J., Frey, A., Hochmuth, M., Ruppert, J.-J., & Seyffer, S. (2021). Apprenticeships as a unique shaping field for the development of an individual future-oriented “vocationality”. *Sustainability*, 13(4), Article 2279. <https://doi.org/10.3390/su13042279>, [in English].

Esangbedo, C. O., Zhang, J., Esangbedo, M. O., Kone, S. D., & Xu, L. (2024). The role of industry-academia collaboration in enhancing educational opportunities and outcomes under the digital driven Industry 4.0. *Journal of Infrastructure, Policy and Development*, 8(1), Article 2569. <https://doi.org/10.24294/jipd.v8i1.2569>, [in English].

European Commission. (2019). *The European Green Deal*. https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en, [in English].

European Commission. (2020). *Renovation Wave: A new EU strategy to improve the energy performance of buildings*. https://ec.europa.eu/commission/presscorner/detail/en/ip_20_1835, [in English].

European Commission. (2024). *Energy Performance of Buildings Directive*. https://energy.ec.europa.eu/topics/energy-efficiency/energy-performance-buildings/energy-performance-buildings-directive_en, [in English].

Janssen, B. N. (2019). *VET4LEC: Inclusive vocational education and training for low energy construction*. <https://beryljanssen.com/project/vet4lec/>, [in English].

Khan, S., Panuwatwanich, K., & Usanavasin, S. (2024). Integrating building information modeling with augmented reality: Application and empirical assessment in building facility management. *Engineering, Construction and Architectural Management*, 31(7), 2809–2828. <https://doi.org/10.1108/ECAM-12-2021-1146>, [in English].

Kozlovska, M., Petkanic, S., Vranay, F., & Vranay, D. (2023). Enhancing energy efficiency and building performance through BEMS-BIM integration. *Energies*, 16(17), Article 6327. <https://doi.org/10.3390/en16176327>, [in English].

Pilz, M., & Wiemann, K. (2021). Does dual training make the world go round? Training models in German companies in China, India and Mexico. *Vocations and Learning*, 14, 95–114. <https://doi.org/10.1007/s12186-020-09255-z>, [in English].

Schwede, J., Heisler, D., & Harteis, C. (2025). Integrating practice-based learning into formal education: Stakeholder perspectives on the challenges of learning location cooperation (LLC) in Germany's dual VET system. *Social Sciences*, 14(3), Article 117. <https://doi.org/10.3390/socsci14030117>, [in English].

DOI: <https://doi.org/10.32835/2707-3092.2025.31.135-142>

ЗАСТОСУВАННЯ ЕКООРІЄНТОВАНИХ ПЕДАГОГІЧНИХ ТЕХНОЛОГІЙ У ПРОФЕСІЙНІЙ ПІДГОТОВЦІ МАЙБУТНІХ КВАЛІФІКОВАНИХ РОБІТНИКІВ БУДІВЕЛЬНОЇ ГАЛУЗІ: ДОСВІД ЄС

Ірина Дрозіч

кандидат педагогічних наук, науковий співробітник відділу змісту і технологій професійної освіти Інституту професійно-технічної освіти НАПН України, <http://orcid.org/0000-0002-8881-9314>, e-mail: irina.drozich@ukr.net

Реферат:

Актуальність: будівельна галузь є ключовою у досягненні кліматичних та енергетичних цілей, зокрема у країнах ЄС; кваліфіковані робітники відіграють важливу роль у реалізації енергоефективного зеленого будівництва; в Україні інтеграція екоорієнтованих педагогічних технологій у систему професійної (професійно-технічної) освіти є нагальною для підтримки післявоєнного відновлення, гармонізації з європейськими стандартами та посилення національної енергетичної безпеки.

Мета: проаналізувати використання екоорієнтованих педагогічних технологій у професійній підготовці майбутніх кваліфікованих робітників будівельної галузі у країнах ЄС та визначити шляхи адаптації й впровадження таких підходів у систему професійної (професійно-технічної) освіти України.

Методи: застосовано трьохетапний порівняльно-адаптивний підхід, що включає: 1) «картування» (mapping) компетентностей за стандартами професійної освіти ЄС та України; 2) огляд екоорієнтованих педагогічних технологій, застосовуваних європейськими колегами, які можуть бути реалізовані в українських закладах професійної (професійно-технічної) освіти; 3) аналіз шляхів їхнього впровадження завдяки пілотним проектам, партнерствам та оновленню освітніх програм.

Результати. Картування компетентностей засвідчило, що європейські екоорієнтовані стандарти охоплюють навички з будівельної фізики, характеристик будівельного огороження, монтажу енергоефективних систем, діагностики та організації робочих процесів на будівельному майданчику. Українські заклади професійної (професійно-технічної) освіти наразі пропонують обмежений практичний досвід у цих галузях. Проекти ЄС, такі як MEnS та VET4LEC, демонструють, що поєднання аудиторного навчання з практичними вправами та цифровими інструментами (BIM, VR, AR) підвищує компетентність та залученість студентів. Поетапне впровадження екоорієнтованих педагогічних технологій в Україні, включно з підвищенням кваліфікації

викладачів, пілотними проєктами та модернізацією освітніх програм, є можливим і поступово дозволяє узгодити результати професійної (професійно-технічної) освіти з європейськими стандартами.

Висновки: адаптація екоорієнтованих педагогічних технологій на основі досвіду ЄС створює можливості для модернізації української професійної освіти, підготовки кваліфікованих фахівців, здатних реалізовувати енергоефективні будівельні проєкти, підтримувати стале відновлення та наближати будівельну галузь України до найкращих європейських практик; подальші дослідження мають оцінити ефективність екоорієнтованих педагогічних технологій в українських закладах освіти для забезпечення їхнього системного впровадження.

Ключові слова: *енергоефективність, професійна освіта, фахівець будівельної галузі, екоорієнтовані педагогічні технології, Україна, ЄС, модернізація освітніх програм.*

Manuscript received: 12.07.2025

Accepted for publication after peer review: 24.09.2025

Published: 16.10.2025



MODERN PROBLEMS OF TRAINING FUTURE SPECIALISTS OF THE CONSTRUCTION INDUSTRY OF UKRAINE IN ENERGY-EFFICIENT TECHNOLOGIES

Vitalii Svyrydiuk

Doctor of Philosophy in Pedagogy, Research Fellow at the Department of Content and Technologies of Vocational Education of the Institute of Vocational Education of the National Academy of Educational science of Ukraine, <http://orcid.org/0000-0001-8909-5680>, e-mail: Vetal-79@i.ua

Abstract

Relevance. The post-war reconstruction of Ukraine and the global transition to a green economy necessitate the implementation of energy-efficient technologies in the construction industry. The author notes that the problem of personnel training is systemic in nature, as vocational education often covers energy efficiency competencies fragmentarily, complicating the integration of information technologies. In this context, there is a growing urgent need to form a holistic approach to personnel training and the implementation of modern energy-efficient technologies at all stages of construction activity.

Aim: to identify and characterize the modern problems of training future specialists of the domestic construction industry in energy-efficient technologies.

Methods: theoretical (systematic literature review, content analysis, classification of barriers); empirical (analysis of reports from international organizations, comparative analysis of Ukrainian and European practices); analytical (generalization of results, interpretation of interconnections).

Results: eight interconnected barriers have been singled out: the absence of a unified training system, the need for an interdisciplinary approach, a lack of practical skills, financial constraints, insufficient management support, difficulties in adapting materials, professional inertia, and excessive procedural regulation.

Conclusions: the identified factors determine the low level of implementation of information technologies in construction (Building Information Modeling, BIM) and Cross-Laminated Timber (CLT) technology, which causes potential energy efficiency losses of up to 30%. Further improvement of the national standards framework, full scaling of dual education, and intensification of partnerships with the EU are recommended.

Keywords: *energy efficiency, construction industry, vocational training, implementation barriers, competencies.*

Introduction. The construction industry occupies one of the leading positions among energy consumers at the global level. According to the Global Alliance for Buildings and Construction (2024), the building and construction sector is responsible for approximately 37% of global energy consumption and 25–30% of CO₂ emissions. In Ukraine, the situation is particularly acute due to

post-war reconstruction and dependence on imported energy resources, transforming energy-efficient technologies not merely into an innovation, but into a necessity for national security and sustainable development.

The relevance of the topic is conditioned by interconnected factors: global challenges of climate change and the UN Sustainable Development Goals

(SDG 7 and SDG 11) require a 50% reduction in energy consumption in buildings by 2030, which is reflected in the EU through the Energy Performance of Buildings Directive (EPBD), establishing minimum standards for the modernization and renovation of buildings (European Commission, 2024).

In the Ukrainian context, post-war reconstruction creates both unique opportunities and risks. The United Nations Development Programme in Ukraine (UNDP Ukraine, 2023) states that energy efficiency initiatives aim to reduce greenhouse gas emissions by strengthening institutional, administrative, and technical capacities in public institutions. The European Training Foundation (2025) emphasizes that the sector faces a shortage of skilled workers capable of working effectively with modern equipment and technologies of energy-efficient construction.

At the same time, the problem of personnel training is systemic in nature: vocational education often covers energy efficiency competencies in a fragmented manner, complicating the integration of technologies such as construction information technologies for modeling energy flows, as well as Cross-Laminated Timber (CLT) for energy-saving solutions (Kuzior et al., 2021). In this context, there is a growing urgent need to form a holistic approach to personnel training and the implementation of modern energy-efficient technologies at all stages of construction activity, including design, construction, and operation of structures.

The analysis of the source base made it possible to identify the main challenges for training future construction industry specialists in energy-efficient technologies. These are: the energy factor (high global energy consumption and Ukraine's critical dependence on imports, requiring personnel training for decarbonization and energy resilience); the educational factor (insufficient interdisciplinarity of programs globally and fragmentation of Ukrainian training, requiring standardization and updating of curricula); the technological factor (slow implementation of digital solutions and a low level of automation in Ukraine, exacerbated by resistance to innovation); and the political factor (global strategies—EPBD, Green Deal—set benchmarks, while the Ukrainian context is defined by the challenges of post-war recovery

and dependence on international aid). In view of this, the training of future construction specialists must simultaneously take into account global trends and national limitations, forming competencies capable of ensuring the integration of energy-efficient technologies into the process of recovery and development of the construction industry.

Research sources. The competency-based approach, which underlies the formation of energy efficiency competencies, integrates technical, economic, and environmental aspects into a holistic concept. The work of M. Ryghaug and K. Sørensen (2009) analyzes the problem of energy efficiency gaps in the construction industry caused by behavioral and organizational barriers. This work lays the theoretical foundations for understanding systemic obstacles influencing the implementation of energy-efficient practices. In the study by F. Mosannenzadeh et al. (2017), the concept is expanded by detailing the barriers to implementing smart energy city projects in Europe. The empirical approach of these studies revealed that the most frequent obstacles are related to planning and design stages, highlighting the importance of educational preparation at the early stages of transformation processes. Researchers A. Trianni et al. (2013) supplemented the picture by analyzing barriers to industrial energy efficiency in European foundries. Their research demonstrates that technological barriers are often intertwined with educational ones, creating complex challenges for industrial transformation.

Modern Ukrainian studies (Andriushchenko, 2019; Deineko, & Tsyplitsyna, 2019; Kuzior et al., 2021; Andrusiv et al., 2023) reveal the specifics of energy efficiency in the context of the transition to a circular economy and green transformation, emphasizing the critical importance of professional training for the successful implementation of sustainable practices. In 2017, G. Hochman and G. Timilsina (2017) conducted one of the most thorough studies of energy efficiency barriers in commercial and industrial firms in Ukraine. Empirical analysis revealed a lack of knowledge and skills as one of the most significant factors hindering the implementation of energy-saving technologies. Ukrainian scholars N. Kholod et al. (2018) expanded this research, focusing on overcoming barriers through policy reforms and emphasizing the role of

educational initiatives in creating a favorable environment for energy-efficient innovations.

Significant attention is paid to international experience as a tool for forming national educational programs: T. Kryvomaz et al. (2020) investigated the prospects for the development of green construction in Ukraine using the example of Poland, demonstrating the value of cross-border perspectives. The works of G. Kharlamova, S. Nate, and O. Chernyak (2016) examined renewable energy and Ukraine's energy security, emphasizing the role of education in ensuring energy independence. At the same time, modern international initiatives, particularly the programs of the International Energy Agency (IEA, 2024, 2025) and the European Commission (2024), demonstrate a comprehensive approach to competence development, combining technical training with economic analysis and environmental awareness.

The purpose of the article is to identify and characterize the current problems of training future specialists of the domestic construction industry in energy-efficient technologies.

Research methods: theoretical (systematic literature review, content analysis, classification of barriers); empirical (analysis of reports from international organizations, comparative analysis of described Ukrainian and European practices); analytical (generalization of results, interpretation of interconnections).

A systematic literature review was conducted according to generally accepted principles of selection, analysis, and synthesis of scientific sources, adapted for interdisciplinary research in the field of energy efficiency and vocational education. Data sources covered academic databases Scopus, Web of Science, and Google Scholar for the period 2013–2025, totaling 22 sources, including 15 academic articles, 7 reports from international organizations, and additional publications. The search was performed using keywords: "energy efficiency", "construction", "vocational training", "barriers", "Ukraine", "professional education". Source selection criteria included research on energy efficiency barriers in construction or related industries, analysis of educational approaches to specialist training, a focus on Ukraine or relevant international experience, as well as publication in peer-reviewed journals or

authoritative reports. Works without empirical substantiation, without connection to educational topics, or with unavailable full texts were excluded. Analysis methods included content analysis with systematic coding of text data to identify the frequency of mentions of different types of barriers, comparative analysis contrasting Ukrainian and international practices, and classification involving the grouping of identified barriers by thematic categories.

Results and discussion. The results of the analysis of the formed source base reveal eight key barriers hindering the effective training of future construction industry specialists in energy-efficient technologies:

1. *Lack of a unified training system.* Vocational education standards only partially cover energy efficiency, creating significant gaps in specialists' competencies. According to the International Energy Agency (IEA, 2025), standardization of curricula is necessary to ensure a systemic approach to education. At the same time, the European Training Foundation (ETF, 2025) points to a specific shortage of skilled workers in the energy-efficient construction sector in Ukraine. Ukrainian scholar K. Andriushchenko (2019) emphasizes that enterprise energy efficiency acts as a key factor in the country's economic development, requiring a systemic approach to education starting from basic vocational training. However, many educational standards do not include or only partially cover the formation of energy efficiency competencies, complicating the training of qualified specialists. As a result, there is no unified framework that would set a general trajectory for forming relevant competencies, leading to a disconnect between labor market requirements and educational programs.

2. *Need for an interdisciplinary approach.* Energy-efficient technologies require the close integration of technical, economic, and environmental knowledge. Research by F. Mosannenzadeh et al. (2017) demonstrates the success of smart energy city projects in Europe built on interdisciplinary cooperation and the integration of various fields of knowledge: technical, economic, environmental, and political. In this context, educational cases should encourage critical thinking and facilitate cooperation between different disciplines. Scholars A. Kuzior et al. (2021)

emphasize that green energy in Ukraine requires a comprehensive understanding of government requirements, societal needs, and technological trends, which is possible only under conditions of interdisciplinary education. Thus, the absence of systemic interdisciplinary training leads to a blurring of boundaries between knowledge and skills necessary for the effective implementation of energy-efficient solutions in the construction sector.

3. *Insufficient practical skills.* This is the most frequently mentioned limiting factor in relevant studies. Although Ukrainian commercial and industrial companies experience difficulties due to a lack of practical experience in applying energy-efficient technologies, similar problems exist in the international context. In particular, scientists G. Hochman and G. Timilsina (2017) note that a significant portion of specialists does not possess a sufficient level of knowledge and practical skills regarding the implementation of the latest energy-efficient technologies in construction, complicating their transition to real production conditions. According to European experience summarized in the study by A. Trianni et al. (2013), even in developed countries, industrial enterprises face similar challenges, indicating the universality of this problem. Thus, the mismatch between theoretical training programs and practical production requirements contributes to a low level of workforce readiness to implement energy-efficient technologies, reducing resource efficiency and innovation implementation in the construction process.

4. *Financial constraints.* In the study by L. Deineko and O. Tsyplitsyna (2019) on the opportunities and barriers of the Ukrainian industry's transition to a circular economy, it is emphasized that financial constraints play a central role in this process. The United Nations Development Programme (UNDP, 2023) states that high initial costs for training and implementing energy-efficient technologies constitute a key barrier for public buildings in Ukraine. An analysis of this problem is also reflected within the framework of the European Skills, Competences, Qualifications and Occupations (ESCO) program, aimed at overcoming relevant financial constraints by introducing innovative financial mechanisms. To effectively overcome financial constraints, systemic

measures combining institutional and investment mechanisms are necessary. Within this strategy, innovative financial mechanisms offered by ESCO gain importance, oriented toward the modernization of educational programs and energy-efficient technologies in public buildings, as well as support for market participants at the initial stages of implementation.

5. *Insufficient management support.* The work of M. Ryghaug and K. Sørensen (2009) shows that the very absence of clear management support at the organizational structure level significantly reduces the effectiveness of energy efficiency measures in the construction industry. Researchers N. Kholod and M. Evans (2018) emphasize that overcoming energy efficiency barriers through policy reforms requires the active participation and support of governing structures at all levels.

6. *Difficulties in adapting teaching materials.* Regarding the difficulties of adapting teaching materials, the International Energy Agency (IEA, 2024) points to the rapid development of technologies as the main reason for difficulties in their adaptation: traditional approaches to curriculum development cannot keep pace with technological innovations, as well as the significant volume of available but not always high-quality information, requiring extensive work from instructors and learners to select relevant content. Polish scholar T. Kryvomaz et al. (2020) emphasize that prospects for green construction development require the constant updating of curricula in accordance with modern technological solutions, reinforcing the need for a systemic approach to updating educational materials in the context of the circular economy and energy efficiency.

7. *Professional inertia.* Among industry barriers, professional inertia is also highlighted, particularly resistance to change among professionals accustomed to traditional approaches and technologies. Ukrainian scholars G. Hochman and G. Timilsina (2017) found that psychological barriers related to resistance to change represent a serious obstacle to the implementation of energy-efficient technologies in Ukrainian firms. Research by Ukrainian scientists U. Andrusiv et al. (2023) showed that the effective use of Ukraine's fuel and energy resources requires not only technical solutions but also cultural changes within the

professional community. Thus, a notable role is assigned to changes in corporate culture and professional values, which must support the implementation of technological innovations and energy-efficient practices.

8. *Bureaucratic procedures.* Regarding bureaucratic procedures, the European Commission (2024) in its Energy Performance of Buildings Directive notes the presence of regulatory barriers as a significant obstacle to the rapid implementation of energy-saving technologies. Examining issues of renewable energy and security for Ukraine, scientists G. Kharlamova, S. Nate, and O. Chernyak (2016) emphasize that complex bureaucratic procedures slow down not only technological innovations but also the development of relevant educational programs. Thus, ensuring a faster and sustainable implementation of the circular economy and energy efficiency in the Ukrainian construction industry requires considering the interaction between regulatory reforms, financial instruments, workforce capacity development, and the adaptation of curricula to technology dynamics.

Thus, the study identified eight barriers of a systemic nature in the context of teaching energy-efficient technologies in the construction industry. The analysis of the problem highlights the necessity of applying a systemic approach to teaching energy-efficient technologies in construction, combining curriculum updates, provision of practical experience, overcoming financial and personnel constraints, and interdisciplinary cooperation to overcome complex challenges.

The review results indicate the critical importance of practice-oriented approaches and economic support for educational initiatives. The interconnection between the identified barriers forms a cascading system of obstacles, where successfully overcoming one challenge often depends on effectively resolving another. For example, the lack of a unified training system directly impacts the formation of interdisciplinary competencies and, consequently, the quality of energy-efficient solutions in practice, creating a chain of limitations in translating existing knowledge into actionable innovative approaches.

Particular attention is drawn to the domestic trend, which partially aligns with global trends but has specific features related to post-war recovery.

While European countries (Mosannenzadeh et al., 2017; Trianni et al., 2013) direct their efforts toward improving existing systems, Ukraine has a unique opportunity to build a new vocational education system by integrating global best practices while taking local realities into account. In this context, the experience of international support programs (UNDP, 2023; ETF, 2025), demonstrating the effectiveness of targeted initiatives to overcome specific barriers, is especially valuable.

The identified barriers have a cascading impact on the entire construction industry of Ukraine: insufficient personnel training leads to a reduction in the quality of energy-efficient solutions, reduces energy saving potential by up to 30%, slows down the pace of post-war reconstruction, and lowers the competitiveness of Ukrainian construction companies in the international market.

The research results are directly linked to achieving the Sustainable Development Goals: SDG 4 (Quality Education), SDG 7 (Affordable and Clean Energy), and SDG 11 (Sustainable Cities and Communities). Overcoming the identified barriers is a prerequisite for the successful implementation of Ukraine's obligations under the Paris Agreement and the European Green Deal.

An important limitation of the study is the use of exclusively secondary sources without primary data collection from Ukrainian specialists. In future research, it is advisable to involve empirical surveys of construction industry representatives, educational institutions, and government bodies to validate and refine the identified barriers, which will strengthen confirmed conclusions and provide a more grounded basis for formulating policies and educational programs oriented toward the industry's real needs.

Conclusions. The study of domestic sources made it possible to ascertain that the training of future construction industry specialists in Ukraine faces complex challenges—from Ukraine's energy dependence and personnel shortages to the slow implementation of modern energy-efficient technologies in the construction industry and the fragmented inclusion of modern energy-efficient technologies in educational programs for future specialists. Combined with the needs of Ukraine's post-war recovery, this requires updating the content of education and forming competencies in future

construction industry specialists capable of ensuring the active implementation of modern energy-efficient technologies in professional activities.

The analysis of the source base allowed outlining the key problems of preparing future construction industry specialists for work with energy-efficient technologies under conditions of Ukraine's post-war reconstruction. The most critical are the deficit of practical skills and financial constraints, which is confirmed by both Ukrainian and foreign studies. At the same time, the country's reconstruction process opens an opportunity to create a qualitatively new system of vocational education that can integrate global best practices and avoid the mistakes of gradual, evolutionary development of educational systems. Overcoming the identified barriers requires a comprehensive

approach including: development and implementation of modern educational standards; active participation in European educational programs; involvement of international organizations' experience; and cultural transformation of the professional community. Without systemic and coordinated work in all directions, there is a risk of losing up to 30% of energy efficiency potential during the reconstruction process, which may cause significant economic losses and reduce the competitiveness of the national construction industry.

In the future, it is planned to conduct a survey among construction industry specialists to clarify specific needs and the existing level of practical skills in energy-efficient technologies, as well as to identify key barriers hindering their implementation.

List of references

Andriushchenko, K. (2019). Energy efficiency of enterprises as a key factor in the development of the country's economy. *Scientific Journal of Polonia University*, 33(2), 36-49. <https://doi.org/10.23856/3304>

Andrusiv, U., Popadynets, N., Zelinska, H., Krasnorutskyy, O., Yakubiv, V., Maksymiv, Y., Hryhoruk, I., Shchur, R., & Lapchyk, Y. (2023). Efficiency of use of fuel and energy resources of Ukraine: Assessment, simulation and forecasting. *Polityka Energetyczna – Energy Policy Journal*, 26(4), 63-80. <https://doi.org/10.33223/epj/169743>

Deineko, L. V., & Tsyplitsyna, O. O. (2019). Opportunities and barriers of the Ukrainian industry transition to the circular economy. *Environmental Economics*, 10(1), 79-92. [https://doi.org/10.21511/ee.10\(1\).2019.06](https://doi.org/10.21511/ee.10(1).2019.06)

European Commission. (2024, May 8). Energy Performance of Buildings Directive (EPBD). https://energy.ec.europa.eu/topics/energy-efficiency/energy-performance-buildings/energy-performance-buildings-directive_en

European Training Foundation. (2025, March 15). Ukraine's Energy Innovative Hubs. <https://www.etf.europa.eu/en/news-and-events/news/ukraines-energy-innovative-hubs>

Global Alliance for Buildings and Construction. (2024). Global status report for buildings and construction 2024-2025. United Nations Environment Programme. <https://globalabc.org/global-status-report>

Hochman, G., & Timilsina, G. R. (2017). Energy efficiency barriers in commercial and industrial firms in Ukraine: An empirical analysis. *Energy Economics*, 63, 106-115. <https://doi.org/10.1016/j.eneco.2017.01.013>

International Energy Agency. (2024). Energy efficiency 2024: Analysis and key findings. <https://www.iea.org/reports/energy-efficiency-2024>

International Energy Agency. (2025). Energy efficiency policy toolkit 2025: *Buildings*. <https://www.iea.org/reports/energy-efficiency-policy-toolkit-2025/buildings>

Kharlamova, G., Nate, S., & Chernyak, O. (2016). Renewable energy and security for Ukraine: Challenge or smart way? *Journal of International Studies*, 9(1), 88-115. <https://doi.org/10.14254/2071-8330.2016/9-1/7>

Kholod, N., & Evans, M. (2018). Improving Ukraine's energy security: The role of energy efficiency. *Pacific Northwest National Laboratory*. <https://www.osti.gov/servlets/purl/1566786>

Kuzior, A., Lyulyov, O., Pimonenko, T., & Kwilinski, A. (2021). Green energy in Ukraine: State, public demands, and trends. *Energies*, 14(22), 7745. <https://doi.org/10.3390/en14227745>

Kryvomaz, T., Chmielewska, J., & Kanashchuk, T. (2020). The prospects of green building developing in Ukraine on example of Poland. *Environmental Safety and Natural Resources*, 36(4), 20-31. <https://doi.org/10.32347/2411-4049.2020.4.20-31>

Mosannenzadeh, F., Di Nucci, M. R., & Vettorato, D. (2017). Identifying and prioritizing barriers to implementation of smart energy city projects in Europe: An empirical approach. *Energy Policy*, 105, 191-201. <https://doi.org/10.1016/j.enpol.2017.02.007>

Carlander, J., & Thollander, P. (2022). Barriers to implementation of energy-efficient technologies in building construction projects – results from a Swedish case study. *Resources Environment and Sustainability*, 11(100097), 100097. <https://doi.org/10.1016/j.resenv.2022.100097>

Paeradigms. (2025). Skills for the green transformation: Toolkit. <https://www.paeradigms.org/projects/skills-for-the-green-transformation>

Pashchenko, T. (2025). Energy-efficient reconstruction of Ukraine: Ecologically-oriented training of construction industry specialists. *Professional Pedagogics*, 1(28), 96-104. <https://jrnls.ivet.edu.ua/index.php/1/en/article/view/966>

Trianni, A., Cagno, E., Thollander, P., & Backlund, S. (2013). Barriers to industrial energy efficiency in foundries: A European comparison. *Journal of Cleaner Production*, 40, 161-176. <https://doi.org/10.1016/j.jclepro.2012.09.040>

Radkevych, V., Kruchek, V., Pryhodii, M., & Voronina-Pryhodii, D. (2024). Standards in vocational teacher education in Ukraine: Problems and fields of tension. In T. Deissinger & O. Melnyk (Eds.), *Partnership-based governance and standardization of vocational teacher education in Ukraine* (pp. 261–292). Wbv Media.

Ryghaug, M., & Sørensen, K. H. (2009). How energy efficiency fails in the building industry. *Energy Policy*, 37(3), 984-991. <https://doi.org/10.1016/j.enpol.2008.11.001>

United Nations Development Programme Ukraine. (2023). Removing barriers to increase investment in energy efficiency in public buildings in Ukraine through the ESCO modality. <https://www.undp.org/ukraine/projects/removing-barriers-increase-investment-energy-efficiency-public-buildings-ukraine-through-esco-modality-small-and-medium-sized>

Janasz, K., Wiśniewska, J., & Marks-Bielska, R. (2022). Modelling the energy sector in Ukraine with RES development scenarios. *European Research Studies Journal*, 25(4), 283-307. <https://doi.org/10.35808/ersj/3082>

DOI: <https://doi.org/10.32835/2707-3092.2025.31.143-150>

СУЧАСНІ ПРОБЛЕМИ НАВЧАННЯ МАЙБУТНІХ ФАХІВЦІВ БУДІВЕЛЬНОЇ ГАЛУЗІ УКРАЇНИ ЕНЕРГОЕФЕКТИВНИМ ТЕХНОЛОГІЯМ

Віталій Свирідюк

доктор філософії, науковий співробітник відділу змісту та технологій професійної освіти
Інституту професійно-технічної освіти НАПН України, <https://orcid.org/0000-0001-8909-5680>,
e-mail: Vetal-79@i.ua

Реферат:

Актуальність. Повоєнна відбудова України та глобальний перехід до зеленої економіки зумовлюють потребу впровадження енергоефективних технологій у будівельній галузі. Автор зазначає, що проблема підготовки кадрів має системний характер, оскільки професійна освіта часто фрагментарно охоплює компетентності з енергоефективності, що ускладнює інтеграцію інформаційних технологій. У цьому контексті зростає нагальна потреба у формуванні цілісного підходу до підготовки кадрів і впровадження сучасних енергоефективних технологій у всіх ланках будівельної діяльності.

Мета: виявити й охарактеризувати сучасні проблеми навчання майбутніх фахівців вітчизняної будівельної галузі енергоефективним технологіям.

Методи: теоретичні (систематичний огляд літератури, контент-аналіз, класифікація бар'єрів); емпіричні (аналіз звітів міжнародних організацій, порівняльний аналіз українських і європейських практик); аналітичні (узагальнення результатів, інтерпретація взаємозв'язків).

Результати: виокремлено вісім взаємопов'язаних бар'єрів: відсутність єдиної системи навчання, потреба в міждисциплінарному підході, нестача практичних умінь, фінансові обмеження, недостатня підтримка керівництва, труднощі адаптації матеріалів, професійна інерція та надмірна зарегламентованість процедур.

Висновки: виявлені чинники зумовлюють низький рівень впровадження інформаційних технологій у будівництві (Building Information Modeling, BIM) і технології перехресно-ламінованого бруса (Cross-Laminated Timber, CLT), що спричиняє потенційні втрати енергоефективності до 30 %. Рекомендовано подальше вдосконалення національної рамки стандартів, повне масштабування дуальної освіти та активізація партнерства з ЄС.

Ключові слова: енергоефективність, будівельна галузь, професійне навчання, бар'єри впровадження, компетентності.

Manuscript received: 25.06.2025

Accepted for publication after peer review: 26.09.2025

Published: 23.10.2025



The publication was prepared within the framework of the implementation of tasks of the scientific research of the Department of Vocational-Practical Training of the Institute of Vocational Education of the NAES of Ukraine "Innovative methodologies of vocational-practical training of future construction industry specialists in the conditions of the post-war recovery of Ukraine" (state registration number 0125U000310), years of implementation: 2025–2027.

THE CURRENT STATE OF IMPLEMENTATION OF VOCATIONAL-PRACTICAL TRAINING OF FUTURE CONSTRUCTION INDUSTRY SPECIALISTS IN THE VOCATIONAL EDUCATION SYSTEM OF UKRAINE

Oksana Subina

Candidate of Pedagogical Sciences, Associate Professor, Senior Researcher at the Department of Vocational-Practical Training of the Institute of Vocational Education of the NAES of Ukraine, <https://orcid.org/0000-0001-8167-539X>, e-mail: subinaoxana@gmail.com

Abstract

Relevance: the modern conditions of global instability and the unprecedented losses sustained by the Ukrainian economy as a result of the full-scale aggression of the Russian Federation in 2022–2025, the vocational-practical training of qualified construction industry specialists acquires special significance; the educational process during the implementation of vocational-practical training is oriented and adapted to the requirements of production and its regularities, which necessitates the improvement of the content of educational and training programs in accordance with production conditions, while the use of innovative technologies occupies a priority place both in the industrial sector and in the educational process.

Objective: to analyze the current state of implementation of vocational-practical training of future construction industry specialists in the vocational education system of Ukraine, to substantiate measures to overcome educational problems caused by the war of the Russian Federation against our state, and to formulate requirements for updating educational programs in accordance with global and domestic trends in the development of the construction industry, the challenges of the state's post-war recovery, the concept of sustainable development, and industrial modernization.

Methods: theoretical analysis of scientific sources, normative-legal documents, and empirical data – to determine the degree of research into the current state of implementation of vocational-practical training of future construction industry specialists in the vocational education system of Ukraine; surveying pedagogical staff – to assess the level of organization of vocational-practical training in vocational education institutions of the construction profile; synthesis and generalization – to form conclusions regarding the measures necessary to overcome educational problems caused by the war and the requirements for updating educational programs.

Results: the modern conditions of the implementation of vocational-practical training of future construction industry specialists in the vocational education system of Ukraine have been determined; measures to overcome problems caused by the war of the Russian Federation against our state have been substantiated; requirements for updating educational programs in accordance with global and domestic trends in the development of the construction industry, the challenges of the state's post-war recovery, the concept of sustainable development, and industrial modernization have been outlined.

Conclusions: it has been clarified that the current state of vocational-practical training of future construction industry specialists in Ukraine is sufficient, but limited by an outdated material-technical base and insufficient implementation of innovative production technologies; it has been substantiated that the successful training of qualified

personnel for the construction industry largely depends on effective forms and methods of organizing vocational-practical training, which involves the practical mastering and practicing of professional competencies of the future profession; priority requirements for the implementation of vocational-practical training of future construction industry specialists have been defined (adaptation of educational programs to Industry 5.0 standards, with an emphasis on human-centricity, strengthening the base of scientific and technical innovations, environmental literacy, and social responsibility, development of creative competencies and leadership; integration of ESG criteria into professional competencies, particularly in the context of the construction industry; orientation of the content of vocational-practical training towards the mastering by learners of innovative methods and technologies that will allow for the effective and high-quality performance of production tasks in the construction industry under conditions of rapid socio-economic global development; combination of modern theoretical knowledge of learners with practical skills acquired in a real production environment; development of the emotional intelligence of future specialists, the capacity for teamwork, and critical thinking).

Keywords: *vocational-practical training; future construction industry specialists; vocational education system; innovative technologies in construction; modern pedagogical technologies.*

Introduction. Here is the professional translation of the provided scientific text into English. The structure, paragraph count, and sentence sequence strictly correspond to the original.

In the current conditions of global instability and unprecedented losses suffered by the Ukrainian economy as a result of the full-scale aggression of the rf in 2022–2025, the professional-practical training of qualified specialists in the construction industry acquires special significance. Requirements for Ukrainian vocational education, particularly in the construction sector, are determined by global trends in industry development, the goals of the Concept of Sustainable Development, the principles of Industry 5.0, and specifically, the reorientation of the economy toward ESG standards, the digitalization of production processes, and the growing role of human capital. At the same time, our state must overcome the consequences of Russian intervention under the brutal conditions of war–rebuilding destroyed critical infrastructure, overcoming the energy crisis, logistical limitations, inflationary waves, and a shortage of qualified personnel. Despite wartime challenges, the content and forms of domestic vocational education are oriented toward modern global trends regarding the digitalization of production processes and the implementation of ESG principles in the economy, integrating innovative approaches to the organization of education, and forming the environmental consciousness and emotional intelligence of the country's future labor potential.

The importance of ensuring quality education for future specialists is one of the 17 key Sustainable Development Goals for the period up to 2030 (UN, 2015), alongside the goals of ensuring decent work and economic growth, industry, innovation and infrastructure development, and other important directions of global progress adopted at the UN Sustainable Development Summit.

The Report on the Implementation of the Sustainable Development Goals in 2025 (United Nations Department of Economic and Social Affairs, 2025) notes that although education is vital for the sustainable development of society, tangible progressive changes in resolving the issue of accessible quality education for all strata of the population in various countries have not yet been achieved. According to the report, education quality results are declining in many countries. At the same time, substantial inequality in access to quality education persists due to gender, wealth, and geographical location.

Among the recommendations of the UN Department of Economic and Social Affairs regarding the acceleration of progress in ensuring accessible quality education for all population strata, priority should be given to the development of inclusive education and the expansion of funding for the educational sector. Such an approach will simultaneously allow for solving problems of access to educational services, ensuring the quality of education, and equality of rights to learning. In this context, the introduction of effective legal norms to

guarantee compulsory free education, the elimination of digital and infrastructural imbalances (especially in the least developed countries), and the expansion of opportunities for lifelong learning for adults and marginalized population groups are envisaged.

An important component of ensuring quality professional education in our country is professional-practical training, which is based on: a competency-based approach; the integration of theoretical knowledge with practical skills; the use of modern educational and professional technologies, particularly digital simulators, artificial intelligence, virtual (VR) and augmented reality (AR) technologies; BIM modeling, etc.

Sources of research. An analysis of scientific achievements regarding the professional-practical training of future construction industry specialists in the system of vocational and professional pre-higher education indicates that Ukrainian scholars have researched various aspects of the problems of training future builders, in particular: scientific foundations of the development of the construction industry of Ukraine (Banakh, Pavlov, & Radkevych, 2017); formation of energy-efficient competence of future qualified workers in the construction industry (Herliand, Homeniuk, Drozich, Kalenskyi, Pashchenko, & Piatnychuk, 2025); innovative energy-efficient technologies in the professional training of future construction industry specialists (Homeniuk, 2025); issues of professional-practical training of future builders in vocational (vocational-technical) education institutions (Lylik, Savytska, Buchynska, & Yashkina, 2025); modular-competency approach in the training of qualified workers in the construction industry; assessment of the quality of specialist training in colleges (Luzan, Lapa, Pashchenko, Mosia, Vanina, Yamkovyi, & Kalenskyi, 2022), and others.

An analysis of the organization of the educational process for future construction industry specialists in vocational education institutions indicates that the basic approach to organizing learning is its orientation toward an in-depth professional-practical component at all stages of student training. Under such an approach, there is a maximum approximation of the students'

professional education to the real conditions of their future professional activity. Besides the acquisition of professional experience, the practice-oriented component for future specialists is an important foundation for their psychological adaptation to the realities of the modern production environment. The educational process during the implementation of professional-practical training is oriented and adapted to production requirements and its regularities, which necessitates the improvement of the content of educational and training programs in accordance with production conditions, wherein the use of innovative technologies occupies a priority place both in the production industry and in the educational process. The significance of innovative technologies in the vocational education process grows simultaneously with the increase in the degree of implementation of scientific and technical progress achievements in every branch of production. At the current stage of economic development, technical progress, and the scientific-technical revolution, the necessity for the rapid restructuring of production using new highly efficient technologies comes to the fore. The process of updating technologies and equipment has intensified particularly with the development of global technological progress, as well as the intensification of research and development works in Ukraine. The modern construction industry develops under conditions of fierce competition and rapid technological changes. To ensure the efficiency of production processes and create competitive advantages, construction enterprises must focus on the development and implementation of innovative technologies that reduce construction costs, increase labor safety, profitability, and production quality, and ensure environmental friendliness and energy efficiency, etc. With the development of innovations in the construction industry, the content and technologies of the professional-practical training of future builders must change and evolve.

The purpose of the article is to analyze the current state of the implementation of professional-practical training of future construction industry specialists in the vocational education system of Ukraine, to substantiate measures for overcoming educational problems caused by the war of the RF

against our state, and to formulate requirements for updating educational programs in accordance with global and domestic trends in construction industry development, the challenges of the state's post-war recovery, the concept of sustainable development, and industrial modernization.

Research methods: theoretical analysis of scientific sources, normative-legal documents, and empirical data—to determine the degree to which the current state of implementation of professional-practical training of future construction industry specialists in the vocational education system of Ukraine has been studied; survey of pedagogical staff—to assess the level of organization of professional-practical training in vocational education institutions of the construction profile; synthesis and generalization—to form conclusions regarding measures necessary to overcome educational problems caused by the war, and requirements for updating educational programs.

Results and discussion. The professional-practical training of future builders is one of the important prerequisites for the successful implementation of tasks of modern professional education, aimed at resolving urgent issues of the state's recovery and development, overcoming global world challenges, and ensuring the rapid development of scientific and technical progress. The successful organization of professional-practical training for future specialists envisages the adaptation of educational and training programs to labor market requirements, the use of innovative approaches in teaching, and the implementation of active cooperation with construction businesses. It is precisely through the integration of theoretical knowledge with practical skills that future specialists will be able to work successfully with the latest technologies and perform tasks aimed at the sustainable development of the construction industry (Kruchek & Subina, 2025). The modern paradigm of vocational education development requires a real partnership between educational institutions and the labor market. The training of a qualified worker requires significant financial and time resources, which these enterprises usually do not have. At the same time, the level of competence of a qualified worker determines the quality of construction works and services and must meet

market requirements and consumer expectations (Lylik, Savytska, Buchynska & Yashkina, 2025).

Mastering innovative methods and technologies by students, which will allow for the effective and high-quality performance of production tasks, is a primary task in forming the professional competencies of future construction industry specialists in conditions of rapid global socio-economic development. Thus, in particular, an important direction in the implementation of construction is the use of the latest machinery. Modern construction machines and equipment, equipped with diverse functions, allow work to be conducted quickly, efficiently, and safely. Innovative technologies in construction also envisage the use of new materials and structures. Such technologies ensure a reduction in construction costs, energy efficiency, and the durability of structures.

The use of innovative methods allows for the creation of comfortable buildings that meet the requirements and demands of modern society. One of the most important achievements in the construction industry today is the application of the potential of artificial intelligence, which contributes to the realization of new opportunities for construction development, allows for the automation of many technical processes, and ensures more precise and efficient execution of production tasks.

A productive achievement in the automation of the construction industry is also the use of drones, robots, and automatic mechanisms capable of performing complex works, relieving people of heavy physical loads and reducing injury risks. The ability of robots to work continuously ensures, in particular, the acceleration of the pace of production task execution and a reduction in labor costs.

The use of virtual reality (VR) technologies in construction creates opportunities for preparing detailed object models, as well as introducing additional functions, such as the visualization of movement and lighting changes, and the sensation of scales and spatial characteristics of future buildings and structures. Thanks to VR technologies, clients and project teams can study the project in greater detail and make necessary changes even before construction begins.

It is also important to form in future builders knowledge and skills regarding the use of modern construction materials and innovations that allow for increasing productivity and work quality. In particular, the use of fast-curing concrete mixtures allows for reducing the time for curing and strengthening structures, which accelerates construction rates; the application of automatic quality control systems allows for timely detection and elimination of any shortcomings and defects, which ensures the high quality of executed works, etc. (Modern technologies in construction – innovations and tips for successful project implementation, 2024).

The conducted analysis of modern approaches to the implementation of professional-practical training allows for asserting that the leading directions of professional-practical training today can be considered: orientation toward relevant educational and professional standards and innovative production experience; mastering digital tools and innovative methods and technologies of the construction industry; forming such soft skills as communicative abilities, the ability to work in a team, the ability to take responsibility, etc.; involving employers and leading specialists of the construction industry in the development of

educational programs, teaching, and assessment of learning outcomes; certification of specialists in accordance with labor market requirements, etc.

At the same time, as experience shows, the dynamic development of production innovations and their successful implementation in the educational process are hindered by wartime challenges, in which Ukrainian education has been situated since 2022. Such trends are confirmed by the results of a survey conducted within the framework of the scientific research "Innovative methods of professional-practical training of future construction industry specialists in conditions of the post-war recovery of Ukraine" by employees of the Department of Professional-Practical Training of the IVE NAES of Ukraine in 2025.

More than 2070 pedagogical workers from all regions of Ukraine participated in the survey. Among the surveyed pedagogical workers, specialists whose pedagogical experience exceeded 20 years constituted almost 52% (51.9%); pedagogical workers with 11–20 years of pedagogical work experience constituted 23.3%; workers with 4–10 years of experience constituted 13.8%, and the rest, 11%, had pedagogical experience of less than 3 years (Fig. 1).

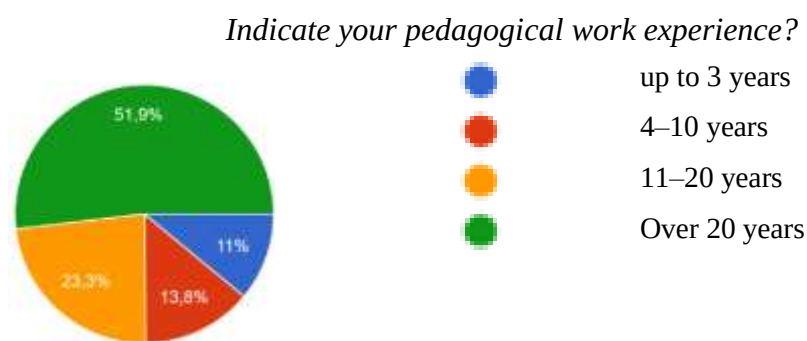


Fig. 1. Indicators of respondent distribution by pedagogical work experience.

Only 22.2% of respondents rated the general level of organization of professional-practical training at their own educational institution as high, nearly 66% of those surveyed as sufficient, 10.6% of

pedagogical staff as average, and, unfortunately, 1.4% of survey participants consider the level of organization of professional-practical training at their educational institution to be low (Fig. 2).

Rate the general level of organization of professional-practical training at your educational institution

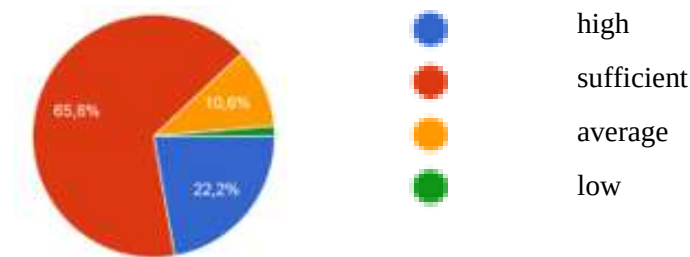


Fig. 2. Assessment indicators of the general level of professional-practical training in educational institutions where the respondents are employed.

62% of those surveyed believe that the content of professional-practical training at their educational institution fully meets the modern requirements of the labor market; 37.2% of

respondents note partial compliance; 0.8% of survey participants negatively assess the compliance of the content of practical training at their own institution (Fig. 3).

Does the content of professional and practical training meet the modern requirements of the labor market?



Fig. 3. Indicators of respondents' assessment regarding the alignment of the content of professional-practical training in their educational institutions with labor market requirements.

78.7% of those surveyed claim that in their educational institution, curricula for industrial training and industrial practice are regularly updated in accordance with changes in production and

technologies; 20.7% of pedagogical staff believe that such updating occurs only occasionally; 0.6% of respondents believe that the necessary updating of programs is not carried out (Fig. 4).

Are the curricula for industrial training and industrial practice in your educational institution updated in accordance with changes in production and technologies?



Fig. 4. Distribution of responses regarding the updating of industrial training and industrial practice curricula in accordance with technological and production changes.

The survey results indicate that the content of professional-practical training reflects issues of the greening of production (this opinion is held by 27.4% of respondents); energy efficiency of

production (63.7% of responses); cost-effectiveness of production (50.7%) and human-centrism (29.3%). The total exceeds 100%, as respondents could choose several answer options (Fig. 5)..

Which of the issues listed below are reflected in the content of professional-practical training carried out in your educational institution?

Greening of production

Energy efficiency of production

Economic efficiency of production

Human-centeredness

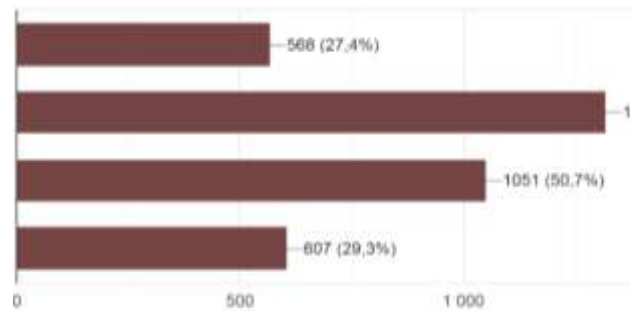


Fig. 5. Distribution of responses regarding the coverage of current issues of modern production in the content of professional-practical training.

Among the innovative technologies used in the professional and practical training of future specialists, the survey participants identified the following from the proposed list: adaptive manufacturing technologies – 15.6%; smart manufacturing technologies – 26.1%; robotics and automation – 10.7%; augmented and virtual reality technologies – 12%; green and energy-efficient

technologies – 16.9%; nano- and manipulative technologies – 2%; biotechnologies – 2.2%; digital twin technologies – 5.1%, etc. At the same time, unfortunately, 40.1% of respondents indicated that none of the innovative technologies listed in the question are used when organizing professional and practical training in their educational institution (Fig. 6).

Which of the following manufacturing innovative technologies are used when organizing the professional and practical training of future specialists in your educational institution?

Adaptive manufacturing

Smart manufacturing

Robotics

Nanotechnology

Augmented and virtual reality

Green and energy-efficient technologies

Biotechnology

Digital twins

Intelligent control

None of the above

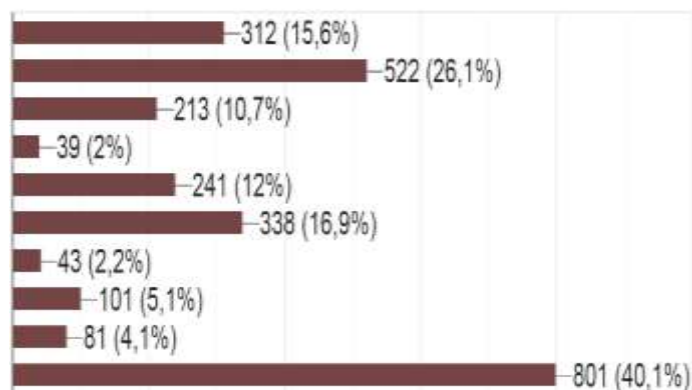


Fig. 6. Distribution of responses regarding the use of manufacturing innovative technologies when organizing the professional and practical training of future specialists.

The results of the responses regarding the use of modern pedagogical technologies in the professional and practical training of future specialists

look more optimistic. Test participants were offered to choose from a list those pedagogical technologies that are used in their educational institution during the

process of training future specialists. Thus, 59.1% of respondents reported the use of problem-based learning technologies in organizing professional and practical training; project-based technologies are applied by 48.4% of instructors; game-based technologies are used by 65.8% of respondents; information and communication technologies are used by 75.5%; cooperative learning technologies – 57.7%; student-centered learning technologies – 40.8%;

simulation learning technologies – 23.1%; critical thinking development technologies – 29.7%; research and inquiry-based technologies are used by 32.3% of those surveyed; artificial intelligence technologies – by 30.7% of respondents. The total exceeded 100%, as respondents could choose several answer options. Only 1.5% of those surveyed answered that they use none of the technologies listed in the question in the educational process (Fig. 7).

Which of the following pedagogical technologies are used when organizing the professional and practical training of future specialists in your educational institution?

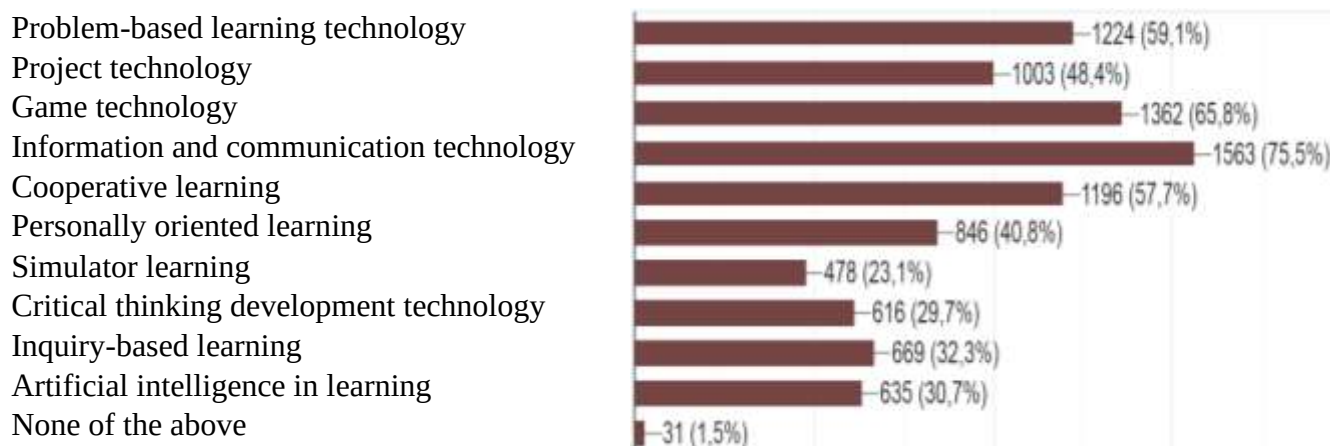


Fig. 7. Results of responses to the question about the use of modern pedagogical technologies when organizing the professional and practical training of students.

Respondents' answers regarding their educational institution's readiness to apply innovative methodologies in the conditions of professional and practical training on a 5-point scale (where 5 is the highest level) showed that the vast

majority of educators rated the level of their own educational institution's readiness in terms of technical, methodological, and teaching competency support at only four points, as shown in Fig. 8.

Assess the readiness of your educational institution to apply innovative methodologies of professional and practical training (on a 5-point scale, where 5 is the highest level of readiness)

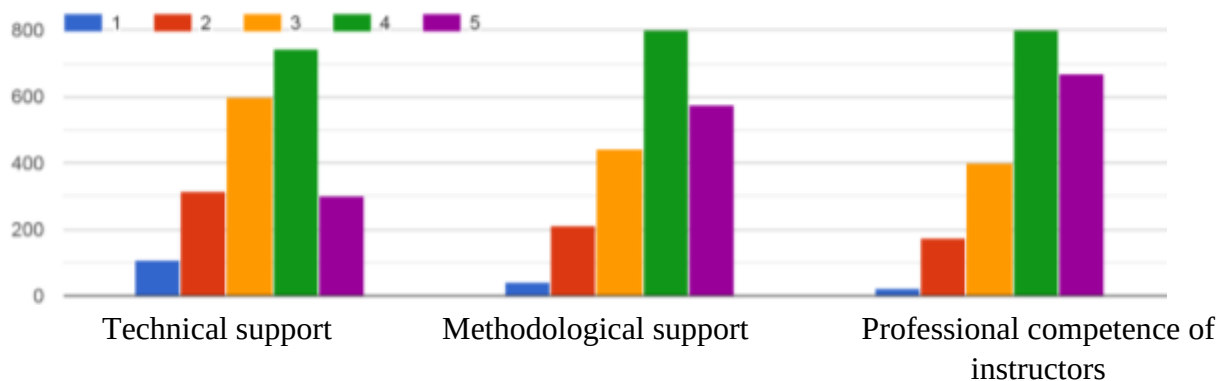


Fig. 8. Distribution of respondents' opinions regarding the level of readiness of their educational institutions to apply innovative methodologies when organizing professional and practical training.

As the survey results testify, among the main problems in organizing the professional and practical training of future specialists, the following are named: outdated material and technical base – 52.8% of respondents; lack of effective motivation of the teaching staff to master and use innovative educational technologies – 55.1%; lack of modern technologies for the practical training of future specialists – 21.8% (which, in fact, may be the result of an outdated material and technical base).

The conducted analysis indicates that in the conditions of war, the necessity of restoring critical infrastructure, arrangement, and social support of citizens affected by armed aggression, developing the vocational education system is not simple. The integration of modern technologies into the educational process has its challenges, specifically the necessity of updating the material and technical base, installing modern equipment and software, and appropriate training of instructors for the effective use of innovations in work.

Also interesting in this context are the results of the All-Ukrainian survey of vocational education students, where it was determined that the main factors influencing the mastering of construction professions, according to the opinion of all participants of professional and practical training – employers, pedagogical staff, and students – are: undergoing industrial practice at enterprises; the presence of qualified mentors at practice bases and proper qualification of the educational institution's pedagogical staff; material and technical provision of enterprises and vocational education institutions (Lylyk, I. V., Savytska, N. L., Buchynska, O. V., & Yashkina, O. I., 2025).

To solve the problematic issues that have arisen in the vocational education system at the present time, one can orient oneself to a certain extent on the provisions of the Concept of the State Targeted Social Program for the Development of Vocational Education for 2022-2027, among which are: implementation of a decentralized management and financing model oriented towards results in the vocational education system; updating the content of educational programs and improving the quality level of vocational education in accordance with the requirements of the modern labor market; development of various forms of partnership in the sphere of vocational education; increasing the

motivation of the teaching staff towards creative activity and the implementation of modern technologies in the educational process, attracting young personnel and qualified specialists to work in vocational education institutions; support for international cooperation programs, academic mobility, and exchange of experience of vocational education institution employees, etc. (Cabinet of Ministers of Ukraine, 2021).

Relevant government initiatives contribute significantly to the development and restoration of the vocational education system, specifically: increasing the volume of financing for the educational sector during 2024-2025, implementation of government projects for the modernization of the material and technical base of vocational education institutions, introduction of a new model for financing the development of educators "Money follows the teacher", etc. According to the Minister of Education and Science of Ukraine O. Lisovyi at the annual educational conference "August 2025" (August 21, 2025), special attention in the 2025-2026 academic year will again be paid to vocational education. Over 200 new workshops equipped with modern equipment have already been created in more than 70 institutions, and such activity continues. Despite the war and the moral and physical destruction caused by it, Ukraine continues to ensure substantial financing of the educational sector, viewing it as the foundation for the restoration and development of the state. At the same time, O. Lisovyi emphasized that the education system must not only withstand extraordinary conditions but also become a driver of cultural and societal changes (Lykhovid, 2025).

Conclusion. Professional and practical training in educational institutions of Ukraine is generally evaluated as sufficient, although only one-fifth of educators consider it high. The content of training mostly corresponds to the requirements of the labor market, programs are regularly updated in accordance with technological changes, and current production problems (energy efficiency, cost-effectiveness, greening) are taken into account in learning. At the same time, the use of innovative manufacturing technologies remains limited (more than 40% of institutions do not apply them). Instead, pedagogical technologies (ICT, game-based, problem-based and project-based learning,

cooperative methods) are actively integrated into the training process, which indicates educators' attention to the modernization of the educational environment. The overwhelming number of respondents could not rate the readiness of their own educational institutions for the implementation of innovative methodologies with the highest score, which is caused by a number of problems (outdated material and technical base, insufficient motivation of educators to master the newest technologies, and a lack of modern means of practical training). Thus, the current state can be characterized as transitional: basic conditions are provided, but a qualitative breakthrough requires updating the material base, wider implementation of innovative manufacturing technologies, and strengthening the motivation of instructors.

Successful training of qualified personnel for the construction industry largely depends on effective forms and methods of organizing professional and practical training, which provides for the practical mastering and practicing of professional competencies of the future profession; undergoing industrial practice at enterprises under the guidance of experienced mentors; proper qualification of the educational institution's pedagogical staff; modern material and technical

provision of practice base enterprises and vocational education institutions. Considering the practical realities of the construction industry and the needs for the restoration of our state in the conditions of Russian military aggression, the priority directions in the implementation of professional and practical training of future specialists in the construction industry should be: adaptation of educational programs to Industry 5.0 standards, with an emphasis on human-centricity, strengthening the base of scientific and technical innovations, environmental literacy and social responsibility, development of creative competencies and leadership; integration of ESG criteria into professional competencies, particularly in the context of the construction industry; orientation of the content of professional and practical training toward students mastering innovative methods and technologies that will allow performing production tasks of the construction industry effectively and qualitatively in conditions of rapid socio-economic development of the world; combining modern theoretical knowledge of students with practical skills acquired in a real production environment; development of emotional intelligence, ability for teamwork, and critical thinking.

List of references

Банах, В. А., Павлов, І. Д., Радкевич, А. В., та ін. (2017). Наукові основи розвитку будівельної галузі України: монографія (І. А. Арутюнян, ред.). Вид-во ЗДІА. <https://crust.ust.edu.ua/items/ea6fa08e-fe01-41e5-a859-f018e21babab>

Герлянд, Т. М., Гоменюк, Д. В., Дрозіч, І. А., Каленський, А. А., Пащенко, Т. М., & Пятничук, Т. В. (2025). *Формування енергоефективної компетентності майбутніх кваліфікованих робітників будівельної галузі: методичний посібник*. Київ: Інститут професійної освіти НАПН України. <https://lib.iitta.gov.ua/id/eprint/747399>

Гоменюк, Д. (2025) «Використання у професійній підготовці майбутніх фахівців будівельної галузі інноваційних енергоефективних технологій», *Професійна педагогіка*, 1(30), с. 213–220. <https://10.32835/2707-3092.2025.30.213-220>.

Розпорядження Кабінету Міністрів України «Концепція Державної цільової соціальної програми розвитку професійної (професійно технічної) освіти на 2022–2027 роки» (2021, грудень 9). <https://zakon.rada.gov.ua/laws/show/1619-2021-%D1%80#Text>

Лирик, І. В., Савицька, Н. Л., Бучинська, О. В., & Яшкіна, О. І. (2025). Аналіз професійно-практичної підготовки з будівельних професій у закладах професійної (професійно-технічної) освіти: Дослідницький звіт. Київ: ТОВ «Франко Пак». https://uam.in.ua/wp-content/uploads/2025/06/1.matova_a5_profteh-book-2-2-2.pdf

Литвин, А. В. (2011). Інформатизація професійно-технічних навчальних закладів будівельного профіля: монографія. Компанія «Манускрипт».

Лиховід, І. (2025). Серпнева конференція 2025: зібрали найголовніші меседжі. *Вчись!* <https://vchysia.media/topic/serpneva-konferentsiia-2025-zibraly-naiholovnishy-mesedzhi>

Лузан, П. Г., Лапа, О. В., Пашченко, Т. М., Мося, І. А., Ваніна, Н. М., Ямковий, О. Ю., & Каленський, А. А. (2022). Оцінювання якості підготовки фахівців у закладах фахової передвищої освіти аграрної, будівельної та машинобудівної галузей: практичний посібник (П. Г. Лузан, ред.). Інститут професійної освіти НАПН України. <https://lib.iitta.gov.ua/id/eprint/733687>

Лузан, П. Г., Каленський, А. А., Пашченко, Т. М., Мося, І. А., & Ямковий, О. Ю. (2021). Методичні основи оцінювання якості підготовки фахівців у закладах фахової передвищої освіти: методичний посібник. Полісся. <https://lib.iitta.gov.ua/id/eprint/729577>

Организация Объединённых Наций. (2015). *Цели развития тысячелетия: доклад за 2015 год*. Нью-Йорк: ООН.

<https://web.archive.org/web/20170712121312/http://www.un.org/ru/millenniumgoals/mdgreport2015.pdf>

Сучасні технології в будівництві – інновації та поради для успішної реалізації проєктів. (2024, 12 вересня). *Ваш Майстер*. <https://vash-master.com.ua/suchasni-texnologii-v-budivnitstvi-osnovni-innovatsiit-poradi-dlya-uspishnoi-realizatsii-proektiv>

Kruchek, V., & Subina, O. (2025). Professional and practical training of future construction professionals for industry 5.0. In V. Radkevych & M. Pryhodii (Eds.), *Scientific and methodological support for the development of vocational education: Monograph* (pp. 8–21). Katowice: The University of Technology in Katowice Press. <https://lib.iitta.gov.ua/id/eprint/746452>

United Nations Department of Economic and Social Affairs. (2025, August revision). *The Sustainable Development Goals Report 2025*. New York: United Nations. <https://unstats.un.org/sdgs/report/2025/The-Sustainable-Development-Goals-Report-2025.pdf>

Translated & Transliterated

Banakh, V. A., Pavlov, I. D., Radkevych, A. V., et al. (2017). *Naukovi osnovy rozvytku budivel'noi haluzi Ukrainy: monohrafiya* [Scientific foundations of the development of the construction industry of Ukraine: Monograph] (I. A. Arutyunyan, Ed.). Vyd-vo ZDIA. <https://crust.ust.edu.ua/items/ea6fa08e-fe01-41e5-a859-f018e21babab>, [in Ukrainian].

Herlyand, T. M., Homeniuk, D. V., Drozhich, I. A., Kalenskyi, A. A., Pashchenko, T. M., & Pyatnychuk, T. V. (2025). *Formuvannya enerhoefektyvnoi kompetentnosti maibutnikh kvalifikovanykh robotnykiv budivel'noi haluzi: metodychnyi posibnyk* [Formation of energy-efficient competence of future qualified workers in the construction industry: Methodical manual]. Institute of Vocational Education of the National Academy of Pedagogical Sciences of Ukraine. <https://lib.iitta.gov.ua/id/eprint/747399>, [in Ukrainian].

Homeniuk, D. (2025). *Vykorystannya u profesiinii pidhotovtsi maibutnikh fakhivtsiv budivel'noi haluzi innovatsiinykh enerhoefektyvnykh tekhnolohii* [Use of innovative energy-efficient technologies in the vocational training of future construction specialists]. *Profesina pedahohika*, 1(30), 213–220. <https://doi.org/10.32835/2707-3092.2025.30.213-220>, [in Ukrainian].

Rozporiadzhennia Kabinetu Ministriv Ukrainy. «Kontseptsiiia Derzhavnoi tsilovoi sotsialnoi prohramy rozvytku profesiinoi (profesiino-tekhnichnoi) osvity na 2022–2027 roky». (2021, Hruden 9) <https://zakon.rada.gov.ua/laws/show/1619-2021-%D1%80#Text>, [in Ukrainian].

Lilyk, I. V., Savytska, N. L., Buchynska, O. V., & Yashkina, O. I. (2025). Analiz profesiino-praktychnoi pidhotovky z budivel'nykh profesii u zakladakh profesiinoi (profesiino-tekhnichnoi) osvity: Doslidnyts'kyi zvit. Kyiv: TOV "Franko Pak". https://uam.in.ua/wp-content/uploads/2025/06/1.matova_a5_profteh-book-2-2-2.pdf, [in Ukrainian].

Lytvyn, A. V. (2011). *Informatyzatsiya profesiino-tekhnichnykh navchalnykh zakladiv budivel'noho profilya: monohrafiya* [Informatization of vocational-technical educational institutions of construction profile: Monograph]. Manuscript Publishing, [in Ukrainian].

Lykhover, I. (2025). *Serpneva konferentsiya 2025: zibraly naiholovnishy mesedzhi* [August Conference 2025: Collected the key messages]. *Vchys'!*. <https://vchysia.media/topic/serpneva-konferentsiia-2025-zibraly-naiholovnishy-mesedzhi>, [in Ukrainian].

Luзан, П. Г., Лапа, О. В., Пашченко, Т. М., Мосія, І. А., Ваніна, Н. М., Ямковий, О. Ю., & Каленський, А. А. (2022). *Otsynuvannya yakosti pidhotovky fakhivtsiv u zakladakh fakhovoi peredvyshchoi*

osvity ahrarnoi, budivel'noi ta mashynobudivnoi haluzei: praktychnyi posibnyk [Assessment of the quality of training specialists in institutions of professional pre-higher education in the agricultural, construction, and mechanical engineering sectors: Practical manual] (P. H. Luzan, Ed.). Institute of Vocational Education of the National Academy of Pedagogical Sciences of Ukraine. <https://lib.iitta.gov.ua/id/eprint/733687>, [in Ukrainian].

Luzan, P. H., Kalenskyi, A. A., Pashchenko, T. M., Mosia, I. A., & Yamkovyi, O. Yu. (2021). *Metodychni osnovy otsynuvannya yakosti pidhotovky fakhivtsiv u zakladakh fakhovoi peredvyshchoi osvity: metodychnyi posibnyk* [Methodological foundations of assessing the quality of training specialists in institutions of professional pre-higher education: Methodical manual]. Polissya. <https://lib.iitta.gov.ua/id/eprint/729577>, [in Ukrainian].

United Nations. (2015). *Tseli razvitiya tysyacheletiya: doklad za 2015 god* [Millennium Development Goals: Report for 2015]. New York: UN. <https://web.archive.org/web/20170712121312/http://www.un.org/ru/millenniumgoals/mdgreport2015.pdf>, [in Ukrainian].

Suchasni tekhnologii v budivnytstvi – innovatsii ta porady dlya uspishnoi realizatsii proektiv [Modern technologies in construction – innovations and tips for successful project implementation]. (2024, September 12). Vash Maister. <https://vash-master.com.ua/suchasni-tekhnologii-v-budivnytstvi-osnovni-innovatsii-ta-porady-dlya-uspishnoi-realizatsii-proektiv>, [in Ukrainian].

Kruchek, V., & Subina, O. (2025). Professional and practical training of future construction professionals for industry 5.0. In V. Radkevych & M. Pryhodii (Eds.), *Scientific and methodological support for the development of vocational education: Monograph* (pp. 8–21). Katowice: The University of Technology in Katowice Press. <https://lib.iitta.gov.ua/id/eprint/746452>, [in English].

United Nations Department of Economic and Social Affairs. (2025, August revision). *The Sustainable Development Goals Report 2025*. New York: United Nations. <https://unstats.un.org/sdgs/report/2025/The-Sustainable-Development-Goals-Report-2025.pdf>, [in English].

DOI: <https://doi.org/10.32835/2707-3092.2025.31.151-163>

СУЧАСНИЙ СТАН РЕАЛІЗАЦІЇ ПРОФЕСІЙНО-ПРАКТИЧНОЇ ПІДГОТОВКИ МАЙБУТНІХ ФАХІВЦІВ БУДІВЕЛЬНОЇ ГАЛУЗІ В СИСТЕМІ ПРОФЕСІЙНОЇ ОСВІТИ УКРАЇНИ

Оксана Субіна

кандидат педагогічних наук, доцент, старший науковий співробітник відділу професійно-практичної підготовки Інституту професійної освіти НАПН України, <https://orcid.org/0000-0001-8167-539X>, e-mail: subinaoxana@gmail.com

Реферат:

Актуальність: у сучасних умовах глобальної нестабільності та безпрецедентних утрат, яких зазнала українська економіка внаслідок повномасштабної агресії рф 2022-2025 рр., професійно-практична підготовка кваліфікованих фахівців будівельної галузі набуває особливої значущості; освітній процес при реалізації професійно-практичної підготовки орієнтується та адаптується до вимог виробництва і його закономірностей, що зумовлює необхідність вдосконалення змісту освітніх і навчальних програм відповідно до виробничих умов, при цьому використання інноваційних технологій займає пріоритетне місце як у виробничій галузі, так і в освітньому процесі.

Мета: проаналізувати сучасний стан реалізації професійно-практичної підготовки майбутніх фахівців будівельної галузі в системі професійної освіти України, обґрунтувати заходи подолання освітніх проблем, спричинених війною рф проти нашої держави, та сформулювати вимоги до оновлення освітніх програм

відповідно до світових та вітчизняних тенденцій розвитку будівельної галузі, викликів повоєнного відновлення держави, концепції сталого розвитку та індустріальної модернізації.

Методи: *теоретичний аналіз* наукових джерел, нормативно-правових документів та емпіричних даних – для визначення ступеня вивченості сучасного стану реалізації професійно-практичної підготовки майбутніх фахівців будівельної галузі в системі професійної освіти України; *опитування педагогічних працівників* – для оцінювання рівня організації професійно-практичної підготовки у закладах професійної освіти будівельного напрямку; *синтез та узагальнення* – для формування висновків щодо заходів, необхідних для подолання спричинених війною освітніх проблем, та вимог до оновлення освітніх програм.

Результати: визначено сучасні умови реалізації професійно-практичної підготовки майбутніх фахівців будівельної галузі в системі професійної освіти України; обґрунтовано заходи подолання проблем, спричинених війною рф проти нашої держави; окреслено вимоги до оновлення освітніх програм відповідно до світових та вітчизняних тенденцій розвитку будівельної галузі, викликів повоєнного відновлення держави, концепції сталого розвитку та індустріальної модернізації.

Висновки: з'ясовано, що сучасний стан професійно-практичної підготовки майбутніх фахівців будівельної галузі в Україні є достатнім, але обмеженим застарілою матеріально-технічною базою і недостатнім впровадженням інноваційних виробничих технологій; обґрунтовано, що успішна підготовка кваліфікованих кадрів будівельної галузі значною мірою залежить від ефективних форм і методів організації професійно-практичної підготовки, що передбачає практичне засвоєння та відпрацювання фахових компетентностей майбутньої професії; визначено пріоритетні вимоги до реалізації професійно-практичної підготовки майбутніх фахівців будівельної галузі (адаптація освітніх програм до стандартів Індустрії 5.0, з акцентом на людиноцентричності, зміцненні бази науково-технічних інновацій, екологічній грамотності та соціальної відповідальності, розвитку творчих компетентностей та лідерства; інтеграція ESG-критеріїв у професійні компетентності, зокрема в контексті будівельної галузі; орієнтація змісту професійно-практичної підготовки на оволодіння здобувачами освіти інноваційними методами й технологіями, які дозволять ефективно та якісно виконувати виробничі завдання будівельної галузі в умовах стрімкого соціально-економічного світового розвитку; поєднання сучасних теоретичних знань здобувачів освіти із практичними навичками, набутими в реальному виробничому середовищі; розвиток емоційного інтелекту майбутніх фахівців, здатності до командної роботи та критичного мислення).

Ключові слова: *професійно-практична підготовка; майбутні фахівці будівельної галузі; система професійної освіти; інноваційні технології в будівництві; сучасні педагогічні технології.*

Manuscript received	11.06.2025
Accepted for publication after peer review	15.09.2025
Published	23.10.2025



ARTIFICIAL INTELLIGENCE IN VOCATIONAL EDUCATION: STRATEGIES FOR DIGITAL INTEGRATION AND PERSONALIZED LEARNING

Andrii Hurzhii¹, Mykola Pryhodii²

- 1 Doctor of Technical Sciences, Professor, Full Member (Academician) of the National Academy of Educational Sciences of Ukraine, Chief Research Fellow, Department of Digital Educational Resources, Institute of Vocational Education and Training, NAES of Ukraine. <https://orcid.org/0000-0006-923-0830>, e-mail: a.m.hurzhii@gmail.com
- 2 Doctor of Pedagogical Sciences, Professor, Corresponding Member of the National Academy of Educational Sciences of Ukraine, Deputy Director for Research, Institute of Vocational Education and Training, NAES of Ukraine, <https://orcid.org/0000-0001-5351-0002>, e-mail: prygodii@ukr.net

Abstract

Relevance. The digital transformation of society significantly alters the requirements for the content and organization of vocational education, necessitating the integration of artificial intelligence (AI) into educational processes. In the context of the digital economy, Industry 4.0, and Ukraine's European integration aspirations, vocational education must ensure the training of specialists capable of working within automated systems, big data environments, and digital ecosystems. The experience of the European Union, as documented in strategic digital education frameworks, demonstrates that AI is not merely a technological tool but a driver of systemic changes encompassing pedagogy, management, curriculum content, and assessment of learning outcomes. Therefore, investigating the implementation of AI in vocational education is both timely and socially significant, particularly in the context of modernizing Ukraine's educational system.

Purpose. The aim of the article is to substantiate the role of artificial intelligence as a strategic resource for the development of vocational education and to identify key directions for its integration into the national educational system in accordance with European standards.

Methods. The study employs analysis of EU and Ukrainian regulatory documents in the field of digital education; systemic and structural-functional analysis to determine the components of vocational education digitalization; comparative analysis of European and Ukrainian experience in AI integration; synthesis of scientific approaches to the formation of future competencies; and forecasting methods to identify the prospects for vocational education development based on analytical platforms and big data.

Results. It has been substantiated that the use of AI facilitates the transition from mass education to personalized educational trajectories, the development of adaptive learning systems, digital mentors, educational analytics, and simulation platforms. Key components of vocational education digitalization have been identified: analytical platforms for labor market needs forecasting, adaptive learning management systems (LMS), digital competency databases, virtual teacher training centers, and academic integrity services. The main barriers to AI implementation in Ukraine have been revealed, including infrastructural, personnel, regulatory, and ethical challenges. The study demonstrates the necessity of transforming the role of the educator into that of a facilitator, analyst, and digital mentor.

Conclusions. Artificial intelligence emerges not merely as an auxiliary technology but as a key factor in the modernization of vocational education. Its integration promotes the development of future competencies, digital literacy, and the harmonization of Ukrainian education with the European educational space. Further development of vocational education requires the creation of a national digitalization strategy, investment in infrastructure, and systematic professional development of teaching staff.

Keywords: *artificial intelligence (AI), vocational education, digital integration, personalization, digital transformation.*

Introduction. The digital transformation of society is fundamentally changing the structure of the economy, social relations, and requirements for professional training. Today, vocational education and training (VET) emerges not merely as a tool for knowledge transfer, but as a complex socio-technological system that shapes competencies for life and work in a world of artificial intelligence, big data, and automated processes. In the context of the dynamic development of information technologies, the issue of integrating artificial intelligence (AI) into the sphere of vocational education acquires special relevance. This is not only a technological innovation but also a strategic factor in the formation of competitive human capital capable of adapting to rapid changes and creating new data-driven solutions. Artificial intelligence is increasingly viewed as a key component of the Fourth Industrial Revolution, necessitating a rethinking of educational goals, methods, and content.

Modern vocational educational systems are shifting from a mass learning model to a personalized development model, where algorithms capable of analyzing the behavior, interests, and educational outcomes of learners play a leading role. Such changes require a new pedagogical paradigm that combines humanistic values with digital (intelligent) technologies (Hurzhii et al., 2025b).

The implementation of intelligent technologies in the educational space is directly linked to the strategic priorities of the European Union. The Digital Education Action Plan (2021–2027) defines the development of the digital readiness of educational systems as a primary condition for competitiveness (European Commission, 2025b). Within this strategy, AI is viewed as a pedagogical resource that facilitates learner-centered, ethical, and competency-based learning.

The EU emphasizes the necessity of ensuring a balance between technological innovations and humanistic values, focusing attention on data security and algorithmic transparency. Particular emphasis is placed on the formation of the digital competence of educators.

The goal of the European Education Area (EEA) is to create a common educational space by 2025. One of the key priorities of the program is the development of artificial intelligence to support individualized learning and improve the quality of vocational education. AI acts as an instrument for the European integration of vocational education, as it ensures common standards of digital literacy and facilitates the creation of transnational educational platforms (European Commission, 2025a).

For Ukraine, the integration of AI into vocational education is of strategic importance. It opens opportunities for harmonizing the national education system with European standards and increases the competitiveness of Ukrainian specialists in the global labor market. AI becomes a guide to European standards of VET quality, academic freedom, and open science (Radkevych et al., 2025).

Thus, modern vocational education must reorient itself from a reproductive learning model to a research-analytical one, based on the use of data and flexible learning algorithms. It is the integration of AI that opens opportunities for forming individual educational trajectories, developing critical thinking, creativity, and digital culture, which are becoming decisive for professional success in the digital economy (Pryhodii & Radkevych, 2025; Hurzhii et al., 2024a).

The aim of the article is to substantiate the role of artificial intelligence as a strategic resource for the development of vocational education and to determine the key directions of its integration into the domestic educational system in accordance with European standards.

Research methods: analysis of regulatory and legal documents of the EU and Ukraine in the field of digital education; systemic and structural-functional analysis to determine the components of the intellectualization of vocational education; comparative analysis of European and Ukrainian experience in integrating artificial intelligence; generalization of scientific approaches to the formation of future competencies; forecasting methods to determine the prospects for the development of vocational education based on analytical platforms and big data.

Results and Discussion. Description of technological solutions and learning models. Artificial intelligence is ceasing to be merely a tool for automating routine processes or a technical auxiliary technology. It is transforming into a powerful factor of systemic changes in the sphere of vocational education, transforming methods of organizing the educational process, management, quality monitoring, and assessment of results. AI acts as a kind of catalyst for the intellectual evolution of the vocational educational space, creating conditions for deeper personalization of learning, the development of adaptive strategies, and the implementation of analytical approaches to making pedagogical decisions (Radkevych et al., 2025).

In modern educational practice, systems based on artificial intelligence are increasingly used to analyze large volumes of educational and socio-economic data. They are capable of identifying hidden patterns in learning achievements, predicting educational risks, and determining the development potential of each learner. This allows not only for the optimization of learning processes but also for the transition to a new paradigm—a self-learning vocational education, that is, one capable of adapting to environmental changes through the constant updating of content and methods (Pryhodii & Radkevych, 2025).

The application of intelligent algorithms ensures the possibility of forecasting labor market development trends. Educational analytical platforms using AI can collect, systematize, and analyze information on the demand for specialists, changes in employment structures, and technological innovations in production in real time. This creates a basis for the prompt adjustment of curricula, updating of VET standards, and ensuring the compliance of specialist training with the needs of the economy.

Thus, artificial intelligence becomes a strategic resource for planning personnel policy in vocational education, facilitating more effective management of human potential. Its use allows for predicting not only quantitative but also qualitative changes in the labor market, and determining key competencies that will be of decisive importance in the near future. Based on such forecasts, it is necessary to form new educational trajectories oriented toward the development of soft skills, creativity, entrepreneurship, and analytical thinking (Pryhodii et al., 2023).

At the same time, the role of artificial intelligence is not limited to the sphere of analytics or planning. It changes the very structure of the educational process—from lesson planning to the formation of individual learning routes, automatic assessment, support for pedagogical decisions, and the creation of adaptive learning environments. The use of intelligent technologies facilitates the transition from a centralized to a flexible, dynamic educational system capable of responding to the challenges of the time. In general, artificial intelligence acts not only as a tool for increasing learning efficiency but also as a factor in updating the philosophy of vocational education itself (Hurzhii et al., 2025a).

One of the important advantages of artificial intelligence is its ability to create individualized, flexible, and dynamic learning environments. Adaptive learning systems, built on machine learning algorithms, automatically analyze a wide range of parameters: the level of prior preparation, the pace of material assimilation, the cognitive and psychological characteristics of the VET learner, as well as their learning preferences. Such an approach allows for the formation of a personal educational route that meets the real needs, abilities, and educational goals of each learner.

Intelligent learning systems ensure the possibility of continuous monitoring of learning activity, identification of individual difficulties, and prompt adjustment of the educational process. AI is capable of identifying knowledge gaps in real time, offering additional explanations, educational videos, or practical tasks, as well as regulating the complexity of content depending on the success of the VET learner. Such an approach turns the learning process into an interactive dialogue between the learner and the education system.

The use of adaptive technologies changes not only the form but also the philosophy of learning. Education becomes flexible, individualized, and oriented toward human needs. The learner gains the opportunity to study at their own pace, choosing a convenient format. Such a level of personalization contributes to increasing internal motivation, and developing self-regulation and autonomy in learning (Hurzhii et al., 2023a).

Adaptive learning opens new opportunities for educators, who receive tools for deeper educational analytics. The artificial intelligence system provides detailed reports on the dynamics of knowledge acquisition. This strengthens the analytical component of pedagogical activity and

allows for making grounded decisions regarding the content, methods, and forms of vocational training.

Adaptive learning technologies are of great importance for ensuring the inclusivity of the vocational educational process. AI is capable of adapting educational content for VET learners with special needs. Thanks to this, every learner receives equal access to quality education (Hurzhii et al., 2024b).

The application of adaptive technologies facilitates the realization of the "lifelong learning" concept. Thanks to artificial intelligence, the educational process goes beyond the classroom—it can continue at any time and in any place. Such a format creates conditions for forming a culture of self-learning and increases the competitiveness of specialists (Pryhodii, 1999).

Virtual assistants, chatbots, decision support systems, and personal tutors are already becoming integral participants in the educational process today. They play the role of digital mentors capable of interacting with VET learners in a dialogue format, explaining complex concepts, offering examples, or providing instant feedback. Such tools form a new type of vocational educational environment, where learning continues at any moment and in any place.

Modern artificial intelligence systems working in the format of educational chatbots use natural language processing (NLP). This creates the effect of a "live dialogue," which is especially valuable in the process of self-learning. The learner can ask questions and receive explanations without waiting for the teacher's response. Such interactivity increases motivation to learn and simultaneously relieves educators from performing routine consultative tasks.

Digital mentors have another important advantage—the individualization of pedagogical interaction. Based on data about the user's learning activity, artificial intelligence can adapt the communication style and select the appropriate level of task complexity. Thanks to this, an effect of personal accompaniment is created, simulating the work of a tutor or mentor.

Special attention should be paid to simulation models—special software environments that allow for modeling real professional situations. Thanks to virtual laboratories, simulators, and digital "sandboxes," VET learners can practice professional actions without risk to themselves or equipment. This is especially relevant for technical, medical, transport, aviation, and military specialties.

The use of virtual simulators contributes to the development of practical skills and critical thinking, as the learner not only performs tasks but also analyzes the consequences of their actions.

Intelligent systems based on AI can record errors, explain the reasons for failures, and offer ways for improvement. This creates a "learning by doing" effect. Simulation technologies also ensure a safe environment for experimentation (Hurzhii et al., 2023b).

Thus, the integration of digital mentors, simulation platforms, and learning bots into the vocational educational process creates conditions for the transition to intelligent learning, where human and machine interact in a partnership format.

Artificial intelligence not only changes technological learning tools but also significantly influences the content and goals of education. The modern system of vocational education must form a complex of future competencies that ensure the individual's ability to act successfully in conditions of rapid changes (Pryhodii, 2011). Critical thinking, creativity, analytical abilities, digital culture, big data skills, and the ability to collaborate are becoming key competencies of the future (Pryhodii et al., 2019).

Modern intelligent learning systems facilitate the transition from a traditional model of knowledge assimilation to a model of knowledge creation. Learners become not passive consumers of information, but active researchers, analysts, and developers of innovative solutions. Artificial intelligence helps create learning environments in which theory is integrated with practice, and learning tasks imitate real professional situations (Hurzhii et al., 2024a).

The formation of future competencies is impossible without the development of digital culture. In the context of the rapid spread of artificial intelligence, ethical aspects acquire special weight: respect for privacy, copyright, and academic integrity. Vocational education must not only teach how to use technologies but also form ethical and social responsibility in learners for the consequences of their application.

It is also important that the development of future competencies implies the integration of interdisciplinary approaches. AI helps combine knowledge from different fields—technical, humanitarian, natural sciences—within single projects or cases. This forms a systemic vision and the ability to analyze complex problems in learners.

In summary, artificial intelligence acts as a catalyst for the transition of vocational education to a model of "human-centric intelligence," where the main result of learning is not the volume of knowledge, but the capacity for its updating, analysis, and creative use (Radkevych et al., 2025).

Problems and limitations of AI technologies. The implementation of artificial intelligence technologies in the educational sphere of Ukraine is accompanied by a number of infrastructural and regulatory challenges (Table 1) (Hurzhii et al., 2025b).

Table 1

Infrastructural and Regulatory Challenges of AI Implementation in Education

Challenges	Characteristic
Infrastructural	Consists of the insufficient level of digitalization of educational institutions. A significant part of educational institutions is not equipped with modern computer hardware, high-quality Internet access, and secure data storage systems. AI implementation requires powerful computing resources, cloud services, and professional technical support, which are currently available only to select leading universities.
Staffing (Personnel)	Many educators lack basic knowledge regarding the principles of how AI algorithms work. The majority of pedagogical staff require professional development and mastery of digital tools. It is also necessary to form a new category of specialists—educator-analysts and digital tutors who combine pedagogical, informational, and research competencies.
Regulatory (Normative-legal)	Relates to the absence of clear state standards, recommendations, and control mechanisms for the use of intelligent technologies. There is a lack of a coherent concept of digital education and unified approaches to AI integration. The issue of educational data protection also requires regulation. Without an appropriate regulatory framework, the application of AI creates risks for academic integrity and confidentiality.
Ethical	Requires educational institutions to ensure the ethical use of artificial intelligence, preventing algorithmic bias, discrimination, or manipulation of results. It is important to form a culture of responsible AI use among educators and students.

Created by the author based on the analysis of sources presented in the article

Overcoming these barriers requires the development of a unified national strategy for the digitalization of vocational education.

The role of the educator. Successful integration of artificial intelligence requires a change in the role of the educator. In the AI era, the teacher ceases to be the sole source of knowledge. Instead, the educator transforms into a facilitator, analyst, curator, and mentor of the learning process who guides the learner, helping to comprehend information and evaluate it critically.

The role of the educator in the digital vocational educational environment can be defined as a mediator between human and technology. They do not simply use intelligent tools but teach learners to apply them consciously and ethically. One of the most important tasks is the development of critical thinking, the ability to distinguish reliable information from manipulative information, evaluate data sources, and understand the

algorithmic logic of decisions. The educator becomes a mentor in the sphere of digital literacy.

At the same time, the psychological profile of the educator also changes. For effective work with artificial intelligence technologies, it is necessary to develop not only digital skills but also emotional intelligence, communicative culture, and flexibility of thinking.

No less important is the issue of ethical upbringing in the context of AI use. The teacher must form an awareness in learners of the consequences of its application; this concerns the culture of observing academic integrity and respect for intellectual property.

Another component is supporting the motivation and psychological comfort of learners. The task of the educator consists of creating a learning system in which technologies become not a barrier, but a means of social interaction (Radkevych et al., 2025).

AI System Model in Education. The intellectualization of education implies the creation of a holistic national digital system of vocational education that will function as an open ecosystem. Its goal is to ensure the continuity of learning,

flexibility of educational trajectories, and effective monitoring of the quality of specialist training. Structurally, it may include several complementary components (Table 2) (Pryhodii et al., 2023).

Table 2

Components of the Intellectualization of Vocational Education

Component	Characteristic
Analytical platforms for forecasting educational needs	Systems using AI and big data to model labor market development trends and identify promising professions and competencies.
Adaptive Learning Management Systems (LMS)	Intelligent educational platforms capable of automatically adjusting the learning process to the level, pace, and learning style of a specific learner.
Digital competence databases	Open electronic resources storing descriptions of professional qualifications and learning outcomes. They ensure transparency in the recognition of qualifications at national and European levels.
Virtual teacher training centers	Innovative learning environments for developing the digital literacy and pedagogical mastery of teachers regarding AI implementation.
Integrated academic integrity verification services	Software solutions based on AI that help prevent plagiarism and automatically check the originality of texts.

Developed by the author based on the generalization of sources presented in the article

In perspective, the creation of a national vocational educational system based on AI should ensure the sustainability of reforms and the improvement of its quality at all levels.

Conclusions. Artificial intelligence is a fundamental factor in the modernization of vocational education. Its integration opens the way to a new quality of professional training built on individualization, analytics, and forecasting. Ukraine has all the prerequisites for forming its own model of digital vocational education, aligned with European standards. It is important that this process be based on scientifically grounded approaches, pedagogical ethics, and state support. This is precisely how artificial intelligence will become not a threat, but an instrument of sustainable

development, social mobility, and professional self-realization of citizens.

Prospects for further research are related to the empirical verification of the effectiveness of artificial intelligence systems in vocational education, particularly adaptive learning platforms, digital tutors, and educational analytics, as well as the development of methodologies for forming the digital and analytical competencies of educators. Separate scientific attention is required for the ethical and legal aspects of using artificial intelligence, issues of data protection, algorithmic transparency, and academic integrity, as well as comparative studies of European and international experience in integrating AI into educational systems.

List of references

Гуржій, А., Бахмат, Н., Карташова, Л., & Зайчук, В. (2024a). Розвиток креативності здобувачів освіти засобами генеративного штучного інтелекту. *Нові технології навчання*, 8(98), 42–49. <https://www.journal.org.ua/index.php/ntn/article/view/395>

Гуржій, А., Карташова, Л., & Зайчук, В. (2023a). Адаптація навчання за межами аудиторії: нові можливості цифровізації для закладів освіти. У *Наука та освіта: зб. пр. XVIII Міжнар. наук. конф., 4–11 січ. 2024 р., м. Хайдусобосло, Угорщина* (с. 3–8). ПП Заколотний М.І. <https://elar.khmn.edu.ua/handle/123456789/15289>

Гуржій, А., Карташова, Л., & Зайчук, В. (2025a). Адаптивне освітнє середовище: особливості застосування штучного інтелекту. У *Збірка праць XIX Міжнародної наукової конференції «Наука та освіта»*, 15–22 січня 2025 р., м. Хайдусобосло, Угорщина (с. 8–13). ХНУ. <https://elar.khmn.edu.ua/handle/123456789/17761>

Гуржій, А., Карташова, Л., & Зайчук, В. (2025b). Штучний інтелект у професійній освіті: нові можливості та виклики. У *Сучасні досягнення в науці та освіті: зб. пр. XX Міжнар. наук. конф.*, 18–25 верес. 2025 р., м. Нетанія (Ізраїль) (с. 56–62). ХНУ. <https://elar.khmn.edu.ua/handle/123456789/19594>

Гуржій, А., Карташова, Л., Зайчук, В., & Бахмат, Н. (2024b). Штучний інтелект: рівні можливості для всіх учасників освітнього процесу. У *Збірник праць XIX Міжнародної наукової конференції "Сучасні досягнення в науці та освіті"*, 29 вересня - 6 жовтня 2024 р., м. Нетанія (Ізраїль) (с. 10–16). ХНУ. <https://elar.khmn.edu.ua/handle/123456789/16880>

Гуржій, А., Радкевич, В., & Пригодій, М. (2023b). Підвищення якості підготовки майбутніх фахівців із використанням віртуальних навчальних комплексів. *Нові технології навчання*, 17(97), 42–50. <https://www.journal.org.ua/index.php/ntn/article/view/377>

Пригодій, М. А. (1999). *Профільне та початкове професійне навчання з електротехніки в загальноосвітній школі* [Автореф. дис. ... канд. пед. наук, 13.00.02. Київський державний педагогічний університет імені М. П. Драгоманова]. Київ. <http://enpuir.npu.edu.ua/handle/123456789/15738>

Пригодій, М. А. (2011). Використання компетентнісного підходу при підготовці майбутніх учителів до профільного навчання учнів. У Н. С. Побірченко та ін. (Ред.), *Технологічний підхід у підготовці майбутніх учителів* (Вип. 3, с. 167–173). ПП Жовтий.

Пригодій, М. А., & Радкевич, О. П. (2025). Технології штучного інтелекту як інструмент персоналізованого навчання на цифрових освітніх платформах. У А. Ostenda & О. Nestorenko (Ред.), *Education, economy, and AI: Multidisciplinary perspectives for a digital future*, (с. 139–151). The University of Technology in Katowice Press. <https://lib.iitta.gov.ua/id/eprint/745754>

Пригодій, М. А., Гуржій, А. М., Гуменний, О. Д., Голуб, І. І., Пригалінська, Т. Г., & Волошин, А. М. (2023). *Цифрові технології професійної підготовки майбутніх кваліфікованих робітників у воєнний та повоєнний час: навчально-методичний посібник*. Інститут професійної освіти НАПН України. <https://lib.iitta.gov.ua/id/eprint/738690>

Пригодій, М. А., Гуржій, А. М., Липська, Л. В., Гуменний, О. Д., Зуєва, А. Б., Кононенко, А. Г., Прохорчук, О. М., & Белан, В. Ю. (2019). *Методичні основи розроблення SMART-комплексів для підготовки кваліфікованих робітників у закладах професійної (професійно-технічної) освіти*. Полісся. <https://lib.iitta.gov.ua/id/eprint/720268>

Радкевич, В. О., Пригодій, М. А., Лупаренко, Л. А., Кравець, С. Г., Герлянд, Т. М., & Кручек, В. А. (2025). *Цифрова трансформація освіти: штучний інтелект в сучасному освітньому просторі: інформаційно-аналітичні матеріали до загальних зборів НАПН України*. Інститут професійної освіти НАПН України. <https://lib.iitta.gov.ua/id/eprint/746629>

European Commission. (2025a). *European Education Area*. Digital Skills & Jobs Platform. <https://digital-skills-jobs.europa.eu/en/actions/european-initiatives/european-education-area>

European Commission. (2025b). *Digital Education Action Plan (2021–2027)*. European Education Area. <https://education.ec.europa.eu/focus-topics/digital-education/plan>

Radkevych, O., Pryhodii, M., & Radkevych, V. (2025). Artificial intelligence use in assessing the learning outcomes of future engineers. In M. E. Auer & T. Rüttmann (Eds.), *Futureproofing engineering education for global responsibility. ICL 2024. Lecture Notes in Networks and Systems* (Vol. 1260, pp. 557–564). Springer. https://doi.org/10.1007/978-3-031-85652-5_55

Translated & Transliterated

Hurzhi, A., Bakhmat, N., Kartashova, L., & Zaichuk, V. (2024a). Rozvytok kreatyvnosti zdobuvachiv osvity zasobamy heneratyvnoho shtuchnoho intelektu [Development of learners' creativity using generative artificial intelligence]. *Novi tekhnolohii navchannia [New teaching technologies]*, 8(98), 42–49. <https://www.journal.org.ua/index.php/ntn/article/view/395>, [in Ukrainian].

Hurzhii, A., Kartashova, L., & Zaichuk, V. (2023a). Adaptatsiia navchannia za mezhamy audytorii: novi mozhlyvosti tsyfrovizatsii dlia zakladiv osvity [Learning beyond the classroom: new opportunities for digitalization in educational institutions]. In *Nauka ta osvita: zb. pr. XVIII Mizhnar. nauk. konf., 4–11 sich. 2024 r., m. Khajdusoboslo, Uhorschyna* [Science and Education: Proceedings of the XVIII International Scientific Conference, 4–11 January 2024, Hajdúszoboszló, Hungary] (pp. 3–8). PP Zakolodnyi M.I. <https://elar.khmn.edu.ua/handle/123456789/15289>, [in Ukrainian].

Hurzhii, A., Kartashova, L., & Zaichuk, V. (2025a). Adaptivne osvitnie seredovyshe: osoblyvosti zastosuvannia shtuchnoho intelektu [Adaptive educational environment: features of artificial intelligence application]. In *Zbirka prats XIX Mizhnarodnoi nauk. konf. «Nauka ta osvita», 15–22 sich. 2025 r., m. Khajdusoboslo, Uhorschyna* (pp. 8–13). KNU. <https://elar.khmn.edu.ua/handle/123456789/17761>, [in Ukrainian].

Hurzhii, A., Kartashova, L., & Zaichuk, V. (2025b). Shtuchnyi intelekt u profesiinii osviti: novi mozhlyvosti ta vyklyky [Artificial intelligence in vocational education: new opportunities and challenges]. In *Suchasni dosiahnennia v nautsi ta osviti: zb. pr. XX Mizhnar. nauk. konf., 18–25 veres. 2025 r., m. Netaniia, Izrail* [Proceedings of the XIX International Scientific Conference 'Science and Education', 15–22 January 2025, Hajdúszoboszló, Hungary] (pp. 56–62). KNU. <https://elar.khmn.edu.ua/handle/123456789/19594>, [in Ukrainian].

Hurzhii, A., Kartashova, L., Zaichuk, V., & Bakhmat, N. (2024b). Shtuchnyi intelekt: rivni mozhlyvosti dlia vsikh uchasykyv osvitnoho protsesu [Artificial intelligence: equal opportunities for all participants in the educational process]. In *Zbirnyk prats XIX Mizhnar. nauk. konf. «Suchasni dosiahnennia v nautsi ta osviti», 29 veresnia–6 zhovtnia 2024 r., m. Netaniia, Izrail* [Modern achievements in science and education: collection of papers from the 20th International Scientific Conference, 18–25 September 2025, Netanya (Israel)] (pp. 10–16). KNU. <https://elar.khmn.edu.ua/handle/123456789/16880>, [in Ukrainian].

Hurzhii, A., Radkevych, V., & Pryhodi, M. (2023b). Pidvyshchennia yakosti pidhotovky maibutnikh fakhivtsiv iz vykorystanniam virtualnykh navchalnykh kompleksiv [Improving the quality of future specialists' training using virtual learning complexes]. *Novi tekhnolohii navchannia* [New teaching technologies], 17(97), 42–50. <https://www.journal.org.ua/index.php/ntn/article/view/377>, [in Ukrainian].

Pryhodi, M. A. (1999). Profilne ta pochatkove profesiine navchannia z elektrotekhniky v zahalnoosvitnii shkoli [Vocational and initial professional training in electrical engineering in secondary school] [Doctoral dissertation, Kyiv State Pedagogical University named after M. P. Drahomanov]. Kyiv. <http://enpuir.npu.edu.ua/handle/123456789/15738>, [in Ukrainian].

Pryhodi, M. A. (2011). Vykorystannia kompetentnisnoho pidkhodu pry pidhotovtsi maibutnikh uchyteliv do profilnoho navchannia uchniv [Use of competency-based approach in preparing future teachers for specialized student training]. In N. S. Pobirchenko et al. (Eds.), *Tekhnolohichniy pidkhid u pidhotovtsi maibutnikh uchyteliv* [A technological approach to training future teachers] (Vol. 3, pp. 167–173). PP Zhovtyi, [in Ukrainian].

Pryhodi, M. A., & Radkevych, O. P. (2025). Tekhnolohii shtuchnoho intelektu yak instrument personalizovanoho navchannia na tsyfrovnykh osvitnikh platformakh [Artificial intelligence technologies as a tool for personalized learning on digital educational platforms]. In A. Ostenda & O. Nestorenko (Eds.), *Education, economy, and AI: Multidisciplinary perspectives for a digital future* (pp. 139–151). The University of Technology in Katowice Press. <https://lib.iitta.gov.ua/id/eprint/745754>, [in Ukrainian].

Pryhodi, M. A., Hurzhii, A. M., Humennyi, O. D., Holub, I. I., Pryhalinska, T. H., & Voloshyn, A. M. (2023). Tsyfrovi tekhnolohii profesiinoyi pidhotovky maibutnikh kvalifikovanykh robitnykiv u voiennyi ta povoiennyi chas: navchalno-metodychnyi posibnyk [Digital technologies for vocational training of future skilled workers during wartime and postwar period: educational-methodical manual]. Instytut profesiinoyi osvity NAPN Ukrainy. <https://lib.iitta.gov.ua/id/eprint/738690>, [in Ukrainian].

Pryhodi, M. A., Hurzhii, A. M., Lypska, L. V., Humennyi, O. D., Zuieva, A. B., Kononenko, A. H., Prokhorchuk, O. M., & Belan, V. Yu. (2019). Metodychni osnovy rozroblennia SMART-kompleksiv dlia pidhotovky kvalifikovanykh robitnykiv u zakladakh profesiinoyi (profesiino-tekhnichnoi) osvity [Methodological foundations for the development of SMART-complexes for training skilled workers in vocational (professional-technical) education institutions]. Polissia. <https://lib.iitta.gov.ua/id/eprint/720268>, [in Ukrainian].

Radkevych, V. O., Pryhodi, M. A., Luparenko, L. A., Kravets, S. H., Herliand, T. M., & Kruchok, V. A. (2025). Tsyfrova transformatsiia osvity: shtuchnyi intelekt v suchasnomu osvitnomu prostori: informatsiino-analitychni materialy do zahalnykh zboriv NAPN Ukrainy [Digital transformation of education: artificial intelligence in the modern educational space: informational-analytical materials for the general assembly of NAPS of Ukraine]. Instytut profesiinoi osvity NAPN Ukrainy. <https://lib.iitta.gov.ua/id/eprint/746629>, [in Ukrainian].

European Commission. (2025a). *European Education Area*. Digital Skills & Jobs Platform. <https://digital-skills-jobs.europa.eu/en/actions/european-initiatives/european-education-area>

European Commission. (2025b). *Digital Education Action Plan* (2021–2027). European Education Area. <https://education.ec.europa.eu/focus-topics/digital-education/plan>

Radkevych, O., Pryhodii, M., & Radkevych, V. (2025). Artificial intelligence use in assessing the learning outcomes of future engineers. In M. E. Auer & T. Rüttmann (Eds.), *Futureproofing engineering education for global responsibility. ICL 2024. Lecture Notes in Networks and Systems* (Vol. 1260, pp. 557–564). Springer. https://doi.org/10.1007/978-3-031-85652-5_55

DOI: <https://doi.org/10.32835/2707-3092.2025.31.164-173>

ШТУЧНИЙ ІНТЕЛЕКТ У ПРОФЕСІЙНІЙ ОСВІТІ: СТРАТЕГІЯ ЦИФРОВОЇ ІНТЕГРАЦІЇ ТА ІНДИВІДУАЛІЗАЦІЇ НАВЧАННЯ

Андрій Гуржій¹, Микола Пригодій²

- 1 доктор технічних наук, професор, дійсний член (академік) НАПН України, головний науковий співробітник відділу цифрових освітніх ресурсів Інституту професійної освіти НАПН України, <https://orcid.org/0000-0001-6923-0830>, e-mail: a.m.hurzhii@gmail.com
- 2 доктор педагогічних наук, професор, член-кореспондент НАПН України, заступник директора з наукової роботи Інституту професійної освіти НАПН України, <https://orcid.org/0000-0001-5351-0002>, e-mail: prygodii@ukr.net

Реферат:

Актуальність. Цифрова трансформація суспільства істотно змінює вимоги до змісту та організації професійної освіти, що зумовлює необхідність інтеграції штучного інтелекту в освітні процеси. В умовах розвитку цифрової економіки, індустрії 4.0 та євроінтеграційних прагнень України професійна освіта має забезпечити підготовку фахівців, здатних працювати в умовах автоматизованих систем, великих даних і цифрових середовищ. Досвід Європейського Союзу, зафіксований у стратегічних документах цифрової освіти, демонструє, що штучний інтелект є не просто технологічним інструментом, а чинником системних змін, які охоплюють педагогіку, управління, зміст навчання та оцінювання результатів. Тому дослідження проблематики впровадження штучного інтелекту в професійну освіту є своєчасним і соціально значущим, особливо в контексті модернізації освітньої системи України.

Метою статті є обґрунтування ролі штучного інтелекту як стратегічного ресурсу розвитку професійної освіти та визначення ключових напрямів його інтеграції у вітчизняну освітню систему відповідно до європейських стандартів.

Методи: аналіз нормативно-правових документів ЄС та України у сфері цифрової освіти; системний і структурно-функціональний аналіз для визначення компонентів інтелектуалізації професійної освіти; порівняльний аналіз європейського й українського досвіду інтеграції штучного інтелекту; узагальнення наукових підходів до формування компетентностей майбутнього; методи прогнозування для визначення перспектив розвитку професійної освіти на основі аналітичних платформ і великих даних.

Результати: обґрунтовано, що використання штучного інтелекту забезпечує перехід від масового навчання до персоналізованих освітніх траєкторій, розвитку адаптивних систем навчання, цифрових

наставників, освітньої аналітики та симуляційних платформ; визначено ключові компоненти інтелектуалізації професійної освіти (аналітичні платформи прогнозування потреб ринку праці, адаптивні LMS, цифрові бази компетентностей, віртуальні центри підготовки педагогів та сервіси академічної доброчесності); виявлено основні бар'єри впровадження штучного інтелекту в Україні (інфраструктурні, кадрові, нормативні, етичні); доведено необхідність трансформації ролі педагога у фасилітатора, аналітика й цифрового наставника.

Висновки: штучний інтелект постає не як допоміжна технологія, а як ключовий фактор модернізації професійної освіти; його інтеграція сприяє формуванню компетентностей майбутнього, розвитку цифрової культури та гармонізації української освіти з європейським простором; подальший розвиток професійної освіти потребує створення національної стратегії цифровізації, інвестицій в інфраструктуру та системної підготовки педагогічних кадрів.

Ключові слова: *штучний інтелект (ШІ), професійна освіта, цифрова інтеграція, індивідуалізація, цифрова трансформація.*

Manuscript received	15.06.2025
Accepted for publication after peer review	03.10.2025
Published	30.10.2025



FORMATION OF ENTREPRENEURIAL COMPETENCE OF INTERNALLY DISPLACED PERSONS IN THE RENEWABLE ENERGY SECTOR AS A FACTOR OF ECONOMIC STABILITY IN HOST COMMUNITIES

Volodymyr Artyushenko

<https://orcid.org/0009-0003-1897-8701>, e-mail: artyushenko.volodymyr@gmail.com

Abstract

Relevance The relevance of the study is driven by the fact that the large-scale internal displacement of the population due to hostilities has coincided with the critical necessity for the state's energy transformation, which actualizes the need to develop entrepreneurial competence, particularly among IDPs, as a strategic tool for simultaneously ensuring their economic self-sufficiency and stabilizing the economic activity of host communities; traditional approaches to the economic integration of this category of the population practically do not take into account their entrepreneurial potential, therefore, the study of the motivational structure of IDPs, the specifics of entrepreneurial competence, and the mechanisms of their activity's impact on host communities will allow for creating a foundation for a business support system that synchronizes social integration with the strategic tasks of ensuring the state's energy independence.

Purpose: to define the specifics of entrepreneurial competence of internally displaced persons in the renewable energy sector, characterize the system of incentives and barriers to their entrepreneurial activity, and justify the impact of IDPs' entrepreneurial activity on economic stability, energy security, and social cohesion of host communities.

Methods: analysis of statistical data and reports from international organizations – to determine the demographic, educational, and professional characteristics of internally displaced persons, identifying the scale of unemployment and social problems of the displaced; analysis of scientific publications and regulatory documents – to clarify the state of research on the specificities of renewable energy development in Ukraine and the economic integration of a specific category of the population; synthesis and generalization – to establish a holistic view of the system of incentives and barriers to entrepreneurial activity and define the specific characteristics of entrepreneurial competence in renewable energy; comparative analysis – to identify the advantages of entrepreneurship over wage labor as a mechanism for the economic integration of displaced persons and to characterize the multiple channels of impact of IDP entrepreneurial activity on the economy of host communities; system approach – to justify the comprehensive nature of forming entrepreneurial competence.

Results: a significant potential for entrepreneurship development among internally displaced persons has been identified, the majority of whom are of working age; the limitations of traditional approaches to IDP economic integration, which do not consider the possibilities of their realization in renewable energy, have been highlighted; the specific features of entrepreneurial competence in the industry, which combines technological, regulatory, and environmental knowledge with business planning and financial management skills, have been determined; the system of incentives and obstacles to starting one's own business by displaced persons has been characterized; the multidimensional impact of IDP business activity on economic stability, energy security, and social cohesion of territories through the creation of enterprises, infrastructure development, technology transfer, and increasing the investment attractiveness of communities has been substantiated.

Conclusion: the formation of entrepreneurial competence of internally displaced persons in the renewable energy sector is one of the strategic directions for the comprehensive transformation of the economy of host communities, as it

synchronizes the resolution of humanitarian tasks of social integration with the achievement of energy transition goals and the economic stability of territories. The study revealed a significant unrealized potential of working-age IDPs for entrepreneurship development in the renewable energy sector, which is characterized by accessibility for entry at the small business level and the possibility of staged deployment of activities. The motivational structure of IDPs is characterized by the interaction of powerful incentives – the need for economic self-sufficiency, the desire to regain control over life, and the wish to integrate into communities – and systemic barriers: lack of seed capital, absence of entrepreneurial experience, and chronic stress. The entrepreneurial activity of displaced persons can catalyze positive changes in the economy of host communities through the creation of new jobs, the development of energy infrastructure, technology transfer, reduction of energy losses, mitigation of social tension, and increasing the investment attractiveness of territories. The realization of this potential requires not fragmentary educational measures but complex systemic support that combines competence formation with psychological support, financial mechanisms, and social integration tools through the coordination of efforts by state institutions, international partners, and the public sector.

Keywords: *internally displaced persons, entrepreneurial competence, renewable energy, vocational education, economic integration, host communities, socio-economic stability, energy transition, self-employment.*

Introduction. Military operations have caused a profound transformation of the state's economic landscape: the large-scale destruction of production capacities, critical infrastructure, and logistical networks has led to a systemic deformation of the labor market (Ustymenko & Dzhabrailov, 2020). As a result of the destruction of industrial complexes and energy facilities, there has been a sharp reduction in employment, which continues to be accompanied by a rapid increase in unemployment and a significant drop in gross domestic product (Zakatnov, 2023). At the same time, the full-scale Russian aggression against Ukraine has triggered internal displacement processes unprecedented in scale, which has fundamentally changed the socio-economic structure of Ukrainian society.

According to statistical data from the State Enterprise "Information and Computing Center of the Ministry of Social Policy, Family, and Unity of Ukraine," as of October 14, 2025, there are 4,583,568 registered internally displaced persons (hereinafter – IDPs) in Ukraine, of whom the most capable age groups include: 21-30 years – 422,264 persons; 31-40 years – 312,023 persons; 41-50 years – 589,102 persons; 51-60 years – 481,745 persons.

The specified analysis allows for the identification of critical parameters of the target audience for programs focused on developing entrepreneurial competence in the field of renewable energy. The demographic structure of registered IDPs confirms the dominance of the working-age population: the share of persons aged 21-60 accounts for approximately 39.4% of the total number. Special

attention should be paid to the 21-40 age group, which demonstrates the highest adaptive capacity, openness to acquiring new professional competencies, and potential for long-term entrepreneurial activity. At the same time, the 41-60 age category possesses significant professional experience, established labor skills, and, most importantly, experience in managing and organizing production processes, which can be converted into entrepreneurial competencies (SE "Information and Computing Center of the Ministry of Social Policy, Family, and Unity of Ukraine", 2025).

According to a study by the International Organization for Migration (IOM), financial support is the most urgent need for IDPs due to prolonged displacement and the depletion of their own resources. Forced displacement during the period of full-scale war has created serious risks regarding employment. The IOM study indicates that across the country, only 40% of IDPs, including 4% of self-employed individuals, have jobs. At the same time, 18% of IDP respondents and 26% of forced migrants who returned home felt tension in their relationships with host communities, which can be considered one of the factors prompting their return. The main reason for this was unequal access to monetary and non-monetary assistance. Furthermore, a quarter of IDPs (25%) reported experiencing inappropriate behavior from local communities, and one in five respondents reported cases of discriminatory or unfair treatment toward them and their family members due to their status as forced migrants (National Institute for Strategic Studies, 2023).

This phenomenon has created a complex of interconnected challenges for both the IDPs themselves and the host communities, which have faced the need to ensure social integration, employment, and economic stabilization for large groups of the population under conditions of limited resources and ongoing military actions.

Sources. A comprehensive analysis of the scientific source base regarding the problem of economic integration of internally displaced persons and the development of entrepreneurship in the renewable energy sector allows for the determination of conceptual foundations and existing scientific approaches that outline the current state of the problem and identify certain gaps requiring further research.

The content of scientific publications indicates that the problem of economic integration of IDPs is considered by researchers primarily in the context of social adaptation, psychological support, and the provision of basic needs. Despite the fact that internally displaced persons constitute one of the most vulnerable social groups, they are represented mainly by the working-age adult population with varying levels of education and professional qualifications, which necessitates their urgent need for employment opportunities and the provision of basic living needs for their families.

The fundamental basis for understanding the researched issues is found in scientific works dedicated to the analysis of the entrepreneurial potential of IDPs and the mechanisms of their economic integration (Pankova, Shastun & Kasperovych, 2021; Prykhodko, Ihnatyshyn, & Prykhodko, 2024), which justify the need to rethink traditional approaches to the economic rehabilitation of displaced persons, proving that the purposeful development of entrepreneurial competence through the stimulation of starting one's own business can become an optimal way to ensure employment and the socio-economic reintegration of displaced persons. This conceptual position is fundamentally important as it shifts the discussion from a model of passive receipt of social assistance to a model of active development of one's own business.

At the same time, the realization of the entrepreneurial potential of IDPs requires the identification of promising sectors for their economic activity, which necessitates a turn toward research in

the renewable energy sector. State policy and strategic priorities for the development of this industry are viewed by scholars as the basis for creating a favorable environment for entrepreneurial activity. Through state development policy, renewable energy in Ukraine is defined as one of the priorities of the energy sector (Koroliuk & Zvierievych, 2024; Myloslavskiy, 2024; Fedorchuk & Feofanov, 2024). The development of renewable energy is seen as a factor in ensuring the sustainable development of communities within the context of the European Green Deal, which creates a methodological basis for understanding the possibilities of integrating the entrepreneurial activity of IDPs into the state's strategic goals for energy transition (Bashynska, 2025). Thus, renewable energy emerges not only as a promising economic sector but also as a field that aligns organically with global trends in sustainable development.

However, the strategic potential of the industry itself does not guarantee its accessibility for entrepreneurs among IDPs, which highlights the need for an analysis of the organizational and economic characteristics of entrepreneurship in renewable energy. Determining the specifics of the functioning of small and medium-sized enterprise (SME) entities in this field, the characteristics of the regulatory environment and business conditions (Kuzmina, 2019), revealing the organizational and economic state of entrepreneurial structures in renewable energy, and characterizing current challenges and development prospects (Petrukhnov, 2025) are critically important, as they allow for an understanding of the barriers and opportunities for IDPs to enter the industry, including the feasibility of starting activities at the level of small business with the possibility of phased business expansion.

At the same time, issues regarding the formation of entrepreneurial competencies of IDPs as a mechanism for their economic self-sufficiency and active participation in the economic development of host communities remain insufficiently explored. This problem acquires particular relevance in the context of Ukraine's strategic development priorities, specifically the transformation of the energy sector, where the purposeful development of entrepreneurial competence through the stimulation of starting one's own business can become an optimal way to ensure

employment, self-sufficiency, and the socio-economic reintegration of displaced persons.

The purpose of the article is to determine the specifics of the entrepreneurial competence of internally displaced persons in the renewable energy sector, to characterize the system of incentives and barriers to their entrepreneurial activity, and to justify the impact of IDP entrepreneurial activity on economic stability, energy security, and social cohesion in host communities.

Research methods: analysis of statistical data and reports from international organizations – to determine the demographic, educational, and professional characteristics of internally displaced persons, and to identify the scale of unemployment and social problems of migrants; analysis of scientific publications and regulatory documents – to clarify the state of research regarding the development of renewable energy in Ukraine and the economic integration of a specific category of the population; synthesis and generalization – to establish a holistic view of the system of incentives and barriers to entrepreneurial activity and to define the specific characteristics of entrepreneurial competence in renewable energy; comparative analysis – to identify the advantages of entrepreneurship over wage labor as a mechanism for the economic integration of migrants and to characterize the multiple channels of influence of IDP entrepreneurial activity on the economy of host communities; a systems approach – to justify the complex nature of entrepreneurial competence formation.

Results and discussion. The renewable energy sector possesses unique potential for implementing the task of forming entrepreneurial skills. Ukraine's solar and wind energy potential is 150 times higher than the current demand for electricity, and using just 1% of suitable land for the placement of relevant power plants is capable of fully meeting the state's internal energy needs and creating opportunities for energy export to European Union countries. The development of the industry involves the creation of approximately 20,000 new jobs by 2030 with the prospect of long-term employment, which opens significant opportunities for the economic integration of IDPs into host communities (Enefcities, 2024). The realization of this economic potential requires not only the modernization of energy infrastructure but also the development of

human resources for the industry through the training of specialists with entrepreneurial competencies capable of initiating and developing their own projects in the field of renewable energy.

Analysis of the development of renewable energy in Ukraine during the full-scale war reveals a contradictory situation: on the one hand, military actions destroy energy infrastructure, while on the other, these very circumstances accelerate the transition to new energy models. Local communities play a key role in these changes, actively implementing green energy solutions into their reconstruction plans. In parallel, international sanctions against Russia have prompted European Union countries to revise their energy strategies and rapidly abandon fossil fuels (Bashynska, 2025).

Entrepreneurial competence in the modern sense entails not only the ability to create and manage one's own business but also a complex set of skills, knowledge, and attitudes that ensure innovation, initiative, risk readiness, and the ability to transform ideas into value. In the context of renewable energy, this competence acquires specific characteristics related to understanding the technological, environmental, economic, and regulatory aspects of the industry. The formation of such competence in IDPs can become a powerful catalyst not only for their personal economic stabilization but also for the comprehensive development of host communities through the creation of new enterprises, jobs, the implementation of innovative energy-saving technologies, and the attraction of investments (Koroliuk & Zvierievych, 2024). The vocational education system plays a key role in solving the outlined problem, as institutions possess the necessary potential to organize flexible, practice-oriented training and retraining programs for specialists that combine technical knowledge in the field of renewable energy with entrepreneurial skills.

The implementation of measures for the social integration of IDPs in the territorial communities of Ukraine where they reside, and the active work of the State Employment Service to promote the employment of displaced persons, should specifically include job matching, vocational guidance services, training vouchers, micro-grants for starting one's own business, and compensation for employers for hiring this category of citizens. Support for the self-employment of forced migrants requires

improvement, including simplifying access to micro-loans for starting a business, as well as special grants, for which it would be desirable to involve tools related to Ukraine's accession to the EU, namely the structural and special funds of the European Union (Report on Internal Displacement, 2024). These and other measures should be targeted and take into account the needs of each individual and family. To develop, refine, and correct forms of assistance, it is necessary to implement constant monitoring of the situation, clear registration of IDPs, and a study of their socio-demographic and professional-qualification profile, which is particularly important for solving specific problems at the local level. In the context of Ukraine's strategic development priorities and the energy transition, the involvement of IDPs in entrepreneurial activities in the field of renewable energy takes on special significance. An analysis of the socio-economic nature of this vulnerable category of the population leads to the conclusion that, despite objective challenges and limitations, this category possesses significant potential for entrepreneurial activity in the renewable energy sector, provided there is targeted support through the formation of appropriate competencies, access to financial resources, and the creation of a favorable institutional environment (International Organization for Migration, 2024).

The motivation of internally displaced persons for entrepreneurial activity in the field of renewable energy is complex in nature, combining economic, psychological, and social factors. Primarily, for a significant portion of IDPs, entrepreneurship becomes a response to the acute necessity of providing a livelihood in conditions of limited access to traditional employment. At the same time, the renewable energy sector offers much more than just an earning opportunity. This industry is perceived as a sphere of the future, opening prospects for long-term development and aligning with global trends of sustainable development (Marushevskiy, 2017).

The psychological dimension of motivation is no less important. Owning a business allows IDPs to regain a sense of control over their own lives, which is critically important for people who have experienced the trauma of forced displacement (Sviderskyi, 2025). Unlike wage labor, where displaced persons often face biased attitudes and

limited development opportunities, entrepreneurship provides independence in decision-making and a direct link between effort and results. Entrepreneurial activity also contributes to the social integration of IDPs in host communities. By creating jobs and developing energy infrastructure, displaced persons are transformed from recipients of aid into active participants in local economic life. This is especially true for small enterprises in the field of renewable energy, which directly improve the lives of local residents by reducing household energy costs.

A favorable factor is the relative regulation of entry into the renewable energy industry at the small business level. The initiation of activities can take place in stages: from energy efficiency consulting services with minimal initial investment to the installation and maintenance of equipment requiring technical skills that can be acquired through short-term educational programs. This phasing makes the sector attractive to IDPs with limited financial resources. Additionally, state policy and international support through grant programs, specialized credit products, and educational initiatives create a favorable environment that reduces risks and increases readiness to start a business in priority sectors (Kuzmina, 2019). IDPs have the potential to become not only objects of social assistance but also active agents of change in host communities. They often possess professional competencies that are lacking in local communities, as a significant portion of them come from the industrially developed regions of the Donetsk and Luhansk oblasts, where they worked as engineering and technical specialists with basic knowledge in the fields of electrical engineering and power engineering. These competencies can be transformed into specialized skills for the renewable energy sector through retraining programs, ensuring the transfer of knowledge to communities where such specialists were previously absent.

At the same time, there are deterring factors: chronic stress resulting from prolonged exposure to uncertainty, a lack of seed capital and entrepreneurial experience, fear of failure, undeveloped social ties in the new location, and fear of bureaucratic procedures (United Nations High Commissioner for Refugees [UNHCR], 2022). Therefore, the effective formation of IDP entrepreneurial competence must take into account the full complexity of the motivational structure, strengthening positive incentives by

demonstrating real prospects and ensuring access to resources, while simultaneously working to overcome barriers through psychological support and the reduction of administrative obstacles (Pankova, Shastun, & Kasperovych, 2021).

At the same time, the realization of the entrepreneurial potential of IDPs in the renewable energy sector requires systemic changes at the level of regional economic policy. A key task for local self-government bodies and regional administrations should be the creation of a favorable investment climate through targeted stimulation of entrepreneurial activity in priority sectors, particularly renewable energy (Seriohina & Bezdietko, 2024). Identifying such priority areas of business development and providing them with primary support from local authorities will allow the concentration of limited resources on promising sectors of the economy (Pysanko, Romaniuk, Pavlov, & Pavlova, 2021). An important tool for such support is the development of modern institutional infrastructure in partnership with European Union member states: the creation of scientific, technological, and industrial parks, the formation of innovative production clusters, and the development of cross-border industrial zones. Closely related to the task of economic development is the creation of conditions for long-term employment and housing for internally displaced persons who cannot return to their homes due to infrastructure destruction or security threats. The integration of IDPs through entrepreneurship in renewable energy offers a comprehensive solution to this problem, simultaneously ensuring the economic self-sufficiency of displaced persons and contributing to the energy transformation of host communities. The formation of a new energy development paradigm in Ukraine, which began with joining the common EU energy system, creates a favorable context for such integration. Renewable energy has been identified as one of the priorities for the energy sector's development, opening opportunities to attract additional investment in the development of a network of solar and wind power plants and the modernization of power generation and transmission infrastructure. It is in this dynamically growing sector that entrepreneurs from among IDPs, armed with the appropriate competencies, can realize their potential while simultaneously contributing to the strategic

goals of energy independence and the sustainable development of Ukraine (Melnyk, 2022).

Entrepreneurial activity of IDPs in the renewable energy sector generates a complex of interconnected economic effects that directly impact the financial stability and development of host communities. The establishment of small and medium-sized enterprises is accompanied by the formation of demand for labor of various qualifications. International experience shows that one job in the renewable energy sector creates an additional 1.8 to 2.8 indirect jobs in related industries through the effect of economic expansion. This effect is reinforced by the fact that displaced persons often prefer to hire other IDPs, which contributes to their economic integration. Employment in this industry is characterized by stability and opportunities for professional development, which is especially important for communities with an outflow of the working-age population (Humeniuk & Novak, 2020). At the same time, it is fundamentally important to transform IDPs from net consumers of budget resources into their generators, which is further accompanied by savings on social support for unemployed displaced persons.

Local infrastructure development occurs through direct investment in energy facilities and the formation of an ecosystem of related services. IDP enterprises can create physical infrastructure for distributed generation, which enhances the community's energy security and reduces dependence on centralized grids. This becomes critically important in the context of military threats. Simultaneously, the development of a service network—maintenance, supply of components, and energy efficiency consulting—creates the prerequisites for further industry scaling and the formation of local renewable energy clusters. The attraction of investments into the local economy can occur through international donor organizations and development funds that prioritize projects combining support for IDPs with renewable energy development. Grant funds and soft loans should be transformed into investments through equipment procurement, facility rentals, and payment for local contractors' services. Successful cases will form a positive investment image for the community and stimulate the influx of private investment.

Entrepreneurial activity of IDPs touches upon fundamental aspects of social cohesion and the quality of social capital in host communities. The status of an entrepreneur cardinally changes their social position: from a passive recipient of aid, the individual is transformed into an active economic agent who creates jobs and contributes to local infrastructure development. This transformation is accompanied by a shift in the perception of displaced persons by the local population—from an object of sympathy to a full-fledged member of the economic community. Activities in renewable energy are associated with progressiveness and environmental awareness, which enhances the social prestige of entrepreneurs. The integration process also has a practical dimension: interaction with local authorities, suppliers, and clients forms a dense network of social and economic ties. Research on the social integration of migrants indicates that entrepreneurs integrate faster and more fully compared to salaried employees due to a wider and more functionally diverse social network (Levytska, 2024). Entrepreneurship objectively requires investment in long-term relationships and creates economic incentives for rooting within the community.

The impact of displaced persons' entrepreneurial activity on the energy profile and innovation potential of host communities is the most promising aspect of the aforementioned issues. IDP entrepreneurs may demonstrate a higher openness to innovation, as they are not burdened by investments in outdated technologies and established business models. Starting their activities, they will strive to master the most modern technological solutions that allow them to compete through technological superiority. At the same time, the limitation of financial resources will stimulate the search for cost-effective innovative solutions adapted to local conditions.

The spectrum of technologies can cover both relatively established solutions (photovoltaic solar panels, solar collectors, heat pumps) and more innovative ones: hybrid generation systems with energy storage, smart energy management systems, solutions for the interaction of distributed sources with the centralized grid, and biomass utilization technologies. Moreover, implementation will take place not as experimental pilots, but as commercial

solutions for real clients, ensuring economic viability and scalability potential. IDP entrepreneurs, having experience in interacting with international organizations, act as a channel for the transfer of technological knowledge from leading countries in renewable energy. Simultaneously, they perform the localization of solutions, taking into account the specifics of climatic conditions, the regulatory environment, and the purchasing power of the population. Thus, IDP enterprises can create physical infrastructure for distributed generation and provide comprehensive support: consulting on the optimal system size, processing documents for connection, and equipment maintenance. Such support is critically important for mass implementation, as technological and administrative barriers often prove insurmountable for individual households (Petrukhnov, 2025).

The development of distributed generation increases energy security by reducing dependence on centralized grids, which are vulnerable to attacks during wartime. Energy costs for households and small businesses are reduced. Consequently, a culture of active energy management will be formed, where consumers become conscious of their energy consumption and optimization opportunities. Prerequisites will be created for the formation of energy cooperatives that will jointly invest in energy facilities.

Energy autonomy should be understood not as complete isolation from the national system, but as the community's ability to provide for critical energy needs with its own sources in crisis situations. To achieve it, a combination of a diversified portfolio of generation sources, energy storage systems, intelligent demand management systems, and energy-efficient infrastructure is necessary. IDP enterprises can be involved in creating all these elements (Koroliuk, & Zvierievych, 2024).

Energy autonomy has not only a technical but also a socio-political dimension. A community that possesses its own energy resources and competencies for their management acquires greater agency in relations with central authorities and large energy companies. Energy autonomy becomes the basis for broader economic autonomy and self-sufficiency. Therefore, the impact of IDP entrepreneurial activity on energy transformation is complex and manifests through technological modernization, structural

changes in the organization of the energy sector, increased energy security, and the formation of a new culture of relations with energy. These changes are long-term in nature and can determine the development trajectory of communities for decades to come.

Conclusions. Based on the conducted research, the problem of forming the entrepreneurial competence of internally displaced persons in renewable energy as a factor of economic stability for host communities allows for the assertion that the current situation in Ukraine has created unprecedented challenges for the socio-economic integration of the displaced population, which simultaneously open opportunities for the structural transformation of the economy through the development of the entrepreneurial potential of vulnerable categories. The scale of internal displacement of a significant part of the citizenry, of which nearly 40% are of working age, has necessitated a rethinking of traditional approaches to the economic rehabilitation of IDPs. Existing employment mechanisms signal the need for a strategic rethinking of active policies for the development of entrepreneurial potential.

The renewable energy sector possesses unique characteristics for the realization of this strategic shift. Particularly important is the possibility of phased escalation of entrepreneurial activity—from consulting services with minimal investment to technologically complex projects. The industry organically fits into the strategic priorities of Ukraine's energy independence and the global trend of decarbonization, which guarantees the long-term viability of entrepreneurial initiatives.

Entrepreneurial competence in the field of renewable energy is integrative in nature, requiring a synthesis of technological knowledge about the functioning of energy generation systems, an understanding of the specifics of the energy market's regulatory environment, and mastery of energy audit

methodologies along with classic entrepreneurial competencies of business planning and financial management.

The motivational dimensions of IDPs are characterized by a complex interaction of powerful stimuli—the acute need for a livelihood, the desire to regain control over their own lives, and the wish to integrate into host communities—and systemic barriers: a critical lack of start-up capital, a lack of entrepreneurial experience, chronic stress, and actual experiences of discrimination. This means that the successful activation of the entrepreneurial potential of IDPs requires not fragmentary educational interventions, but a comprehensive support system that combines competence training with psychological support, financial mechanisms, and social integration tools (Rumyk, 2024).

The formation of IDP entrepreneurial competence in renewable energy is capable of catalyzing systemic positive changes in the economy of host communities through multiple channels of influence: direct creation of enterprises and jobs, variety in the development paths of the local economy, reduction of energy costs, transfer of knowledge and technologies, reduction of social tension, and increasing the investment attractiveness of territories.

Thus, the formation of entrepreneurial competence of internally displaced persons in the renewable energy sector is a strategic tool for the comprehensive transformation of host communities' economies, synchronizing the resolution of humanitarian tasks of social integration with the achievement of energy transition goals, sustainable development, and the post-war reconstruction of Ukraine. The realization of this potential requires systemic changes in professional education and the coordination of efforts by state institutions, international donors, and civil society in creating a comprehensive ecosystem to support IDP entrepreneurship.

List of references

Башинська, Ю. І. (2025). Розвиток відновлюваної енергетики як чинник забезпечення сталого розвитку громад в контексті Європейського зеленого курсу. *Науковий вісник ІФНТУНГ. Серія: Економіка та управління в нафтовій і газовій промисловості*, 1(31), 57-67. [https://doi.org/10.31471/2409-0948-2025-1\(31\)-57-67](https://doi.org/10.31471/2409-0948-2025-1(31)-57-67)

Гуменюк, О., & Новак, І. (2020). *Дослідження створення робочих місць у сферах енергоефективності та відновлюваної енергетики в Україні: Резюме дослідження*. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.
<https://reform.energy/media/1463/b46d83bca4c4d68ed98f1807262d702c.pdf>

ДП «Інформаційно-обчислювальний центр Міністерства соціальної політики, сім'ї та єдності України». (2025). ВІО. <https://www.ioc.gov.ua/analytics/dashboard-vpo>

Закатнов, Д. (2023). Модель консультування з молодіжного підприємництва для повоєнного відновлення економіки України. *Професійне становлення особистості: проблеми і перспективи: матеріали XII міжнародної науково-практичної конференції (м. Хмельницький, 19–20 жовт. 2023 р.), (с. 91-92).* Хмельницький: ХНУ..

https://www.pusb.pl/files/articles/29/publikacje_i_materialy/konferentsii_19_202023_r.pdf

Звіт про внутрішнє переміщення населення в Україні: опитування загального населення (Раунд 16, квітень 2024).

https://dtm.iom.int/sites/g/files/tmzbd1461/files/reports/IOM_UKR_GPS_Internal%20Displacement%20Report_R

Королук, Т. О., & Зверевич, Ю. О. (2024). Державна політика розвитку відновлювальної енергетики в Україні. *Державне будівництво*, 2(36), 83-99. <https://doi.org/10.26565/1992-2337-2024-2-06>

Кузьміна, М. (2019). Суб'єкти малого та середнього підприємництва у сфері відновлювальної енергетики. *Господарське право і процес*, 12, 97-102. <https://doi.org/10.32849/2663-5313/2019.12.18>

Левицька, О. О. (2024). Конкурентоспроможність ринку праці регіону та міграційна безпека: моделювання взаємозв'язків і політика забезпечення (Сер. «Проблеми регіонального розвитку»). Державна установа «Інститут регіональних досліджень імені М. І. Долишнього НАН України». <https://ird.gov.ua/irdp/p20240006.pdf>

Марушевський, Г. (2017). «Зелений» бізнес для малих і середніх підприємств: Посібник. Київ. <https://bc.biz.mk.ua/wp-content/uploads/2021/04/ZELENYJ-biznes-dlia-MSP.pdf>

Мельник, М. І. (Ред.). (2022). *Глобальні чинники та ризики ендегенного розвитку регіонів*. ДУ «Інститут регіональних досліджень імені М. І. Долишнього НАН України». (Серія «Проблеми регіонального розвитку»). <https://ird.gov.ua/irdp/p20220039.pdf>

Милославський, В. В. (2024). Організаційно-економічні механізми впровадження відновлюваної енергетики в Україні. *Здобутки економіки: перспективи та інновації*, 9, 1-19. <https://doi.org/10.5281/zenodo.13268480>

Національний інститут стратегічних досліджень. (2023, 10 жовтня). *Внутрішні вимушені переміщення: обсяги, проблеми та шляхи їх вирішення*. <https://niss.gov.ua/news/komentari-ekspertiv/vnutrishni-vymusheni-peremishchennya-obsyaky-problemy-ta-sposoby-yikh>

Панькова, О. В., Шастун, А. Д. & Касперович, О. Ю. (2021). Підприємницький потенціал внутрішньо переміщених осіб: механізми залучення та використання. *Економічний вісник Донбасу*, 2(64), 108-117. [https://doi.org/10.12958/1817-3772-2021-2\(64\)-108-117](https://doi.org/10.12958/1817-3772-2021-2(64)-108-117)

Петрухнов, О. В. (2025). Організаційно-економічний стан підприємницьких структур у сфері відновлюваної енергетики: сучасні виклики та перспективи розвитку. *Бізнесінформ*, 2, 247-254. <https://doi.org/10.32983/2222-4459-2025-2-247-254>

Писанко, С. В., Романюк, Р. В., Павлов, К. В., & Павлова, О. М. (2021). Стратегія та ризики при реформуванні ринку електроенергетики в регіонах України. *Економічний часопис ВНУ імені Лесі Українки*, 1(25), 16-27. <https://www.echas.vnu.edu.ua/index.php/echas/en/issue/view/28/2021-1>

Приходько, І., Ігнатишин, В., & Приходько, Ю. (2024). Особливості розвитку відновлюваної енергетики в Україні та світі. *Економіка та суспільство*, 62. <https://doi.org/10.32782/2524-0072/2024-62-47>

Свідерський, І. В. (2025). Психологічні засади формування підприємницької компетентності у внутрішньо переміщених осіб. *Академічні студії. Серія «Педагогіка»*, 2, 61-73. <https://doi.org/10.52726/as.pedagogy/2025.2.9>

Серьогіна, Д., & Бездєтко, К. (2024). Роль відновлюваної енергетики в сталому розвитку територій України. *Економіка та суспільство*, 68. <https://doi.org/10.32782/2524-0072/2024-68-87>

Устименко, В. А., & Джабраїлов, Р. А. (2020). Економічна безпека постконфліктних територій: деякі аспекти правового забезпечення. *Економіка та право*, 2, 3-13. <https://doi.org/10.15407/econlaw.2020.02.003>

Федорчук, В., & Феофанов, Д. (2024). Напрями стратегічного розвитку «зеленої» енергетики в світі. *Вісник Хмельницького національного університету*, 4, 155-161. <https://doi.org/10.31891/2307-5740-2024-332-23>

Enefcities. (2024, 16 квітня). *Потенціал сонячної та вітрової енергії України у 150 разів перевищує поточний попит на електроенергію*. <https://enefcities.org.ua/novyny/potentsial-sonyachno-ta-vitrovo-energi-ukrany-u-150-raziv-perevyschuye-potochnyy-popyt-na-elektroenergiyu/>

International Organization for Migration. (2024). *Звіт про внутрішнє переміщення населення в Україні: опитування загального населення (Раунд 16, квітень 2024)*. https://dtm.iom.int/sites/g/files/tmzbd1461/files/reports/IOM_UKR_GPS_Internal%20Displacement%20Report_R

Rumyk, I. I. (2024). Financial mechanisms for ensuring small business efficiency. *Економічні перспективи підприємництва: виклики воєнного часу та повоєнної відбудови: збірник матеріалів VII Міжнародної науково-практичної конференції*, (с. 26-29). Державний податковий університет. <https://ief.org.ua/publication/zbirnyk-naukovykh-prac/2024/ekonomichni-perspektyvy-pidpryemnytstva>

UNHCR. (2022). *Information provision and mental health support for internally displaced persons: Lessons learned and best practices*. United Nations High Commissioner for Refugees. <https://www.unhcr.org/what-we-do/protect-human-rights/public-health/mental-health-and-psychosocial-support>

Translated & Transliterated

Bashynska, Yu. I. (2025). Rozvytok vidnovliuvanoi enerhetyky yak chynnyk zabezpechennia staloho rozvytku hromad v konteksti Yevropeiskoho zelenoho kursu. *Naukovyi visnyk IFNTUNH. Serii: Ekonomika ta upravlinnia v naftovii i hazovii promyslovosti*, 1(31), 57-67. [https://doi.org/10.31471/2409-0948-2025-1\(31\)-57-67](https://doi.org/10.31471/2409-0948-2025-1(31)-57-67)

Humeniuk, O., & Novak, I. (2020). *Doslidzhennia stvorennia robochych mist u sferakh enerhoefektyvnosti ta vidnovliuvanoi enerhetyky v Ukraini: Reziyme doslidzhennia*. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. <https://reform.energy/media/1463/b46d83bca4c4d68ed98f1807262d702c.pdf>

DP «Інформатиіно-обчислювальні центри Міністерства соціальної політики, сім'ї та єдності України». (2025). VPO. <https://www.ioc.gov.ua/analytics/dashboard-vpo>

Zakatnov, D. (2023). Model konsultuvannia z molodizhnogo pidpryemnytstva dlia povoiennoho vidnovlennia ekonomiky Ukrainy. *Profesiine stanovlennia osobystosti: problemy i perspektyvy: materialy KhII mizhnarodnoi nauково-praktychnoi konferentsii (m. Khmelnytskyi, 19–20 zhovt. 2023 r.)*, (s. 91-92). Khmelnytskyi: KhNU.. https://www.pusb.pl/files/articles/29/publikacje_i_materialy/konferentsii_19_202023_r.pdf

Zvit pro vnutrishnie peremishchennia naselennia v Ukraini: opytuvannia zahalnoho naselennia (Raund 16, kviten 2024) [Elektronnyi resurs]. URL: https://dtm.iom.int/sites/g/files/tmzbd1461/files/reports/IOM_UKR_GPS_Internal%20Displacement%20Report_R

Koroliuk, T. O., & Zvierievych, Yu. O. (2024). Derzhavna polityka rozvytku vidnovliuvanoi enerhetyky v Ukraini. *Derzhavne budivnytstvo*, 2(36), 83-99. <https://doi.org/10.26565/1992-2337-2024-2-06>

Kuzmina, M. (2019). Subiekty maloho ta serednoho pidpryemnytstva u sferi vidnovliuvanoi enerhetyky. *Hospodarske pravo i protses*, 12, 97-102. <https://doi.org/10.32849/2663-5313/2019.12.18>

Levytska, O. O. (2024). *Konkurentospromozhnist rynku pratsi rehionu ta mihratsiina bezpeka: modeliuvannia vzaïmozv'iazkiv i polityka zabezpechennia* (Ser. «Problemy rehionalnoho rozvytku»). Derzhavna ustanova «Інститут rehionalnykh doslidzen imeni M. I. Dolishnoho NAN Ukrainy». <https://ird.gov.ua/irdp/p20240006.pdf>

Marushevskyi, H. (2017). «Zelenyi» biznes dlia malykh i serednikh pidpryemstv: Posibnyk. Kyiv. <https://bc.biz.mk.ua/wp-content/uploads/2021/04/ZELENYJ-biznes-dlia-MSP.pdf>

Melnyk, M. I. (Red.). (2022). *Hlobalni chynnyky ta ryzyky endohennoho rozvytku rehioniv*. DU «Instytut rehionalnykh doslidzhen imeni M. I. Dolishnoho NAN Ukrainy». (Seriia «Problemy rehionalnoho rozvytku»). <https://ird.gov.ua/irdp/p20220039.pdf>

Myloslavskyi, V. V. (2024). Orhanizatsiino-ekonomichni mekhanizmy vprovadzhennia vidnovliuvanoi enerhetyky v Ukraini. *Zdobutky ekonomiky: perspektyvy ta innovatsii*, 9, 1-19. <https://doi.org/10.5281/zenodo.13268480>

Natsionalnyi instytut stratehichnykh doslidzhen. (2023, 10 zhovtnia). *Vnutrishni vymusheni peremishchennia: obsiah, problemy ta shliakhy yikh vyrishennia*. <https://niss.gov.ua/news/komentari-ekspertiv/vnutrishni-vymusheni-peremishchennya-obsyaky-problemy-ta-sposoby-yikh>

Pankova, O. V., Shastun, A. D. & Kasperovych, O. Yu. (2021). Pidpriemnytskyi potentsial vnutrishno peremishchenykh osib: mekhanizmy zaluchennia ta vykorystannia. *Ekonomichniy visnyk Donbasu*, 2(64), 108-117. [https://doi.org/10.12958/1817-3772-2021-2\(64\)-108-117](https://doi.org/10.12958/1817-3772-2021-2(64)-108-117)

Petrukhnov, O. V. (2025). Orhanizatsiino-ekonomichniy stan pidpriemnytskykh struktur u sferi vidnovliuvanoi enerhetyky: suchasni vyklyky ta perspektyvy rozvytku. *Biznesinform*, 2, 247-254. <https://doi.org/10.32983/2222-4459-2025-2-247-254>

Pysanko, S. V., Romaniuk, R. V., Pavlov, K. V., & Pavlova, O. M. (2021). Stratehiia ta ryzyky pry reformuvanni rynku elektroenerhetyky v rehionakh Ukrainy. *Ekonomichniy chasopys VNU imeni Lesi Ukrainky*, 1(25), 16-27. <https://www.echas.vnu.edu.ua/index.php/echas/en/issue/view/28/2021-1>

Prykhodko, I., Ihnatyshyn, V., & Prykhodko, Yu. (2024). Osoblyvosti rozvytku vidnovliuvanoi enerhetyky v Ukraini ta sviti. *Ekonomika ta suspilstvo*, 62. <https://doi.org/10.32782/2524-0072/2024-62-47>

Sviderskyi, I. V. (2025). Psykholohichni zasady formuvannia pidpriemnytskoi kompetentnosti u vnutrishno peremishchenykh osib. *Akademichni studii. Seriia «Pedahohika»*, 2, 61-73. <https://doi.org/10.52726/as.pedagogy/2025.2.9>

Serohina, D., & Bezdietko, K. (2024). Rol vidnovliuvanoi enerhetyky v stalomu rozvytku terytorii Ukrainy. *Ekonomika ta suspilstvo*, 68. <https://doi.org/10.32782/2524-0072/2024-68-87>

Ustymenko, V. A., & Dzhabrailov, R. A. (2020). Ekonomichna bezpeka postkonfliktnykh terytorii: deiakii aspekty pravovoho zabezpechennia. *Ekonomika ta pravo*, 2, 3-13. <https://doi.org/10.15407/econlaw.2020.02.003>

Fedorchuk, V., & Feofanov, D. (2024). Napriamy stratehichnoho rozvytku «zelenoi» enerhetyky v sviti. *Visnyk Khmelnytskoho natsionalnoho universytetu*, 4, 155-161. <https://doi.org/10.31891/2307-5740-2024-332-23>

Enefcities. (2024, 16 kvitnia). *Potentsial soniachnoi ta vitrovoi enerhii Ukrainy u 150 raziv perevyschuie potochnyi popyt na elektroenerhiu*. <https://enefcities.org.ua/novyiny/potentsial-sonyachno-ta-vitrovo-energi-ukrany-u-150-raziv-perevyschuye-potochnyy-popyt-na-elektroenergiyu/>

International Organization for Migration. (2024). *Zvit pro vnutrishnie peremishchennia naselennia v Ukraini: opytuvannia zahalnoho naselennia (Raund 16, kviten 2024)*. https://dtm.iom.int/sites/g/files/tmzbd11461/files/reports/IOM_UKR_GPS_Internal%20Displacement%20Report_R

Rumyk, I. I. (2024). Financial mechanisms for ensuring small business efficiency. *Ekonomichni perspektyvy pidpriemnytstva: vyklyky voiennoho chasu ta povoiennoi vidbudovy: zbirnyk materialiv VII Mizhnarodnoi naukovo-praktychnoi konferentsii*, (s. 26-29). Derzhavnyi podatkovyi universytet.. <https://ief.org.ua/publication/zbirnyk-naukovykh-prac/2024/ekonomichni-perspektyvy-pidpriemnytstva>

UNHCR. (2022). *Information provision and mental health support for internally displaced persons: Lessons learned and best practices*. United Nations High Commissioner for Refugees. <https://www.unhcr.org/what-we-do/protect-human-rights/public-health/mental-health-and-psychosocial-support>

ФОРМУВАННЯ ПІДПРИЄМНИЦЬКОЇ КОМПЕТЕНТНОСТІ ВНУТРІШНЬО ПЕРЕМІЩЕНИХ ОСІБ У ВІДНОВЛЮВАЛЬНІЙ ЕНЕРГЕТИЦІ ЯК ЧИННИК ЕКОНОМІЧНОЇ СТАБІЛЬНОСТІ ПРИЙМАЮЧИХ ГРОМАД

Володимир Артюшенко

<https://orcid.org/0009-0003-1897-8701>, e-mail: artyushenko.volodymyr@gmail.com

Реферат:

Актуальність дослідження зумовлюється тим, що масштабне внутрішнє переміщення населення внаслідок бойових дій збіглося з критичною необхідністю енергетичної трансформації держави, що актуалізує потребу формування підприємницької компетентності зокрема й ВПО як стратегічного інструменту одночасного забезпечення їхньої економічної самодостатності та стабілізації економічної активності приймаючих громад; традиційні підходи до економічної інтеграції зазначеної категорії населення практично не враховують їхній підприємницький потенціал, тому дослідження мотиваційної структури ВПО, специфіки підприємницької компетентності й механізмів впливу їхньої активності на приймаючі громади дозволить створити підґрунтя для системи підтримки підприємництва, що синхронізує соціальну інтеграцію зі стратегічними завданнями забезпечення енергетичної незалежності держави.

Мета: визначення специфіки підприємницької компетентності внутрішньо переміщених осіб в секторі відновлювальної енергетики, характеристика системи стимулів і бар'єрів їхньої підприємницької діяльності, а також обґрунтування впливу підприємницької активності ВПО на економічну стабільність, енергетичну безпеку й соціальну згуртованість приймаючих громад.

Методи: аналіз статистичних даних і звітів міжнародних організацій – для визначення демографічних, освітніх і професійних характеристик внутрішньо переміщених осіб, виявлення масштабів безробіття й соціальних проблем переселенців; аналіз наукових публікацій і нормативно-правових документів – для з'ясування стану дослідження проблеми особливостей розвитку відновлювальної енергетики в Україні та економічної інтеграції окремої категорії населення; синтез та узагальнення – для встановлення цілісного уявлення про систему стимулів і бар'єрів до підприємницької діяльності, визначення специфічних характеристик підприємницької компетентності у відновлювальній енергетиці; порівняльний аналіз – для виявлення переваг підприємництва над найманою працею як механізму економічної інтеграції переселенців і характеристики множинних каналів впливу підприємницької активності ВПО на економіку приймаючих громад; системний підхід – для обґрунтування комплексного характеру формування підприємницької компетентності.

Результати: виявлено значний потенціал для розвитку підприємництва серед внутрішньо переміщених осіб, більшість з яких належать до осіб працездатного віку; висвітлено обмеженість традиційних підходів до економічної інтеграції ВПО, які не враховують можливості їхньої реалізації у відновлювальній енергетиці; визначено особливості підприємницької компетентності в галузі, що поєднує технологічні, регуляторні й екологічні знання з навичками планування бізнесу й управління фінансами; охарактеризовано систему стимулів і перешкод до започаткування власної справи переселенцями; обґрунтовано багатоаспектний вплив бізнес-активності ВПО на економічну стабільність, енергетичну безпеку й соціальну згуртованість територій через створення підприємств, розбудову інфраструктури, передачу технологій і підвищення інвестиційної привабливості громад.

Висновок: формування підприємницької компетентності внутрішньо переміщених осіб у секторі відновлювальної енергетики є одним із стратегічних напрямків комплексної трансформації економіки приймаючих громад, оскільки синхронізує вирішення гуманітарних завдань соціальної інтеграції з досягненням цілей енергетичного переходу й економічної стабільності територій. Дослідження виявило значний нереалізований потенціал ВПО працездатного віку для розвитку підприємництва у галузі відновлювальної енергетики, яка характеризується доступністю входження на рівні малого бізнесу й можливістю поетапного

розгортання діяльності. Мотиваційна структура ВПО характеризується взаємодією потужних стимулів – потреби в економічній самодостатності, прагнення відновити контроль над життям і бажання інтегруватися у громади – і системних бар'єрів: браку стартового капіталу, відсутності підприємницького досвіду, хронічного стресу. Підприємницька активність переселенців може активізувати позитивні зміни в економіці приймаючих громад через створення нових робочих місць, розбудову енергетичної інфраструктури, передачу технологій, зниження енергетичних втрат, послаблення соціальної напруги й підвищення інвестиційної привабливості територій. Реалізація цього потенціалу вимагає не фрагментарних освітніх заходів, а комплексної системної підтримки, що поєднує формування компетентностей із психологічним супроводом, фінансовими механізмами й інструментами соціальної інтеграції через координацію зусиль державних інституцій, міжнародних партнерів і громадського сектору.

Ключові слова: *внутрішньо переміщені особи, підприємницька компетентність, відновлювальна енергетика, професійна освіта, економічна інтеграція, приймаючі громади, соціально-економічна стабільність, енергетичний перехід, самозайнятість.*

Manuscript received	29.05.2025
Accepted for publication after peer review	07.10.2025
Published	06.11.2025



THE USE OF VIRTUAL REALITY HARDWARE AND SOFTWARE COMPLEXES IN THE PROFESSIONAL TRAINING OF COMPUTER SCIENCE TEACHERS: STRATEGIES AND PERSPECTIVES FOR THE DIGITALIZATION OF THE EDUCATIONAL PROCESS

Oleh Predmestnikov¹, Serhii Hulevych²

- 1 Doctor of Law, Full Professor, Head of the Department of Law, Bogdan Khmelnytsky Melitopol State Pedagogical University, <http://orcid.org/0000-0001-8196-647X>, [ResearcherID: IAO-1664-2023](#), e-mail: predmestnikov@ukr.net
- 2 Lecturer-trainee of the Department of Informatics and Cybernetics Bogdan Khmelnytsky Melitopol State Pedagogical University, <http://orcid.org/0009-0006-0955-7085>, e-mail: gulevychsergii@gmail.com

Abstract

Relevance The necessity of analyzing the use of virtual and augmented reality hardware and software complexes in the professional training of computer science teachers under the conditions of educational digitalization is driven by the need for a profound understanding of the opportunities and challenges these technologies create for modern pedagogical practice. Such an analysis enables the assessment of the effectiveness of VR/AR tools in forming the professional, methodological, and digital competencies of future teachers, determining their level of readiness to work with immersive technologies, and outlining optimal strategies for implementing these innovations into the educational process. In the context of the digital transformation of education, such research is essential to ensure the scientifically grounded implementation of VR/AR in pedagogical personnel training, enhancing the quality of education, and adapting the educational environment to the requirements of the modern information society.

Purpose: to substantiate the theoretical and methodological foundations of implementing VR/AR technologies in teacher training as a factor in developing their digital and professional competence.

Methods: analysis, synthesis, systematization, generalization, observation, survey, comparative-analytical method, and modeling.

Results: showed that immersive technologies create an interactive educational environment in which future computer science teachers develop cognitive, emotional, and communicative skills. International experience (China, Norway, the EU, the USA, Japan) was investigated, proving the effectiveness of VR/AR as a tool for active learning, modeling pedagogical situations, and improving the quality of knowledge acquisition. It is demonstrated that the implementation of such technologies requires pedagogical support, methodological dosage, and technical provision. It is recommended to integrate VR/AR into teacher training programs as a component of the digital transformation of education. Furthermore, key stages of implementing virtual technologies into the professional education system were identified, encompassing the adaptation of curricula, training of pedagogical staff, and the creation of technical infrastructure.

Conclusions: the study proves that the implementation of virtual and augmented reality (VR/AR) technologies is a vital direction for the digitalization of the professional training of computer science teachers; they contribute to the development of digital competence, professional thinking, communicative and emotional skills, create an interactive educational environment, and increase motivation for learning; international experience confirms the effectiveness of VR/AR as tools for modernizing education and forming a new pedagogical culture.

Keywords: virtual reality, digitalization, teacher training, VR/AR, education.

Introduction. The current state of educational development is characterized by intensive digitalization, which leads to the transformation of traditional approaches to teaching and training pedagogical personnel. In the training of future informatics teachers, this process is of particular importance, as they are the primary drivers of digital innovations in the educational process. The use of virtual (VR) and augmented (AR) reality hardware and software complexes serves as an important factor in implementing the "education of the future" concept, as it contributes to the development of critical thinking, professional reflection, and the creative potential of students.

Research sources. The issue of using virtual reality hardware and software complexes in the professional training of informatics teachers, considering the strategies and prospects of the educational process digitalization, is sufficiently researched in domestic and foreign scientific literature. In modern scientific discourse, there is an active interest in the potential of VR/AR technologies as a tool for modernizing pedagogical education. In particular, a significant contribution to the study of this topic was made by Yu. Trach (Trach, 2017), who considers VR not only as a method but also as a means of forming new approaches to teaching that involve interactivity, immersiveness, and personalization of the educational experience. Also important is the position of O. Sokoliuk (Sokoliuk, 2021), who emphasizes the change in educational practices under the influence of VR/AR, highlighting the need to rethink traditional didactic models. The study by Ya. Slupska and O. Shkurenko (Slupska & Shkurenko, 2022) has a valuable practical dimension, analyzing examples of successful VR implementation in learning environments.

I. M. Romanyshyn, O. V. Samborska, and N. A. Khmil (Romanyshyn, Samborska, & Khmil, 2024) focus on the effectiveness of VR/AR as a means of professional training for educators, particularly in the context of forming professional identity and developing practical skills. N. M. Petrukha and co-authors (Petrukha, Tripak, & Fedorchuk, 2024) consider VR as a tool for developing stress resistance, which is relevant in training educators who will work with special categories of students. N. Maiatina (Maiatina &

Khanykina, 2021) underscores the potential of VR/AR for improving the quality of education, drawing attention to the accessibility, adaptability, and multi-layered nature of immersive learning. A. Kovalchuk (Kovalchuk, 2023) analyzes VR in the context of the digital competence of future educators, emphasizing the necessity of a systemic approach to forming digital skills.

In turn, O. Yu. Kovalenko, D. V. Hulpa, and Ye. O. Khrinyk (Kovalenko, Hulpa, & Khrinyk, 2025) offer an overview of modern trends in implementing VR/AR in the professional training of educators in Ukraine, drawing attention to technical and methodological challenges. Foreign experience is thoroughly covered in the meta-analysis by H. Han and co-authors (Han, Luo, Wang, & Zhang, 2025), which demonstrates the effectiveness of VR in forming the professional competencies of teachers, as well as in the study by A. S. Faldet and colleagues (Faldet, Skrefsrud, Somby, & Stalheim, 2025), which presents the experience of integrating VR into the training system for future educators in Norway, with an emphasis on practice-orientation and student engagement.

H. Han, H. Luo, Z. Wang, and D. Zhang (Han, Luo, Wang & Zhang, 2025) conducted a systematic review and meta-analysis of studies from 2014–2024, demonstrating the effectiveness of using virtual reality in the professional training of teachers, particularly in aspects of pedagogical skill development. A. S. van der Want and A. J. Visscher (Van der Want & Visscher, 2024) emphasized the key characteristics of VR technologies in training future teachers, highlighting their role in modeling pedagogical situations and increasing learning motivation. O. V. Klochko, S. V. Tkachenko, I. M. Babiichuk, V. M. Fedorets, and T. V. Halych (Klochko, et al., 2021) substantiated the feasibility of integrating VR technologies into the school informatics course, which is also significant for the teacher training system, forming their readiness to use the latest digital tools in teaching.

Expert literature was also used for the research, including publications in modern online editions such as "Osvita.ua," "New Ukrainian School," "EdEra," and analytical materials from the Ministry of Education and Science of Ukraine, which highlight the current state and prospects of educational digitalization, the implementation of

VR/AR technologies in the educational process, and teacher training.

Despite the existence of a significant number of scientific works on this issue, there is a lack of systematized and generalized material. In view of this, using various methods of scientific cognition, an analysis, grouping, and systematization of information presented in the context of the research topic were carried out.

The purpose of the article is to substantiate the theoretical and methodological foundations of using virtual (VR) and augmented (AR) reality hardware and software complexes in the process of professional training for informatics teachers under the conditions of educational digitalization. To achieve this goal, the following tasks will be performed: to define the pedagogical potential of VR/AR technologies in the context of modern education; to analyze methodological approaches to integrating immersive technologies into the training of pedagogical personnel; to generalize the results of domestic and foreign research on the problem of implementing VR/AR in the educational process; to formulate promising directions for using VR/AR complexes in the professional education of informatics teachers.

Research methods: The methodological basis of the research consists of systemic, competency-based, and activity-based approaches, which ensure a comprehensive understanding of the process of implementing virtual (VR) and augmented (AR) reality hardware and software complexes into the professional training of informatics teachers. The systemic approach allows for considering the educational process as a holistic dynamic system, within which VR/AR technologies act as integrated elements of the pedagogical environment. The competency-based approach is oriented toward forming the digital, professional-pedagogical, and research competencies of future teachers, while the activity-based approach directs educational practice toward active student interaction with the immersive environment and the development of skills to analyze, model, and evaluate pedagogical situations.

In the process of the research, a complex of complementary methods was used: – theoretical methods – analysis and synthesis of scientific sources on the problems of educational digitalization, generalization of modern approaches to implementing VR/AR in pedagogical practice, and systematization of international research results; – empirical methods – observation of the

educational process, analysis of pedagogical experience in implementing VR simulations and AR applications in educational institutions, and surveying students and teachers regarding the effectiveness of using immersive technologies; – comparative-analytical method – to identify common and differing trends in the use of VR/AR in domestic and foreign pedagogical education; – modeling method – to develop a conceptual model for integrating VR/AR complexes into the professional training of informatics teachers.

The scientific novelty of the methodology lies in the combination of pedagogical and technological approaches to studying VR/AR as a didactic tool that simultaneously affects the cognitive, emotional, and communicative spheres of the future educator. The methodological structure of the research is oriented toward creating conditions for understanding VR/AR not only as a technical resource but as a means of developing the personal and professional potential of the teacher in the context of the digital transformation of education.

Results and Discussion. *Theoretical aspects of implementing VR and AR in education.* Digitalization of the educational process is a fundamental factor in the development of modern pedagogical theory and practice. In the context of the professional training of informatics teachers, it acquires special significance, as it contributes to the formation of the digital competence of future educators. The use of information and communication technologies (ICT), in particular virtual (VR) and augmented (AR) reality hardware and software complexes, ensures the integration of innovative approaches into learning, increases the efficiency of the educational process, expands the didactic capabilities of the teacher, and activates the cognitive activity of learners (Kovalchuk, 2023).

Virtual (VR) and augmented (AR) reality belong to immersive technologies that create an effect of presence in a modeled digital space. They allow the user to immerse themselves in simulated environments or overlay virtual objects onto the real world, thereby expanding the boundaries of cognitive experience. In a pedagogical context, this means the possibility of creating immersion situations in which the learner acts as an active subject of cognition. Mixed reality (MR), which combines VR and AR, opens new opportunities for interactive learning, allowing for the simultaneous perception of the real environment and virtual elements that stimulate cognitive activity and

increase learning motivation (Slupska & Shkurenko, 2022).

Augmented reality (AR) technology allows for the integration of virtual 3D objects into the physical environment, creating a new learning context. Thanks to AR, a student can interact with holographic models, simulations, or animations overlaid on real objects through the screens of mobile devices or special glasses. In turn, virtual reality (VR) technology provides full user immersion into a digital environment, allowing for the reproduction of learning situations that are impossible or dangerous in physical reality. Thus, VR contributes to the formation of practical skills, the development of spatial thinking, and the understanding of complex processes through interactive simulation (Slupska & Shkurenko, 2022).

There are various types of virtual reality systems, which differ in the degree of user immersion and the method of interaction with the virtual space. These include: "Window on the World" type systems; full immersion systems, mixed reality; video mapping systems; and telepresence systems (Maiatina & Khanykina, 2021).

Each type has its own technical and didactic features. For instance, immersion systems provide the highest level of immersivity, allowing the student to experience the "presence" effect in the learning environment, while video overlay systems combine digital and physical elements, forming a virtual avatar of the user in the educational cyberspace (Maiatina & Khanykina, 2021).

The main elements of virtual reality used in education include cyberspace, three-dimensional graphics, simulations, 3D tours, and virtual panoramas. Each of these elements performs a specific function in the educational process: three-dimensional graphics – for visualizing complex concepts; simulations – for practical skill development; 3D tours – for creating educational routes; panoramas – for the sense of presence in a real environment. The application of such tools increases learning interactivity, develops visual thinking, and ensures interdisciplinary knowledge integration (Maiatina & Khanykina, 2021).

Methodological aspects of implementing VR technologies in the educational process. The effective implementation of virtual (VR) and augmented reality (AR) technologies in pedagogical education requires a methodologically sound approach. These technologies cannot be considered

merely a technical novelty – they should be integrated into the educational process as a tool for developing the professional competencies of future teachers. For VR and AR to truly become effective educational means, they must be content-rich, accessible, and flexible. Primarily, immersive technologies must create a presence effect – ensuring the full immersion of the user into the virtual environment. It is this sense of "transfer" that allows the learner to study through experience, emotions, and practice (Kovalenko, Hulpa & Khrinyk, 2025).

It is essential that the implementation of VR and AR in pedagogical education is based on a holistic methodological system. It should provide for the creation of state standards, methodological recommendations, and textbooks regulating the use of the latest technologies in teacher training. The inclusion of VR/AR components in the curricula of pedagogical, methodological, and psychological disciplines is necessary. This will allow students not only to master theoretical knowledge but also to model real pedagogical situations in a safe environment. It is also important to increase the digital literacy of educators. They must become the guides for new technologies; therefore, participation in trainings, courses, and master classes is a mandatory condition for professional development. Technical support also plays a significant role – educational institutions must be equipped with VR headsets, AR devices, powerful computers, and licensed software. Without this, even the best methodology will remain theoretical (Kovalenko, Hulpa & Khrinyk, 2025).

Advantages of VR technologies in education. The results of international research confirm the high pedagogical effectiveness of VR technologies. In particular, a study by Faldet A.S., Skrefsrud T.A., Somby N.M., and Stalheim O.R. analyzed the experience of future teachers participating in VR simulations of teaching situations. Using the focus group interview method, the researchers found that immersive simulations not only increase engagement but also foster emotional resilience and reflexivity. Future teachers reported that even in a virtual environment, they experienced real emotions – anxiety, empathy, and tension. Such emotional reactions are a necessary component of a teacher's professional development. One student noted: "It's completely synthetic, but the feelings are real." Others emphasized that simulations helped them learn to stay calm in difficult situations, react thoughtfully, and control their own emotions. Such

results indicate that VR can be not only a technical teaching aid but also a powerful psychological tool for shaping pedagogical culture (Faldet, Skrefsrud, Somby & Stalheim 2025).

Participation in VR simulations stimulated the development of dialogue and cooperation among students. Post-simulation discussions helped them realize their own actions, mistakes, and successes. Observing peers became an effective way of self-directed learning, as it allowed them to see various behavioral strategies in pedagogical situations. One study participant emphasized: "We are inspired by each other." Such forms of interaction correspond to Vygotsky's ideas about the social nature of learning, where development occurs through cooperation, communication, and mutual learning (Faldet, Skrefsrud, Somby & Stalheim 2025).

The use of VR also contributes to the development of professional thinking. During interviews, students noted that simulations forced them to rethink the meaning of pedagogical concepts – support, trust, and communication. One participant admitted: "I realized that familiar words have a completely different meaning when you see them in action." Such experience deepens the understanding of pedagogical principles and contributes to the formation of the future teacher's reflexive position (Romanyshyn, Samborska & Khmil, 2024).

Virtual reality has significant potential to support learners with special educational needs, as it creates a safe, controlled, and adaptive learning environment. Due to the possibility of modeling

situations, adjusting the pace of material presentation, and using multi-sensory interaction, VR promotes the development of cognitive, communicative, and socio-emotional skills of such students. Immersive technologies allow for the avoidance of stimulus overload by adjusting the difficulty level according to the child's individual capabilities. Specifically, for students with visual, hearing, or musculoskeletal impairments, VR provides alternative perception channels – through visualization, tactile, or auditory feedback. Furthermore, virtual simulations help build social interaction skills in children with autism spectrum disorders, providing an opportunity to practice behavioral reactions in a safe space. Thus, the use of VR technologies opens new opportunities for implementing the principles of inclusive education, ensuring equal access to knowledge and creating conditions for individualized learning (Petrukha, Tripak & Fedorchuk, 2024).

VR simulations have also introduced a new type of learning that goes beyond the traditional lecture model. They allow students to experiment and make mistakes without risk to real participants in the educational process. This safety promotes the free development of professional skills. One student noted: "It's good that you can make mistakes – and it's safe." Thanks to this, a culture of pedagogical flexibility is formed, where a mistake is perceived as an element of learning rather than a failure (Trach, 2017).

Table 1

Comparative table of pedagogical effects of VR simulations

Aspect of development	Manifestation in VR simulation
Emotional sphere	Emergence of real emotions (empathy, tension, anxiety)
Communicative competence	Dialogue and cooperation during discussions
Cognitive reflection	Analysis of one's own actions and mistakes, observation of others

Systematized by the author based on sources: Trach, 2017; Romanyshyn, Samborska & Khmil, 2024; Petrukha, Tripak & Fedorchuk, 2024; Faldet, Skrefsrud, Somby & Stalheim, 2025.

Therefore, the methodological implementation of VR and AR in pedagogical education creates conditions for a deep transformation of the learning process. It combines technological progress with psychological and pedagogical approaches aimed at developing reflection, communication skills, critical thinking, and the emotional intelligence of future teachers.

Immersive technologies transform traditional education into an interactive, exploratory, and simultaneously humanistic process, at the center of which is the personality of the future educator (Trach, 2017).

Examples of using VR technologies in global educational practice. Numerous VR and AR-based applications are already being used in educational

practice. Specifically, Google Expeditions provides virtual field trips for students, Second Life creates educational simulations in a virtual world, Melchemistry helps study chemical processes, and New Horizon demonstrates a new generation of AR textbooks. Atom Visualizer and CreatorAVR allow for the visualization of scientific models and the creation of interactive educational tasks without programming. Such tools contribute to the personalization of learning, the adaptation of material to the individual needs of learners, and the formation of digital creativity competencies (Maiatina & Khanykina, 2021).

Among the projects that most successfully demonstrate the potential of VR in education, one can highlight LABSTER, which allows students to conduct virtual experiments in scientific laboratories; EXPEDITIONS PIONEER PROGRAM – for organizing virtual trips; and ER VR – for medical training in simulated clinical situations. Educational platforms like Lecture VR, Titans of Space, or Colosseum VR open possibilities for interactive study of history, astronomy, or architecture. Such systems provide high interactivity, realism, and emotional involvement, which significantly improves the quality of learning (Trach, 2017).

Today, virtual reality technologies are actively being implemented in educational practices in various countries worldwide, confirming their significant potential as a tool for modernizing learning. They are no longer an element of experimental pedagogy but are turning into an important component of innovative educational systems aimed at increasing motivation, the quality of knowledge acquisition, and the development of students' practical skills. Examples of using VR in training demonstrate a wide range of possibilities – from modeling physical processes to simulating pedagogical situations in future teacher training (Trach, 2017).

A prominent example of successful VR implementation in higher education is China. A large-scale experiment was conducted in several Chinese universities, where classrooms were equipped with HTC Vive virtual reality headsets. Experiment participants attended classes using VR applications aimed at increasing engagement and the depth of material mastery. The results were impressive: the average academic performance level of students in VR groups was 94% compared to 73% in control classes. Researchers also recorded an increase in attention span, improved memory, and a

decrease in fatigue levels during classes. Thus, the Chinese experiment confirmed that virtual reality not only improves the quality of learning but also positively affects the psychological resilience of students, stimulating cognitive activity and long-term retention of material (Slupska & Shkurenko, 2022).

Significant attention to immersive technologies is also observed in European universities. In studies conducted at Leiden University (the Netherlands), VR is used in combination with augmented reality (AR) and Microsoft HoloLens technology. This tool allows medical students to study anatomy by observing a virtual model of the human body that reacts to their movements. This format of learning promotes the development of spatial reasoning, a better understanding of complex biological processes, and the safe acquisition of practical skills that would normally require long-term laboratory research. Similar VR solutions are being implemented in the educational programs of Japan Airlines, where future pilots and aircraft mechanics undergo training in simulated flight environments. They practice actions during emergencies, engine maintenance, and crew communication. This not only reduces the cost of real simulators but also increases the level of training safety (Sokoliuk, 2021).

A high level of VR application is also demonstrated by the NASA Project Sidekick program, within which HoloLens technology is used for astronaut training. Virtual simulations allow space station crews to receive step-by-step support from engineers on Earth, view instructions in real-time, and model technical situations without risking lives or equipment. This is an example of how VR can effectively combine education, engineering, and remote control, forming a fundamentally new format of learning in extreme conditions (Sokoliuk, 2021).

Furthermore, in many countries, VR and AR are increasingly integrated into general secondary education. For middle school students, free 3D visualization programs are used, including Paint 3D, Mixed Reality Viewer, and Story Remix, which are part of the Windows 10 operating system. They allow for the creation of three-dimensional objects and the modeling of chemical reactions, astronomical phenomena, or architectural structures. Such tools contribute to the development of creativity, engineering thinking, and research activity skills. Educational institutions in EU countries also actively use the VictoryVR Science

Curriculum collection of VR models and the Mozaik Education digital library, which are utilized during the study of natural sciences and mathematics. Their advantage lies in the ability to create interactive laboratory experiments that do not require physical materials but provide a realistic reproduction of experiments (Sokoliuk, 2021).

It is worth noting that the global development of VR is not limited to technical innovations; it is accompanied by methodological reflection. According to the generalized results of a meta-analysis by Han H., Luo H., Wang Z., and Zhang D., the success of VR applications in teacher education depends on three key factors: the target audience, the duration of exposure, and the level of interactivity. Research shows that VR has the best impact on novice students who are still forming their

pedagogical identity. For experienced teachers, the practical orientation of the content and its alignment with curricula play a greater role. At the same time, short but repetitive VR sessions accompanied by reflection and feedback prove to be the most effective. Excessive use of the technology can lead to cognitive fatigue; therefore, methodological dosing of educational immersions is mandatory. Highly interactive simulations provide deeper engagement but require careful pedagogical support from instructors to avoid student overload (Han, Luo, Wang & Zhang, 2025).

To demonstrate how various factors—from the duration of learning to the level of interactivity—influence the effectiveness of VR learning, let us consider the generalized data from the study by Han H., Luo H., Wang Z., and Zhang D. (Table 2).

Table 2

Analytical table of VR effectiveness factors		
Factor	Optimal Approach	Potential Risk
Target Audience	Novice students forming identity	Insufficient adaptation for experienced teachers
Duration of Exposure	Several short sessions (up to 45 min)	Cognitive fatigue during prolonged immersion
Interactivity Level	High sensory presence and meaningful interaction	Sensory overload

Systematized by the author based on the source: Han, Luo, Wang, & Zhang, 2025.

At the same time, the accessibility of VR and AR is no less important. Educational systems should not require complex technical skills from either instructors or students. The interface must be intuitive, and the content must be clear and pedagogically justified. Effective technologies in the field of education should tell stories, engage learners in active activities, and facilitate material mastery through interaction. Furthermore, VR/AR technologies must adapt to students' level of preparation, their interests, and their learning needs. The success of such an approach is also determined by the ability to demonstrate real results—from reflection to practical achievements that can be assessed through special tests or observations. Only under such conditions can immersive learning perform a cognitive and educational function rather than an entertaining one (Sokoliuk, 2021).

The experience of using VR in various countries confirms its effectiveness as a universal educational tool. It not only modernizes traditional approaches but also forms a new learning culture based on active research, emotional engagement,

and safe experimentation. In the future, virtual reality could become the foundation of flexible, individualized education that combines technological advancements with the humanistic values of modern pedagogy.

Conclusions. Summarizing the research results, it has been established that the use of hardware-software complexes of virtual (VR) and augmented (AR) reality in the system of professional training for computer science teachers is one of the key directions of the digitalization of modern education. It is shown that these technologies integrate innovative means of cognition into pedagogical practice, contribute to the development of the digital competence of future educators, the formation of cognitive, emotional, and communication skills, and ensure the creation of an interactive educational environment in which the learner acts as an active subject of the educational process. In the course of the study, the methodological foundations for implementing VR/AR in teacher education were substantiated, combining the technological potential of the virtual

environment with humanistic principles of learning oriented toward the development of the teacher's personal and professional potential.

Investigating the practical component, it is shown that VR simulations contribute to the formation of emotional stability, reflection, professional thinking, and effective communication skills, creating conditions for safe experimentation and the modeling of pedagogical situations. Foreign experience (China, EU countries, USA, Japan, Norway) confirms the effectiveness of immersive

technologies as a means of increasing motivation, the quality of knowledge acquisition, and the development of pedagogical creativity. Thus, the conducted research has allowed for the proof that VR/AR technologies are an important factor in the digital transformation of professional education, capable of forming a new pedagogical culture based on the combination of innovative technologies, emotional-cognitive experience, and learner-centered education.

List of references

Трач, Ю. (2017). VR-технології як метод і засіб навчання. *Освітологічний дискурс*, 309-322. <https://doi.org/10.28925/2312-5829.2017.3-4.3932>.

Соколюк, О. М. (2021). Вплив VR/AR на технології навчання й освітнянські практики. *Сучасні інформаційні технології та інноваційні методики навчання у підготовці фахівців: методологія, теорія, досвід, проблеми: збірник наукових праць*, (60), 108-116. https://www.researchgate.net/publication/369922677_VPLIV_VR_AR_NA_TEHNOLOGII_NAVCANNA_J_OSVITANSKI_PRAKTIKI.

Слупська, Я., & Шкуренько, О. (2022). Застосування віртуальної реальності (VR) у освіті. *Молодий вчений*, 9 (109), 82-88. <https://doi.org/10.32839/2304-5809/2022-9-109-19>

Романишин, І. М., Самборська, О. В., & Хміль, Н. А. (2024). Ефективність використання віртуальної та доповненої реальності у професійній підготовці майбутніх педагогів. *Педагогічна Академія: наукові записки*, 5. <https://doi.org/10.57125/pedacademy.2024.04.29.01>

Петруха, Н. М., Тріпак, М. М., & Федорчук, В. М. (2024). Інтерактивні технології розвитку стресостійкості здобувачів з особливими освітніми потребами: прикладний аспект. У М. М. Тріпак, А. Ю. Дерлиця, Р. В. Козак та О. В. Лаврук (Ред.), *Вишкіл вищої та фахової передвищої інклюзивної освіти* (с. 45–62). Кам'янець-Подільський.

Маятіна, Н., & Ханикіна, Н. (2021). Віртуальна та доповнена реальність у сучасному освітньому процесі: нові можливості для якості освіти. *Актуальні питання гуманітарних наук*, 36, 241-247. <https://doi.org/10.24919/2308-4863/36-2-39>.

Ковальчук, А. (2023). Розвиток цифрової компетентності майбутніх педагогів професійного навчання в умовах цифровізації. *Молодь і ринок*, 11(219), 148-153. <https://doi.org/10.24919/2308-4634.2023.296992>.

Коваленко, О. Ю., Гульпа, Д. В., & Хріник, Є. О. (2025). Використання віртуальної та доповненої реальності в професійній підготовці майбутніх педагогів в Україні. *Педагогічна Академія: наукові записки*, 18. <https://pedagogical-academy.com/index.php/journal/article/view/955>.

Han, X., Luo, H., Wang, Z., & Zhang, D. (2025). Using virtual reality for teacher education: A systematic review and meta-analysis of literature from 2014 to 2024. *Frontiers in Virtual Reality*, 6, 1620905. <https://doi.org/10.3389/frvir.2025.1620905>

Faldet, A. C., Skrefsrud, T. A., Somby, H. M., & Stalheim, O. R. (2025). Integrating virtual reality as a pedagogical tool into teacher education: experiences from Norwegian preservice teachers. *Professional Development in Education*, 1-20. <https://doi.org/10.1080/19415257.2025.2518536>

Klochko, O. V., Tkachenko, S. V., Babiichuk, I. M., Fedorets, V. M., & Galych, T. V. (2021). Using virtual reality technologies for teaching computer science at secondary school. *CEUR Workshop Proceedings: ICTERI 2021 Workshops*, 2. <https://icteri.org/icteri-2021/proceedings/volume-2/202110467.pdf>

Van der Want, A. C., & Visscher, A. J. (2024). Virtual Reality in Preservice Teacher Education: Core Features, Advantages and Effects. *Education Sciences*, 14(6), 635. <https://doi.org/10.3390/educsci14060635>

Translated & Transliterated

Trach, Yu. (2017). VR-tekhnologii yak metod i zasib navchannia [VR technologies as a method and means of learning]. *Osvitohichnyi dyskurs*, 309-322. <https://doi.org/10.28925/2312-5829.2017.3-4.3932> , [in Ukrainian].

Sokoliuk, O. M. (2021). Vplyv VR/AR na tekhnologii navchannia y osvitianski praktyky [The impact of VR/AR on learning technologies and educational practices]. *Suchasni informatsiini tekhnologii ta innovatsiini metodyky navchannia u pidhotovtsi fakhivtsiv: metodolohiia, teoriia, dosvid, problemy: zbirnyk naukovykh prats*, 60, 108–116. https://www.researchgate.net/publication/369922677_VPLIV_VR_AR_NA_TEHNOLOGII_NAVCANNA_J_OSVITANSKI_PRAKTIKI [in Ukrainian].

Slupska, Ya., & Shkurenko, O. (2022). Zastosuvannia virtualnoi realnosti (VR) u osviti [Application of virtual reality (VR) in education]. *Molody vchenyi*, 9 (109), 82-88. <https://doi.org/10.32839/2304-5809/2022-9-109-19> [in Ukrainian].

Romanyshyn, I. M., Samborska, O. V., & Khmil, N. A. (2024). Efektyvnist vykorystannia virtualnoi ta dopovnenoї realnosti u profesiinii pidhotovtsi maibutnikh pedahohiv [The effectiveness of using virtual and augmented reality in the professional training of future teachers]. *Pedahohichna Akademiia: naukovyi zapysky*, 5. <https://doi.org/10.57125/pedacademy.2024.04.29.01> [in Ukrainian].

Petrukha, N. M., Tripak, M. M., & Fedorchuk, V. M. (2024). Interaktyvni tekhnologii rozvytku stresostiikosti zdobuvachiv z osoblyvymy osvitnimy potrebamy: prykladnyi aspekt [Interactive technologies for the development of stress resistance of applicants with special educational needs: applied aspect]. U M. M. Tripak, A. Yu. Derlytsia, R. V. Kozak ta O. V. Lavruk (Red.), *Vyshkil vyshchoi ta fakhovoi peredvyshchoi inkliuzyvnoi osvity* (s. 45-62). Kamianets-Podilskyi.

Maiatina, N., & Khanykina, N. (2021). Virtualna ta dopovnena realnist u suchasnomu osvitnomu protsesi: novi mozhlyvosti dlia yakosti osvity [Virtual and augmented reality in the modern educational process: new opportunities for the quality of education]. *Aktualni pytannia humanitarnykh nauk*, 36, 241-247. <https://doi.org/10.24919/2308-4863/36-2-39> [in Ukrainian].

Kovalchuk, A. (2023). Rozvytok tsyfrovoy kompetentnosti maibutnikh pedahohiv profesiinoho navchannia v umovakh tsyfrovizatsii. *Molod i rynek*, 11(219), 148-153. <https://doi.org/10.24919/2308-4634.2023.296992> [in Ukrainian].

Kovalenko, O. Yu., Hulpa, D. V., & Khrinyk, Ye. O. (2025). Vykorystannia virtualnoi ta dopovnenoї realnosti v profesiinii pidhotovtsi maibutnikh pedahohiv v Ukraini [Development of digital competence of future teachers of professional training in the conditions of digitalization]. *Pedahohichna Akademiia: naukovyi zapysky*, 18. <https://pedagogical-academy.com/index.php/journal/article/view/955> [in Ukrainian].

Han, X., Luo, H., Wang, Z., & Zhang, D. (2025). Using virtual reality for teacher education: A systematic review and meta-analysis of literature from 2014 to 2024. *Frontiers in Virtual Reality*, 6, 1620905. <https://doi.org/10.3389/frvir.2025.1620905> [in English].

Faldet, A. C., Skrefsrud, T. A., Somby, H. M., & Stalheim, O. R. (2025). Integrating virtual reality as a pedagogical tool into teacher education: experiences from Norwegian preservice teachers. *Professional Development in Education*, 1–20. <https://doi.org/10.1080/19415257.2025.2518536> [in English].

Klochko, O. V., Tkachenko, S. V., Babiichuk, I. M., Fedorets, V. M., & Galych, T. V. (2021). Using virtual reality technologies for teaching computer science at secondary school. *CEUR Workshop Proceedings: ICTERI 2021 Workshops*, 2. <https://icteri.org/icteri-2021/proceedings/volume-2/202110467.pdf> [in English].

Van der Want, A. C., & Visscher, A. J. (2024). Virtual Reality in Preservice Teacher Education: Core Features, Advantages and Effects. *Education Sciences*, 14(6), 635. <https://doi.org/10.3390/educsci14060635> [in English].

ВИКОРИСТАННЯ АПАРАТНО-ПРОГРАМНИХ КОМПЛЕКСІВ ВІРТУАЛЬНОЇ РЕАЛЬНОСТІ У ПРОФЕСІЙНІЙ ПІДГОТОВЦІ ВИКЛАДАЧІВ ІНФОРМАТИКИ: СТРАТЕГІЇ ТА ПЕРСПЕКТИВИ ЦИФРОВІЗАЦІЇ ОСВІТНЬОГО ПРОЦЕСУ

Олег Предместніков¹, Сергій Гулевич²

- 1 доктор юридичних наук, професор, завідувач кафедри права, Мелітопольський державний педагогічний університет імені Богдана Хмельницького, <http://orcid.org/0000-0001-8196-647X>, [ResearcherID: IAO-1664-2023](https://orcid.org/0000-0001-8196-647X), e-mail: predmestnikov@ukr.net
- 2 викладач-стажист кафедри інформатики і кібернетики, Мелітопольський державний педагогічний університет імені Богдана Хмельницького, <http://orcid.org/0009-0006-0955-7085>, e-mail: gulevyhsergii@gmail.com

Реферат:

Актуальність. Необхідність проведення аналізу використання апаратно-програмних комплексів віртуальної та доповненої реальності у професійній підготовці викладачів інформатики в умовах цифровізації освіти зумовлена потребою глибокого розуміння можливостей і викликів, які ці технології створюють для сучасної педагогічної практики. Такий аналіз дає змогу оцінити ефективність застосування VR/AR-засобів у формуванні професійних, методичних і цифрових компетентностей майбутніх викладачів, визначити рівень їх готовності до роботи з імерсивними технологіями, а також окреслити оптимальні стратегії впровадження цих інновацій у навчальний процес. У контексті цифрової трансформації освіти подібне дослідження є необхідним для забезпечення науково обґрунтованого впровадження VR/AR у підготовку педагогічних кадрів, підвищення якості освіти та адаптації освітнього середовища до вимог сучасного інформаційного суспільства.

Мета: обґрунтувати теоретичні та методичні засади впровадження VR/AR-технологій у підготовку педагогів як чинника розвитку їх цифрової та професійної компетентності.

Методи: аналіз, синтез, систематизація, узагальнення, спостереження, опитування, порівняльно-аналітичний метод і моделювання.

Результати: показали, що імерсивні технології створюють інтерактивне освітнє середовище, в якому майбутні викладачі інформатики розвивають когнітивні, емоційні та комунікативні навички. Досліджено зарубіжний досвід (Китай, Норвегія, ЄС, США, Японія), який доводить ефективність VR/AR як інструменту активного навчання, моделювання педагогічних ситуацій та підвищення якості засвоєння знань. Показано, що впровадження таких технологій вимагає педагогічного супроводу, методичного дозування та технічного забезпечення. Рекомендовано інтегрувати VR/AR у програми підготовки викладачів як складову цифрової трансформації освіти. Також визначено ключові етапи впровадження віртуальних технологій у систему професійної освіти, що охоплюють адаптацію навчальних програм, підготовку педагогічних кадрів і створення технічної інфраструктури.

Висновки: дослідження доводить, що впровадження технологій віртуальної та доповненої реальності (VR/AR) є важливим напрямом цифровізації професійної підготовки викладачів інформатики; вони сприяють розвитку цифрової компетентності, професійного мислення, комунікативних та емоційних навичок, створюють інтерактивне освітнє середовище й підвищують мотивацію до навчання; зарубіжний досвід підтверджує ефективність VR/AR як інструментів модернізації освіти та формування нової педагогічної культури.

Ключові слова: віртуальна реальність, цифровізація, підготовка педагогів, VR/AR, освіта.

Manuscript received	21.05.2025
Accepted for publication after peer review	09.10.2025
Published	13.11.2025



REGULATORY AND LEGAL FRAMEWORK FOR THE TRAINING OF CONSTRUCTION PROFESSIONALS IN VOCATIONAL COLLEGES OF THE UNITED KINGDOM

Andrii Mykytiuk

Master of Industrial Training, Nadvirna Vocational School #11, <https://orcid.org/0009-0001-2301-5198>,
e-mail: andriimtk@gmail.com

Abstract

The relevance of the article is determined by the necessity of analyzing the regulatory and legal framework for the training of construction professionals within the technical and vocational education and training (TVET) system of the United Kingdom, which is essential for implementing progressive British experience into the educational legislation of Ukraine in the context of enhancing the impact of vocational education on post-war reconstruction.

The purpose of the article is to identify and analyze the primary regulatory acts and mechanisms of the United Kingdom governing the activities of vocational colleges in the field of training construction professionals, and to substantiate the possibilities of implementing specific elements of this experience into Ukrainian legislation for the development of vocational education.

Methods: analysis of legislative acts of the British Government, strategic documents, and reports of regulatory bodies (Ofsted, Ofqual, Institute for Apprenticeships and Technical Education) for the period 2000–2025; study of scientific works by Ukrainian and British scholars to ascertain the current state of research on the problem; comparison to identify differences and common trends between the British and Ukrainian vocational education systems; generalization to formulate conclusions and recommendations.

Results: a comprehensive analysis of the regulatory and legal documents of the United Kingdom regulating the activities of construction-oriented vocational colleges was conducted; key legislative acts (Further and Higher Education Act 1992, Skills and Post-16 Education Act 2022, Building Safety Act 2022, Apprenticeships, Skills, Children and Learning Act 2009) providing the legal basis for the functioning of vocational colleges were identified; the role of specialized state institutions (Department for Education, Ofsted, IfATE, CITB) in regulating the quality of vocational construction education was characterized; requirements for training programs, certification, and accreditation in construction fields were outlined; promising directions for implementing British experience in the context of improving the regulatory and legal framework for the vocational training of construction professionals in Ukraine were determined.

Conclusions: it was established that the legislative framework of the United Kingdom regarding the training of construction professionals in vocational colleges provides a clear distribution of powers among regulators, defines qualification standards, and ensures that training content meets the requirements of the modern construction industry; the implementation of specific elements of British experience (mechanisms of institutional autonomy, practice-oriented learning, and the participation of industry partners in the formation of educational standards) is promising for improving the regulatory and legal framework for training construction professionals in vocational colleges of Ukraine.

Keywords: vocational training, vocational colleges, construction professionals, educational legislation, United Kingdom.

Introduction. The United Kingdom possesses a well-developed system of vocational education and training (hereinafter: VET) and established traditions of professional training, particularly for the construction industry, which plays a vital role in the country's economy. The relevance of the study of the regulatory and legal framework for the training of construction professionals in vocational colleges of the United Kingdom is driven by the need to modernize vocational education in Ukraine based on best European practices. The British experience is characterized by a combination of state quality control mechanisms and internal quality assurance systems, with an orientation toward a competency-based approach and labor market needs (Radkevych, 2025). Its study is essential for improving the training of qualified personnel in Ukraine, especially in the construction sector, where increasing human capital quality and implementing modern educational technologies are of high priority.

The Ukrainian vocational education system is in the process of reform aimed at aligning with EU standards regarding training quality and interaction with employers (Pukhovska, 2018). Priority is given to adopting the best international practices in training construction professionals—a field that requires constant updating of educational content due to the rapid development of technologies and safety standards. In the United Kingdom, further education colleges, which are functionally similar to Ukrainian vocational colleges, operate on the basis of a sophisticated regulatory and legal framework and with the active participation of the state and business. The analysis of these regulatory foundations allows for the identification of mechanisms for ensuring the quality and relevance of construction training and the determination of elements of the British experience relevant to Ukraine.

Research Sources. The theoretical foundation of this study consists of the works of Ukrainian scholars dedicated to the analysis of foreign experience in organizing vocational education, the transformation of the professional training system, and the formation of educational policy in the context of European integration processes. Among the works that constitute the scientific basis for comparative analysis, the studies

of N. Bidiuk (2000), T. Desiatov (2018), S. Leu (2018), V. Melnyk (2014), N. Paziura (2022), L. Pukhovska (2018), and V. Radkevych (2025) stand out. The works of S. Leu (2018) highlight contemporary vocational education standards in the United Kingdom and their regulation procedures, which directly relate to the training of construction professionals in vocational colleges. A collective monograph involving N. Paziura (2022) addresses foreign approaches to external quality control of education, specifically British models of accreditation and assessment, providing an opportunity to correlate them with the regulatory and legal mechanisms governing the training of construction professionals in the UK (Avsheniuk et al., 2022). L. Pukhovska (2018) analyzes European approaches to the formation of professional qualifications and state policy in the field of vocational education, enabling a comparison of the regulatory principles of the British and Ukrainian systems. The contribution of V. Radkevych (2025) is significant, as she emphasizes the mechanisms of regulation and quality assurance of vocational education and training in the United Kingdom, forming the basis for analyzing British regulatory and legal instruments in the field of construction training.

Of great methodological significance are the works of foreign authors, which substantiate the concept of learning outcomes as a regulatory tool for the formation of qualifications (Adams, 2004), reveal the management of national qualification frameworks (Bjornavold & Coles, 2007), analyze policies for regulating professional qualifications (Raggatt & Williams, 1999), and examine the legal foundations of the apprenticeship system in the construction industry (Fuller & Unwin, 2003).

A separate group of sources consists of the regulatory and legal acts of the United Kingdom (Further and Higher Education Act, 1992; Learning and Skills Act, 2000; Education and Skills Act, 2008; Apprenticeships, Skills, Children and Learning Act, 2009; Education Act, 2011; Technical and Further Education Act, 2017; Skills and Post-16 Education Act, 2022), which regulate the activities of vocational colleges, the organization of the educational process, funding, accreditation, and qualifications management.

The purpose of the article is to identify and analyze the primary regulatory acts and mechanisms of the United Kingdom governing the activities of vocational colleges in the field of training construction professionals, and to substantiate the possibilities of implementing specific elements of this experience into Ukrainian vocational education legislation.

Research methods: analysis of legislative acts of the British Government, strategic documents, and reports of regulatory bodies (Ofsted, Ofqual, Institute for Apprenticeships and Technical Education) for the period 2000–2025; study of scientific works by Ukrainian and British scholars to ascertain the state of research on the problem; comparison to identify differences and common trends between the British and Ukrainian vocational education systems; generalization to formulate conclusions and recommendations.

Results and Discussion. The vocational education and training (VET) system of the United Kingdom is not governed by a single codified law; its functioning is ensured by a set of legislative acts and regulatory documents from various years (Cedefop, 2015). This model was formed as a result of decentralized educational management: since 1999, educational policy has been largely delegated to the governments of the constituent parts of the country (British Council, 2022). At the same time, the entire United Kingdom is characterized by an orientation toward close interaction between education and the labor market and employers, especially in the field of vocational training. The training of construction professionals is of particular importance given the industry's role in the economy and the increasing requirements for technology and energy efficiency, which necessitates constant updating of the regulatory framework (GOV.UK, 2024).

The legal field of VET was shaped by a series of historical legislative decisions. The Education Act 1944 laid the foundations for post-school education (UK Parliament, 1944), and the Industrial Training Act 1964 initiated the system of industry boards and a mechanism for collecting employer levies for vocational training (UK Parliament, 1964). In the construction sector, this led to the creation of the Construction Industry Training Board (CITB), authorized to implement an industry

levy and fund professional training using these resources (CITB, n.d.). Although most industry boards were abolished or stripped of the right to mandatory levies in the 1980s, the construction industry retained the CITB, justifying this by the high mobility of the workforce and the fragmented structure of the sector. As a result, the CITB remains one of the few industrial boards in the United Kingdom with the right to a mandatory levy for professional training, ensuring industry investment in the training and professional development of personnel based on a legally established financial mechanism (Cedefop, n.d.).

The key legislative act that defined the modern model of vocational education in the United Kingdom was the Further and Higher Education Act 1992. It removed vocational colleges from the jurisdiction of local authorities and granted them the status of autonomous corporations. Since then, colleges in England have operated as self-governing non-profit institutions that independently develop educational programs and management structures and are responsible for financial sustainability. Scotland, Wales, and Northern Ireland have their own legislative acts with similar framework provisions and regional specifics. Ultimately, a high degree of institutional autonomy for vocational colleges is legally established, ensuring their flexibility and ability to respond promptly to labor market needs.

The regulatory and legal assurance of the quality of training for construction professionals is based on the activities of specialized state bodies. Each part of the country has an inspectorate authorized to monitor educational standards in vocational colleges: in England – Ofsted (Office for Standards in Education, Children's Services and Skills), in Scotland – Education Scotland, in Wales – Estyn, and in Northern Ireland – the Education and Training Inspectorate (British Council, 2022). They conduct regular inspections of colleges and educational providers, publicly report on the quality of services, and can recommend interventions or the termination of funding for institutions that fail to meet requirements.

Thus, the state legally guarantees an external VET quality assurance system, complementing the colleges' internal controls. In addition to inspectorates, national qualification agencies set

standards for programs and the assessment of learning outcomes. Ofqual regulates the content and assessment of professional qualifications, including those in construction, ensuring their compliance with a single national Regulated Qualifications Framework (RQF). This prevents the lowering of requirements or the issuance of diplomas without the verification of competencies. Furthermore, Ofqual adopted updated regulatory requirements for assessments in apprenticeship programs to enhance their reliability and alignment with professional standards. Collectively, institutional autonomy, industry-funded training, qualification standards, and independent quality monitoring form a comprehensive system for the flexible and high-quality functioning of VET in the United Kingdom.

Vocational colleges are the primary link in the training and professional development of personnel for the construction industry: they provide qualifications for bricklayers, carpenters, electricians, scaffolders, finishers, construction technicians, and more. There are two main pathways for entering the profession: full-time vocational courses at a college and apprenticeships, which combine on-the-job training with college attendance. Both pathways are legally recognized as equivalent: according to the Apprenticeships, Skills, Children and Learning Act 2009 and the 2016 amendments, an apprenticeship is legally equated to obtaining higher education in terms of qualification significance (Department for Education, 2022).

One of the defining features of construction training is the cooperation between colleges and employers. The Institute for Apprenticeships and Technical Education (IfATE) involves construction companies in the development of occupational standards and curricula. Each specialty has a standard developed by an expert group of employers aimed at defining knowledge, skills, and competencies, which guarantees that training aligns with current industry needs. The 2017–2022 reform granted employers a more formalized role in program planning: the Skills and Post-16 Education Act 2022 introduced a requirement for colleges to develop Local Skills Improvement Plans in collaboration with employers and to align educational offerings with local economic needs through regular consultations with industry associations (Department for Education, 2022).

Alongside this, programs to increase the quantity and quality of trained personnel for construction companies are being implemented with regulatory and legal support. In connection with plans to build 1.5 million new homes by the early 2030s and the transition to a "green" economy, the need for skilled professionals (bricklayers, roofers, insulators, solar panel installers, energy efficiency specialists, etc.) has grown. The response was the initiative to create Homebuilding Skills Hubs. In November 2024, the opening of 32 regional centers for rapid construction training was announced, funded on a partnership basis by the government and leading companies (Department for Education, 2024). The industry is investing £140 million, which will allow for the additional training of 5,000 construction apprentices annually. The hubs serve as educational and production sites for intensive practical training; apprenticeship programs, which usually last 2–3 years, have been shortened to 12–18 months due to intensity and narrow specialization. The CITB and the National House-Building Council (NHBC) are involved in creating the centers in cooperation with Skills England (the skills agency for England). Skills England analyzes the labor market and identifies regions with a shortage of construction specialists, directing hub resources to the most locally needed professions (Department for Education, 2025). The initiative is funded through the Apprenticeship Levy mechanism and CITB grants, and its implementation is coordinated by several ministries (Education, Housing, Business, Labor) in partnership with industry boards. Such an interdepartmental and public-private approach reflects the trend of British VET policy: strengthening interaction with employers and flexible regulation allow for the rapid scaling of personnel training to meet the country's strategic needs.

Conclusions. The analysis of the regulatory and legal framework for the training of construction professionals in vocational colleges of the United Kingdom has demonstrated the existence of a coherent multi-level system that combines state regulation with active employer participation. The absence of a single codified law on vocational education and training is compensated by a flexible set of regulatory acts governing the status and autonomy of vocational colleges, funding

mechanisms, quality assurance, and learning outcomes management. The evolution of the British model has moved toward decentralization and partnership, within which educational institutions are held accountable for training results, and employers influence the content and volume of workforce formation. In the construction industry, this model ensures a sustainable cycle of interaction between education and industry, oriented toward training specialists according to agreed standards.

The research results allow for the formulation of practical recommendations for Ukraine aimed at creating a more effective, market-oriented vocational education system that meets the needs of infrastructure and economic recovery in the post-war period. Primarily, it is advisable to initiate the creation of permanent working groups or industry boards involving representatives of the

construction industry, employers, educators, and qualification policy specialists, who would serve an advisory function regarding the updating of professional standards, the assessment of training quality, and the implementation of innovative educational practices. Drawing on the experience of British regulatory structures, it is recommended to move gradually toward strengthening the autonomy of vocational colleges within a clearly defined system of external oversight focused not only on the process but also on the learning outcome. It is also worth promoting the consolidation of efforts of all stakeholders—through the creation of cross-sectoral coalitions or partnership platforms—to ensure the relevance of the training of qualified construction professionals and the effective use of national human potential in the context of the country's strategic recovery.

List of references

Авшенюк, Н. М., Дяченко, Л. М., Огієнко, О. І., Пазюра, Н. В., & Постригач, Н. О. (2022). *Забезпечення якості педагогічної освіти у зарубіжних країнах (Монографія)*. Київ: ІПОД НАПН України. https://lib.iitta.gov.ua/id/eprint/733665/1/Монографія_НД_2022.pdf

Бідюк, Н. (2000). Розвиток змісту та форм організації підготовки бакалаврів інженерії в університетах Великої Британії (Автореф. дис. канд. пед. наук, Тернопільський державний педагогічний університет імені В. Гнатюка). <https://lnk.ua/y4zj7KR4j>

Десятов, Т. М. (2018). Компаративно-педагогічне дослідження підготовки вчителів у великій Британії: результатоцентризований підхід. Вісник Черкаського університету. Серія «Педагогічні науки», (3), 43-49. <https://eprints.cdu.edu.ua/6102/1/adminojs%2C%2B7.pdf>

Леу, С. О. (2018). Сучасні стандарти ПОН: досвід Великої Британії. *Інноваційна педагогіка*, 5, 110-115. https://lib.iitta.gov.ua/id/eprint/713481/1/SL_VET_Standards_GB.pdf

Пуховська, Л. П., Ворначев, А. О., Мельник, С. В., Кравець, Ю. І. (2014). Професійні стандарти і кваліфікації у країнах з високорозвинутою економікою (Л. П. Пуховська, ред.). Київ: НВП «Поліграфсервіс». https://nmc-ptd.dp.ua/doc/2016/kordos_35.pdf

Пуховська, Л. (2018). Професійна освіта та інновації: досвід країн Європейського Союзу. *Професійна педагогіка*, 14, 124-132. <https://doi.org/10.32835/2223-5752.2017.14.124-132>

Радкевич, В. (2025). Ключові тенденції розвитку системи забезпечення якості професійної освіти і підготовки у Великій Британії. *Професійна педагогіка*, 2(31), 3-20. <https://doi.org/10.32835/2707-3092.2025.31.3-20>

Adams, S. (2004). A consideration of the nature, role, application and implications for European education of employing “learning outcomes” at the local, national and international levels. Edinburgh: Scottish Executive. <https://www.scirp.org/reference/referencespapers?referenceid=1692948>

Bjornavold, J., & Coles, M. (2007). Governing education and training: The case of qualifications frameworks. *European Journal of Vocational Training*, 42–43, 204–233.

British Council. (2022). The UK technical and vocational education and training (TVET) systems: An introduction. British Council. https://www.britishcouncil.org/sites/default/files/the_uk_technical_and_vocational_education_and_training_systems.pdf

Cedefop. (2015). Vocational education and training in the United Kingdom: Short description (Cedefop ReferNet VET in Europe reports). Publications Office of the European Union. https://www.cedefop.europa.eu/files/5159_en.pdf

Cedefop. (2020). Vocational education and training in Europe: United Kingdom. VET in Europe reports 2020. Publications Office of the European Union. https://www.cedefop.europa.eu/files/4168_en_uk.pdf

Construction Industry Training Board (CITB). (n.d.). History citb.co.uk. <https://www.citb.co.uk/about-citb/what-we-do/history/>

Cedefop. (n.d.). CITB levy/Industrial Training Levy (construction). Database on Financing Apprenticeships. <https://www.cedefop.europa.eu/en/tools/financing-apprenticeships/financing-instruments/citb-levyindustrial-training-levy-construction>

Department for Education (DfE). (2022). Skills Bill becomes law – Press release. GOV.UK. <https://www.gov.uk/government/news/skills-bill-becomes-law>

Department for Education (DfE). (2024). New skills hubs launched to get Britain building – Press release. GOV.UK. <https://www.gov.uk/government/news/new-skills-hubs-launched-to-get-britain-building>

Department for Education. (2022). Skills and Post-16 Education Act. <https://www.legislation.gov.uk/ukpga/2022/21>

Department for Education. (2025). Skills England: Better skills for better jobs. *Blog Skills England*. <https://skillsengland.blog.gov.uk/2025/08/13/skills-england-better-skills-for-better-jobs/>

Fuller, A., & Unwin, L. (2003). Learning as apprentices in the contemporary UK workplace: Creating and managing expansive participation. *Journal of Education and Work*, 16(4), 407–426. <https://doi.org/10.1080/1363908032000093012>

Further and Higher Education Act 1992. (1992). UK Public General Acts. <https://www.legislation.gov.uk/ukpga/1992/13/contents>

New skills hubs launched to get Britain building (2024). GOV.UK. <https://www.gov.uk/government/news/new-skills-hubs-launched-to-get-britain-building>

Raggatt, P., & Williams, S. (1999). *Government, markets and vocational qualifications: An anatomy of policy*. London: Falmer Press. <http://pisebooks.com/raggatt-peter-williams-steve-PDF-29451329.pdf>

UK Parliament. (1944). Education Act 1944 (7 & 8 Geo, 6. c. 31). <https://www.legislation.gov.uk/ukpga/Geo6/7-8/31/enacted>

UK Parliament. (1964). Industrial Training Act (1964, c. 16). <https://www.legislation.gov.uk/ukpga/1964/16>

Translated & Transliterated

Avsheniuk, N. M., Diachenko, L. M., Ohiienko, O. I., Paziura, N. V., & Postryhach, N. O. (2022). Zabezpechennia yakosti pedahohichnoi osvity u zarubizhnykh krainakh [Quality assurance of teacher education in foreign countries]. IPOD NAES of Ukraine. https://lib.iitta.gov.ua/id/eprint/733665/1/Монографія_НД_2022.pdf, [in Ukrainian].

Bidyuk, N. (2000). Rozvytok zmistu ta form orhanizatsii pidhotovky bakalavriv inzhenerii v universytetakh Velykoi Brytanii [Development of the content and forms of engineering bachelor training in UK universities] (Candidate dissertation abstract). Ternopil State Pedagogical University named after V. Hnatiuk. <https://lnk.ua/y4zj7KR4j>, [in Ukrainian].

Desiatov, T. M. (2018). Komparatyvno-pedahohichne doslidzhennia pidhotovky vchyteliv u Velykii Brytanii: rezultatsentrovanyi pidkhid [Comparative pedagogical study of teacher training in the UK: A result-oriented approach]. *Visnyk Cherkaskoho universytetu. Seriya "Pedahohichni nauky"* [Bulletin of Cherkasy University. Pedagogical Sciences], 3, 43–49. <https://eprints.cdu.edu.ua/6102/1/adminojs%2C%2B7.pdf>, [in Ukrainian].

Leu, S. O. (2018). Suchasni standarty PON: dosvid Velykoi Brytanii [Modern VET standards: UK experience]. *Innovatsiina pedahohika* [Innovative Pedagogy], 5, 110–115. https://lib.iitta.gov.ua/id/eprint/713481/1/SL_VET_Standards_GB.pdf, [in Ukrainian].

Pukhovska, L. P., Vornachev, A. O., Melnyk, S. V., & Kravets, Yu. I. (2014). Profesiini standarty i kvalifikatsii u krainakh z vysokorozvynutoiu ekonomikoiu [Professional standards and qualifications in highly

- developed economies] (L. P. Pukhovska, Ed.). NVPP "Polihrafservis". https://nmc-pto.dp.ua/doc/2016/kordos_35.pdf, [in Ukrainian].
- Pukhovska, L. (2018). Profesiina osvita ta innovatsii: dosvid krain Yevropeiskoho Soiuzu [Vocational education and innovations: EU experience]. *Profesina pedahohika* [Professional Pedagogics], 14, 124-132. <https://doi.org/10.32835/2223-5752.2017.14.124-132>, [in Ukrainian].
- Radkevych, V. (2025). Kliuchovi tendentsii rozvytku systemy zabezpechennia yakosti profesiinoi osvity i pidhotovky u Velykii Brytanii [Key trends in the development of the quality assurance system of vocational education and training in the UK]. *Profesina pedahohika* [Professional Pedagogics], 2(31), 3-20. <https://doi.org/10.32835/2707-3092.2025.31.3-20>, [in Ukrainian].
- Adams, S. (2004). A consideration of the nature, role, application and implications for European education of employing "learning outcomes" at the local, national and international levels. Scottish Executive. <https://www.scirp.org/reference/referencespapers?referenceid=1692948>, [in English].
- Bjornavold, J., & Coles, M. (2007). Governing education and training: The case of qualifications frameworks. *European Journal of Vocational Training*, 42-43, 204-233, [in English].
- British Council. (2022). The UK technical and vocational education and training (TVET) systems: An introduction. British Council. https://www.britishcouncil.org/sites/default/files/the_uk_technical_and_vocational_education_and_training_systems.pdf, [in English].
- Cedefop. (2015). Vocational education and training in the United Kingdom: Short description. Publications Office of the European Union. https://www.cedefop.europa.eu/files/5159_en.pdf, [in English].
- Cedefop. (2020). Vocational education and training in Europe: United Kingdom. Publications Office of the European Union. https://www.cedefop.europa.eu/files/4168_en_uk.pdf, [in English].
- Cedefop. (n.d.). CITB levy/Industrial Training Levy (construction). Database on Financing Apprenticeships. <https://www.cedefop.europa.eu/en/tools/financing-apprenticeships/financing-instruments/citb-levyindustrial-training-levy-construction>, [in English].
- Construction Industry Training Board (CITB). (n.d.). History. <https://www.citb.co.uk/about-citb/what-we-do/history/>, [in English].
- Department for Education (DfE). (2022). Skills Bill becomes law – Press release. <https://www.gov.uk/government/news/skills-bill-becomes-law>, [in English].
- Department for Education (DfE). (2024). New skills hubs launched to get Britain building – Press release. <https://www.gov.uk/government/news/new-skills-hubs-launched-to-get-britain-building>, [in English].
- Department for Education. (2022). Skills and Post-16 Education Act. <https://www.legislation.gov.uk/ukpga/2022/21>, [in English].
- Department for Education. (2025). Skills England: Better skills for better jobs. <https://skillsengland.blog.gov.uk/2025/08/13/skills-england-better-skills-for-better-jobs/>, [in English].
- Fuller, A., & Unwin, L. (2003). Learning as apprentices in the contemporary UK workplace. *Journal of Education and Work*, 16(4), 407–426. <https://doi.org/10.1080/1363908032000093012>, [in English].
- Further and Higher Education Act 1992. (1992). UK Public General Acts. <https://www.legislation.gov.uk/ukpga/1992/13/contents>, [in English].
- GOV.UK. (2024). New skills hubs launched to get Britain building. <https://www.gov.uk/government/news/new-skills-hubs-launched-to-get-britain-building>, [in English].
- Raggatt, P., & Williams, S. (1999). Government, markets and vocational qualifications: An anatomy of policy. Falmer Press. <http://pisebooks.com/raggatt-peter-williams-steve-PDF-29451329.pdf>, [in English].
- UK Parliament. (1944). Education Act 1944. <https://www.legislation.gov.uk/ukpga/Geo6/7-8/31/enacted>, [in English].
- UK Parliament. (1964). Industrial Training Act 1964. <https://www.legislation.gov.uk/ukpga/1964/16>, [in English].

НОРМАТИВНО- ПРАВОВЕ ЗАБЕЗПЕЧЕННЯ ПІДГОТОВКИ ФАХІВЦІВ БУДІВЕЛЬНОГО ПРОФІЛЮ У ПРОФЕСІЙНИХ КОЛЕДЖАХ ВЕЛИКОЇ БРИТАНІЇ

Андрій Микитюк

Майстер виробничого навчання, Надвірнянське професійно-технічне училище #11,
<https://orcid.org/0009-0001-2301-5198>, e-mail: andriimktk@gmail.com

Реферат:

Актуальність статті зумовлюється необхідністю здійснення аналізу нормативно-правового забезпечення підготовки фахівців будівельного профілю в системі професійної освіти і підготовки Великої Британії, що є важливим для імплементації прогресивного британського досвіду в освітнє законодавство України в контексті посилення впливу професійної освіти на повоєнну відбудову.

Мета статті полягає у визначенні та аналізі основних нормативно-правових актів і механізмів Великої Британії, що регулюють діяльність професійних коледжів у сфері підготовки фахівців будівельного профілю, обґрунтування можливостей імплементації окремих елементів досвіду в українське законодавство для розвитку професійної освіти.

Методи: аналіз законодавчих актів Уряду Британії, стратегічних документів і звітів регуляторних органів (Ofsted, Ofqual, Інституту учнівства та технічної освіти) за період 2000 – 2025 рр., вивчення наукових праць українських і британських учених – для з'ясування стану дослідженості проблеми; порівняння – для виявлення відмінностей і спільних тенденцій між британською та українською системами професійної освіти; узагальнення – для формулювання висновків і рекомендацій.

Результати: здійснено комплексний аналіз нормативно-правових документів Великої Британії, що регламентують діяльність професійних коледжів будівельного профілю; визначено ключові законодавчі акти (Further and Higher Education Act 1992, Skills and Post-16 Education Act 2022, Building Safety Act 2022, Apprenticeships, Skills, Children and Learning Act 2009), що забезпечують правову основу функціонування професійних коледжів; охарактеризовано роль профільних державних інституцій (Department for Education, Ofsted, IfATE, CITB) у регулюванні якості професійної будівельної освіти; виокремлено вимоги до програм підготовки, сертифікації та акредитації за напрямками будівництва; визначено перспективні напрями імплементації британського досвіду в контексті вдосконалення нормативно-правового забезпечення професійної підготовки фахівців будівельного профілю в Україні.

Висновки: встановлено, що законодавча база Великої Британії щодо підготовки фахівців будівельного профілю у професійних коледжах, забезпечує чіткий розподіл повноважень між регуляторами, визначає стандарти кваліфікації та гарантує відповідність змісту навчання вимогам сучасної будівельної галузі; імплементація окремих елементів британського досвіду (механізмів інституційної автономії, практикоорієнтованого навчання, участі галузевих партнерів у формуванні освітніх стандартів) є перспективною для вдосконалення нормативно-правового забезпечення підготовки фахівців будівельного профілю в професійних коледжах України.

Ключові слова: професійна підготовка, професійні коледжі, фахівці будівельного профілю, освітнє законодавство, Велика Британія.

Manuscript received	28.06.2025
Accepted for publication after peer review	22.10.2025
Published	20.11.2025



PROFESSIONAL TRAINING OF FUTURE BACHELOR'S DEGREE HOLDERS IN TRANSPORT TECHNOLOGIES: TERMINOLOGICAL DISCOURSE

Iryna Lebid

Candidate of Technical Sciences, Professor, Professor at the department of International Transportation and Customs Control National Transport University, <https://orcid.org/0000-0003-0707-4179>, Researcher ID: GPF-8996-2022, i.h.lebed@gmail.com

Abstract

Relevance. The need to unify the terminological apparatus of bachelor's training in transport technologies stems from the necessity of consistent interpretation of key concepts and the modernization of educational standards and programs in line with the European Qualifications Framework (EQF) and the National Qualifications Framework (NQF).

Purpose – to theoretically justify and unify the basic concepts of the terminological field of professional training («vocational training» «professional competence», «methodological system», «engineering pedagogy», «digital education», «transport technologies») and to identify gaps between normative requirements and educational practice in technical higher education institutions (HEIs).

Methods: interpretive and content analysis of normative documents, comparative analysis of dictionary and encyclopedic sources, semi-structured interviews with students, faculty, and employers.

Results. A structured scheme of the terminological field has been developed, with a central core of «vocational training» and related concepts. A gap has been identified between the competence requirements of EQF/NQF (knowledge – skills – communication – responsibility – autonomy) and the reduced perceptions of stakeholders («knowledge + skills»). Harmonized working definitions of key terms, aligned with European and national approaches, have been proposed.

Conclusions. The need to unify the terminological field for bachelor's training in specialty 275 Transport Technologies (by mode of transport) and harmonize it with EQF/NQF has been substantiated. The identified gaps between normative requirements and stakeholders' perceptions confirm the need to strengthen components of autonomy, responsibility, professional communication, and transversal skills in educational programs.

Keywords: vocational training; professional competence; methodological system; engineering pedagogy; digital education; technical education; transport technologies.

Introduction. Modern training of bachelors in the field of transport technologies is carried out under conditions of intensive transformation of higher technical education, digitalization of the educational process, and growing requirements for the effectiveness of graduates' professional activity. In accordance with European and national guidelines for the development of educational systems—specifically the European Qualifications Framework (EQF) and the updated National

Qualifications Framework (NQF)—key learning outcomes at the bachelor's level are described by the dimensions of "knowledge – skills – communication – responsibility and autonomy," which sets a new conceptual configuration for the professional training of technical specialists. In this context, the issue of terminological consistency acquires particular weight, as it is precisely this that determines the accuracy of scientific conclusions, the validity of educational programs, and the

correctness of assessing competency-based results. However, an analysis of modern discourse demonstrates that in the interdisciplinary field of "pedagogy – engineering – logistics – digitalization," significant semantic fragmentation of key concepts is observed, which complicates scientific communication and reduces the comparability of research results.

The implementation of digital transformation technologies, the growing role of engineering pedagogy, and requirements for the integration of professional, technical, and transversal competencies actualize the need to form a unified terminological field that will rely on modern methodological approaches and respond to the challenges of technical education. Interaction with various groups of stakeholders attests to the presence of substantial gaps between regulatory requirements and the practices of their implementation. In particular, the EQF for the sixth level insists on results covering responsibility, autonomy, and professional communication alongside knowledge and skills (Council of the European Union, 2017), whereas in real descriptions of educational-professional programs (EPP) and in the perceptions of some subjects of the educational process, results are often narrowed to the formula "knowledge + skills" without a clear definition of the components of autonomy, responsibility, and communication. A similar gap is also traced between the state standards for specialty 275 Transport Technologies (by modes of transport) (which set competencies regarding the planning and organization of transportation processes, ITS/data integration, safety, and ecological sustainability) and the assessment practices of academic disciplines, where test instruments for checking knowledge predominate without authentic tasks that measure managerial decisions, work with data, or indicators of safety and sustainability (Ministry of Education and Science of Ukraine, 2018, 2024). Additionally, in the digital education block, international frameworks (OECD, UNESCO) offer an ecosystemic human-centric perspective and a requirement for evidence of the impact of digital tools on results, yet in the practice of technical HEIs, digitalization is often reduced to the instrumental use of platforms without integration into the design of competency-based results and substantiated criteria for their measurement (OECD, 2023; UNESCO, 2024). This, in turn, points to insufficient consistency of educational process components, for example, learning goals and outcomes with the

content of disciplines (syllabuses do not always reflect requirements for responsibility, autonomy, and professional communication), which determines the necessity of theoretical rethinking of the content and functions of main concepts.

Thus, the problem lies in the absence of a holistic and scientifically grounded terminological apparatus that would ensure unified approaches to the interpretation of key concepts and serve as a foundation for the modernization of the professional training of future specialists in transport technologies. The relevance of solving this problem is conditioned both by scientific tasks—the construction of correct theoretical models, methodological bases, and conceptual schemes—and by practical ones—updating the content of educational programs, improving the quality of training, and increasing the conformity of graduates to labor market demands. Comprehensive systematization of terms in the context of engineering pedagogy and the digital transformation of education provides opportunities for increasing the consistency of standards, ensuring the transparency of professional qualifications, and forming an effective methodical system in technical higher education institutions.

Therefore, the problem of the terminological discourse of professional training in the technical field is determining for ensuring the effectiveness and modernity of the educational process. Its solution is directly connected with the formation of a competent, responsible, and mobile specialist capable of acting under conditions of uncertainty, technological dynamics, and the growing digitalization of transport systems.

Sources. The theoretical basis of the research is constituted by four complementary blocks of sources, which include: normative-framework documents (European and national), state standards of specialty 275 Transport Technologies (by modes of transport), terminological and encyclopedic reference books of the transport sphere, as well as policies on the digital transformation of education. Their synthesis ensures a unified conceptual field that makes it possible to compare framework expectations with the current educational practice of technical HEIs.

The European Qualifications Framework (EQF) defines learning outcomes in the categories of knowledge, skills, and competence, concretized through responsibility and autonomy. The National Qualifications Framework, compatible with the EQF, additionally singles out the dimension of

communication, which influences the interpretation of the competencies of a bachelor graduate of a technical profile.

State standards of specialty 275 "Transport Technologies" for the first (bachelor's) and third (educational-scientific) levels of higher education concretize learning outcomes through a system of professional competencies, thereby setting the engineering-organizational-digital character of the concept "transport technologies" (MES of Ukraine, 2018; MES of Ukraine, 2024).

Terminological and encyclopedic sources of the transport sphere in this research served to unify terms, for example, the Glossary for Transport Statistics (UNECE–ITF–Eurostat), which ensures the consistency of statistical definitions between countries and modes of transport (Eurostat, ITF (OECD), & UNECE, 2019). Leading encyclopedic publications reflect the evolution of transport technologies from a material basis to digital platforms and automation (Britannica Editors, 2026; Vickerman, 2021).

International documents (OECD Digital Education Outlook 2023; UNESCO Six Pillars) and the JRC DigCompEdu framework set a pedagogically grounded approach to the integration of technologies into learning, teaching, management, and assessment (OECD, 2023; UNESCO, 2024; Redecker & Punie, 2017). The National Concept for the Development of Digital Competencies concretizes requirements for the digital literacy of instructors and learners and supports institutional initiatives for mass access to learning (Decree of the Cabinet of Ministers of Ukraine, 2021).

Collectively, these sources outline the boundaries of key definitions ("professional training," "professional competence," "methodical system," "transport technologies," "digital education") and serve as a foundation for building

the author's terminological framework and further harmonization with the EQF/NQF and standards of specialty 275 Transport Technologies (by modes of transport) (Council of the European Union, 2017; Resolution of the Cabinet of Ministers of Ukraine, 2011; MES of Ukraine, 2018, 2024; Eurostat et al., 2019; OECD, 2023; UNESCO, 2024; Redecker & Punie, 2017).

The goal of the article lies in the theoretical substantiation and unification of key concepts of the terminological field of professional training of future bachelors in transport technologies (specifically: "professional training," "professional competence," "methodical system," "engineering pedagogy," "digital education," "transport technologies") in accordance with the requirements of the EQF/NQF and higher education standards for specialty 275 Transport Technologies (by modes of transport), as well as in identifying and explaining gaps between framework normative prescriptions and practices of their implementation in technical HEIs, with the subsequent formulation of methodical guidelines for the harmonization of educational design.

Methods. Interpretative analysis of scientific and normative sources was applied; content analysis of standards and frameworks (EQF/NQF); semi-structured interviews with learners (n=31), instructors of professionally oriented specialized disciplines (n=16), and stakeholders (n=7), aimed at identifying the meanings they invest in key concepts ("professional training," "professional competence," "methodical system," "engineering pedagogy," "digitalization of education").

Results and Discussion. The terminological field of the research is outlined by the issues of professional training of future bachelors in specialty 275 "Transport Technologies" (by modes) in institutions of higher technical education; its structural representation is presented in Fig. 1.

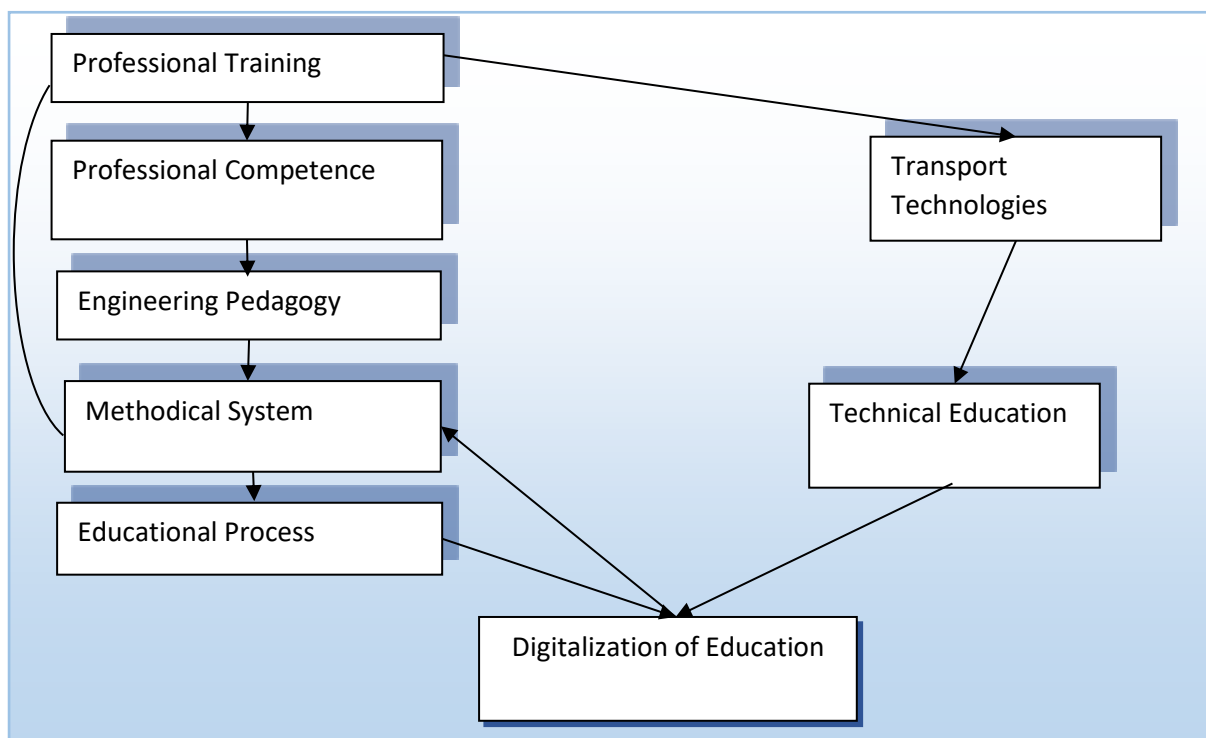


Fig. 1. Structural scheme of the terminological field with visualization of key concepts of the research topic and their interconnections (Source: developed by the author)

In accordance with the aim of the research, an interpretative review of normative sources was carried out, which makes it possible to define the categorical-conceptual apparatus of the study. The focus of our attention was centered on a number of definitions, namely: professional competence, methodical system, educational process, engineering pedagogy, digital education, technical education, transport technologies. Basing on the results of the analysis of normative documents, we note that within the framework of the EQF and the updated NQF, these connections are logically organized around learning outcomes in the dimensions of "knowledge – skills – communication – responsibility – autonomy," where the sixth level (bachelor's) sets the requirement for managing complex types of activities (projects) and making decisions under conditions of uncertainty (Council of the European Union, 2017; Resolution of the Cabinet of Ministers of Ukraine, 2011).

Let us examine the essence of the aforementioned definitions that align with qualifications frameworks and higher education standards for the specialty. Thus, the term "professional training" is formulated as a systemically organized process of achieving learning outcomes of the sixth (bachelor's) level of the EQF/NQF in the field of "Transport," which ensures the ability for independent decision-making, professional communication, and responsibility in

typical and atypical production-transport situations. The definition "professional competence" is an integral ability to act effectively under conditions of uncertainty on the basis of a combination of knowledge, skills, communication, responsibility, and autonomy (Council of the European Union, 2017; Resolution of the Cabinet of Ministers of Ukraine, 2011).

Effective formation and reliable assessment of the components of professional competence of bachelors in transport technologies is ensured by the methodical system, which translates expected results into a managed educational process – from goals and content to mechanisms, methods, and tools; it is holistic and algorithmized to the specifics of the specialty. N. Nychkalo (2000) defines a methodical system as a constituent part of the methodology of a certain academic subject, which covers: methodology of research, methodology of the academic subject; general methodology of a complex of interconnected subjects (various foreign languages; natural science disciplines, etc.); methodology of educational work, methodology of training teacher personnel, etc. (Nychkalo, 2000, p.183). 275 (MES of Ukraine, 2018; MES of Ukraine, 2024).

Besides this, the methodical system must align with EQF/NQF descriptors, and therefore a need arises for an instrument that ensures the transfer of these framework requirements into

concrete educational designs, methods, and tools. Such a function in our research is performed by engineering pedagogy as a conceptual and technological "bridge" between the provisions of the EQF/NQF and content-methodical practices of training bachelors of specialty 275 "Transport Technologies (by modes)." It ensures pedagogical design and algorithmization of the methodical system (goals → content → mechanisms → methods → tools → assessment) for measurable results required by the EQF/NQF and concretized in state standards for the indicated specialty (MES of Ukraine, 2018; MES of Ukraine, 2024). Substantively, engineering pedagogy integrates engineering content, didactics, and work-based learning (WBL), translating the engineering-organizational-digital character of "transport technologies" (ITS/data, safety, sustainability, efficiency) into authentic educational situations (cases, projects, production tasks), by means of which the competencies of graduates are verified. In this way, engineering pedagogy: firstly, ensures the unification of terms and requirements (from EQF/NQF frameworks to courses and syllabuses); secondly, strengthens the evidence base of digitalization (selection of impact tools according to OECD/UNESCO, DigCompEdu); thirdly, guarantees the transfer of learning results into typical and atypical production-transport situations where the graduate demonstrates independent decision-making and professional communication at a high level of responsibility and autonomy (OECD, 2023; UNESCO, 2024; Redecker & Punie, 2017). Thus, engineering pedagogy is a methodological and technological platform for designing and implementing the professional training of bachelors in transport technologies, converting framework EQF/NQF requirements and standards into managed educational design and verifiable results in WBL and case formats.

The next step in scientific explorations is defining and comprehending the digital component of educational design. If engineering pedagogy sets methodological and technological principles for transferring framework requirements into practice, the concept "digital education" defines the ecosystem conditions and tools for their implementation and evidence-based verification: from data management and impact indicators on specialist training, as well as professional development of instructors. In this context, international frameworks serve as guidelines on data management and system design (OECD, 2023);

UNESCO Six Pillars (UNESCO, 2024) – coordination, infrastructure, sustainability, capacity, content/solutions, data/evidence, and JRC DigCompEdu (Redecker & Punie, 2017) – digital competencies. Their coordinated application allows translating WBL and case formats from the level of instrumental use of platforms to the level of pedagogically motivated, data-confirmed digital transformation for expected results in training bachelors in specialty 275 Transport Technologies (by modes of transport).

We believe that precisely on this foundation it is appropriate to clarify the base subject of professional training – "transport technologies" – as an object of learning and assessment, relying on unified terminology and statistical standards of transport to avoid semantic discrepancies between subsystems of the field and educational programs. In this research, transport technologies are defined as an engineering-organizational-digital complex of technical means, infrastructure, processes, and ITS/data aimed at efficient and safe transportation of passengers and cargo (Eurostat, ITF (OECD), & UNECE, 2019).

As a next step, we must clarify the essence of the concept "technical education" as a system of training specialists for engineering-rich spheres (specifically transport) combining fundamental natural science and engineering training with applied technological components, methodology of design and operation of technical systems, as well as modern digital tools for analysis, modeling, and management. In other words, technical education sets a framework for competence formation and assessment in which "transport technologies" act as the subject core of content, and engineering pedagogy and digital education ensure didactic mechanisms and substantiated assessment of results.

Thus, a common language for describing phenomena and results is outlined. It is here that terminological discourse acquires a system-forming role: a) it consolidates the conceptual apparatus; b) it cultivates flexible, context-sensitive scientific thinking necessary for solving complex theoretical and practical tasks of the methodology of organizing the educational process for training bachelors in transport technologies. At the same time, such discourse encompasses the ordering of conceptual series reflecting the specifics of the transport field as a multi-level scientific-technical system integrated from engineering, logistics, managerial, and digital components.

Given the applied nature of professional training and its orientation toward satisfying labor market needs, we believe that the interpretation of the categorical-conceptual apparatus of the research cannot be limited only to normative interpretations of the essence of outlined concepts. Therefore, to achieve the aim of the research, theoretical generalizations and studies of subjective perceptions and professional experience of key stakeholders – employers, instructors, and learners, who comprehend the essence and results of professional training differently – are necessary. This, in turn, determines the choice of such qualitative research methods that ensure depth, flexibility, and contextual sensitivity of the data obtained. In this context, it is expedient, from our point of view, to use the semi-structured interview as a method of collecting empirical data for the interpretative analysis of concepts.

If we compare domestic and international normative-conceptual documents with the empirical perceptions of educational process participants, one can see a gap between the formally established competency model of professional training and its perception in the practice of higher technical education. Thus, formulated normative definitions often fixate on the program-procedural side of training, whereas the EQF and NQF (for the sixth level) describe a qualification through results, among which emphasis is placed on the ability to manage complex types of activities and make decisions autonomously with an appropriate measure of responsibility. This expands the traditional pair "knowledge – skills" to at least "knowledge – skills – responsibility – autonomy" supplemented by communication.

Consequently, the concept "professional training" is a complex, multidimensional phenomenon. Its content and functional substance are formed at the intersection of normative-legal requirements, international educational guidelines, and practical meanings attributed to it by participants of the educational process.

In the understanding of employers, professional training implies possession of theoretical knowledge, the ability to apply it in practice, and readiness for independent solving of professional tasks (42.9%). The same proportion of respondents (42.9%) reduces professional training primarily to practical application of knowledge, and 14.3% emphasize only readiness for independent solving of professional tasks. The majority of learners (87.1%) interpret professional training as a

combination of theoretical knowledge and practical skills necessary for the future profession. Among instructors of professionally oriented disciplines, 68.8% invest primarily theoretical knowledge into the content of the concept; 18.8% – practical skills and ability for self-learning; 6.3% – social and communicative skills, while another 6.3% found it difficult to answer.

Thus, stakeholder perceptions regarding the essence of professional training generally align around a combination of theoretical knowledge and practical skills, however, they differ in emphasis: employers orient primarily on practicality and autonomy in performing professional tasks, learners – on integration of theory and practice, and instructors – on the dominance of the theoretical component with gradual recognition of the role of practical and social competencies. This attests to the need for a balanced model of training combining knowledge, practical, and activity components. In this model, it is necessary to consider transversal skills as an obligatory content component of professional training. It is communication, teamwork, and the ability to present and argue results that ensure the transfer of acquired knowledge and skills into real professional contexts, reinforcing the autonomy and responsibility of the future specialist. This dimension is clearly articulated in the "Dublin Descriptors" (Bologna Working Group on Qualifications Frameworks [BWGQF], 2005), where among expected training results at different cycles of higher education, the ability to communicate effectively with professional and non-professional audiences, cooperate, and make substantiated decisions in a team is defined. In a situation of increasing interdisciplinarity, precisely these competencies become the "connective tissue" between theory, practice, and innovations. At the same time, results of our surveys indicate that this component often remains out of focus for educational process participants.

Results of interviewing higher education learners attested to a predominantly practice-oriented interpretation of professional competence, understanding it as the ability to apply knowledge, abilities, and skills in practice (81.7%), whereas a part of respondents (12.9%) limits it to the sphere of professional knowledge. Instructors also adhere to a pragmatic approach, yet often interpret professional competence within the traditional didactic paradigm, emphasizing primarily content mastery. The positions of employers are more varied: 42.9% view competence as a complex of knowledge, skills,

and readiness for independent decisions; the same amount – as the ability to apply knowledge in practice; 14.3% focus primarily on autonomy in professional activity. Overall, empirical perceptions of all groups confirm the dominance of an activity-based, practice-oriented vision of professional competence.

Thus, summarizing the results of interviewing different groups of respondents gives grounds to assert that professional competence in the consciousness of educational process participants and stakeholders is predominantly associated with practical ability to act in the professional sphere, whereas such components as responsibility, autonomy, reflexivity, and value-motivational orientation remain insufficiently articulated, especially in the views of learners and instructors. At the same time, it is the position of employers that most closely approaches the modern competence-based understanding of professional competence as an integral characteristic of personality that goes beyond possession of knowledge and skills and reflects the specialist's readiness for independent, responsible professional activity.

Regarding the concept "engineering pedagogy," we note that according to the data of the National Repository of Academic Texts database for the last quarter of the 21st century, close to 30 dissertation works have been identified in which it acts as a theoretical basis of research or an independent object of scientific analysis. Generalization of results of studying dissertations and professional publications makes it possible to single out four leading approaches to its interpretation. Specifically, within the disciplinary approach, it is viewed as an integration of pedagogy, psychology of learning, and engineering sciences, serving as a theoretical basis for forming professional and pedagogical competencies of future engineers and engineer-pedagogues (Tymkiv, 2020). The integrative-competency approach, which dominates in recent research, defines engineering pedagogy as a system of integrating engineering and pedagogical knowledge aimed at developing professional, didactic, and social-communicative competencies (Ivanushko, 2022). In the activity-methodological approach, it appears as a methodology of designing the educational process in technical education and a totality of principles and technologies of training engineers, which is characteristic primarily for works in the sphere of vocational and professional pre-higher education (Ivanushko, 2022). The sociocultural and

international approach interprets engineering pedagogy as an instrument for developing human capital and ensuring the quality of engineering education in accordance with IGIP standards and requirements of the European Higher Education Area (Tymkiv, 2020). Consequently, the modern understanding of engineering pedagogy is characterized by a plurality of interpretations, among which the leading one is the integrative-competency approach, since it corresponds most to current tendencies of development of technical education and training of engineering personnel.

Analysis of stakeholder views on the essence and role of engineering pedagogy in training future specialists revealed significant differences between groups. Thus, employers demonstrate a fragmented understanding: part of them (28.6%) acknowledge engineering pedagogy as an important source of modern approaches to learning, whereas the same proportion assigns it a secondary place, prioritizing production experience. Another 14.3% do not consider it significant, and the rest either hesitate or do not identify the concept, which attests to uneven awareness regarding its potential. The position of instructors is more consistent: 56.3% grant engineering pedagogy key significance in forming the methodical system of learning, whereas 31.3% view it as secondary to the content filling of disciplines. This reflects the tension characteristic of technical education between methodology ("how to teach") and subject content ("what to teach"). Among learners, a positive and practice-oriented attitude dominates: 51.6% consider engineering pedagogy a source of modern techniques and development of engineering thinking, 35.5% emphasize its role in understandable and structured teaching of technical disciplines. The obtained empirical data make it possible to generalize results: 1) within the academic environment (instructors, students) there is a consensus regarding the importance of engineering pedagogy; among employers – a fragmented and partially insufficiently informed vision; 3) common to all groups remains the need for practice-oriented, accessible, and technologically modern methodologies capable of developing engineering thinking and being effective in production conditions.

The study of scientific sources made it possible to single out several approaches to interpreting the concept "methodical system." Within the systemic-didactic approach, this phenomenon is defined as a holistic unity of goals,

content, internal mechanisms, methods, and tools of a specific way of learning; herein methods act as instruments of realizing goals and content taking into account psychological mechanisms of learning (Malafiiik, 2005). According to the integrative-linguodidactic approach, the methodical system is interpreted as an integrative category combining theoretical modeling and practical implementation of interconnected elements aimed at achieving high results of professional training (Druzhenenko, 2016). In classical didactics, a methodical system is viewed as a way of constructing learning – a coordinated complex of methods selected according to principles, goals, content, capabilities of learners, and conditions of learning; such a system ensures predictable sequencing of method application according to leading psychological mechanisms of learning. Generalizing these approaches allows defining the essence of the concept "methodical system" as a holistically designed organization of the educational process that integrates the goal and content of learning, psycho-didactic mechanisms, methods, and tools into an interconnected structure oriented toward theoretical modeling and practical implementation of educational activity. Such a system implies algorithmized, context-conditioned selection and combination of methods according to principles of learning, conditions, resources, and characteristics of learners (Druzhenenko, 2016; Concept of methodical systems, n.d.; Yahupov, n.d.).

Survey results allowed outlining perceptions of different respondent groups about the essence of the methodical system. Learners mostly perceive it as clearly structured and modern (64.5%), ensuring conformity of training to labor market requirements. At the same time, 22.6% point to the need for its updating, and 9.7% are not familiar with the concept itself, which reflects a certain terminological inconsistency in the student environment. In turn, instructors of professionally oriented disciplines demonstrate a predominantly situational-contextual approach to organizing the methodical system: 75% combine methods depending on the learning situation, and 25% purposefully use modern methods and digital tools. This indicates dominance of constructive logic of building learning – not as a set of methods, but as their thoughtful combination according to goals, content, and conditions.

Interesting, in our opinion, is the understanding of this concept by employers, who emphasize practical utility of methodical system elements. The predominant proportion (71.4%)

simultaneously defines three priorities: practical training at enterprises, use of modern technologies, and systemic cooperation of HEIs with employers; in smaller subgroups (14.3% each) a focus only on practice or only on partnership is singled out. This reflects expectations of a holistic and coordinated configuration of elements ensuring transition from learning to professional activity. Summarizing results, we must attest to gradual convergence of respondent perceptions toward understanding the methodical system as a structured, context-conditioned, and practice-oriented way of organizing learning. At the same time, among learners and part of instructors a tendency is recorded to simplify this concept to "modernity" or "a set of methods," without taking into account internal psycho-didactic mechanisms and algorithmized design.

Thus, empirical assessments show concentration of interview participants on structuredness, modernity, practice, digital tools, and cooperation with employers. They partially align with scientific approaches but require supplementation with systemic components: a clear model of goals and content, defined internal mechanisms, and context-sensitive combination of methods ensuring reproducibility and guaranteed nature of training results.

In accordance with the Law of Ukraine "On Education" (2017), the educational process is understood as a "system of scientific-methodical and pedagogical measures aimed at development of personality through formation and application of its competencies." In our research, this definition is used as a conceptual basis. Simultaneously, results of interviewing different groups of respondents attested that employers are unambiguously oriented toward practical direction of the educational process: 71.4% emphasize necessity of forming practical skills, using flexible programs, and close cooperation with business, whereas 28.6% focus only on practical component of training without accent on institutional interaction. In our view, such assessments reflect labor market demand for an applied educational process approximated to real conditions of professional activity. Instructors of higher technical education institutions predominantly support integration of theoretical and practical components of training (68.8%), which corresponds to academic traditions. Another 25% indicate importance of using modern technical and laboratory equipment, and individual respondents emphasize significance of independent work of

learners, connecting it with development of autonomy and responsibility. In survey results of learners two dominant interpretations of the educational process can be distinguished: for 64.5% it is purposeful interaction of students and instructors aimed at forming professional competencies, whereas 35.5% identify it with totality of lectures, practical and laboratory classes. The latter testifies to prevalence of formally organizational, rather than competence-based vision of the educational process.

Summarizing obtained empirical data, it is necessary to pay attention to notable differences between groups: employers emphasize practicality and flexibility of the educational process; instructors – integration of theory and practice and resource provision; learners – predominantly its organizational forms. This confirms necessity of updating content and methods of organizing the educational process to ensure its competence orientation and balance expectations of all stakeholders.

Quite debatable is the essence of the concept "technical education," which in Ukrainian tradition of its comprehension is defined as component of professional, technological, and engineering-pedagogical training. Such a point of view is presented in works of domestic scholars O. Abramov et al. (2024); L. Potapiuk (2018); Yu. Rashkevych and T. Semyhina (2025). It should be noted that despite absence of normatively fixed definition, in these studies concept "technical education" functions within stable conceptual field. Basing on results of studying essence of technical education, one can conclude that in scientific works this term is presented as: a) component of professional education aimed at training specialists of technical and technological profile; b) competence-oriented educational process resulting in formed integral, general, and professional competencies relevant to dynamic technological environment; c) integrative system combining engineering-technical, psycho-pedagogical, and sociocultural components of training; d) resource for development of human capital and innovative economy. In such vision technical education appears as holistic, multidimensional process of professional direction oriented toward combining technical knowledge, competencies, and values necessary for activity in sphere of technique and technologies and for sustainable development of society.

Generalizing cited approaches, one can state that modern Ukrainian interpretations of category

"technical education" are gradually converging with European ones according to logic of competence orientation and integrativity of training. At the same time domestic definitions remain mostly generalized and oriented toward procedural character of educational activity, whereas European approaches are distinguished by greater normative structuredness and clear result orientation within TVET and Engineering Education frameworks. In these approaches technical education is viewed as means of developing professional, social, and personal capability of specialist (Rashkevych & Semyhina, 2025; UNESCO UNEVOC, 2008; Rauner & Maclean, 2008).

The revealed conceptual discrepancies in defining the social function of technical education—the economocentric accent in domestic discourse and the human-centric orientation of European approaches—require empirical verification at the level of attitudes of different respondent groups. With this aim, a survey of employers, instructors, and learners was conducted, the results of which made it possible to assess the degree of consistency of their perceptions with modern conceptual approaches. It was found that the majority of learners (83.9%) understand technical education as an integration of theory, practice, and innovations, which testifies to an integrative vision of its essence formed in the student environment. Another 12.9% interpret it as a system of knowledge in technical disciplines, whereas other representatives of this surveyed group found it difficult to answer. Among instructors, a complex assessment of challenges and prospects for the development of technical education dominates. The multiple choice of the majority of respondents (68.8%) outlines three coordinated priorities: updating content, digitalization, and increasing the motivation of learners. At the same time, other positions were also revealed: 18.8% emphasize exclusively motivation, and 6.3% each – only digital technologies or only content updating. The totality of answers attests to a consensus regarding key directions of technical education modernization.

Thus, the obtained data demonstrate consistency between the student interpretation of technical education as a combination of theory, practice, and innovations and the instructor vision of its development through content modernization, implementation of EdTech tools, and strengthening of motivational strategies. This confirms the relevance of the human-centric and competency-practical trajectory of technical education

development and concretizes directions for its updating – curriculum redesign, integration of digital technologies, and formation of a motivational educational environment. Employers were proposed to assess the level of technical education of bachelor graduates in specialty 275 Transport Technologies. Almost unanimously critical assessments were obtained: 42.9% believe that training requires improvement, another 42.9% – that it does not meet labor market requirements, and only 14.3% assess it as corresponding to modern requirements. These results confirm the employers' demand for strengthening the practical component, updating content, and broader integration with the production environment.

Relying on the analysis of policies and scientific-analytical sources, it was established that in international discourse the concept "digital education" is interpreted ecosystemically and human-centrally: from frameworks of digital competencies and pedagogically grounded integration of technologies to systemic policies of digital transformation and indicator models of assessment (OECD; UNESCO). The Ukrainian approach, instead, gravitates toward an institutional-environmental definition, with an emphasis on the development of digital competencies of citizens and educators and the expansion of access through national platforms and programs (Concept of Digital Competence Development; "Diia.Osvita").

Within the limits of this research, digital education is viewed as a systemic transformation of the educational process and its management based on digital technologies and data, which creates criteria for assessing effectiveness in the dimensions of quality, personalization, inclusivity, and evidence-based practice. Further analysis is directed at the empirical identification of how these guidelines are perceived by the main subjects of the educational process.

Survey results of learners demonstrate a predominantly positive attitude toward digitalization: 83.9% believe that it improves the quality of training thanks to access to modern resources and technologies. At the same time, 9.7% point to information overload, and 6.5% do not note a substantial influence of digitalization. This makes it possible to outline both dominant perceptions of positive effects and risk zones requiring methodical correction.

The positions of other groups align with these tendencies, yet have their own emphases. Among instructors, 87.5% note that digitalization

reinforces the innovativeness and flexibility of learning. Among employers, 71.4% share a positive attitude, whereas 14.3% express reservations, linking excessive use of digital tools with risks of formal learning and a decrease in the level of critical thinking.

Consequently, empirical data attest to a generally positive perception of the digital transformation of education by all respondent groups, which confirms its potential as a factor in improving the quality and flexibility of professional training. At the same time, the revealed reservations actualize the need for managed and methodically substantiated digitalization aimed at reducing information overload, developing critical thinking, and ensuring a balanced combination of digital and traditional educational practices.

Within the limits of this research, it is important to clarify the content of the concept "transport technologies," which in professional dictionaries and sectoral glossaries is interpreted as a set of technical means, infrastructure, operational processes, and digital systems ensuring the movement of passengers and cargo. International terminological frameworks emphasize the integrated character of this concept, within which transport technologies cover not only the material component but also standards, algorithms, rules, and information systems ensuring the efficiency and safety of transport processes (UNECE, ITF & Eurostat).

Encyclopedic sources supplement this understanding with a systemic and evolutionary vision: from historical technical solutions to modern high-speed and digital mobility systems. In Britannica, transport technologies are represented as a dynamic complex of means and modes of movement, whereas the International Encyclopedia of Transportation emphasizes their interdisciplinarity, integration with logistics, safety, traffic management, modeling, and the influence of new technologies – AI, automation, big data. At the level of European standardization, ITS is defined as the application of ICT to transport, which is a key subsystem of transport technologies in the digital dimension.

In Ukrainian standards of specialty 275 "Transport Technologies (by modes)," the concept is disclosed through competency-based results connected with planning and organizing the transportation process, managing flows, safety, using ITS and digital systems, as well as the logistic interaction of transport modes. Typical educational-

professional programs detail it as applied engineering-organizational activity aimed at optimizing transportation processes with the help of engineering methods and digital tools.

Scientific sources interpret transport technologies as mechanisms of technical and organizational improvement of transport systems – reducing time, cost, and risks through the implementation of alternative energy types, intelligent transport systems, automation, digital platforms, and logistic integration (Button & Hensher, 2001; Annema, 2023). Regional frameworks of UN ESCAP supplement this vision with an emphasis on transport digitalization, smart solutions, ITS, big data, and automated network management (UN ESCAP, 2019; UN ESCAP, 2024).

Generalization of the researched literature confirms that the term "transport technologies" in modern approaches means the innovative contour of the transport system combining technique, infrastructure, digital solutions, and logistic algorithms for the purpose of increasing the efficiency, safety, and sustainability of transport networks (Annema, 2023; UN ESCAP et al., 2019).

Thus, within the limits of this research, it is expedient to use the definition of the concept "transport technologies" as an integrated totality of technical means, infrastructure, organizational methods, and digital solutions (ITS/data) ensuring efficient, safe, inclusive, and ecologically sustainable movement of passengers and cargo, aligned with international terminological

frameworks and modern approaches to digitalization.

Conclusion. The research substantiates the necessity of unifying the terminological field of professional training of bachelors in specialty 275 "Transport Technologies" and its harmonization with the EQF/NQF, which ensures correct design of learning outcomes in the dimensions "knowledge – skills – communication – responsibility – autonomy." A gap was revealed between framework requirements and perceptions of stakeholders, who often reduce competence to the formula "knowledge+skills"; this requires strengthening components of autonomy, responsibility, professional communication, and transversal skills in the content of EPP. The methodical system must act as an instrument of transferring framework requirements into managed educational design (goals → content → mechanisms → methods → tools → assessment), while engineering pedagogy and digital education – ensure pedagogically motivated, data-confirmed solutions and authentic assessment. Empirical data attested to student support for the integration of theory, practice, and innovations, instructor consensus regarding content updating, digitalization, and motivation, as well as the employer demand for strengthening the practical component and integration with production. In connection with this, in the future practice of professional training of future bachelors, it is necessary to use authentic assessment more broadly, institutionalize the HEI – business dialogue, systemically develop transversal skills, and ensure the digitalization of the educational process.

List of references

Абрамова, О., Пуляк, О., Верстюк, Т., & Лопаківа, О. (2024). Інтерактивні методи як засоби формування м'яких навичок у майбутніх педагогів технічної та професійної освіти. В *Актуальні проблеми професійної та технологічної освіти: досвід та перспективи*, 11–19. УДПУ імені Павла Тичини.

Дружененко, Р. С. (2016). Теоретичне обґрунтування поняття «методична система навчання» у парадигмі мовної підготовки майбутнього вчителя української мови та літератури. *Збірник наукових праць Уманського державного педагогічного університету*, (2), 97–105. <https://doi.org/10.31499/2307-4906.2.2016.196078>

Закон України «Про освіту» (2017, 5 вересня). <https://zakon.rada.gov.ua/laws/show/2145-19#Text>

Іванушко, О. (2022). Інженерна педагогіка як теоретико-методологічна основа підготовки майбутніх педагогів професійного навчання. *Професійна педагогіка*, 1(24), 145–152. <https://doi.org/10.32835/2707-3092.2022.24.145-152>

Малафіїк, І. В. (2005). *Дидактика: навчальний посібник*. Кондор. https://library.nlu.edu.ua/POLN_TEXT/KNIGI/KONDOR1/DIDAKTIKA_2005.pdf

Міністерство освіти і науки України. (2018). *Транспортні технології (за видами транспорту)* (Стандарт вищої освіти, спеціальність 275, перший (бакалаврський) рівень). <https://osvita.ua/doc/files/news/627/62782/5bd962aa64106062276834.pdf>

Міністерство освіти і науки України. (2024). *Транспортні технології (за видами)* (Стандарт вищої освіти, спеціальність 275, третій (освітньо-науковий) рівень). <https://mon.gov.ua/static-objects/mon/uploads/public/674/ee5/a60/674ee5a60f116234745752.pdf>

Ничкало, Н.Г. (Ред.). (2000). *Професійна освіта: Словник*. Вища школа.

Постанова Кабінету міністрів України «Про затвердження Національної рамки кваліфікацій» (2011, 23 листопада). <https://zakon.rada.gov.ua/laws/show/1341-2011-%D0%BF#Text>.

Потапук, Л. М. (2018). Теоретичні аспекти компетентнісного підходу в контексті професійної підготовки фахівців інженерно-педагогічного профілю. *Вісник Університету імені Альфреда Нобеля. Серія «Педагогіка і психологія». Педагогічні науки*, 1(15), 180–185. <https://doi.org/10.32342/2522-4115-2018-0-15-180-185>

Рашкевич, Ю. М., & Семигіна, Т. В. (2025). Європейська інтеграція в професійній освіті: Імперативи для України. *Освітня аналітика України*, 1(33), 43–57. <https://doi.org/10.32987/2617-8532-2025-1-43-57>

Розпорядження Кабінету Міністрів України «Про схвалення Концепції розвитку цифрових компетентностей та затвердження плану заходів з її реалізації» (2021, 3 березня). <https://zakon.rada.gov.ua/laws/show/167-2021-%D1%80#Textkmu>

Тимків, Н. М. (2020). Інженерна педагогіка як субдисципліна педагогічної науки. *Наукові записки. Розділ: педагогічні науки*, (147), 174–181. <https://doi.org/10.31392/NZ-npu-147.2020.22>

Ягупов, В. В. (2002). *Педагогіка*. Либідь. https://eduknigi.com/ped_view.php?id=67

Annema, J. A. (2023). Transport technology. In *The transport system and transport policy*. TU Delft / TRAIL.

Bologna Working Group on Qualifications Frameworks. (2005, February). *A framework for qualifications of the European Higher Education Area*. Ministry of Science, Technology and Innovation. https://ehea.info/media.ehea.info/file/WG_Frameworks_qualification/71/0/050218_QF_EHEA_580710.pdf

Britannica Editors. (2026, January 10). *Transportation technology*. Britannica. <https://www.britannica.com/technology/transportation-technology>

Button, K. J., & Hensher, D. A. (Eds.). (2001). *Handbook of transport systems and traffic control*. Pergamon.

Council of the European Union. (2017). Council Recommendation of 22 May 2017 on the European Qualifications Framework for lifelong learning (2017/C 189/03). *Official Journal of the European Union*. [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32017H0615\(01\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32017H0615(01))

Eurostat, International Transport Forum (OECD), & United Nations Economic Commission for Europe. (2019). *Glossary for transport statistics* (5th ed.). Publications Office of the European Union. <https://doi.org/10.2785/675927>

OECD. (2023). *OECD digital education outlook 2023: Towards an effective digital education ecosystem*. OECD Publishing. <https://doi.org/10.1787/c74f03de-en>

Redecker, C., & Punie, Y. (2017). *European framework for the digital competence of educators: DigCompEdu* (EUR 28775 EN). Publications Office of the European Union. <https://doi.org/10.2760/159770>

UNESCO. (2024). *Six pillars for the digital transformation of education: A common framework* (ED2024/WS/23 Rev.). <https://unesdoc.unesco.org/ark:/48223/pf0000391299>

United Nations Economic and Social Commission for Asia and the Pacific. (2019). *Sustainable transport and digitalization*. UN.

United Nations Economic and Social Commission for Asia and the Pacific. (2024). *Digitalization of transport*. UN.

Vickerman, R. (Ed.). (2021). *International encyclopedia of transportation*. Elsevier. <https://shop.elsevier.com/books/international-encyclopedia-of-transportation/vickerman/978-0-08-102671-7>

Translated & Transliterated

Abramova, O., Puliak, O., Verstiuk, T., & Lopakova, O. (2024, 5 veresnia). Interaktyvni metody yak zasoby formuvannia miakyykh navychok u maibutnikh pedahohiv tekhnichnoi ta profesiinoi osvity [Interactive methods as a means of forming soft skills in future teachers of technical and vocational education]. *V Aktualni problemy profesiinoi ta tekhnologichnoi osvity: dosvid ta perspektyvy* [Actual problems of professional and technological education: Experience and prospects], 11–19. UDPU imeni Pavla Tychyny, [in Ukrainian].

Druzenhenko, R. S. (2016). Teoretychne obgruntuvannia poniattia «metodychna systema navchannia» u paradyhmi movnoi pidhotovky maibutnoho vchytelia ukrainskoi movy ta literatury [Theoretical substantiation of the concept of "methodical system of teaching" in the paradigm of language training of the future teacher of Ukrainian language and literature]. *Zbirnyk naukovykh prats Umanskoho derzhavnogo pedahohichnoho universytetu* [Collection of Scientific Papers of Uman State Pedagogical University], (2), 97–105. <https://doi.org/10.31499/2307-4906.2.2016.196078>, [in Ukrainian].

Zakon Ukrainy «Pro osvitu» [Law of Ukraine «On Education»] (2017, 5 veresnia). <https://zakon.rada.gov.ua/laws/show/2145-19#Text> [in Ukrainian].

Ivanushko, O. (2022). Inzhenerna pedahohika yak teoretyko-metodolohichna osnova pidhotovky maibutnikh pedahohiv profesiinoho navchannia [Engineering pedagogy as a theoretical and methodological basis for training future teachers of professional studies]. *Profesiina pedahohika* [Professional Pedagogics], 1(24), 145–152. <https://doi.org/10.32835/2707-3092.2022.24.145-152>, [in Ukrainian].

Malafiik, I. V. (2005). *Dydaktyka: navchalnyi posibnyk* [Didactics: A study guide]. Kondor, [in Ukrainian]. https://library.nlu.edu.ua/POLN_TEXT/KNIGI/KONDOR1/DIDAKTIKA_2005.pdf

Ministerstvo osvity i nauky Ukrainy [Ministry of Education and Science of Ukraine]. (2018). *Transportni tekhnolohii (za vydamy transportu)* (Standart vyshchoi osvity, spetsialnist 275, pershyi (bakalavrskyi) riven) [Transport technologies (by types of transport) (Standard of higher education, specialty 275, first (bachelor's) level)]. <https://osvita.ua/doc/files/news/627/62782/5bd962aa64106062276834.pdf>, [in Ukrainian].

Ministerstvo osvity i nauky Ukrainy [Ministry of Education and Science of Ukraine]. (2024). *Transportni tekhnolohii (za vydamy)* (Standart vyshchoi osvity, spetsialnist 275, tretii (osvitno-naukovyi) riven) [Transport technologies (by types) (Standard of higher education, specialty 275, third (educational and scientific) level)]. <https://mon.gov.ua/static-objects/mon/uploads/public/674/ee5/a60/674ee5a60f116234745752.pdf>, [in Ukrainian].

Nychkalo, N.H. (Red.). (2000). *Profesiina osvita: Slovnyk* [Vocational education: Dictionary]. Vyshcha shkola, [in Ukrainian].

Postanova Kabinetu ministriv Ukrainy «Pro zatverdzhennia Natsionalnoi ramky kvalifikatsii» (2011) [Decree of the Cabinet of Ministers of Ukraine “On the Approval of the National Qualification Framework” (2011)]. <https://zakon.rada.gov.ua/laws/show/1341-2011-%D0%BF#Text>, [in Ukrainian].

Potapiuk, L. M. (2018). Teoretychni aspekty kompetentnisnoho pidkhodu v konteksti profesiinoi pidhotovky fakhivtsiv inzhenerno-pedahohichnoho profilu [Theoretical aspects of competency approach in the context of professional training of specialists in engineering and pedagogical profile]. *Visnyk Universytetu imeni Alfreda Nobelia. Seriya «Pedahohika i psykholohiia». Pedahohichni nauky* [Bulletin of Alfred Nobel University. Series: Pedagogy and Psychology. Pedagogical Sciences], 1(15), 180–185. <https://doi.org/10.32342/2522-4115-2018-0-15-180-185>, [in Ukrainian].

Rashkevych, Yu. M., & Semyhina, T. V. (2025). Yevropeiska intehtratsiia v profesiinii osviti: Imperatyvy dlia Ukrainy [European integration in vocational education: imperatives for Ukraine]. *Osvitnia analityka Ukrainy* [Educational analytics of Ukraine], 1(33), 43–57. <https://doi.org/10.32987/2617-8532-2025-1-43-57>, [in Ukrainian].

Rozporiadzhennia Kabinetu Ministriv Ukrainy «Pro skhvalennia Kontseptsii rozvytku tsyfrovyykh kompetentnostei ta zatverdzhennia planu zakhodiv z yii realizatsii» (2021, 3 bereznia) [Order of the Cabinet of Ministers of Ukraine “On approval of the Concept of Digital Competence Development and approval of the action plan for its implementation” (2021, March 3)]. <https://zakon.rada.gov.ua/laws/show/167-2021-%D1%80#Textkmu>, [in Ukrainian].

Tymkiv, N. M. (2020). Inzhenerna pedahohika yak subdystsyplina pedahohichnoi nauky [Engineering Pedagogics as a Subdiscipline of Pedagogical Science]. *Naukovi zapysky. Rozdil: pedahohichni nauky*

[Scientific notes. Section: pedagogical sciences], (147), 174–181. <https://doi.org/10.31392/NZ-npu-147.2020.22>, [in Ukrainian].

Yahupov, V. V. (2002). *Pedahohika [Pedagogy]*. Lybid. https://eduknigi.com/ped_view.php?id=67, [in Ukrainian].

Annema, J. A. (2023). Transport technology. In *The transport system and transport policy*. TU Delft / TRAIL, [in English].

Bologna Working Group on Qualifications Frameworks. (2005, February). *A framework for qualifications of the European Higher Education Area*. Ministry of Science, Technology and Innovation. https://ehea.info/media.ehea.info/file/WG_Frameworks_qualification/71/0/050218_QF_EHEA_580710.pdf, [in English].

Britannica Editors. (2026, January 10). *Transportation technology*. Britannica. <https://www.britannica.com/technology/transportation-technology>, [in English].

Button, K. J., & Hensher, D. A. (Eds.). (2001). *Handbook of transport systems and traffic control*. Pergamon, [in English].

Council of the European Union. (2017). Council Recommendation of 22 May 2017 on the European Qualifications Framework for lifelong learning (2017/C 189/03). *Official Journal of the European Union*. [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32017H0615\(01\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32017H0615(01)), [in English].

Eurostat, International Transport Forum (OECD), & United Nations Economic Commission for Europe. (2019). *Glossary for transport statistics* (5th ed.). Publications Office of the European Union. <https://doi.org/10.2785/675927>, [in English].

OECD. (2023). *OECD digital education outlook 2023: Towards an effective digital education ecosystem*. OECD Publishing. <https://doi.org/10.1787/c74f03de-en>, [in English].

Redecker, C., & Punie, Y. (2017). *European framework for the digital competence of educators: DigCompEdu* (EUR 28775 EN). Publications Office of the European Union. <https://doi.org/10.2760/159770>, [in English].

UNESCO. (2024). *Six pillars for the digital transformation of education: A common framework* (ED2024/WS/23 Rev.). <https://unesdoc.unesco.org/ark:/48223/pf0000391299>, [in English].

United Nations Economic and Social Commission for Asia and the Pacific. (2019). *Sustainable transport and digitalization*. UN, [in English].

United Nations Economic and Social Commission for Asia and the Pacific. (2024). *Digitalization of transport*. UN, [in English].

Vickerman, R. (Ed.). (2021). *International encyclopedia of transportation*. Elsevier. <https://shop.elsevier.com/books/international-encyclopedia-of-transportation/vickerman/978-0-08-102671-7>, [in English].

ПРОФЕСІЙНА ПІДГОТОВКА МАЙБУТНІХ БАКАЛАВРІВ З ТРАНСПОРТНИХ ТЕХНОЛОГІЙ: ТЕРМІНОЛОГІЧНИЙ ДИСКУРС

Ірина Лебідь

кандидат технічних наук, професор, професор кафедри міжнародних перевезень та митного контролю Національного транспортного університету, <https://orcid.org/0000-0003-0707-4179>,
Researcher ID: GPF-8996-2022, i.h.lebed@gmail.com

Реферат:

Актуальність: потреба уніфікації термінологічного апарату професійної підготовки бакалаврів з транспортних технологій зумовлена необхідністю узгодженого тлумачення ключових понять і модернізації освітніх стандартів та програм відповідно до європейської (EQF) та Національної (НРК) рамок кваліфікацій.

Мета – теоретично обґрунтувати та уніфікувати базові поняття термінологічного поля професійної підготовки («фахова підготовка», «професійна компетентність», «методична система», «інженерна педагогіка», «цифрова освіта», «транспортні технології») та виявити розриви між нормативними вимогами й освітньою практикою у технічних ЗВО.

Методи: інтерпретаційний і контент-аналіз нормативних документів, порівняльний аналіз словникових та енциклопедичних джерел, напівструктуровані інтерв'ю зі здобувачами освіти, викладачами і роботодавцями.

Результати: сформовано структуровану схему термінологічного поля з центральним ядром «фахова підготовка» та пов'язаними поняттями; виявлено розрив між компетентнісними вимогами EQF/НРК (знання – уміння – комунікація – відповідальність – автономність) і редукованими уявленнями стейкхолдерів («знання+навички»); запропоновано узгоджені з європейськими й національними підходами робочі дефініції ключових термінів.

Висновки: обґрунтовано необхідність уніфікації термінологічного поля підготовки бакалаврів зі спеціальності 275 Транспортні технології (за видами транспорту) та його гармонізації з EQF/НРК; виявлені розриви між нормативними вимогами та уявленнями стейкхолдерів підтверджують потребу посилення в освітніх програмах компонентів автономності, відповідальності, професійної комунікації та трансверсальних умінь.

Ключові слова: фахова підготовка, професійна компетентність, методична система, інженерна педагогіка, цифрова освіта, технічна освіта, транспортні технології.

Manuscript received	18.06.2025
Accepted for publication after peer review	02.11.2025
Published	27.11.2025



A TRAUMA-FOCUSED APPROACH TO TEACHER EDUCATION AMIDST GLOBAL CHALLENGES

Larysa Didkovska

Candidate of Psychological Sciences, Professor, Rector of the Ukrainian Free University (Germany)
<https://orcid.org/0000-0003-4462-1135>, e-mail: didkovska@gmail.com

Abstract

Relevance The contemporary educational landscape operates within a "traumatic epidemic" precipitated by warfare, migration crises, and global social turbulence. Traditional pedagogical methodologies are losing efficacy due to the widespread psychological impact on learners, necessitating a transformation of the educator's role from a mere transmitter of knowledge into a "resource leader." The demand for professionals capable of supporting learners through crisis experiences underscores the need for a scientific substantiation of the trauma-focused approach as a nascent philosophy for higher education.

Aim. This study aims to theoretically substantiate and elucidate the essence of the trauma-focused approach in teacher education, develop a three-level implementation model, and delineate the methodological foundations for its integration into the higher education process.

Methods. The research employs an analysis of scientific literature in the fields of trauma neuropsychology and humanistic pedagogy; a reflexive analysis of the author's managerial experience at the Ukrainian Free University; a modeling method to design the professional training structure; and theoretical synthesis to formulate the "guild training" methodology and transgenerational continuity.

Results. The study elucidates the substance of the trauma-focused approach, which prioritizes psychological safety and the concept of "vector competence." It identifies several foundational principles for training, including "Love and Boundaries," horizontal communication ("I'm OK – You're OK"), the prevention of retraumatization, and fundamentality. The analysis substantiates a three-level implementation model comprising a foundation (axiology and ethics), a process (the "Love and Boundaries" model), and an existential dimension (the cultivation of self-efficacy and a life-affirming outlook). Furthermore, the paper delineates an implementation methodology that incorporates stages of decompression, the delegation of responsibility, the construction of a transgenerational bridge, and existential reflection. Finally, the results demonstrate that while artificial intelligence serves as an auxiliary tool, it cannot replicate the "containment" effect or the depth of authentic human relationships.

Conclusions. The trauma-focused approach enables the preparation of professionals capable of transforming traumatic experiences into post-traumatic growth. The proposed model facilitates the development of competitive educators who integrate technological literacy with profound empathy and ethical responsibility. Ultimately, implementing this methodology in Ukraine establishes the prerequisites for formulating new global standards in humanistic and resilient pedagogy.

Keywords: trauma-focused approach, educator, resource leader, post-traumatic growth, model, self-efficacy.

Introduction. The contemporary architecture of global education is undergoing a profound transformation, precipitated not only by digitalisation and technological leaps but also by an unprecedented surge in psychotraumatic factors. Warfare, social instability, and global crises shape a

new reality in which the educator ceases to be a mere transmitter of knowledge. Within vocational and higher education institutions, there is an urgent demand for specialists capable of operating under conditions of "high psychological tension." This necessitates the implementation of a trauma-focused

approach that integrates psychological advancements into pedagogical practice, thereby creating a safe and supportive educational environment.

Traditional teacher education models often focus on didactic methods, frequently ignoring the emotional state of both the lecturer and the student. However, the disconnect between psychology and pedagogy leads to the emergence of "pseudo-competence" – a situation where the specialist possesses the toolkit but lacks the internal resource for an ethical and empathetic relationship with the world. The problem lies in the absence of systemic methodologies that would allow the educator to combine "Love and Boundaries" (educational limits) when working with traumatised communities while maintaining their own professional resilience.

Developing a trauma-focused approach is directly linked to the strategic tasks of modernising vocational education in Ukraine. This includes: fostering resource leadership; ensuring psychological support within the educational process; and preparing future specialists for work in post-war recovery conditions.

The experience of the Ukrainian Free University (Munich) (hereafter: UFU), which combines European democratic traditions with a deep understanding of the Ukrainian socio-cultural context, offers a unique model of "resource leadership" where professional training is grounded in the principles of tolerance for the "otherness of the other" and a democratic relationship with the world.

Sources. A qualitative analysis of contemporary scientific literature indicates that preparing educators for work amidst global challenges requires a fundamental revision of environmental and substantive factors of learning. The author's concept is based on the integration of several key scientific directions. One of these is the ecological approach to the educational environment (Priestley et al., 2015), according to which pedagogical efficacy is determined not only by the educator's individual qualities but by the "ecology" of the environment – a dynamic set of structural and cultural resources. In the context of the Ukrainian Free University (UFU) experience, this allows for treating the university as an ecosystem where a democratic relationship with the world serves as a

resource for overcoming professional burnout and pseudo-competence.

Trauma-focused educational strategies (Trauma-Informed Practices) constitute an essential theoretical foundation for this study. Certain works (Brunzell et al., 2016; Carello, & Butler, 2015) emphasize that in crisis conditions, traditional didactics must be reinforced by emotional regulation strategies. Substantiating the need for "learning to be happy" as a cognitive skill correlates with the idea of the inextricable link between psychology and pedagogy. This aspect is further deepened through the study of professional resilience and the prevention of secondary traumatising of the educator (Crosby, 2015; Overstreet & Chafouleas, 2016).

H. Romanova (2025b) systematically analysed the educational design of UFU pedagogical studies, proving the significance of the university's experience for the development of Ukrainian pedagogy amidst European integration and multiculturalism. In turn, another article by the same author, dedicated to teacher agency, focuses on the preparation of self-efficacious educators capable of career counselling and psycho-pedagogical support under wartime conditions.

Issues of ethical responsibility and the humanistic values of the educator are examined through the lens of the "pedagogy of care" (Noddings, 2013) and the theory of social-emotional learning (Zins et al., 2004). Utilising interdisciplinary approaches to trauma-focused pedagogy (Stephens, 2016) allows for expanding the educator's toolkit beyond classical methodology. Despite this thorough foundation, questions remain regarding the direct integration of trauma-focused approaches into the methodology of teaching specialized disciplines within the system of higher pedagogical education. The problem of maintaining "live" ethical contact amidst digital transformation and the mechanism for transforming collective trauma into a resource for professional growth still requires resolution.

Aim. The aim of this article is to theoretically substantiate and elucidate the conceptual foundations of the trauma-focused approach in teacher education based on the experience of the Ukrainian Free University; it also analyzes the interconnection between professional competence, ethical responsibility, and the

educator's "resourcefulness" amidst global transformations.

Methods. The study utilizes the following methods: examining scientific sources, policy, and educational-methodological documents of the Ukrainian Free University, as well as professional publications in trauma-focused psychology and vocational pedagogy – to theoretically substantiate the "resource leadership" concept and identify the state of professional competence in crisis conditions. Reflexive analysis and interpretation of the author's university management, teaching, and psychotherapeutic practice – to conceptualise the models of "democratic relationship" and "Love and Boundaries" within the educational process. Theoretical analysis, synthesis, and generalization – to determine the key characteristics of UFU pedagogical studies and formulate conclusions regarding the implementation of trauma-focused approaches into the vocational education system of Ukraine.

Results and Discussion. The contemporary educational landscape in Ukraine and globally exists in a state of "traumatic epidemic." As the eminent surgeon M. Pirogov once noted, war is not only a physical injury but also a massive psychological affliction affecting all layers of the population. Under these conditions, teacher education is transformed: the educator ceases to be a mere transmitter of knowledge and becomes a "resource leader" capable of supporting learners through the experiences of crisis, migration, and loss. A trauma-focused approach in higher education is a response to the challenges of our time, where the synergy between psychology and pedagogy becomes the foundation for national survival and development.

The essence of the trauma-focused approach in education lies in recognizing the priority of psychological safety and emotional resilience as a prerequisite for any cognitive process. We view trauma not as a clinical pathology but as an extreme life experience requiring integration into the holistic structure of the personality. The approach is grounded in the concept of "vector competence," where pedagogical mastery is inseparable from deep psychological knowledge. This enables the specialist to differentiate between a state of "traumatic regression" – when an individual, under the influence of destructive events, returns to archaic

defense mechanisms and a sense of helplessness regarding mortality (Yalom, 1980) – and a state of "post-traumatic growth." The latter concept proves that, with appropriate support, overcoming a crisis can make an individual qualitatively stronger, expanding their range of values and resources (Tedeschi, & Calhoun, 2004).

The trauma-focused approach is based on modern neurobiological data regarding brain neuroplasticity, which allows the nervous system to recover even after severe experiences (Doidge, 2007). However, trauma creates specific "disruptions" in the cognitive perception of the world. When working under martial law, the educator must realize they are interacting with "people in the fire," whose experiences often exceed their internal resources. In this context, the essence of the approach shifts from classical didactics to the ethics of responsibility and containment (Bion, 1962). The educator's authority over the audience must be balanced by a readiness to accept and process students' anxiety, creating a "secure base" (Bowlby, 1988) that restores faith in the safety of the world.

Implementing the trauma-focused approach in teacher education is grounded in several foundational principles that ensure the integrity of the educational process in crisis conditions. Primarily, the "Love and Boundaries" principle involves a harmonious combination of unconditional support for the learner with clear boundaries of responsibility, where the Boundary is viewed not as a tool for personal suppression but as a necessary guarantor of social and psychological safety. An essential component is the principle of a democratic horizontal relationship, which entails moving away from rigid vertical hierarchies in favour of a humanistic "I'm OK – You're OK" position, stimulating tolerance for the "otherness of the other" and a deep respect for each individual's right to their identity.

Special attention is required for the principle of preventing retraumatisation, which demands a deep understanding of contextual sensitivity from the educator and an awareness that phrases common in peacetime can become painful triggers for a child or student with experience of loss (for example, the innocuous peacetime phrase "ask your father" may trigger a child who has lost family members).

This system concludes with the principle of fundamentality, aimed at building innovative teaching methods upon a solid humanitarian foundation of morality, ethics, and tradition, which serves as a reliable safeguard against the formation of "pseudo-competence" in future specialists.

The model for implementing the trauma-focused approach in teacher education is structured as a three-level system:

1. The Fundamental Level – internalising ethical norms and "traditional" pedagogy (basic concepts of good, evil, and responsibility).

2. The Processual Level – implementing the "Love and Boundaries" model through horizontal communication.

3. The Existential Level – cultivating self-efficacy as the ability to be happy despite circumstances ("It is never too late to have a happy childhood").

The model constitutes a holistic architecture, where each subsequent stage is logically built upon the strength of the previous one. The first and foundational stage of this system is the fundamental level, responsible for forming the individual's axiological basis. In times of global social fractures, when trauma disrupts usual semantic connections, education must return to the study of fundamental ethical categories. This involves internalising basic concepts of good, evil, and personal responsibility. This is the "humanitarian concrete" that prevents a specialist from turning into a mere function or falling victim to pseudo-competence. At this level, we appeal to traditional pedagogy as a resource for stability, where the educator acts as a bearer of enduring values that help the student regain a sense of predictability and moral support in a destructive world.

The second level of the model is defined as processual and focuses on the methodology of live interaction. Its core is the "Love and Boundaries" formula, realized through horizontal communication. Love in this context is interpreted as creating a secure base and a psychological container for the student's anxiety (Bion, 1962). The educator demonstrates unconditional respect for the experience of the other, providing emotional acceptance according to J. Bowlby's (1988) methodology, without which no intellectual activity is possible following experienced stress. Meanwhile, the Boundary serves as a tool for structuring and delegating responsibility. It creates a

safe perimeter with clear rules and requirements that prevent the chaos of permissiveness. This approach is based on an egalitarian relationship where the pedagogue recognizes the student's autonomy, avoiding vertical pressure or superiority, which is critical for preventing retraumatization within the educational process.

The final and most strategic level is the existential level, the goal of which is to foster the specialist's self-efficacy. This is the individual's ability to be autonomous and find resources for a fulfilling life despite any external circumstances. At this stage, we teach students strategies for transitioning from passive survival to active creation of their own destiny, which correlates with R. Tedeschi and L. Calhoun's (2004) theory of post-traumatic growth. Central here is the idea that the past should not dominate the future, following the principles of I. Yalom's (1980) existential therapy. The concept of happiness as a conscious choice and the assertion that it is never too late to have a happy childhood encourage the adult to independently address their deficits and reframe traumatic experiences. Thus, the model concludes with the preparation of a resource leader who not only possesses professional knowledge but also radiates internal harmony and resilience, becoming a living example of successful trauma integration for their future students.

The methodological foundations for implementing the trauma-focused approach in practical teacher training involve a comprehensive transformation of the content, methods, and organisational forms of learning. The content of professional training is revised in favour of deep interdisciplinarity, allowing for the combination of psychotherapeutic techniques with pedagogical practice. A prime example is the integration of special courses on psychological assistance for PTSD into the curricula not only for psychologists but also for future educators and managers. This ensures the substantive enrichment of education with knowledge of micro-motor skills, developmental psychology, and the laws of social interaction, which serve as a foundation for overcoming stress in professional activities.

The methodological system is based on reflexive practice and the methodology of guild training. In this format, experience is transferred from master to student not through abstract theory, but through the direct resolution of professional cases and

joint volunteer activity. Training forms here depart from rigidly determined academic groups in favour of the Western model of free elective choice. This approach stimulates the development of soft skills and networking, where socio-pedagogical volunteering becomes the key form of learning. Participation in real initiatives, such as the "Grunt" refugee support project (Ukrainian Free University, 2023), allows students to instantly convert theoretical knowledge into an effective tool for assistance.

The technological component of the trauma-focused approach involves a critical assessment of innovations, particularly artificial intelligence. AI is viewed as an effective auxiliary tool for knowledge algorithmisation; however, emphasis is placed on its inability to replace the warm human relationship that is critical in trauma work. Methodologically, this is realized by creating safe zones within the educational process, where future educators have the opportunity to process their own traumatic experiences within the university's therapeutic environment before beginning professional work with others.

The direct methodology for introducing this approach into higher education involves a phased transformation of professional consciousness. At the decompression and initiation stage, the recognition of one's own vulnerability and the path of self-healing through regular supervision take place. The next stage – the delegation of responsibility – rejects the concept of over-protection inherent in pseudo-competent education and implements an initiation methodology by assigning students real, complex tasks requiring volitional effort.

An important methodological element is the construction of a transgenerational bridge, which involves engaging the experience of master craftsmen with many years of tenure. This creates a sense of institutional continuity and safety, based on the principle of the educational institution's historical duration and resilience. The methodology concludes with the stage of existential reflection, during which students form their own resource package – an individual system of resilience strategies that ensures their competitiveness and ability to function effectively amidst global challenges.

Consequently, the trauma-focused approach in teacher education represents a new philosophy of education. It is based on the understanding that the teacher's "authority" is a tool of salvation only when

it is combined with "responsibility." The graduate of such a system is a resource leader who understands that the new is often the well-renewed old, and that true competence is forged by the ability to remain human in superhuman circumstances. Implementing this model allows Ukraine not only to survive in crisis conditions but also to set new global standards for humanistic and resilient pedagogy.

Conclusions. Under the conditions of the modern "traumatic epidemic," the trauma-focused approach emerges not merely as a collection of psychological methods but as a holistic philosophy for the transformation of higher pedagogical education. The essence of this approach lies in changing the fundamental role of the educator, who transforms from a transmitter of knowledge into a resource leader capable of ensuring psychological safety and emotional resilience as a mandatory prerequisite for any cognitive process. At the core of this vision lies the concept of vector competence, where trauma is viewed not as a clinical pathology but as an extreme life experience, the integration of which through professional containment and brain neuroplasticity allows for the achievement of post-traumatic growth.

The efficacy of implementing this approach is grounded in principles that define the ethical and professional contours of the educator's activity. Crucial here is the "Love and Boundaries" principle, where unconditional support for the student is combined with clear boundaries of responsibility, creating a secure base for development. This is supplemented by the principle of a democratic horizontal relationship based on the "I'm OK – You're OK" model, the prevention of retraumatisation through sensitivity to triggers, and the principle of fundamentality. The latter involves building innovations upon a solid humanitarian foundation of ethics and tradition, which acts as the primary safeguard against pseudo-competence and allows for combining technological literacy, including the use of artificial intelligence, with authentic humanity.

The aforementioned principles are embodied in a three-level model for implementing the trauma-focused approach, which constitutes a holistic architecture for professional training. The model's fundamental level ensures the formation of an axiological basis through the internalisation of ethical norms; the processual level is responsible for

the methodology of live interaction and secure relationships; and the existential level is aimed at fostering self-efficacy and the ability to be happy despite external circumstances. Each stage of this model logically reinforces the next, transforming the educational process into a space for restoring agency and life-affirmation.

The methodological foundations for implementing this model in practice involve deep interdisciplinarity of content, the introduction of reflexive guild training practices, and the development of socio-pedagogical volunteering.

The methodology for introducing the approach into higher education is phased: from the decompression and self-healing of the educator through supervision to the construction of a transgenerational bridge between experienced masters and students. The final result of such training is the formation of an individual resource package of resilience, allowing the graduate not only to survive in crisis conditions but also to set new standards for humanistic pedagogy, where the teacher's authority is inextricably linked to their ethical responsibility and capacity for empathy.

List of references

- Bion, W. R. (1962). *Learning from experience*. Heinemann. <https://archive.org/details/learningfromexpe0000bion>
- Bowlby, J. (1988). *A secure base: Parent-child attachment and healthy human development*. Basic Books. [https://www.increaseproject.eu/images/DOWNLOADS/IO2/HU/CURR_M4-A13_Bowlby_\(EN-only\)_20170920_HU_final.pdf](https://www.increaseproject.eu/images/DOWNLOADS/IO2/HU/CURR_M4-A13_Bowlby_(EN-only)_20170920_HU_final.pdf)
- Brunzell, T., Stokes, H., & Waters, L. (2016). Trauma-informed positive education: Using positive psychology to strengthen vulnerable students. *Contemporary School Psychology*, 20(1), 63–83. <https://doi.org/10.1007/s40688-015-0070-x>
- Carello, J., & Butler, L. D. (2015). Practicing what we teach: Trauma-informed educational practice. *Journal of Teaching in Social Work*, 35(3), 262–278. <https://doi.org/10.1080/08841233.2015.1030059>
- Crosby, S. D. (2015). An ecological perspective on emerging trauma-informed teaching practices. *Children & Schools*, 37(4), 223–230. <https://doi.org/10.1093/cs/cdv027>
- Doidge, N. (2007). *The brain that changes itself*. Viking. <https://yurttutan.info/wp-content/uploads/2017/12/Doidge-Brain-Changes-Itself.pdf>
- Noddings, N. (2013). *Caring: A relational approach to ethics and moral education*. University of California Press. https://www.jstor.org/stable/10.1525/j.ctt7zw1nb?turn_away=true
- Overstreet, S., & Chafouleas, S. M. (2016). Trauma-informed schools: Introduction to the special issue. *School Mental Health*, 8(1), 1–6. <https://doi.org/10.1007/s12310-016-9184-1>
- Priestley, M., Biesta, G., & Robinson, S. (2015). *Teacher agency: An ecological approach*. Bloomsbury Academic. <https://dokumen.pub/teacher-agency-an-ecological-approach-9781472534668-9781474219426-9781472525871.html>
- Romanova, G. (2025a). Analysis of the educational design of pedagogical studies at the Ukrainian Free University. *Professional Pedagogy*, 1(30), 3–24. <https://profped.uipa.edu.ua/index.php/journal>
- Romanova, G. (2025b). Agency of teachers in the system of career counseling and psycho-pedagogical support. *Innovative Pedagogy*, 4(25), 384–388. <http://www.innovativepedagogy.od.ua/>
- Stephens, D. W. (2020). Trauma-informed pedagogy for the religious and theological higher education classroom. *Religions*, 11(9), 449. <https://doi.org/10.3390/rel11090449>
- Tedeschi, R. G., & Calhoun, L. G. (2004). Posttraumatic growth: Conceptual foundations and empirical evidence. *Psychological Inquiry*, 15(1), 1–18. https://doi.org/10.1207/s15327965pli1501_01
- Ukrainian Free University. (2023). *Official website of the Ukrainian Free University in Munich*. <https://ufu-muenchen.de/>
- Yalom, I. D. (1980). *Existential psychotherapy*. Basic Books. <https://archive.org/details/existentialpsych00yalo>
- Zins, J. E., Weissberg, R. P., Wang, M. C., & Walberg, H. J. (2004). *Building academic success on social and emotional learning*. Teachers College Press. https://www.researchgate.net/profile/John-Pellitteri/publication/247498855_Building_Academic_Success_on_Social_and_Emotional_Learning_What_

ТРАВМОФОКУСНИЙ ПІДХІД ДО ПІДГОТОВКИ ПЕДАГОГІВ В УМОВАХ ГЛОБАЛЬНИХ ВИКЛИКІВ

Лариса Дідковська

кандидат психологічних наук, професор, ректор Українського вільного університету (Німеччина),
<https://orcid.org/0000-0003-4462-1135>, e-mail: didkovska@gmail.com

Реферат:

Актуальність. Сучасний освітній простір функціонує в умовах «травматичної епідемії», спричиненої війною, міграційними кризами та глобальною соціальною турбулентністю. Традиційні педагогічні методи втрачають ефективність через масове психологічне ураження суб'єктів навчання, що вимагає трансформації ролі педагога з ретранслятора знань у «ресурсного лідера». Потреба у фахівцях, здатних супроводжувати здобувачів через досвід кризи, зумовлює необхідність наукового обґрунтування травмофокусного підходу як нової філософії вищої освіти.

Мета: теоретично обґрунтувати та розкрити сутність травмофокусного підходу у підготовці педагогів, розробити трирівневу модель його реалізації та описати методичні засади її впровадження в освітній процес вищої школи.

Методи: аналіз наукових джерел у галузі нейропсихології травми та гуманістичної педагогіки; рефлексивний аналіз авторського досвіду управління Українським вільним університетом; метод моделювання – для розробки структури підготовки фахівців; теоретичний синтез – для формування методики «цехового навчання» та трансгенераційної наступності.

Результати: розкрито зміст травмофокусного підходу, що базується на пріоритеті психологічної безпеки та концепції «векторної компетентності»; визначено засадничі принципи підготовки: «Любові та Рамки», горизонтальної комунікації («Я – окей, Ти – окей»), превенції ретравматизації та фундаментальності; обґрунтовано трирівневу модель реалізації підходу: фундамент (аксіологія та етика), процес (модель «Любов і Рамка») та екзистенція (формування самозарадності й життєствердності); описано методику впровадження, що включає етапи декомпресії, делегування відповідальності, побудови трансгенераційного мосту та екзистенційної рефлексії; доведено, що використання штучного інтелекту є допоміжним інструментом, який не може замінити ефект «контейнування» та живий людський стосунок.

Висновки: травмофокусний підхід дозволяє готувати фахівців, здатних трансформувати травматичний досвід у посттравматичне зростання; запропонована модель забезпечує підготовку конкурентоспроможного педагога, який поєднує технологічну грамотність із глибокою емпатією та етичною відповідальністю; реалізація цієї методики в Україні створює передумови для формування нових світових стандартів гуманістичної та життєстійкої педагогіки.

Ключові слова: травмофокусний підхід, педагог, ресурсний лідер, посттравматичне зростання, модель, самозарадність.

Manuscript received	19.06.2025
Accepted for publication after peer review	31.10.2025
Published	04.12.2025



EXPERIENCE IN DEVELOPING THE PROJECT COMPETENCE OF FUTURE ENVIRONMENT DESIGN SPECIALISTS IN HIGHER EDUCATION INSTITUTIONS OF UKRAINE AND ABROAD

Maksym Maksymov

PhD Student of the Institute of Vocational Education of NAES of Ukraine, <https://orcid.org/0009-0001-1332-1570>, e-mail: m.b.maksymov@gmail.com

Abstract

Relevance Within the framework of European integration, the societal value of design as a vital element of the national revival of the Ukrainian state is intensifying; shifts in urban renovation standards for spaces and city infrastructure necessitate an increasing demand for qualified environment designers who possess advanced professional competence, spatial-volumetric thinking, theoretical knowledge, and practical skills; consequently, the need to identify innovative strategies for ensuring the quality of professional training for environment design specialists in Higher Education Institutions (HEIs) arises, alongside incorporating their positive attributes to enhance the design education system in Ukraine.

Purpose: The study aims to conduct a theoretical and comparative analysis of "Environment Design" educational programmes at leading HEIs in Ukraine and abroad; furthermore, based on the findings, it identifies the specificities of practical experience in developing the project competence of future environment design specialists.

Methods: Theoretical analysis and synthesis were employed to investigate HEI educational programmes; a systemic-structural approach helped identify the interconnections between curricula and their educational components targeted at developing the project competence of future environment designers; finally, a comparative analysis served to distinguish specific features of professional training for these specialists in both Ukrainian and foreign HEIs, which influence their project competence development levels within the educational process.

Results: Based on the analysis of educational programmes (EPs) from domestic HEIs and leading global universities, the study identifies and evaluates the characteristics of project competence development; the findings reveal that the domestic model emphasises the integration of artistic disciplines with the core "Projecting" course, whereas international programmes demonstrate a deeper implementation of project-based learning principles, sustainable design, digital tools, and communication.

Conclusions: The development of project competence in future environment designers constitutes a dynamic process; a key distinction of foreign programmes is a higher degree of student engagement in authentic collaboration with industry and communities; for Ukrainian education, updating teaching and methodological resources and monitoring the development levels of students' project competence appears highly promising.

Keywords: professional training, project activities, environment design, projecting, project competence of environment design specialists.

Introduction. The contemporary world is characterised by global challenges: socio-economic and political transformations, ecology and climate change, urbanisation, and the rapid development of

digital technologies. These factors drive an increasing demand for specialists with advanced project competence, who possess profound theoretical knowledge, practical skills, and the

capacity to solve complex environment design problems.

Scholarly interest focuses on fostering a conducive educational environment and pedagogical conditions within specific higher education institutions; this interest partially highlights the content of educational programmes in general and their individual components in particular, teaching staff activities, and student project activities, where learning opportunities and tools must fully comply with contemporary requirements and the programme objectives of training specialists in the "B2 Design" field. Project-Based Learning (PBL) represents a contemporary pedagogical approach where the educational process is organised through students' execution of relevant complex projects aimed at solving real-world or practice-oriented problems, integrating knowledge, and developing critical thinking, autonomy, and teamwork skills.

Sources. To achieve robust conclusions regarding the state of project competence development among future environment design specialists in leading HEIs of Ukraine and abroad, the study analysed two groups of sources. The first group encompassed scholarly research by Ukrainian and foreign academics concerning educational systems in Ukraine, European countries, and the USA. Specifically, the characteristics of higher education organisation in the EU are described in the work "Educational Systems of European Union Countries: General Characteristics" by S. Sysoieva and T. Krystopchuk (2012), while the specificities of higher education organisation in the USA are detailed in the works of L. Knodel (2012). Furthermore, G. Poberezska (2005) conducted a theoretical analysis of higher education development in Europe and Ukraine in the dissertation study "Trends in Higher Education Development in Western European Countries and Ukraine". The monograph edited by V. Radkevych, "Modern Models of Vocational Education and Training in EU Countries: Comparative Experience" (2018), highlights the theoretical analysis of the problem of VET system development in EU countries. Notably, the monograph "Strategies for the Development of Educational Systems in Global Countries" by D. Kucherenko and O. Martyniuk (2011) examines educational systems worldwide

and their strategic planning. O. Fursa (2014), in the foundational work "Trends in the Development of Design Education in Ukraine", highlights the development and establishment of domestic design education in higher schools. Finally, the work "Higher Education Curriculum in the United States" (2023) provides an overview of training programmes and curricula in US higher education.

The second group of sources includes the First (Bachelor's) Level Higher Education Standard for the "022 Design" specialty, official HEI websites, and their educational programmes, curricula, and educational components. The theoretical analysis of these sources constitutes the initial stage of our research; this analysis aims to enhance academic staff awareness and inform their strategies for developing the project competence of environment design bachelors within the educational process, alongside providing advisory and methodological support via existing high-quality teaching and methodological materials.

Within the context of the research objectives, the study examined the experience of teaching staff in environment design departments at Ukrainian higher education institutions; analysed curricula, educational programmes, teaching and methodological support, lecture notes, and design department web pages; and involved attendance at semester and examination reviews of specialised disciplines, as well as the defence of coursework and qualification papers.

The aim of the article is to conduct a theoretical and comparative analysis of educational programmes in the "Environment Design" specialty at leading HEIs in Ukraine and abroad and to identify, based on the results obtained, the specificities of practical experience in developing the project competence of future environment design specialists.

Methods: theoretical analysis and generalisation – to examine HEI educational programmes; a systemic-structural approach – to identify the interconnection between educational programmes and their components aimed at developing the project competence of future environment designers; comparative analysis – to distinguish the specific characteristics of professional training for such specialists in both Ukraine and foreign HEIs that influence their level

of project competence development within the educational process.

Results and Discussion. Given the recognised importance of project competence and contemporary digital technologies, there is a need for a comprehensive understanding of the mechanisms for effectively developing knowledge, skills, and abilities in environment design bachelor's programmes within the context of different higher education systems. Notably, for Ukraine, which is currently in a phase of European integration and digital transformation, it is vital to analyse the current state with a subsequent comparison to international experience.

We define professional training as a process oriented towards cultivating the readiness of future environment designers for professional activity according to the Bachelor's educational level and the acquisition of relevant qualifications in higher education institutions. According to the Unified State Electronic Database on Education as of November 2025, professional training in the "B2 Design" specialty in Ukraine is conducted in 45 higher education institutions, 33 of which offer Bachelor's programmes in environment design (Registry of Educational Entities: Higher Education Institutions, 2025).

Recognised and authoritative higher education institutions in Ukraine include departments and units at the National Academy of Visual Arts and Architecture, the Kharkiv State Academy of Design and Arts, the Institute of Architecture and Design (IARD) of the Lviv Polytechnic National University, the Mykhailo Boichuk Kyiv State Academy of Decorative and Applied Arts and Design, the Kyiv National University of Culture and Arts, the Lviv National Academy of Arts, the Salvador Dali Art Academy of Contemporary Arts, as well as other artistic, technical, and pedagogical higher education institutions in Ukraine.

This translation and editorial refinement adhere to the strict 1:1 sentence mapping and structural constraints required for high-tier journal submission. British English (UK) conventions and the "Slavic-English" filter have been applied to ensure academic rigour.

Within the professional training system for future environment designers, project activities are

implemented through semester, term, and qualification projects, grounded in constructive pedagogical interaction between the educator and learners. This process employs independent, individual, and collective forms of work, facilitating the development of practical skills and fostering the project and communicative competencies of students. Executing creative tasks and addressing project-related challenges enhances motivation for design activities and stimulates the development of socially significant personal qualities, the capacity for goal setting, the search for non-standard solutions, the activation of cognitive activity, and the cultivation of research potential, alongside the refinement of organisational skills regarding workspace management.

Project activities for future environment designers focus on developing a motivational-evaluative attitude toward professional practice, enhancing project competence, creative imagination, and spatial, artistic, and figurative thinking. The emphasis within these activities lies on the analytical study of subject-spatial design projects, the cultivation of an individual authorial style, and the advancement of the capacity for creative self-expression, reflection, self-development, and the self-assessment of professional outcomes. Orienting students toward the independent execution of professional tasks and their critical analysis enhances project competence levels, which subsequently ensures the high-quality performance of design projects.

The following section examines environment design educational programmes at leading higher education institutions in Ukraine.

The National Academy of Visual Arts and Architecture (hereinafter: NAVAA) serves as one of Ukraine's premier artistic institutions, providing specialist training in environment design and architecture within the "Architecture of Buildings and Structures" educational programme. This educational programme aims to prepare highly qualified specialists capable of logical thinking, applying fundamental knowledge, and developing cutting-edge, innovative skills to solve complex specialised tasks and practical problems within the professional field of architecture and urban planning. The programme maintains a primary applied orientation and considers the current state of

the architectural sector, focusing on pertinent issues of architecture, urban planning, and the organisation of surrounding spaces. Professional training emphasises the ability to develop creative architectural solutions and the advancement of effective comprehensive skills for addressing professional challenges (NAVAA, 2025). Analysis of student qualification projects demonstrates a high level of professional training and meticulousness in selecting project themes that address a wide spectrum of contemporary societal demands.

The Kharkiv State Academy of Design and Arts (hereinafter: KSADA) is a leading Ukrainian artistic university with a long history and a recognised school for training environment designers. The "Environment Design" educational programme is implemented at the Faculty of Environment Design, which prepares Bachelors and Masters in the "B2 Design" specialty. Alongside other specialisations, the "Environment Design" programme builds upon the sixty-year experience of the Kharkiv State Academy of Design and the century-long history of the Kharkiv Art School. Professional training for environment designers at KSADA is comprehensive, integrating academic art education, contemporary digital technologies, practical work on authentic projects, and active participation in the country's creative life. Considerable attention is devoted to students acquiring knowledge and practical skills in designing specialised types of environments – including residential, public, and industrial spaces. The Academy ensures a high level of professional training, enabling graduates to remain competitive in both the Ukrainian and international labour markets (KSADA, 2023).

The Institute of Architecture and Design of Lviv Polytechnic National University (hereinafter: IARD) represents one of the largest and oldest centres for architectural and design training in Ukraine. The institute offers Bachelor's educational programmes in "Architecture and Urban Planning" and "Design" (including "Visual Design" and "Interior and Spatial Environment Design"). IARD curricula combine traditional artistic and architectural disciplines with modern approaches, actively integrating project-based learning methods and digital skills into the educational process. To ensure an individualised learning approach, students

are granted the opportunity to select educational blocks at the end of their second year. This significant choice enables future specialists to define their professional interests and priorities, allowing them to construct their own educational trajectory through elective subjects in the third and fourth years. Within the available elective blocks, students can choose a direction that best reveals their abilities and creative potential. Educators from various departments specialising in different spheres of multifaceted architectural and design education assist them in this process. Furthermore, the institute actively collaborates with international partners and offers several foreign programmes for study and internships, such as the Baltic University Programme, DAAD, Erasmus+, and NAWA (IARD, 2024).

The Mykhailo Boichuk Kyiv State Academy of Decorative and Applied Arts and Design (hereinafter: KSADAAD) is a premier Ukrainian artistic higher education institution that prepares specialists in decorative-applied arts and design, specifically environment designers. The Department of Environment Design within the Faculty of Design serves as the graduating department for this specialisation. The department prepares specialists capable of creative thinking and rapid adaptation to dynamic societal demands. Students undertake tasks related to the organisation of residential and industrial building environments, public spaces in modern urban settings, and the creation of inclusive/barrier-free environments; additionally, they engage in the creative design of emergency housing and rapidly-assembled comfortable modular homes (KSADAAD, 2024). The training of environment designers at this institution maintains a high professional standard by blending classical Ukrainian artistic traditions with contemporary design trends, thereby ensuring a sustained demand for graduates in professional markets both in Ukraine and abroad.

Kyiv National University of Culture and Arts (hereinafter: KNUCA) aims its "Environment Design" educational programme at preparing specialists capable of solving complex tasks in environment design, including the planning of interiors, landscapes, small architectural forms, furniture, and decorative finishes. The curricula focus on developing comprehensive competencies

in informational, analytical, cultural, aesthetic, functional-typological, and technological solutions for project challenges. A primary objective of the educational programme involves developing skills in working with modern software, technological equipment, and materials. The educational process focuses on adapting knowledge to real professional conditions, with students participating in national and international creative projects and competitions. Training at KNUCA maintains a comprehensive, practice-oriented character with an emphasis on modern technologies, project activities, and creative competency development, guaranteeing graduate employability in domestic and international labour markets (KNUCA, 2020).

The Department of Environment Design at the Lviv National Academy of Arts (hereinafter: LNAA) defines its learning objectives as the development of specialists capable of solving complex tasks and practical problems in environment design, characterised by multifaceted conditions and the application of specific design theories and methods. To achieve a high level of training, the "Environment Design" programme provides a fundamental theoretical component in the humanities, ensures mastery of fundamental artistic disciplines – sculpture, drawing, and painting – and offers in-depth knowledge in professional subjects such as ergonomics, building typology, construction, contemporary interior materials, colour science, and engineering networks. The programme addresses challenges not only in interior design for public and residential buildings but also in the planning of urban and local residential spaces. The primary focus of the educational programme lies in preparing specialists who possess design theory and methodology, are capable of solving pertinent professional tasks, and can generate new ideas within the context of global design trends while implementing projects in collaboration with the professional community (LNAA, 2023).

The Salvador Dali Art Academy of Contemporary Arts (hereinafter: SDAACA) is an artistic higher education institution specialising in training design professionals, particularly environment designers. Professional training aims to develop highly mobile, competitive specialists oriented toward creative self-development and career growth. The emphasis lies on the development of an

individual authorial style, creative thinking, and project culture. The training of environment designers at the academy is based on a combination of creative approaches, practical orientation, and innovative computer technologies. The academy cultivates professional creative specialists capable of succeeding in environment design, creating original projects, and adapting to modern labour market challenges (SDAACA, 2025).

Following an analysis of educational programmes at leading domestic HEIs within the professional training system for future environment designers, it is evident that project activities are implemented through semester, term, and qualification projects, grounded in constructive pedagogical interaction between the educator and students. The educational process employs independent, individual, and collective forms of work, facilitating the development of practical skills, communication, and the project competence of learners. Executing creative tasks and addressing project problems enhances motivation for design activities and stimulates the development of socially significant personal qualities, the capacity for goal setting, the search for non-standard solutions, the activation of cognitive activity, and the cultivation of research potential, alongside the refinement of organisational skills regarding workspace management.

The project activity of future environment designers is characterised by an orientation toward cultivating a motivational-value attitude toward professional activity, developing project competence, and fostering creative imagination, volumetric-spatial thinking, and artistic-figurative thinking.

The specificity of professional training within design education lies in the integration of humanitarian and vocationally oriented components of the educational process. Studying fine arts disciplines (specifically "Drawing", "Painting", "Anatomy", and "Graphic Techniques") as well as specialised training courses (such as "Composition", "Colour Science", "Typography", "Architectonics", "Bionics", "Ergonomics", "Building Typology", "Materials Science", "Morphology", "Modelling", and "Computer Graphics") remains particularly significant, among which the core profiling discipline "Projecting" occupies the leading position. In our view, this specific discipline acts as

a catalyst for developing the project competence of future environment design specialists. Consequently, reorienting the educational process from an emphasis on cognitive-perceptual aspects – the effectiveness of which is determined by the learner's intellectual and creative potential – toward the development of volumetric-spatial, visual-figurative, and associative thinking, visual memory, psychophysiological perception, and imagination appears appropriate; furthermore, this shift should prioritise cultivating the practical skills necessary for creating innovative design objects within environmental spaces.

Simultaneously, within the context of our study, the researchers analysed educational programmes from leading universities in Poland, Germany, Sweden, Norway, Finland, the United Kingdom, and the USA offered at the first (Bachelor's) level in environment design, interior design, landscape architecture, or related fields. The analysis encompassed the structure of educational programmes, the emphasis on project-based learning, the integration of digital technologies, and, primarily, the specific characteristics of project competence development in future environment designers.

Leading international educational programmes in environment design within foreign educational institutions warrant detailed consideration.

Higher education institutions in Poland, such as SWPS University (Faculty of Design, School of Form), the University of Warsaw (Spatial Planning), Warsaw University of Technology (Architecture), Gdańsk University of Technology (Spatial Development), Cracow University of Technology (Spatial Management), and the International European University (Interior Design), actively combine project-based learning and modern digital technologies with the long-standing traditions of European education (Bachelors degrees in design studies in Poland, 2025; IEU. School of architecture and engineering: Environmental design, n.d.).

Educational programmes focus on mastering practical skills and a multidisciplinary approach with an emphasis on social design and the revitalisation of the historical environment, preserving local cultural identity, and the harmonious integration of new objects into the existing urban context. Learners participate in

authentic projects, learning from experienced specialists and collaborating with colleagues, business representatives, and the public.

Project-based learning in the professional education of German universities, building upon the legacy of prominent design schools such as the Weimar Bauhaus State School of Industrial Arts and the Ulm School of Design, is regarded as a systemic, structured approach to developing the competencies of future specialists who perceive their task as the organisation of the human environment. Notably, Bauhaus University Weimar offers a Bachelor's programme in architecture lasting six semesters, traditionally characterised by a creative and functional approach to architecture, engineering solutions, and aesthetics. Project management plays a crucial role in ensuring quality assurance, cost control, and adherence to deadlines in construction (Bauhaus. Faculty of Civil and Environmental Engineering, 2025).

Swedish universities, particularly Linnaeus University (educational programmes "Design and Change" and "Bachelor of Fine Arts in Visual Communication"), actively position design as a tool for achieving sustainability and social change through the rational use of natural resources. Digital methods and projecting tools form part of the curriculum, complemented by a persistent emphasis on implementing real-world projects, often in collaboration with local and regional enterprises, organisations, and communities (Design and change: Bachelor's programme (Linnaeus University, 2025).

The Norwegian University of Science and Technology (NTNU), one of Norway's leading universities, offers a wide range of programmes in architecture, urban planning, graphic design, and environment design. NTNU emphasises "learning by doing", encouraging learners toward activity and research while maintaining a careful attitude toward nature. Interdisciplinary collaboration exists between architecture and civil engineering students, including "Design-Build-Test" (DBT) projects (NTNU. About the Faculty of Architecture and Design, 2025).

Finnish universities, such as LAB University of Applied Sciences (Sustainable Construction Technology, Sustainable Solutions Engineering, Sustainable Design Business) and Häme University

of Applied Sciences (HAMK) (Smart and Sustainable Design), distinguish themselves by focusing on sustainability, the circular economy, and the "Sustainable Design Business" concept, where design is viewed through the prism of business models and environmental responsibility. Instruction includes the use of digital tools and software, focusing on a practice-oriented approach and project experience (Sustainable design bachelor's degrees in Finland, 2025).

Leading UK universities, such as the University of Cambridge and University College London (UCL), specifically the Bartlett School of Architecture, offer programmes that combine art and science with design.

Cambridge educational programmes focus on the history and philosophy of architecture and urbanism, contemporary culture, and structural and environmental design. The Bartlett School of Architecture at UCL is renowned for its creativity and innovation, featuring digital fabrication workshops and advanced computer laboratories. Digital project representation skills are taught from the first year. The emphasis is placed on studio learning, where learners have dedicated workspaces and work on projects through regular discussions and critical reviews. Study trips and internships constitute a mandatory part of the curriculum (UK architecture and environmental design courses, 2025; UCL. Undergraduate architecture degrees – Bartlett Faculty of the Built Environment, 2025).

The US higher education system is characterised by a large number of private institutions compared to public ones. Another characteristic feature is a high degree of decentralisation and autonomy. Leading US universities, such as the University of Oregon, California State Polytechnic University Pomona, Marywood University, Miami University Oxford, University of Nebraska–Lincoln, and Auburn University (interior design programmes), as well as Parsons School of Design (BFA Interior Design) and Cornell University (Human-Centred Design, BFA Interior Design), traditionally demonstrate high levels of integration between project skills and cutting-edge digital computer technologies.

Educational programmes concentrate on solving issues related to the systemic functioning of the modern metropolis, including the design of

residential, administrative, and industrial developments, as well as public and recreational spaces. The Cornell University programme in Human-Centred Design integrates multidisciplinary training in environment design, urban studies, ecology, and ergonomics, with an emphasis on solving the multifaceted problems and challenges of modern urban planning (CU. Human-centered design: Interior design BFA, 2025; CalPoly. College of environmental design, 2025).

International programmes demonstrate an emphasis on integrating the principles of "sustainable design", "ecological building design", and the "circular economy" into environment design educational curricula. This indicates a global paradigm shift in design education—a transition from purely aesthetic or functional considerations to a holistic approach that prioritises responsibility for design outcomes, self-reflection, self-improvement, resource efficiency, and systemic social changes.

The widespread implementation of advanced projecting and modelling tools as core pedagogical methods is another notable trend. Digital modelling, automated design systems, BIM, and cutting-edge virtual and augmented reality (VR/AR) technologies, as well as three-dimensional printing, are no longer considered additional but are fundamental to modern design practice and, consequently, to effective design education.

Conclusions. The key differences in foreign educational programmes include a higher degree of student engagement in authentic collaboration during training as a result of implementing project-oriented methods, the development of communicative and presentational skills, teamwork experience, and the establishment and expansion of interdisciplinary links and rapid software implementation. The strength of domestic educational programmes lies in the fact that the educational process is thoroughly based on academic fine arts disciplines combined with modern digital technologies, the relevant preservation of national cultural traditions, and a steady trend toward specialists meeting contemporary professional requirements of European and global labour markets.

Following the theoretical and comparative analysis of educational programmes in Ukrainian and foreign HEIs, one can conclude that the project

competence development of future designers should encompass numerous categories, such as innovation, manufacturability, utility, aesthetics, inclusivity, and environmental friendliness, as the dynamics of socio-cultural processes in society currently demand their full interaction within design objects. Today, these categories of project competence require updating according to contemporary requirements and implementation within teaching and

methodological support, particularly for the core discipline "Projecting".

Monitoring the development levels of project competence among educational stakeholders and evaluating the quality of training tasks and qualification projects in the "B2 Design" specialty represents a promising way to enhance the professional training of future environment designers.

List of references

- Арт-Академія сучасного мистецтва імені Сальвадора Далі (ААСМСД). (2025). *Дизайн середовища*. <https://mixmd.edu.ua/2020/06/30/dyzajn-seredovyshha/>
- Єдина державна електронна база з питань освіти (ЄДЕБО). (2025). *Реєстр суб'єктів освітньої діяльності: Заклади вищої освіти*. <https://registry.edbo.gov.ua/>
- Київська державна академія декоративно-прикладного мистецтва і дизайну імені Михайла Бойчука (КДАДПМД). (2024). *Кафедра дизайну середовища*. <https://kdidpamid.edu.ua/academy/robochi-programy-navchalnyh-dysczyplin-ta-inshi-navchalno-metodychni-materialy-kafedry-ds/>
- Київський національний університет культури і мистецтв (КНУКіМ). (2020). *ФДІР. Кафедра дизайну і технологій*. <https://www.design.knukim.edu.ua/bakalavrat/>
- Кнодель, Л. В. (2012). Сучасна вища освіта в США. *Вісник Дніпропетровського університету імені Альфреда Нобеля. Серія «Педагогіка і психологія»*, 2(4), 18–23. <https://pedpsy.duan.edu.ua/images/PDF/2012/2/4.pdf>
- Кучеренко, Д. Г., & Мартинюк, О. В. (2011). *Стратегії розвитку освітніх систем країн світу*. ІПК ДСЗУ.
- Львівська національна академія мистецтв (ЛНАМ). (2023). *Бакалаврська програма: Дизайн середовища*. <https://lnam.edu.ua/uk/faculty/design/interiour/bakalavska-prohrama.html>
- Львівська політехніка, Інститут архітектури та дизайну (ІАРД). (2024). *Дизайн середовища: ОПП Бакалавр*. <https://lpnu.ua/sites/default/files/2021/program/17130/022-bak-ds-opp-2024.PDF>
- Національна академія образотворчого мистецтва та архітектури (НАОМА). (2025). *Архітектура будівель та споруд – бакалаврські програми*. <https://naoma.edu.ua/navchannya/bakalavrski-programy/arhitektura-budivel-ta-sporud/>
- Поберезська, Г. Г. (2005). *Тенденції розвитку вищої освіти країн Західної Європи та України* (Дис. канд. пед. наук). Київ.
- Радкевич, В. О. (Ed.), Пуховська, Л. П., Бородієнко, О. В., Радкевич, О. П., Базелюк, Н. В., Корчинська, Н. М., Леу, С. О., & Артемчук, В. В. (2018). *Сучасні моделі професійної освіти і навчання в країнах Європейського Союзу: порівняльний досвід*. ІПТО НАПН України.
- Сисоєва, С. О., & Кристочук, Т. Є. (2012). *Освітні системи країн Європейського Союзу: загальна характеристика*. Овід.
- Стандарт вищої освіти першого (бакалаврського) рівня галузі знань 02 «Культура і мистецтво» за спеціальністю 022 «Дизайн». (2018). <https://mon.gov.ua/static-objects/mon/sites/1/vishcha-osvita/zatverdzeni%20standarty/2021/07/28/022-Dyzajn-bakalavr.28.07.pdf>
- Фурса, О. О. (2014). *Тенденції розвитку дизайн-освіти в Україні* (друга половина XX – початок XXI століття) (Дис. д-ра пед. наук). Житомир.
- Харківська державна академія дизайну і мистецтв (ХДАДМ). (2023). *Кафедра дизайну середовища: Бакалаврська програма*. <https://www.ksada.org/edu-programs/dyzajn-seredovyshha/>

Bauhaus-Universität Weimar. (2025). *Bauhaus. Faculty of Civil and Environmental Engineering*. <https://www.uni-weimar.de/en/civil-and-environmental-engineering/studies/bachelor/umweltingenieurwissenschaften/>

California State Polytechnic University, Pomona. (2025). *CalPoly. College of environmental design*. <https://catalog.cpp.edu/content.php?catoid=65&navoid=5345>

Cornell University (CU). (2025). *Human-centered design: Interior design BFA*. <https://www.design.cornell.edu/human-centered-design/academics/interior-design-bfa/>

Educatons.com. (2025). *Bachelors degrees in design studies in Poland*. <https://www.educations.com/bachelors-degree/design-studies/poland>

Educatons.com. (2025). *Design and change: Bachelor's programme (Linnaeus University)*. <https://www.educations.com/institutions/linnaeus-university/design-and-change-bachelors-programme>

Educatons.com. (2025). *Sustainable design bachelor's degrees in Finland*. <https://www.educations.com/bachelors/sustainable-design/finland>

GoStudyIn. (2025). *UK architecture and environmental design courses*. <https://gostudyin.com/study-in-uk/popular-courses/architecture-and-environmental-design>

Higher education curriculum in the United States. (2023). *Oxford Research Encyclopedia of Education*. <https://doi.org/10.1093/acrefore/9780190264093.013.1067>

International European University (IEU). (n.d.). *School of architecture and engineering: Environmental design*. <https://ieu.com.pl/european-school-of-architecture-and-engineering-home/school-of-architecture-and-engineering-environmental-design/>

Norwegian University of Science and Technology (NTNU). (2025). *About the Faculty of Architecture and Design*. <https://www.ntnu.edu/ad/studies>

University College London (UCL). (2025). *Undergraduate architecture degrees – Bartlett Faculty of the Built Environment*. <https://www.ucl.ac.uk/bartlett/architecture/study/undergraduate-architecture-degrees>

Translated & Transliterated

Art-Akademiiia suchasnoho mystetstva imeni Salvadora Dali (AASMSD) [Salvador Dali Academy of Contemporary Arts]. (2025).. *Dyzain seredovyscha* [Environmental Design]. <https://mixmd.edu.ua/2020/06/30/dyzajn-seredovyssha/>, [in Ukrainian].

Yedyna derzhavna elektronna baza z pytan osvity (YeDEBO) [Unified State Electronic Database on Education]. (2025).. *Reiestr subiektiv osvithoi diialnosti: Zaklady vyshchoi osvity* [USEDE. Register of educational entities: Higher education institutions]. <https://registry.edbo.gov.ua/>, [in Ukrainian].

Kyivska derzhavna akademiia dekoratyvno-prykładnoho mystetstva i dyzainu imeni Mykhaila Boichuka (KDADPMD) [Mykhailo Boichuk Kyiv State Academy of Decorative-Applied Arts and Design]. (2024). *Kafedra dyzainu seredovyscha* [Department of Environment Design]. <https://kdidpmd.edu.ua/academy/robochi-programy-navchalnyh-dysczyplin-ta-inshi-navchalno-metodychni-materialy-kafedry-ds/>, [in Ukrainian].

Kyivskyi natsionalnyi universytet kultury i mystetstv (KNUKiM) [Kyiv National University of Culture and Arts]. (2020). *FDIR. Kafedra dyzainu i tekhnolohii* [Department of Design and Technology]. <https://www.design.knukim.edu.ua/bakalavrat/>, [in Ukrainian].

Knodel, L. V. (2012). *Suchasna vyshcha osvita v SSHA* [Modern higher education in the USA]. Visnyk Dnipropetrovskoho universytetu imeni Alfreda Nobelia. Seriiia «Pedahohika i psykholohiia» [Bulletin of Alfred Nobel University of Dnipropetrovsk. Series "Pedagogy and Psychology"], 2(4), 18–23. <https://pedpsy.duan.edu.ua/images/PDF/2012/2/4.pdf>, [in Ukrainian].

Kucherenko, D. H., & Martyniuk, O. V. (2011). *Stratehii rozvytku osvithnikh system krain svitu* [Strategies for the development of educational systems in countries around the world]. IPK DSZU, [in Ukrainian].

Lvivska natsionalna akademiia mystetstv [Lviv National Academy of Arts]. (2023). *LNAM. Bakalavraska prohrama: Dyzain seredovyscha* [Bachelor's program: Environmental Design]. <https://lnam.edu.ua/uk/faculty/design/interiour/bakalavska-prohrama.html>, [in Ukrainian].

Lvivska politekhnika, Instytut arkhitektury ta dyzainu (IARD) [Lviv Polytechnic National Univesity. Institute of Architecture and Design]. (2024). *Dyzain seredovyscha: OPP Bakalavr* [Environmental Design:

Bachelor's Educational Professional Program]. <https://lpnu.ua/sites/default/files/2021/program/17130/022-bakds-opp-2024.PDF>, [in Ukrainian].

Natsionalna akademiia obrazotvorchoho mystetstva ta arkhitektury (NAOMA) [National Academy of Fine Arts and Architecture]. (2025). *Arkhitektura budivel ta sporud – bakalavrski prohramy* [NAFAA. Architecture of buildings and structures – bachelor's programs]. <https://naoma.edu.ua/navchannya/bakalavrski-prohramy/arhitektura-budivel-ta-sporud/>, [in Ukrainian].

Poberezska, H. H. (2005). *Tendentsii rozvytku vyshchoi osvity krain Zakhidnoi Yevropy ta Ukrainy* [Trends in the development of higher education in Western Europe and Ukraine]. (Dissertation of the Candidate of Pedagogical Sciences). Kyiv, [in Ukrainian].

Radkevych, V. O. (Ed.), Pukhovska, L. P., Borodiienko, O. V., Radkevych, O. P., Bazeliuk, N. V., Korchynska, N. M., Leu, S. O., & Artemchuk, V. V. (2018). *Suchasni modeli profesiinoi osvity i navchannia v krainakh Yevropeiskoho Soiuzu: porivnialnyi dosvid* [Modern models of vocational education and training in the countries of the European Union: comparative experience]. IPTO NAPN Ukrainy, [in Ukrainian].

Sysoieva, S. O., & Krystopchuk, T. Ye. (2012). *Osvitni systemy krain Yevropeiskoho Soiuzu: zahalna kharakterystyka* [Educational systems of the European Union countries: general characteristics]. Ovid, [in Ukrainian].

Standart vyshchoi osvity pershoho (bakalavrskoho) rivnia haluzi znan 02 «Kultura i mystetstvo» za spetsialnistiu 022 «Dyzain» [Standard of higher education of the first (bachelor's) level in the field of knowledge 02 "Culture and Art" in the specialty 022 "Design"]. (2018). <https://mon.gov.ua/static-objects/mon/sites/1/vishcha-osvita/zatverdzeni%20standarty/2021/07/28/022-Dyzayn-bakalavr.28.07.pdf>, [in Ukrainian].

Fursa, O. O. (2014). *Tendentsii rozvytku dyzain-osvity v Ukraini (druha polovyna XX – pochatok XXI stolittia)* [Trends in the development of design education in Ukraine (second half of the 20th – beginning of the 21st century)]. (Dissertation of the Doctor of Pedagogical Sciences). Zhytomyr, [in Ukrainian].

Kharkivska derzhavna akademiia dyzainu i mystetstv (KhDADM) [Kharkiv State Academy of Design and Arts]. (2023). *Kafedra dyzainu seredovyshcha: Bakalavska prohrama* [Department of Environmental Design: Bachelor's Program]. <https://www.ksada.org/edu-programs/dyzajn-seredovyshha/>, [in Ukrainian].

Bauhaus-Universität Weimar. (2025). *Bauhaus. Faculty of Civil and Environmental Engineering*. <https://www.uni-weimar.de/en/civil-and-environmental-engineering/studies/bachelor/umweltingenieurwissenschaften/>, [in English].

California State Polytechnic University (CalPoly), Pomona. (2025). *College of environmental design*. <https://catalog.cpp.edu/content.php?catoid=65&navoid=5345>, [in English].

Cornell University (CU). (2025). *Human-centered design: Interior design BFA*. <https://www.design.cornell.edu/human-centered-design/academics/interior-design-bfa/>, [in English].

Educatons.com. (2025). *Bachelors degrees in design studies in Poland*. <https://www.educations.com/bachelors-degree/design-studies/poland>, [in English].

Educatons.com. (2025). *Design and change: Bachelor's programme (Linnaeus University)*. <https://www.educations.com/institutions/linnaeus-university/design-and-change-bachelors-programme>, [in English].

Educatons.com. (2025). *Sustainable design bachelor's degrees in Finland*. <https://www.educations.com/bachelors/sustainable-design/finland>, [in English].

GoStudyIn. (2025). *UK architecture and environmental design courses*. <https://gostudyin.com/study-in-uk/popular-courses/architecture-and-environmental-design>, [in English].

Higher education curriculum in the United States. (2023). *Oxford Research Encyclopedia of Education*. <https://doi.org/10.1093/acrefore/9780190264093.013.1067>, [in English].

International European University (IEU). (n.d.). *School of architecture and engineering: Environmental design*. <https://ieu.com.pl/european-school-of-architecture-and-engineering-home/school-of-architecture-and-engineering-environmental-design/>, [in English].

Norwegian University of Science and Technology (NTNU). (2025). *About the Faculty of Architecture and Design*. <https://www.ntnu.edu/ad/studies>, [in English].

University College London (UCL). (2025). *Undergraduate architecture degrees – Bartlett Faculty of the Built Environment*. <https://www.ucl.ac.uk/bartlett/architecture/study/undergraduate-architecture-degrees>, [in English].

ДОСВІД РОЗВИТКУ ПРОЄКТНОЇ КОМПЕТЕНТНОСТІ МАЙБУТНІХ ФАХІВЦІВ З ДИЗАЙНУ СЕРЕДОВИЩА У ЗВО УКРАЇНИ ТА ЗАРУБІЖЖЯ

Максим Максимов

аспірант Інституту професійної освіти НАПН України, <https://orcid.org/0009-0001-1332-1570>,
e-mail: m.b.maksymov@gmail.com

Реферат:

Актуальність: в умовах євроінтеграційних процесів посилюється суспільне значення дизайну як важливої складової національного відродження Української держави; зміни стандартів щодо реновації урбаністичного простору й інфраструктури міст зумовлюють зростаючу потребу у кваліфікованих дизайнерах середовища із розвинутою професійною компетентністю, об'ємно-просторовим мисленням, теоретичними знаннями та практичними вміннями й навичками; звідси актуалізується необхідність пошуку інноваційних способів забезпечення якості професійної підготовки фахівців з дизайну середовища у ЗВО та врахування їх позитивних аспектів при вдосконаленні системи дизайн-освіти України.

Метою статті є проведення теоретичного і порівняльного аналізу освітніх програм за спеціальністю «Дизайн середовища» провідних ЗВО України та зарубіжжя та визначення на основі отриманих результатів особливостей практичного досвіду розвитку проєктної компетентності майбутніх фахівців з дизайну середовища.

Методи: теоретичний аналіз і узагальнення – для вивчення освітніх програм ЗВО; системно-структурний підхід – для виявлення взаємозв'язку між ОП та їх освітніми компонентами, націлених на розвиток проєктної компетентності майбутніх дизайнерів середовища; порівняльний аналіз – для виокремлення специфічних особливостей професійної підготовки таких фахівців як в Україні, так і в зарубіжних ЗВО, що впливають на їх рівень розвиненості проєктної компетентності в освітньому процесі.

Результати: на основі аналізу освітніх програм (ОП) вітчизняних ЗВО та провідних університетів світу визначено й проаналізовано особливості розвитку проєктної компетентності; встановлено, що у вітчизняній моделі акцент зроблено на інтеграції художніх дисциплін із профільним курсом «Проектування», тоді як міжнародні ОП демонструють глибшу імплементацію принципів проєктного навчання, «сталого дизайну», цифрових інструментів і комунікативності.

Висновки: розвиток проєктної компетентності майбутнього дизайнера середовища є динамічним процесом; ключовою відмінністю зарубіжних програм є вища ступінь залученості студентів до реальної співпраці з промисловістю та громадами; для української освіти перспективним є оновлення навчально-методичного забезпечення та моніторинг рівнів сформованості проєктної компетентності здобувачів освіти.

Ключові слова: професійна підготовка, проєктна діяльність, дизайн середовища, проектування, проєктна компетентність фахівців з дизайну середовища.

Manuscript received	08.08.2025
Accepted for publication after peer review	16.11.2025
Published	11.12.2025



FOREIGN EXPERIENCE IN RESEARCHING THE PROFESSIONAL CULTURE OF PRACTITIONER PSYCHOLOGISTS IN VOCATIONAL EDUCATION AND TRAINING (VET) INSTITUTIONS

Oksana Lapa

PhD in Pedagogy, Senior Researcher, Doctoral Candidate, Institute of Vocational Education of the National Academy of Educational Sciences of Ukraine, <https://orcid.org/0000-0002-0964-7674>, e-mail: oksana.lapa@ukr.net

Abstract

Relevance: The necessity of investigating foreign experience in developing the professional culture of practitioner psychologists in vocational education and training (VET) institutions is driven by intensive digitalisation processes, crisis challenges, the transformation of psychological service roles, and heightened requirements for the professional activity of practitioner psychologists; an analysis of foreign experience permits the identification of the best mechanisms and practices for professional culture development that can be adapted to the Ukrainian educational context.

Purpose: The article aims to provide a systemic analysis of foreign theoretical, regulatory, and empirical approaches to the study of practitioner psychologists' professional culture in VET institutions, as well as to outline the possibilities for their implementation into Ukrainian educational practice.

Methods: Theoretical methods include analysis and synthesis (to generalise foreign scientific approaches to understanding psychologists' professional culture), comparative analysis (to contrast theoretical models of professional culture and approaches to its structuring and assessment), systematisation and classification (to organise concepts, methodological approaches, professional culture indicators, and tools for its institutional support), content analysis of scientific sources and regulatory documents (to identify key categories, value orientations, and regulatory perceptions of psychologists' professional culture), and the method of theoretical generalisation (to formulate authorial conclusions regarding the integration of foreign experience into the Ukrainian context); empirical methods involve the analysis of empirical research results (to study the specific activities of psychologists and psychological services abroad) and a comparative analysis of empirical data (related to the formation of psychologists' professional culture).

Results: Foreign scientific approaches to the development of practitioner psychologists' professional culture (systemic, competency-based, value-based, sociocultural, regulatory, and normative-institutional) are generalised; directions for implementing the best foreign experience into domestic practice are identified (clarity of ethical principles, interprofessional interaction, enhancing the quality of assistance, specialist resilience and trust in the psychological service, institutionalisation of supervision, continuous professional development, implementation of operationalisation tools, and the development of digital culture).

Conclusions: Within the foreign scientific tradition, the development of practitioner psychologists' professional culture is regarded as a multidimensional phenomenon formed at the intersection of the systemic organisation of professional activity, the structure of professional competencies, reflexive mechanisms of professional development, and institutional-regulatory policies for the quality assurance of psychological services; understanding the development of these specialists' professional culture involves the integration of ethical values, professional identity, reflexive practices, and institutional responsibility; the implementation of foreign experience into the educational space of domestic VET institutions should be viewed as a strategic process for modernising practitioner psychologists' professional culture, aimed at increasing the quality of assistance, specialist resilience, and overall trust in the psychological service.

Keywords: *foreign experience, professional culture, professional activity, practitioner psychologists in vocational education and training institutions, psychologists, vocational education and training (VET) institutions.*

Introduction. Under contemporary conditions, characterized by the transformation of educational systems amidst crisis challenges, the professional activity of practitioner psychologists within vocational education and training (VET) institutions acquires profound social significance. The primary function of a practitioner psychologist in a VET institution involves the psychological facilitation of the educational process through psychosocial adaptation, support for professional self-determination, prevention of risk-taking behaviour, and conflict mediation among learners. The quality of implementing these functions depends directly on the developmental level of the practitioner psychologist's professional culture, which serves as an integrative characteristic of their vocational activity.

In the foreign scientific tradition, the concept of a practitioner psychologist's professional culture is examined across a broad spectrum. It encompasses a system of values, ethical principles, norms of professional conduct, reflexive capacities, professional identity, and the institutional responsibility of the aforementioned specialist. Foreign researchers identify professional culture as a pivotal factor in ensuring the quality of psychological services, fostering client trust, and maintaining the sustainability of psychological services within educational establishments. Analysing the professional culture of psychologists specifically within the context of VET institutions is increasingly relevant, as these institutions in many countries serve socially and economically vulnerable youth, migrants, adult learners, and individuals with interrupted educational trajectories. Foreign studies emphasise that psychologists in these educational settings encounter heightened emotional loads, complex ethical dilemmas, the necessity for interprofessional interaction, and the need for constant adaptation to changing conditions. Drawing upon foreign research regarding the problem of professional culture allows for the identification of leading theoretical approaches, institutional mechanisms, and practical tools for supporting professional culture, which can be utilised to modernise psychological services in Ukrainian VET institutions.

The scope of our scientific study encompasses the USA, Canada, the United Kingdom, Finland, Greece, Australia, New Zealand, Israel, and European Union countries, alongside the activities of the European Federation of Psychologists' Associations (EFPA). The EFPA serves as a

supranational professional organisation that unites national psychological associations across Europe, establishing common ethical standards, professional training requirements for psychologists, and mechanisms for the quality assurance of psychological practice. Furthermore, we have analysed analytical materials from the Organisation for Economic Co-operation and Development (OECD). The aforementioned OECD is a structure that develops analytical reports, policy recommendations, and quality indicators in the fields of education and healthcare on an international scale. These countries and supranational structures were selected for scientific inquiry for several reasons. Primarily, they adhere to humanistic principles of social policy and a person-centred approach to the development of psychological services. Additionally, the USA and the UK are leading centres for the development of psychology as a regulated professional activity, featuring advanced models of professional culture, competency standards, codes of ethics, and supervision systems. Finland and Greece represent the European general educational context, where researchers actively investigate the professional roles of psychologists and the influence of institutional conditions on professional identity. Australia and New Zealand are exemplary due to their high level of regulatory control, focus on continuous professional development, digitalisation of psychological practice, and the distinct integration of ethical and quality standards. Israeli studies offer unique empirical value regarding psychological safety, secondary traumatising, and institutional support for specialists in crisis and wartime conditions. Finally, EFPA and OECD documentation allowed for the examination of psychologists' professional culture as a component of the quality management system for psychological services in an international dimension. Consequently, scientific inquiries into the experience of selected countries and international structures ensure a balance in the analysis of theoretical approaches, practical contexts, and the relevance of modern challenges to the development of psychologists' professional culture.

The aim of this article is to provide a systemic analysis of foreign theoretical, regulatory, and empirical approaches to the study of practitioner psychologists' professional culture in VET institutions, while outlining the possibilities for their implementation into Ukrainian educational practice.

Research methods. Theoretical: analysis and synthesis (generalising foreign scientific approaches to understanding the professional culture of psychologists); comparative analysis (comparing theoretical models of professional culture, alongside approaches to its structuring and assessment); systematisation and classification (organising methodological approaches, professional culture indicators, and tools for its institutional support); content analysis of scientific sources and regulatory documents (identifying key categories, value orientations, and regulatory perceptions of psychologists' professional culture); and the method of theoretical generalisation (formulating authorial conclusions regarding the integration of foreign experience into the Ukrainian context). Empirical: analysis of the results of empirical studies dedicated to the activities of psychologists and psychological services in foreign countries; and a comparative analysis of empirical data from various countries (identifying common trends and contextual differences in the formation of psychologists' professional culture).

Sources of research. The analysis of the problem under study is represented in the works of many domestic scholars. Specifically, the works of T. Hura (2014) provide a historical-pedagogical analysis of foreign models of professional training for psychologists, as well as approaches to forming a specialist's professional thinking and culture across different educational traditions. These works hold theoretical value for comprehending the evolution of the concept of a psychologist's professional culture. The research of O. Ihnatovych (2019) analyses models for developing psychologists' professional competencies in various countries. Professional culture is viewed as the result of the interaction between professional knowledge, value orientations, and the individual's capacity for self-development. O. Zatvorniuk (2016) conducts a comparative analysis of psychologist training systems in the USA and Ukraine, focusing on curriculum content, the practical component, and the role of ethical standards. The author traces the idea of forming a psychologist's professional culture through a combination of academic training, practice, and institutional support. Publications by A. Karpenko (2025) examine the integration of foreign experience in the professional training of psychologists, particularly in the context of working in extreme and crisis conditions. International approaches to fostering professional resilience, ethical responsibility, and readiness for complex professional challenges are analysed. In the

author's works, professional culture is revealed indirectly as a factor in the specialist's psychological safety. O. Pakhomova (2019) investigates the problem of developing professional psychological culture within higher education institutions, taking into account foreign scientific approaches. Professional culture is interpreted as a complex of value-semantic orientations, norms of professional interaction, and mechanisms for the specialist's personal development. Significant attention is devoted to the ethical, communicative, and reflexive components of a psychologist's professional activity. V. Pedorenko and N. Sereda (2025) investigate the structural components of the professional communication culture of future psychologists. Considering contemporary challenges, a shift in emphasis is observed towards the culture of feelings, communicative competence, subject-to-subject interaction, and professional etiquette. Simultaneously, the authors note that within the English-speaking academic space, the professional communication culture of specialists is mostly considered in the context of intercultural communication. The works of D. Suprun (2018) provide a systemic analysis of the modernisation of professional training for psychologists, considering foreign standards and models. Particular attention is paid to the competency-based approach, supervision, and the integration of international experience into domestic educational programmes. Research demonstrates the link between the quality of professional training and the formation of a psychologist's professional culture as a holistic personal and professional construct. The study by N. Shel (2024) represents the process of forming the professional competence of future psychologists, specifically using foreign educational models. The author reveals the role of international standards, practical training, and reflexive teaching methods. A psychologist's professional culture can be interpreted as an integrative result of professional education and personal development.

The analysis of these works indicates an absence within the Ukrainian scientific landscape of a systemic analysis of foreign theoretical, regulatory, and empirical approaches to the study of professional culture, both for psychologists in general and for practitioner psychologists in VET institutions in particular. Consequently, this issue requires detailed systemic consideration.

Results and discussion. Given that the subject of our research is quite specific and clearly defined, we shall consider foreign scientific research

regarding the professional culture of psychologists across all spheres of professional activity and a broader time frame (1980–2025). We must also note that within the contemporary foreign scientific tradition, we have not succeeded in finding a definition for the professional culture of a VET practitioner psychologist as a distinct phenomenon. Broadly, the aforementioned phenomenon is viewed as a multidimensional phenomenon formed at the intersection of the systemic organisation of professional activity, the structure of professional competencies, reflexive mechanisms of professional development, and institutional-regulatory policies for the quality assurance of psychological services. Accordingly, in the theoretical research of foreign authors, individual approaches generally do not oppose but logically complement one another.

The systemic approach to activity involves understanding a psychologist's professional practice as a holistic, socially mediated system. Within the framework of the cultural-historical activity theory, Y. Engeström (Finland) proposed the "activity system"—an analytical model of activity as a system of interaction between the subject, object, tools, rules, community, and the division of labour within a specific sociocultural context (Engeström, 1987, 2001). Such an approach creates a methodological basis for comprehending a psychologist's professional culture as a property of their activity system rather than merely the individual qualities of the specialist.

The systemic vision of professional activity is complemented by an ecological analysis of the social context. In U. Bronfenbrenner's (USA) development theory, a specialist's professional activity is viewed in interaction with multi-level social systems—from the immediate work environment to macrosocial and cultural factors—which allows for the interpretation of a psychologist's professional culture as a result of integration into broad social and institutional contexts (Bronfenbrenner, 1979).

The structural dimension of professional culture is revealed within the competency model formed in the Anglo-American tradition of psychological training. Specifically, M. Rodolfa (USA) proposed a cubic model of competency development, in which professional development is described as the interaction between levels of training, types of competencies, and professional roles (Rodolfa, 2005). This model clearly distinguishes between foundational competencies—basic value-based, ethical, theoretical, and personal characteristics that form a psychologist's professional

identity—and functional competencies, which are professional skills directly related to the performance of primary functions in psychological practice. This approach was further developed in the scientific inquiries of N. Kaslow (USA) and colleagues, who viewed professional culture as an integrated set of competencies ensuring the quality and ethics of psychological activity (Kaslow, 2007).

The dynamic and procedural aspect of professional culture is most comprehensively represented in the 'reflective practitioner' concept. Specifically, D. Schön (USA) substantiated the ideas of reflection-in-action – reflection occurring directly during professional activity – and reflection-on-action – the retrospective analysis of completed work to conceptualise experience and enhance future practice (Schön, 1983; 1987). D. Boud (Australia) and J. Moon (UK) further developed this trajectory, identifying reflection as a pivotal mechanism for the continuous professional development of psychologists (Boud, 1985; 1998; Moon, 1999; 2004).

The policy analysis approach emerged subsequently, addressing the institutional and regulatory level of professional culture analysis through the systematic examination of public and professional policies, which permits the treatment of psychologists' professional culture as a tool for the quality management of psychological services. E. Bardach (USA) proposed an applied policy analysis model utilised to evaluate the effectiveness of professional standards and regulatory decisions within the mental health sector (Bardach, 2012). The 'audit society' concept, developed by M. Power (UK), emphasises the role of professional culture within mechanisms of control, accreditation, and quality assurance (Power, 1997). Conversely, D. Mechanic (USA) and T. Greenhalgh (UK) demonstrated that the professional culture of specialists determines the actual effectiveness of quality policies and evidence-based practice in psychological and medical assistance (Mechanic, 2008; Greenhalgh, 2004; 2014).

We shall analyse methodological approaches to investigating psychologists' professional culture in foreign research, which are based on a combination of qualitative and quantitative methods, enabling a comprehensive analysis of the normative, institutional, and personal-professional dimensions of vocational activity. A leading method involves the analysis of professional standards and regulatory documents, applied to identify institutionally embedded perceptions of psychologists' professional

culture. Within this direction, American Psychological Association documents and their analytical interpretations are widely utilised, such as in the works of M. Rodolfa (USA) and N. Kaslow (USA), where professional culture is examined through a system of competency requirements and training standards (Rodolfa, 2005; Kaslow, 2007).

Content analysis of ethical codes occupies a significant place in the methodology, allowing for the reconstruction of the value-normative foundations of professional culture among psychologists abroad. Thus, scientific inquiries by G. Koocher (USA) and P. Keith-Spiegel (USA) investigate APA ethical codes and international ethical principles as instruments for regulating psychologists' professional conduct (Koocher, 2016; Keith-Spiegel, 2016).

Empirical methods, such as surveys and practitioner questionnaires, are actively employed to study the actual professional roles and functions of psychologists. In this context, studies by D. Watkins (UK) are exemplary, analysing the alignment between normatively defined roles and actual professional practice (Watkins, 2011).

A distinct research direction comprises studies on psychologists' professional identity, based primarily on qualitative methods: semi-structured interviews, narrative analysis, and the phenomenological approach. Within this field, works by S. J. Schwartz (USA) and M. McMahon (Australia) are widely cited, where professional culture is interpreted as a component of professional identification processes throughout a specialist's career development (Schwartz, 2011; McMahon, 2007).

An important methodological direction is the analysis of psychological service effectiveness indicators, combining quantitative metrics (intervention efficacy, client satisfaction, adherence to standards) with a qualitative analysis of organisational culture. This approach is presented in the works of D. Mechanic (USA) and T. Greenhalgh (UK), where psychologists' professional culture is viewed as a key factor in the quality and sustainability of psychological services (Mechanic, 2008; Greenhalgh, 2004).

Thus, the theoretical and methodological foundations of foreign research into practitioner psychologists' professional culture are characterised by interdisciplinarity, the integration of individual and institutional levels of analysis, and an orientation towards the practical applicability of results.

The implementation of regulatory-institutional approaches within the social fields of specific countries plays a major role in shaping the professional culture of practitioner psychologists abroad. We consider the Israeli model particularly relevant to the Ukrainian context, as it examines psychologists' professional culture through the prisms of crisis readiness and the psychological safety of specialists. Regulatory documents from the Israel Ministry of Health define clear protocols for psychologists' work in emergency situations, including remote forms of assistance. Consequently, professional culture encompasses not only client care but also institutional protection for the psychologist against secondary traumatisation (Israel Ministry of Health, 2022). Thus, we note that in foreign countries, the professional culture of practitioner psychologists is understood as the result of the interaction between an individual professional position and a clearly structured normative field that ensures the sustainability and quality of psychological practice.

Empirical research from recent years (2019–2025) confirms that the professional culture of practitioner psychologists is a dynamic construct, sensitive to organisational, social, and technological changes. One of the most frequently documented phenomena is the so-called 'role gap' – the discrepancy between the formally declared functions of a psychologist and the actual structure of their activity. For instance, a study conducted in Greece and Finland demonstrated that a significant portion of psychologists' working time in educational institutions is consumed by diagnostic and administrative tasks, whereas consultative and preventive work is marginalised. The authors emphasise that such an imbalance negatively affects psychologists' professional identity and reduces job satisfaction, which serves as a critical indicator of professional culture (Panteri et al., 2021).

Another direction of empirical research involves studying psychologists' professional identity and its link to the quality of provided assistance. A. Mecadon-Mann (USA) proved that psychologists with a highly developed professional identity are more resilient to professional burnout, engage more actively in supervision, and more frequently utilise reflective practices. This permits the consideration of professional identity as the core of professional culture (Mecadon-Mann, 2023).

A significant body of modern research is dedicated to the digitalisation of psychological practice. For example, a study by R. Dobson (Dobson et al., 2022), conducted using data from New

Zealand, showed that psychologists' digital competency levels vary significantly depending on age, professional experience, and the level of organisational support. The authors stress that the absence of clear telepractice standards undermines professional culture and heightens the risk of ethical violations (Dobson et al., 2022).

A separate group consists of studies focused on the psychological safety of specialists. Scientific inquiries by Israeli scholars have documented high levels of secondary traumatisation among psychologists working with populations affected by military actions. Israeli researchers (George-Levi et al., 2025) demonstrate that the presence of institutional support mechanisms – regular supervision, group debriefings, and case rotation – significantly reduces levels of professional exhaustion. In their view, the application of a system of institutional mechanisms must be a mandatory component of psychologists' professional culture.

In contemporary foreign research, the issue of operationalising practitioner psychologists' professional culture – specifically, translating abstract value and competency characteristics into measurable indicators – is gaining increasing importance. One such tool is the system of Key Performance Indicators (KPIs), used to monitor the quality, accessibility, and safety of psychological services.

In foreign practice, KPIs are not regarded as direct equivalents of professional culture but are used as indicators of its external manifestations. Typical KPIs for psychological services include: average waiting time for the first consultation; the percentage of clients covered by risk screening; user satisfaction levels; the proportion of time dedicated to preventive work; and psychologists' participation in supervision and continuous professional development programmes (OECD; Panteri et al., 2021).

Particular attention in foreign studies is given to warnings against reducing professional culture to purely quantitative metrics. Authors emphasise that KPIs should be combined with qualitative indicators, such as reflective reports, supervisory case discussions, and the analysis of ethical dilemmas and professional decisions (Norcross & Wampold, 2019). In such an approach, KPIs perform a developmental rather than a punitive function.

Another critical tool for instrumentalising professional culture is the role matrix, which allows for the clear definition of a psychologist's functional field within a multidisciplinary team. Foreign research indicates that the absence of clearly defined

roles leads to psychologist overload, the dominance of administrative or diagnostic functions, and a decline in the quality of consultative assistance (Zábek, 2023).

Role matrices typically encompass the allocation of functions such as individual and group counselling, prevention, crisis intervention, engagement with educators, career guidance, and participation in team discussions. Within VET/TVET systems, this holds particular significance, as the psychologist operates at the intersection of education, the labour market, and social support. Clear role definition facilitates the enhancement of professional identity and the reduction of the 'role gap' (Panteri et al., 2021). In Canada and Finland, role matrices are coupled with performance indicators at the institutional level, allowing for the evaluation of the psychological service's contribution to overall student well-being and the reduction of risk-taking behaviour (OECD, 2023). In Israel, role matrices are adapted to crisis conditions and include specific psychological functions for staff support and management of traumatic events (Israel Ministry of Health, 2022).

Consequently, the instrumentalisation of professional culture through KPIs and role matrices in foreign practice serves as a critical element of quality management for psychological services. Provided that quantitative and qualitative indicators are combined, the aforementioned tools do not contradict the humanistic foundations of the profession; on the contrary, they facilitate their institutional consolidation.

Thus, foreign scientific research from 2019–2025 confirms that the professional culture of psychologists is formed under the influence of structural conditions of activity, the level of supervisory support, digital readiness, and institutional attitudes towards the mental safety of specialists.

To distinguish common elements and nationally determined features of the formation, development, and support of psychologists' professional culture, we consider it appropriate to conduct a comparative analysis of professional culture models for practitioner psychologists across different countries.

Primarily, we note that despite differences in educational systems, regulatory mechanisms, and sociocultural contexts, most countries demonstrate a convergence of approaches toward understanding the psychologist's professional culture as an integrated system of competencies, values, and responsibility.

Therefore, the common core of professional culture across all analysed countries is the combination of professional competence and ethical regulation of activity. For instance, professional standards and codes of ethics in EU countries, the UK, Canada, Australia, and Israel emphasise that adherence to ethical principles is not restricted to formal rule-following but involves the capacity for ethical reasoning, complex professional decision-making, and awareness of the consequences of one's actions (British Psychological Society, 2022; Canadian Psychological Association, 2023). We must emphasise that the professional culture of psychologists necessarily contains a moral-value dimension that extends beyond technical competence.

A significant common element in the development of psychologists' professional culture abroad is the leading role of supervision. In most foreign models, supervision is mandatory and is regarded as a mechanism for supporting professional identity, preventing burnout, and ensuring practice quality. Thus, within the EuroPsy system, supervision is a necessary condition for confirming a psychologist's professional status (European Federation of Psychologists' Associations, 2023). In Israel, supervisory and group support practices are integrated into crisis protocols, demonstrating an expanded interpretation of professional culture as a system of care not only for the client but also for the specialist (Israel Ministry of Health, 2022).

The differences we observed between national models manifest primarily in the value emphases of the psychologist's professional activity. In Canada and Australia, a psychologist's professional culture is closely linked to the principles of cultural sensitivity, social justice, and engagement with diverse communities, particularly indigenous populations (Canadian Psychological Association, 2023; Australian Psychological Society, 2020). In Finland, a preventive approach dominates, within which the psychologist is viewed as a participant in shaping the overall well-being of the educational environment rather than merely a specialist in individual assistance (OECD, 2023).

The development of the digital field within a psychologist's professional culture requires separate analysis. In all studied countries, telepractice and online counselling have ceased to be temporary tools and have become sustainable components of professional activity. Accordingly, digital competence, adherence to data protection standards, confidentiality, and risk management are integrated

into the structure of the psychologist's professional culture (Dobson et al., 2022; Canadian Psychological Association, 2023). In countries with clear regulatory control over telepractice (Canada, Israel), this process is more systemic than in countries with fragmented recommendations. Research into burnout, secondary traumatisation, and professional resilience is increasingly included in the analysis of professional culture, especially in crisis contexts (George-Levi et al., 2025; Schaufeli, 2021). This indicates a transformation in perceptions of a specialist's professional culture – shifting from an individual characteristic to the systemic responsibility of organisations and the state.

Consequently, a comparative analysis of foreign models suggests that a practitioner psychologist's professional culture is a multidimensional phenomenon that combines universal (ethical and competency-based) foundations with nationally specific (sociocultural and institutional) features.

Finally, let us analyse the possibilities for implementing foreign experience in the development of practitioner psychologists' professional culture within Ukraine's VET system. We note that this process requires a comprehensive, phased, and context-sensitive approach. We believe that the mechanical transfer of individual tools or normative models without considering the domestic features of the VET educational field may lead to the formalisation of changes without a tangible increase in the quality of psychological assistance.

In our view, the priority is to introduce elements of foreign experience into the professional culture of Ukrainian VET practitioner psychologists, such as ethical clarity, mandatory supervision, readiness for interprofessional interaction within the educational field, and the concern of state institutions for the specialist's psychological safety.

A second important direction for implementing foreign experience could be the institutionalisation of supervision and continuous professional development (CPD). In most foreign models, supervision serves as the key mechanism for supporting professional culture, preventing burnout, and developing professional identity. Domestic VET practitioner psychologists acutely lack both trained supervisors and the regulatory consolidation of a minimum number of state-funded supervision hours.

The third direction involves implementing tools for operationalising professional culture (KPIs, role matrices) exclusively in a developmental, rather than punitive, format. Experience from foreign

psychological systems demonstrates that KPIs are an effective means of evaluating and managing the quality of psychological services only if they are combined with qualitative indicators: reflective reports, supervisory discussions, and the analysis of complex professional cases (Norcross & Wampold, 2019; OECD, 2023). Role matrices, in turn, help avoid the 'role gap' characteristic of the Ukrainian psychological service delivery system. Such actions will ensure a rational distribution of functions between practitioner psychologists, social educators, teaching staff, and VET institution administration.

The fourth direction for implementing experience is the intensive development of the digital component of the professional culture of VET practitioner psychologists. Foreign studies convincingly prove that telepractice, online counselling, and digital documentation require clear ethical and procedural standards. Consequently, for domestic VET institutions, the development of unified recommendations regarding psychologists' online activities, informed consent, personal data protection, and crisis protocols becomes highly relevant.

Under current conditions, the issue of the psychological safety of VET practitioner psychologists requires special attention. The Israeli experience demonstrates that a psychologist's professional culture cannot be considered complete without institutional support mechanisms in crisis conditions. For Ukraine, which has long been subjected to wartime conditions and social upheaval, this signifies the necessity of including burnout prevention programmes, group debriefings, and crisis supervision in the standard practice of the psychological service.

Thus, the implementation of foreign experience should be viewed as a strategic process for modernising the professional culture of VET

practitioner psychologists, aimed at improving the quality of assistance, specialist resilience, and trust in the psychological service as a whole.

Conclusions. Generally, we note that the foreign experience in researching the problem of practitioner psychologists' professional culture is characterised by a transition from a narrow understanding of professionalism as a set of competencies to a systemic vision of professional culture as the integration of ethical values, professional identity, reflective practice, and institutional responsibility.

In most advanced educational systems, a psychologist's professional culture is formed and maintained through a combination of regulatory control, supervisory support, continuous professional development, and clearly defined practice standards, including digital forms of assistance. Recent scientific research confirms that the absence of such mechanisms leads to professional burnout, a decline in the quality of assistance, and the fragmentation of professional identity.

Comparative analysis of foreign models revealed a common humanistic core of professional culture, upon which national accents related to cultural sensitivity, prevention, or crisis readiness are layered. This creates opportunities for the selective borrowing of effective practices while considering the Ukrainian context.

For the domestic education system, the accumulated experience of psychological services in foreign countries is a valuable source of theoretical, legislative, methodological, and practical guidelines. Adapting this experience to Ukrainian educational realities will allow VET practitioner psychologists to transition to a holistic model of professional culture development in accordance with contemporary social challenges.

List of references

Гура, Т. Є. (2014). *Психологія розвитку професійного мислення у майбутніх психологів у процесі фахової підготовки* (Автореф. дис. д-ра психол. наук). Національний педагогічний університет імені М. П. Драгоманова.

Затворнюк, О. М. (2016). *Формування у майбутніх психологів готовності до професійного самовдосконалення* (Автореф. дис. канд. пед. наук). Національний педагогічний університет імені М. П. Драгоманова.. <https://enpuir.udu.edu.ua/bitstreams/45d1afe7-4eee-472d-ae79-7532c2f7fc0d/download>

Ігнатович, О. М. (2019). *Психологічні основи розвитку фахової інноваційної культури педагогічних працівників* (Автореф. дис. д-ра психол. наук). Інститут психології імені Г. С. Костюка НАПН України. http://psychology-naes-ua.institute/files/pdf/avtoreferat_ignatovich_1556732803.pdf

Карпенко, А. А. (2025). Інтеграція зарубіжного досвіду професійної підготовки психологів до роботи з дітьми в екстремальних умовах. *Педагогічна Академія: наукові записки*, (22). <https://doi.org/10.5281/zenodo.17253763>

Пахомова, О. (2019). Особливості розвитку професійної психологічної культури в умовах ВНЗ як мета професійного становлення майбутніх психологів. *Збірник наукових праць "Проблеми сучасної психології"*, (15). <https://doi.org/10.32626/2227-6246.2012-15.%p>

Педоренко, В., & Серeda, Н. (2025). Формування культури професійного спілкування майбутнього психолога: наукові підходи та виклики сучасності. *Теорія і практика управління соціальними системами*, 2. https://www.researchgate.net/publication/394233126_formation_of_a_professional_communication_culture_among_future_psychologists_scientific_approaches_and_challenges_of_our_time

Супрун, Д. М. (2018). *Модернізація змісту професійної підготовки психологів в галузі спеціальної освіти*: монографія. Київ : Вид-во НПУ імені М. П. Драгоманова. <http://enpuir.npu.edu.ua/handle/123456789/30565>

Шель, Н.В. 2024. Формування професійної компетентності майбутніх психологів на етапі їх підготовки у ВУЗі . *Вісник Донецького національного університету імені Василя Стуса. Серія Психологічні науки*. (Ліс 2024), 40-50. [https://doi.org/10.31558/2786-8745.2024.1\(4\).4](https://doi.org/10.31558/2786-8745.2024.1(4).4).

American Psychological Association. (2021). *Guidelines for the practice of telepsychology*. <https://www.apa.org/practice/guidelines/telepsychology>

Australian Psychological Society. (2020). *Ethical guidelines and professional practice standards*. <https://psychology.org.au/for-members/resource-finder/resource/ethical-guidelines>

Bardach, E. (2012). *A practical guide for policy analysis: The eightfold path to more effective problem solving* (4th ed.). Thousand Oaks, CA: CQ Press.

Boud, D., & Walker, D. (1998). Promoting reflection in professional courses. *Studies in Higher Education*, 23(2), 191–206. <https://doi.org/10.1080/03075079812331380384>

Boud, D., Keogh, R., & Walker, D. (1985). *Reflection: Turning experience into learning*. London, UK: Kogan Page.

British Psychological Society. (2022). *Code of ethics and conduct*. Leicester, UK: British Psychological Society. <https://www.bps.org.uk/guideline/code-ethics-and-conduct>

Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Cambridge, MA: Harvard University Press.

Canadian Psychological Association. (2023). *Canadian code of ethics for psychologists (4th ed.)*. https://cpa.ca/docs/File/Ethics/CPA_Code_2017_4thEd.pdf

Canadian Psychological Association. (2023). *Telepsychology guidelines*. <https://cpa.ca/practice-ethics/telepsychology>

Dobson, R., Fitzgerald, C., McDonald, K., & Flett, R. (2022). Telepsychology practice in Aotearoa New Zealand: Experiences, challenges, and professional implications. *Frontiers in Psychology*, 13, Article 9489853.

European Federation of Psychologists' Associations. (2023). *EFPA meta-code of ethics (revised edition)*. Brussels, Belgium: European Federation of Psychologists' Associations. <https://www.efpa.eu/efpa-participates-european-mental-health-week-2023>

Greenhalgh, T., Howick, J., & Maskrey, N. (2014). Evidence based medicine: A movement in crisis? *BMJ*, 348, g3725. <https://doi.org/10.1136/bmj.g3725>

Greenhalgh, T., Robert, G., Macfarlane, F., Bate, P., & Kyriakidou, O. (2004). Diffusion of innovations in service organizations: Systematic review and recommendations. *Milbank Quarterly*, 82(4), 581-629. <https://doi.org/10.1111/j.0887-378X.2004.00325.x>

Kaslow, N. J., Rubin, N. J., Forrest, L., Elman, N. S., Van Horne, B. A., Jacobs, S. C., Huprich, S. K., & Thorn, B. E. (2007). Recognizing, assessing, and intervening with problems of professional competence. *Professional Psychology: Research and Practice*, 38(5), 479-492. <https://doi.org/10.1037/0735-7028.38.5.479>

Koocher, G. P., & Keith-Spiegel, P. (2016). *Ethics in psychology and the mental health professions: Standards and cases* (4th ed.). New York, NY: Oxford University Press.

McMahon, M., & Watson, M. (2007). The systems theory framework of career development: Expanding its applications. *Australian Journal of Career Development*, 16(3), 12-20.

<https://www.researchgate.net/publication/43478999> The Systems Theory Framework of Career Development Expanding its Research Influence

Mechanic, D. (2008). *Managing medical uncertainty: The crisis of professional knowledge*. New Brunswick, NJ: Transaction Publishers.

Moon, J. A. (1999). *Reflection in learning and professional development: Theory and practice*. London, UK: Kogan Page.

Moon, J. A. (2004). *A handbook of reflective and experiential learning*. London, UK: RoutledgeFalmer. <https://doi.org/10.4324/9780203416150>

Norcross, J. C., & Wampold, B. E. (2019). *Psychotherapy relationships that work: Evidence-based therapist contributions* (3rd ed.). New York, NY: Oxford University Press. <https://global.oup.com/academic/product/psychotherapy-relationships-that-work-9780190843960>

Power, M. (1997). *The audit society: Rituals of verification*. Oxford, UK: Oxford University Press.

Rodolfa, M. J., Bent, R., Eisman, E., Nelson, P. D., Rehm, L., & Ritchie, P. (2005). A cube model for competency development: Implications for psychology educators and regulators. *Professional Psychology: Research and Practice*, 36(4), 347-354. <https://doi.org/10.1037/0735-7028.36.4.347>

Schaufeli, W. B., & Taris, T. W. (2005). The conceptualization and measurement of burnout: *Work & Stress*, 19(3), 256-262. <https://doi.org/10.1080/02678370500385913>

Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. New York, NY: Basic Books.

Schön, D. A. (1987). *Educating the reflective practitioner*. San Francisco, CA: Jossey-Bass.

Schwartz, S. J., Luyckx, K., & Vignoles, V. L. (2011). *Handbook of identity theory and research*. New York, NY: Springer.

Super, D. E. (1980). A life-span, life-space approach to career development. *Journal of Vocational Behavior*, 16(3), 282-298. [https://doi.org/10.1016/0001-8791\(80\)90056-1](https://doi.org/10.1016/0001-8791(80)90056-1)

Watkins, D. (2011). Teaching and learning processes: A cross-cultural perspective. *International Journal of Psychology*, 46(5), 307-315. <https://ru.scribd.com/document/838850694/Psychopathology-Research-Assessment-And-Treatment-in-Clinical-Psychology-Third-Edition-G-Davey-2021>

Translated & Transliterated

Hura, T. Ye. (2014). Psykholohiia rozvytku profesiinoho myslennia u maibutnikh psykholohiv u protsesi fakhovoi pidhotovky: avtoref. dys. d-ra psykhol. nauk : 19.00.07. [Psychology of professional thinking development of future psychologists in the process of professional training] Nats. ped. un-t im. M.P. Drahomanova. Kyiv, [in Ukrainian].

Zatvorniuk, O.M. (2016). Formuvannia u maibutnikh psykholohiv hotovnosti do profesiinoho samovdoskonalennia: avtoreferat na zdobuttia nauk.stupenia kand.ped.nauk. [Formation of readiness for professional self-improvement in future psychologists: extended abstract of PhD dissertation]. Kyiv, NDU imeni M.P. Drahomanova. 22 s. <https://enpuir.udu.edu.ua/bitstreams/45d1afe7-4eee-472d-ae79-7532c2f7fc0d/download>, [in Ukrainian].

Ihnatovych, O.M. (2019) *Psykholohichni osnovy rozvytku fakhovoi innovatsiinoi kultury pedahohichnykh pratsivnykiv*. [Psychological foundations of professional innovative culture development of pedagogical staff: extended abstract of Doctoral dissertation, specialty 19.00.07]. Avtoreferat dys. na zdobuttia naukovoho stupenia doktora psykholohichnykh nauk za spetsialnistiu 19.00.07– pedahohichna ta vikova psykholohiia. Kyiv, Instytut psykholohii imeni H. S. Kostiuka NAPN Ukrainy. http://psychology-naes-ua.institute/files/pdf/avtoreferat_ignatovich_1556732803.pdf, [in Ukrainian].

Karpenko, A. A. (2025). Intehratsiia zarubizhnogo dosvidu profesiinoi pidhotovky psykholohiv do roboty z ditmy v ekstremalnykh umovakh [Integration of foreign experience in professional training of psychologists for work with children in extreme conditions]. Pedahohichna Akademiia: naukovy zapysky, (22). <https://doi.org/10.5281/zenodo.17253763>, [in Ukrainian].

Pakhomova, O. (2019). Osoblyvosti rozvytku profesiinoi psykholohichnoi kultury v umovakh VNZ yak meta profesiinoho stanovlennia maibutnikh psykholohiv [Features of professional psychological culture development in higher education institutions as a goal of future psychologists' professional formation] Zbirnyk

naukovykh prats «Problemy suchasnoi psykholohii», (15). <https://doi.org/10.32626/2227-6246.2012-15.%p> , [in Ukrainian].

Pedorenko, V., & Sereda, N. (2025). Formuvannia kultury profesiinoho spilkuvannia maibutnoho psykholoha: naukovy pidkhody ta vyklyky suchasnosti [Formation of professional communication culture of future psychologists: Scientific approaches and contemporary challenges]. *Teoriia i praktyka upravlinnia sotsialnymy systemamy*, 2. https://www.researchgate.net/publication/394233126_formation_of_a_professional_communication_culture_among_future_psychologists_scientific_approaches_and_challenges_of_our_time , [in Ukrainian].

Suprun, D. M. (2018). Modernizatsiia zmistu profesiinoi pidhotovky psykholohiv v haluzi spetsialnoi osvity: monohrafiia [Modernization of the content of professional training of psychologists in the field of special education]. Kyiv : Vyd-vo NPU imeni M. P. Drahomanova. <http://enpuir.npu.edu.ua/handle/123456789/30565> , [in Ukrainian].

Shel, N.V. (2024). Formuvannia profesiinoi kompetentnosti maibutnikh psykholohiv na etapi yikh pidhotovky u VUZi [Formation of professional competence of future psychologists at the stage of university training]. *Visnyk Donetskoho natsionalnoho universytetu imeni Vasylia Stusa. Seriia Psykholohichni nauky*. (Lys 2024), 40-50. [https://doi.org/10.31558/2786-8745.2024.1\(4\).4](https://doi.org/10.31558/2786-8745.2024.1(4).4) , [in Ukrainian].

American Psychological Association. (2021). *Guidelines for the practice of telepsychology*. <https://www.apa.org/practice/guidelines/telepsychology>

Australian Psychological Society. (2020). *Ethical guidelines and professional practice standards*. <https://psychology.org.au/for-members/resource-finder/resource/ethical-guidelines>, [in English].

Bardach, E. (2012). *A practical guide for policy analysis: The eightfold path to more effective problem solving* (4th ed.). Thousand Oaks, CA: CQ Press.

Boud, D., & Walker, D. (1998). Promoting reflection in professional courses. *Studies in Higher Education*, 23(2), 191–206. <https://doi.org/10.1080/03075079812331380384> , [in English].

Boud, D., Keogh, R., & Walker, D. (1985). *Reflection: Turning experience into learning*. London, UK: Kogan Page , [in English].

British Psychological Society. (2022). *Code of ethics and conduct*. Leicester, UK: British Psychological Society. <https://www.bps.org.uk/guideline/code-ethics-and-conduct> , [in English].

Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Cambridge, MA: Harvard University Press, [in English].

Canadian Psychological Association. (2023). *Canadian code of ethics for psychologists (4th ed.)*. https://cpa.ca/docs/File/Ethics/CPA_Code_2017_4thEd.pdf , [in English].

Canadian Psychological Association. (2023). *Telepsychology guidelines*. <https://cpa.ca/practice-ethics/telepsychology> , [in English].

Dobson, R., Fitzgerald, C., McDonald, K., & Flett, R. (2022). Telepsychology practice in Aotearoa New Zealand: Experiences, challenges, and professional implications. *Frontiers in Psychology*, 13, Article 9489853, [in English].

European Federation of Psychologists' Associations. (2023). *EFPA meta-code of ethics (revised edition)*. Brussels, Belgium: European Federation of Psychologists' Associations. <https://www.efpa.eu/efpa-participates-european-mental-health-week-2023> , [in English].

Greenhalgh, T., Howick, J., & Maskrey, N. (2014). Evidence based medicine: A movement in crisis? *BMJ*, 348, g3725. <https://doi.org/10.1136/bmj.g3725>, [in English].

Greenhalgh, T., Robert, G., Macfarlane, F., Bate, P., & Kyriakidou, O. (2004). Diffusion of innovations in service organizations: Systematic review and recommendations. *Milbank Quarterly*, 82(4), 581-629. <https://doi.org/10.1111/j.0887-378X.2004.00325.x>, [in English].

Kaslow, N. J., Rubin, N. J., Forrest, L., Elman, N. S., Van Horne, B. A., Jacobs, S. C., Huprich, S. K., & Thorn, B. E. (2007). Recognizing, assessing, and intervening with problems of professional competence. *Professional Psychology: Research and Practice*, 38(5), 479-492. <https://doi.org/10.1037/0735-7028.38.5.479>, [in English].

Koocher, G. P., & Keith-Spiegel, P. (2016). *Ethics in psychology and the mental health professions: Standards and cases* (4th ed.). New York, NY: Oxford University Press, [in English].

McMahon, M., & Watson, M. (2007). The systems theory framework of career development: Expanding its applications. *Australian Journal of Career Development*, 16(3), 12-20.

<https://www.researchgate.net/publication/43478999> The Systems Theory Framework of Career Development Expanding its Research Influence,[in English].

Mechanic, D. (2008). *Managing medical uncertainty: The crisis of professional knowledge*. New Brunswick, NJ: Transaction Publishers,[in English].

Moon, J. A. (1999). *Reflection in learning and professional development: Theory and practice*. London, UK: Kogan Page, [in English].

Moon, J. A. (2004). *A handbook of reflective and experiential learning*. London, UK: RoutledgeFalmer. <https://doi.org/10.4324/9780203416150>,[in English].

Norcross, J. C., & Wampold, B. E. (2019). *Psychotherapy relationships that work: Evidence-based therapist contributions* (3rd ed.). New York, NY: Oxford University Press. <https://global.oup.com/academic/product/psychotherapy-relationships-that-work-9780190843960>,[in English].

Power, M. (1997). *The audit society: Rituals of verification*. Oxford, UK: Oxford University Press, [in English].

Rodolfa, M. J., Bent, R., Eisman, E., Nelson, P. D., Rehm, L., & Ritchie, P. (2005). A cube model for competency development: Implications for psychology educators and regulators. *Professional Psychology: Research and Practice*, 36(4), 347-354. <https://doi.org/10.1037/0735-7028.36.4.347>,[in English].

Schaufeli, W. B., & Taris, T. W. (2005). The conceptualization and measurement of burnout: *Work & Stress*, 19(3), 256-262. <https://doi.org/10.1080/02678370500385913>,[in English].

Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. New York, NY: Basic Books, [in English].

Schön, D. A. (1987). *Educating the reflective practitioner*. San Francisco, CA: Jossey-Bass, [in English].

Schwartz, S. J., Luyckx, K., & Vignoles, V. L. (2011). *Handbook of identity theory and research*. New York, NY: Springer,[in English].

Super, D. E. (1980). A life-span, life-space approach to career development. *Journal of Vocational Behavior*, 16(3), 282-298. [https://doi.org/10.1016/0001-8791\(80\)90056-1](https://doi.org/10.1016/0001-8791(80)90056-1), [in English].

Watkins, D. (2011). Teaching and learning processes: A cross-cultural perspective. *International Journal of Psychology*, 46(5), 307-315. <https://ru.scribd.com/document/838850694/Psychopathology-Research-Assessment-And-Treatment-in-Clinical-Psychology-Third-Edition-G-Davey-2021>, [in English].

DOI: <https://doi.org/10.32835/2707-3092.2025.31.238-250>

ЗАРУБІЖНИЙ ДОСВІД ДОСЛІДЖЕННЯ ПРОБЛЕМИ ПРОФЕСІЙНОЇ КУЛЬТУРИ ПРАКТИЧНИХ ПСИХОЛОГІВ ЗАКЛАДІВ ПРОФЕСІЙНОЇ (ПРОФЕСІЙНО-ТЕХНІЧНОЇ) ОСВІТИ

Оксана Лапа

кандидат педагогічних наук, старший дослідник, докторант Інституту професійної освіти Національної академії педагогічних наук, <https://orcid.org/0000-0002-0964-7674>, email: oksana.lapa@ukr.net

Реферат:

Актуальність: необхідність дослідження зарубіжного досвіду розвитку професійної культури практичних психологів закладів професійної (професійно-технічної) освіти визначається активними процесами цифровізації, кризовими викликами, трансформацією ролі психологічної служби, підвищеними вимогами до професійної діяльності практичного психолога; аналіз зарубіжного досвіду дозволяє виявити найкращі механізми і практики розвитку професійної культури, які можуть бути адаптовані в українському освітньому контексті.

Мета: системний аналіз зарубіжних теоретичних, нормативних та емпіричних підходів до дослідження професійної культури практичних психологів у закладах професійної (професійно-технічної) освіти, а також окреслення можливостей їх імплементації в українську освітню практику.

Методи: теоретичні – аналіз і синтез (для узагальнення зарубіжних наукових підходів до розуміння професійної культури психологів), порівняльний аналіз (для зіставлення теоретичних моделей професійної культури, підходів до її структурування та оцінювання), систематизація та класифікація (для впорядкування концепцій, методологічних підходів, індикаторів професійної культури та інструментів її інституційного забезпечення), контент-аналіз наукових джерел і нормативних документів (для виявлення ключових категорій, ціннісних орієнтацій і нормативних уявлень про професійну культуру психологів), метод теоретичного узагальнення (для формулювання авторських висновків щодо інтеграції зарубіжного досвіду в український контекст); емпіричні: аналіз результатів емпіричних досліджень (для вивчення особливостей діяльності психологів і психологічних служб зарубіжних країн), порівняльний аналіз емпіричних даних (для формуванні професійної культури психологів).

Результати: узагальнено зарубіжні наукові підходи до розвитку професійної культури практичних психологів (системний, компетентнісний, ціннісний, соціокультурний, регуляторний, нормативно-інституційний); визначено напрями імплементації кращого зарубіжного досвіду у вітчизняну практику (чіткість етичних принципів; міжпрофесійна взаємодія; підвищення якості допомоги, стійкості фахівців і довіри до психологічної служби; інституціоналізація супервізії; безперервний професійний розвиток; упровадження інструментів операціоналізації; розвиток цифрової культури).

Висновки: у зарубіжній науковій традиції розвиток професійної культури практичних психологів розглядається як багатовимірне явище, що формується на перетині системної організації професійної діяльності, структури професійних компетентностей, рефлексивних механізмів професійного розвитку та інституційно-нормативних політик забезпечення якості психологічних послуг; розуміння розвитку професійної культури цих фахівців передбачає інтеграцію етичних цінностей, професійну ідентичність, рефлексивні практики та інституційну відповідальність; імплементація зарубіжного досвіду в освітній простір вітчизняних ЗП(ПТ)О має розглядатися як стратегічний процес модернізації професійної культури практичних психологів, спрямований на підвищення якості допомоги, стійкості фахівців і довіри до психологічної служби в цілому.

Ключові слова: *зарубіжний досвід, професійна культура, професійна діяльність, практичні психологи закладів професійної (професійно-технічної освіти), психологи, заклади професійної (професійно-технічної) освіти.*

Manuscript received	07.08.2025
Accepted for publication after peer review	20.11.2025
Published	11.12.2025



SOCIO-HUMANITARIAN EDUCATION IN EU COUNTRIES: EXPERIENCE AND PROSPECTS OF IMPLEMENTATION INTO THE UKRAINIAN EDUCATIONAL SYSTEM

Mykola-Oleg Yershov

PhD, Doctoral Student of the Ivan Ziaziun Institute of Pedagogical and Adult Education of the National Academy of Educational Sciences of Ukraine, Kyiv, Ukraine, <https://orcid.org/0000-0002-6839-622X>, e-mail: my.yershov@gmail.com

Abstract

Relevance of studying foreign experience in the development of socio-humanitarian education in Ukraine is driven by public demand for: the use of effective global practices in the socio-humanitarian training of higher education students for life and professional activity in conditions of socio-economic and geopolitical uncertainty; the formation of state educational policy aimed at strengthening democratic values and protecting democracy; the development of a new paradigm for the socio-humanitarian education of future specialists to enhance the resilience and cohesion of Ukrainian society in conditions of war and post-war recovery.

Purpose: to identify current trends in the development of socio-humanitarian education in EU higher education institutions and to substantiate the directions for implementing the best European experience in Ukraine to increase the effectiveness of educational reforms, develop civil society, preserve democratic values, and accelerate the post-war recovery of Ukraine.

Methods: information-search and complex analysis of sources – to identify the stages and trends in the development of the studied phenomenon; theoretical analysis, comparison, and generalization – to determine the characteristics of the development of socio-humanitarian education in EU countries; predictive scenarios – to distinguish the goals and ways of utilizing foreign experience in the development of socio-humanitarian education in Ukraine.

Results: trends in the development of socio-humanitarian education in EU countries have been identified; probable directions for the implementation of the best European experience into the Ukrainian education system have been forecasted; challenges and obstacles to the introduction of foreign experience in the development of socio-humanitarian education into the Ukrainian education system have been determined; practical recommendations have been formulated, and an algorithm for implementing the best foreign practices into the domestic system of socio-humanitarian education has been proposed.

Conclusions: in modern scientific discourse, a rethinking of the consequences of the Bologna Process is taking place; the functioning of higher education institutions in EU countries is influenced by globalization, digital transformation, and the militarization of the information space; the modern context of socio-humanitarian education in EU countries is defined by trends aimed at forming an innovative, responsible, and critical-thinking citizen (internationalization of education, interdisciplinarity and meta-disciplinarity, the competency-based approach, the implementation of innovative technologies and teaching methods, focus on civic education and social responsibility, flexibility and adaptability of educational programs, decentralization and democratization of education systems); three main goals for applying foreign experience in the development of socio-humanitarian education in Ukraine have been identified (for the development of the domestic education system, strengthening the capacity of civil society, strengthening democratic values, and preserving democracy); probable ways of its utilization have been outlined (modernization of programs with the implementation of foreign practices, improving the quality of science and education based on international standards, integration into the global scientific and educational space through the development of academic mobility, participation of educational process

subjects in grant programs); the successful implementation of this experience is not only an academic but also a strategic task for protecting national interests and preserving democracy in Ukraine.

Keywords: *socio-humanitarian education, higher education, third mission of universities, social responsibility, critical thinking, democratic values, digitalization of education, state educational policy.*

Introduction. In the context of contemporary challenges, the importance of studying foreign experience in the development of socio-humanitarian education for Ukraine is extremely high, as it has a direct impact on the development of human capital, the quality of youth preparation for personal and social life and professional activity, the strengthening of civil society, and the preservation of democratic values. The implementation of the best foreign experience in Ukraine contributes to the renewal of outdated educational models inherited from the Soviet system, helps modernize educational programs, improve the quality of education, and accelerate integration into the global scientific and educational space.

Modern socio-humanitarian education abroad focuses not only on theoretical knowledge but also on nurturing an active and responsible citizen. It forms critical thinking and stimulates social responsibility. In conditions of external aggression and internal threats to democratic institutions, socio-humanitarian education becomes a key tool for preserving democracy. Foreign experience of its development shows how democratic institutions were created in the world's developed countries, how rights and freedoms were strengthened, how the value of human rights was realized, and how the readiness to protect them was formed. Therefore, the study of this experience is not only an academic task but also a strategic step towards achieving Ukraine's most important humanistic goal, which consists in building a modern democratic society based on the maximum disclosure of the potential of all citizens capable of critical thinking and able to defend democracy (Kachan & Ivanov, 2023, p. 177; Petruk, 2020, p. 54; Kulalaieva, Romanov, Yershov, Romanova, & Yershova, 2024).

Modern development of education in Ukraine and the world takes place in a difficult period of globalization, digital transformation, powerful geopolitical, socio-economic, and national challenges, and is identified in scientific sources as post-Bologna (Sytnyk, 2019, p. 159). The education system in EU countries develops on principles defined by the Bologna Process, relies on fundamental values of Western culture, and is characterized by attention to

the competency-based approach, a course towards further unification of educational standards, the development of student mobility, academic freedom, etc. At the same time, in modern scientific discourse, there is a rethinking of the consequences of the Bologna Process, and attempts appear to move away from its excessive technocratism and utilitarianism, focusing attention on the development of educational mechanisms for strengthening and protecting democracy.

The purpose of the article is to identify current trends in the development of socio-humanitarian education in EU higher education institutions and to substantiate directions for implementing the best European experience in Ukraine to increase the effectiveness of educational reforms, develop civil society, preserve democratic values, and accelerate the post-war recovery of Ukraine.

Methods: information-search analysis – for the formation of the source base; historiographical analysis of the researched problem – to identify the stages and trends of the development of socio-humanitarian education in democratic countries of the world as a historical-pedagogical phenomenon; complex analysis of selected sources using a multidimensional approach – to identify quantitative and qualitative characteristics of academic discourse; theoretical analysis, comparison, and generalization – to determine innovative approaches to the development of socio-humanitarian education in EU countries, study their impact on the formation of critical thinking and social responsibility of youth, and the development of civil society; forecasting (historical analogy – to transfer the identified patterns of development of socio-humanitarian education in EU countries to the process of reforming the national education system; establishing cause-and-effect relationships – to identify interdependencies between various factors of socio-humanitarian education development; forecast scenarios – to build probable directions, problems, and challenges of using foreign

experience in the development of socio-humanitarian education in Ukraine).

Sources. To form the source base in the study, the Google Scholar search engine was used, where 1,750 publications were identified for the query "socio-humanitarian education in EU countries." For a complex analysis of the selected sources, a multidimensional approach was applied, which allows for identifying not only quantitative but also qualitative characteristics of academic discourse. The purpose of the analysis was not only the quantitative outlining of thematic trends but also a deep interpretation of structural patterns, conceptual emphases, and interdisciplinary relationships that shape academic discourse in this field.

The methodological matrix of publication analysis is built on the basis of the following logical sequence: criterion → goal → result. The following analysis criteria have been determined: industry affiliation – determining the dominant scientific fields (pedagogy, sociology, political science, economics), which allows for assessing the interdisciplinarity of the problem; geographical representation – the distribution of publications by EU countries, which allows for tracking regional imbalances in the study of

socio-humanitarian education; type of publication – classification of sources by format (journals, conference materials, monographs, policy papers), reflecting various channels of academic communication; degree of proximity to the problem – differentiation between works directly related to socio-humanitarian education and publications of a broader profile (general education, higher education, educational policy, public policy). The justification for the choice of criteria has been provided: the sectoral cross-section allows for identifying whether socio-humanitarian education is considered as an independent object of research or as a derivative of other disciplines; the geographical aspect shows which countries form the core of the discourse and which remain peripheral; the typology of publications reflects the balance between academic and applied publication formats; the degree of proximity allows for evaluating the depth of conceptualization of the problem or the risks of its marginalization in broader educational or political discourses. Thus, the analysis methodology combines quantitative and qualitative parameters, providing a comprehensive vision of the state of research on socio-humanitarian education in EU countries.

Table 1

Generalized results of publication analysis for the query "socio-humanitarian education in EU countries" in Google Scholar, indicating the share of each category in the total number of sources (1,750)

By scientific branch	Number of sources	Share, %
Pedagogy and educational sciences	~ 875	50
Sociology, cultural studies	~ 350	20
Political science, public administration	~ 280	16
Economics, education management	~ 105	6
Others	~ 140	8
By country	Number of sources	Share, %
Poland	~ 260	15
Germany	~ 210	12
France	~ 175	10
Scandinavian countries (SE, FI, DK)	~ 140	8
Italy, Spain, Greece	~ 105	6
Other EU countries	~ 860	49
By type of publication	Number of sources	Share, %
Scientific journals	~ 1,050	60
Conference proceedings	~ 350	20
Monographs and books	~ 175	10
Analytical reports	~ 175	10

By degree of proximity to the topic	Number of sources	Share, %
Direct study of socio-humanitarian education	~ 210	12
General education	~ 875	50
Educational policy	~ 455	26
Public policy in general (mentioning educational issues)	~ 210	12

Compiled by the author based on the Google Scholar search function and with the help of the Copilot analytical tool.

An analysis of sources by disciplinary affiliation showed that the vast majority (50%) belong to pedagogy and educational sciences, among which studies focusing on didactic and competency-based approaches to the study of social-humanitarian education dominate. At the same time, a significant share of works (20%) falls under sociology and cultural studies, where attention is focused on the social functions of education and the formation of civic values and identities. Publications in political science and public administration (16%) mostly consider education as an instrument of political influence, especially in the context of European integration. Works on the economics and management of education (6%) address tasks oriented toward the efficiency and commercialization of educational processes. The remaining sources (8%) cover education in the context of philosophy, law, psychology, and other sciences, which emphasizes the interdisciplinary potential of the problem under study.

The geographical representation of selected publications revealed significant regional imbalances in the presentation of social-humanitarian education in EU countries within Ukraine's academic space. In terms of quantity, publications dedicated to the educational systems of Poland (15%), Germany (12%), and France (10%) lead, indicating the interest of the Ukrainian scientific community in the academic infrastructure of these countries and the effectiveness of their educational programs. Works dedicated to education in the Scandinavian countries (8%) demonstrate the steady interest of domestic scientists in studying socially-oriented models of education. Education in Southern Europe (6%) is presented less actively in scientific discourse, primarily in the context of European integration processes.

Typological analysis showed that 60% of sources are articles in scientific journals, confirming the academic legitimacy of the topic. Conference proceedings account for 20%, reflecting the dynamics of interdisciplinary discussion. Monographs and books cover 10%, typically offering deeper theoretical generalizations. Another 10% falls to analytical reports and policy papers, which have applied significance for educational policy.

At the same time, it is worth noting that only 12% of sources are directly dedicated to social-humanitarian education, indicating its marginalization in academic discourse. The largest share (50%) consists of publications on general education, where the social-humanitarian component is mentioned indirectly. Educational policy covers 26% of the sources, with an emphasis on reforms, standardization, and managerial aspects. Another 12% is accounted for by works on public policy in general, where social-humanitarian education is viewed as a tool of social influence.

Consequently, the attention of Ukrainian scientists is primarily focused on the adaptation of European models of social-humanitarian education to the national context, reflecting the desire for integration into the European academic space. At the same time, the insufficiency of empirical research must be acknowledged, which complicates a deep understanding of the specifics of social-humanitarian education in EU countries. Ukrainian researchers note that in scientific discussions, social-humanitarian education often remains marginalized, which limits the study of its impact on educational policy and practice. The lack of clear conceptual models complicates its institutionalization and development as an independent object of study. Simultaneously, it outlines the potential for further interdisciplinary studies, particularly in the context of

educational policy, civic education, and academic freedom.

An additional 260 sources (dissertations, research reports, monographs) were added to the research source base following the information-search analysis of NRAT (National Repository of Academic Texts) materials, identified through general search queries such as "education in EU countries" (17), "education in the countries of the European Union" (38), and specific queries regarding education in each European country. The chart (Fig.

1) demonstrates the unevenness of academic attention toward the study of education in the EU. The scientific attention of Ukrainian scholars is most concentrated on studying the educational systems of Poland (66), Germany (52), France (24), Hungary (14), and Sweden (11). Presumably, the reason for such an imbalance may be the varying levels of institutional support for educational research, language barriers, as well as the differing relevance of educational reforms.

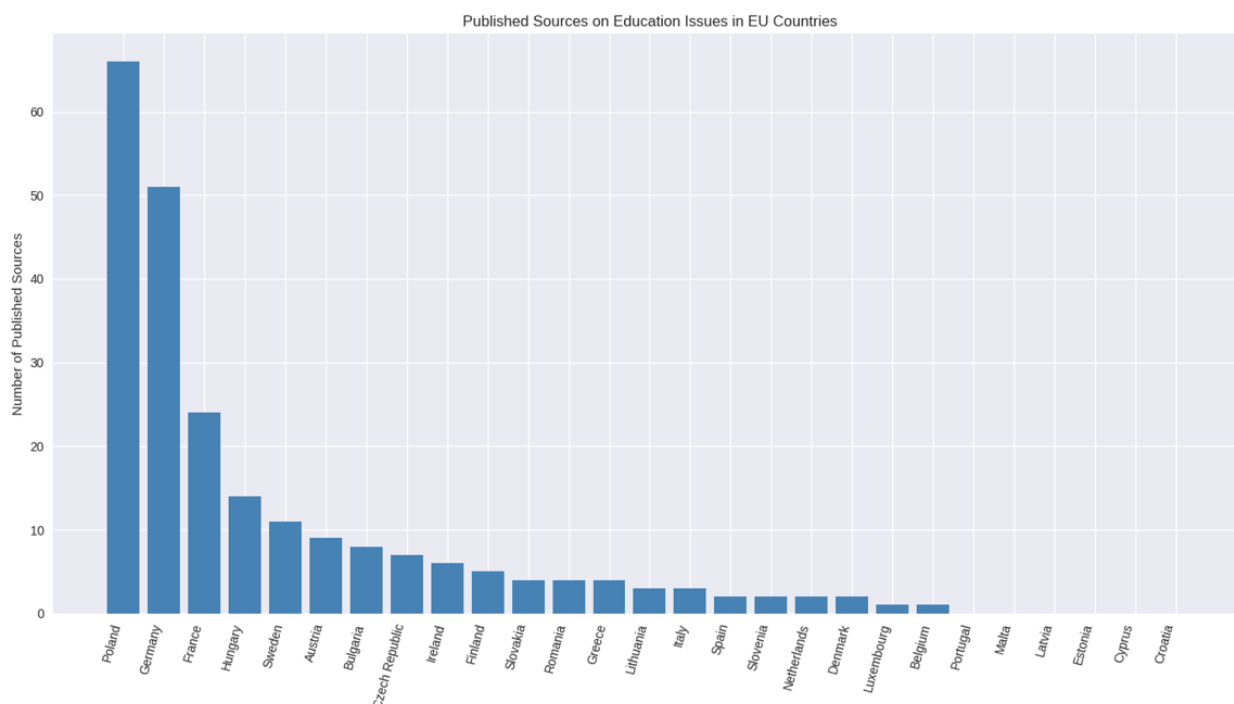


Fig. 1. Number of scientific sources on the problems of education in EU countries (Compiled by the author based on NRAT data)

The subject matter of sources from the NRAT database also demonstrates their interdisciplinary nature, with the dominance of pedagogical and social sciences. Geographically, Central and Western European countries are most represented in them; typologically, dissertations and monographs prevail. Directly, social-humanitarian education is covered limitedly—most materials concern general education and educational policy. Overall, this confirms the trend identified during the analysis of sources from the Google Scholar database.

The article also took into account the ideas of foreign authors, whose works were selected according to the following criteria: relevance, citation rate, topic significance, and influence on EU

policy. Specifically, the following concepts were utilized: Andy Green (Green, 2013), where education is substantiated as a tool for state-building and a factor influencing social cohesion; Ronald Barnett (Barnett, 1990; Barnett, Bengtsen, Davids, & Peters, 2023), where the university is defined as a space for the formation of critical thinking and preparing youth for life in a "supercomplex" world; Guy Standing (Standing, 2016), where the role of education in youth mobility and its impact on employment instability is characterized; Gert Biesta (Biesta, 2006), highlighting the influence of education on the civic agency of youth and their participation in democratic processes; Andreas Schleicher (Schleicher, 2018), where the impact of skills on youth competitiveness is defined; Martin

Carnoy (Carnoy, 2024), presenting the economic and political factors that determine the effectiveness of educational systems and highlighting their impact on social mobility and the labor market. These researchers represent different disciplines: sociology (A. Green, G. Standing), philosophy of education (G. Biesta, R. Barnett), economic foundations of education (M. Carnoy), and educational measurement (A. Schleicher). Such a spectrum ensures a comprehensive analysis of education as a social institution that influences both the professional and social lives of young people. Their works are actively published in the 21st century, have high citation indices in scientific databases such as Scopus, Web of Science, or Google Scholar, OECD or Routledge, are cited in the publications of Ukrainian researchers (Google Scholar citation search), and reflect contemporary educational challenges (globalization, digitalization, labor market instability, democratic transformations). This makes it possible to use the aforementioned concepts as a basis for analyzing the development of social-humanitarian education in EU countries.

Results and Discussion. Based on the analysis of the source base characterized in the article, several stages in the development of social-humanitarian education in European countries can be identified. The first stage is the pre-Bologna period (1990s – 2003). During this time, attention to concepts such as "post-national citizenship," "world citizenship," and "global outlook" was activated. Several new concepts were formed. The first is the education of a global citizen, which involves providing high-quality social-humanitarian education for the awareness and adoption of a system of universal human values (peace, democracy, pluralism, respect for other cultures), understanding global environmental, social, and political problems (poverty, environment, xenophobia, violence, illiteracy, intolerance, terrorism, etc.), forming critical thinking, and developing readiness to counteract planetary threats (Gilbert, 1992, pp. 51-68; Habermas, 1995, pp. 255-281; Ichilov, pp. 11-27). The second concept is democratic citizenship, aimed at forming a new generation of Europeans with a progressive outlook (personal responsibility and activity of citizens of a united Europe and collective responsibility for

building democracy in the community). For its implementation, high-quality social-humanitarian education (civic, political, axiological, global, peace education, human rights education) is also necessary (Barnett, 1990; Birzea, 2000, pp. 36-37). During this period, technologies for teaching democratic citizenship in general secondary schools were actively developed (learning through practical experience and cooperation, intercultural and contextual learning, learning by doing, political socialization, etc.), oriented toward the formation of participatory democracy in educational institutions (direct active participation of students in the management of the educational institution) (Birzea, 2000, p. 47). In this concept, the school is considered a micro-model of a democratic learning community (Barnett, 1990; Volynets, Yehorov, Lavrychenko, Lokshyna, Melnychenko, Pershukova, & Sheverun, 2014, p. 49). Significant attention at this stage was also paid to: classic models of university education formed in the 19th–20th centuries; studying the role of the humanities in the formation of national elites (historical and philosophical studies examining the development of universities as centers of culture and knowledge); and defining differences between the educational systems of different countries, reflected in well-known concepts of university education – Napoleonic (French), Humboldtian (German), Newmanian (English), and American.

The second stage is the Bologna period (early 2004 – 2014). This is the most active period of research dedicated to studying the Bologna Process and its impact on the social-humanitarian sciences. In the field of European social-humanitarian education, Ukrainian scholars considered the key trend of this period to be the enrichment of content with democratic values by implementing the idea of the European dimension in education (Volynets, Yehorov, Lavrychenko, Lokshyna, Melnychenko, Pershukova, & Sheverun, 2014, p. 21).

At the current stage (from 2014 to the present), scientific thought moves beyond the Bologna Process, considering global challenges for the development of social-humanitarian education. Publications appear dedicated to the criticism of the Bologna Process for its excessive utilitarianism and commercialization. The key research areas at this stage are: digital transformation (studying the

impact of online courses (MOOCs), artificial intelligence, and digital tools on social-humanitarian education); interdisciplinarity (describing successful cases of combining the humanities with IT, business, and natural sciences); and the "third mission" of universities (analyzing the role of universities in social service, civil society development, and regional development).

It is this stage that is the main object of our analysis, conducted to determine modern trends in the development of social-humanitarian education in EU countries. We specifically relied on the work of M. Wihlborg (2019), which analyzed 38 articles containing certain concerns about the possible negative consequences of the Bologna Process. Recognizing the Bologna Process as the most powerful educational phenomenon of modern times, the author attests to the lack of adequate analysis of its results and strategic forecasts, and the ambiguity and caution of researchers' conclusions. More clearly formulated warnings are generally focused on threats of an ideological and economic nature (Burnett, 2007; Curaj, Hâj, & Pricopie, 2024; Quinteri, & Kajee, 2025). The former are associated with the globalization of educational policy and the internationalization of education. They are expressed through the actualization of phenomena such as "transnational education," "cross-border learning," and "global citizen," and, in the opinion of scientists, potentially threaten to compromise multilingual diversity, which lowers the quality of education, and lead to the emergence of a crisis of national identity. The latter are related to the transformation of education into a tool for economic efficiency and market competitiveness, the excessive commercialization of universities, the diminishing role of humanitarian disciplines, the strengthening of intellectual leadership, the emergence of conflicts of economic interests, the transformation of education into a business, and the student into a client, and the increased risk of losing academic freedom through standardization and bureaucratization. Consequently, the Bologna Process undoubtedly modernized the European education system but also created conditions not entirely favorable for preserving the social-humanitarian values upon which the life of the democratic world is built.

An important role in studying the educational systems of EU countries belongs to Ukrainian scientists, who considered: the impact of the Bologna Process on overcoming post-Soviet stereotypes in Ukrainian education (Kushnir, 2021, p. 42); trends in the development of the content of school humanities education in EU countries (Volynets, Yehorov, Lavrychenko, Lokshyna, Melnychenko, Pershukova, & Sheverun, 2011); processes of decentralization, democratization, and ensuring the resilience of foreign educational systems (Kohut, 2017; Londar, Bosenko, & Gaiduk, 2024), trends in the development of academic freedom in foreign countries (Zaiets, 2025, p. 40), European traditions of developing university responsibility, forming critical thinking and social responsibility, introducing the principles of open science, the participation of universities in achieving sustainable development goals (Luhovyi, Drach, Petroie et al., 2022, pp. 41, 82), European experience in conducting humanitarian research in integration with public organizations and business (Borodiienko, Vitrenko, Vorona et al., pp. 41, 67), and the dominance of the moral-ethical component in preparing youth for the profession (Babkina, 2019, pp. 31-32). Furthermore, the problem of studying the foreign experience of social-humanitarian education development as a value-activity basis for raising citizens and leaders of a democratic society is the subject of not only pedagogical dissertation research but also philosophical (N. Habrusieva), psychological (O. Kovalchuk), legal (V. Nesterovych), political (Kh. Holynska), public administration (N. Popadiuk), etc.

It is worth noting that in these studies, special attention was paid to the development of social-humanitarian education in post-Soviet countries. It was found that the political and social changes caused by the collapse of the Soviet Union had a deep and often contradictory impact on the social-humanitarian education of the former republics. After emerging from under Russian ideological influence, they gained the opportunity to free themselves from ideological control but simultaneously faced new challenges. In this context, the impact on social-humanitarian education was highlighted regarding: political and social changes after the collapse of the Soviet Union, the modern concept of the "third mission of

universities," digitalization and open educational resources, and the integration of social-humanitarian and technical knowledge.

The impact of political changes on the state of social-humanitarian education is reflected through its de-ideologization. Political liberalization paved the way for rethinking scientific disciplines that were previously under the strict control of the Communist Party. This made it possible to abandon the dogmas of Marxism-Leninism, develop a new methodology, introduce new practices, and freely research previously forbidden topics. This was also facilitated by integration into global science, as post-Soviet countries gained the opportunity to join international scientific networks, participate in joint research, and grant programs, which contributed to the exchange of social-humanitarian knowledge and experience. At the same time, not all post-Soviet countries were able to take advantage of the window of opportunity for democracy development, which affected the content of their social-humanitarian education. For example, Russia and Belarus returned to political control over the social-humanitarian sciences. Their scientists, researching "inconvenient" topics (historical, political, social), face censorship, financial restrictions, and persecution.

Social changes also affected the state of social-humanitarian education in post-Soviet countries. Social-humanitarian sciences began to research new topics relevant to society: gender issues, migration, social inequality, and the development of civil society. This made them more relevant and in demand. A change in funding sources occurred. The objective reduction of state funding during the formation of young economies forced researchers to seek grants from international foundations and other sources. This contributed to the development of project-based thinking but simultaneously made some research areas dependent on external priorities. Consequently, phenomena such as commercialization and plagiarism emerged. The transition to a market economy and the deterioration of the financial situation of scientists led to the spread of academic dishonesty. This phenomenon became a serious challenge to the reputation and quality of science in post-Soviet countries. Thus, the post-Soviet period became a time of great opportunities and, at the

same time, serious challenges for social-humanitarian science. It was found that, depending on the political course of a specific country, this influence was both stimulating and hindering.

It should also be noted that in EU countries, the development of social-humanitarian education is a transnational process focusing on strengthening interdisciplinarity, digitalization, and increasing ties with society. These initiatives are part of a broader strategy known as the third mission of universities, which involves moving beyond purely academic functions to address contemporary social challenges. Such, in particular, is the "European University Initiative." This is a network of transnational alliances that unite universities from different EU countries. They create joint educational programs that encourage student and faculty mobility, as well as collaboration in research. For example, the CIVIS Alliance unites 11 universities, including Vilnius University (Lithuania), Aix-Marseille University (France), and others. It focuses on studying global challenges such as climate change, migration, and development, the solution of which requires the use of social-humanitarian science. The strengthening of the "third mission" occurs through science parks and clusters. Universities collaborate with local communities and government authorities. This allows for the implementation of projects that have a direct social and cultural impact and respond to the needs of society.

Digitalization and open educational resources contribute to the development of social-humanitarian education in democratic countries around the world. Universities create online courses (MOOCs) and open educational resources, making social-humanitarian knowledge accessible to a wider audience. An example is the Coursera platform, which hosts courses in history, philosophy, and political science from leading European universities, including Edinburgh and Amsterdam. In many foreign countries, the practice of integrating social-humanitarian and technical knowledge is widespread. Universities create programs that combine social-humanitarian sciences with technical, natural, and other sciences. This helps students solve complex problems (climate change, migration, cybersecurity, etc.). For example, the Netherlands is introducing a "Digital

Humanities" program that combines history, linguistics, and information technology (Digital Humanities: official website of the University of Amsterdam, n.d.). These examples illustrate the fact that social-humanitarian education in democratic countries is moving away from purely academic functions and becoming an active tool for addressing modern global, national, and local challenges for the individual, society, and the state.

The main task of domestic pedagogical science is to adapt successful foreign practices to Ukrainian realities. This will contribute to strengthening the "third mission" of domestic universities and the social role of social-humanitarian education. The implementation of European experience can transform Ukrainian social-humanitarian faculties into centers of social service. Students can be involved in community projects, collaborate with local communities, analyze social problems, and propose ways to solve them. This will make education more practical and meaningful for society. For example, sociology students can conduct research for local governments, while historians can develop projects for local communities to preserve cultural heritage. Foreign experience will positively influence the development of interdisciplinary programs. The practice of European universities shows that social-humanitarian sciences become particularly valuable at the intersection with other fields. Ukraine has the potential to create programs that combine "digital humanities," where history or philology is combined with Big Data analysis. This will expand employment opportunities for humanities graduates in the IT sector. Foreign experience is an impetus for rethinking traditional scientific approaches to preparing future specialists, optimizing the cycle of social-humanitarian disciplines, transitioning from outdated methodologies to modern ones, introducing the latest approaches to academic ethics

and open science, and strengthening the influence of social-humanitarian education on social consciousness and behavior (Petruk, 2020, pp. 54-55). This will help Ukrainian humanities researchers, integrating into the international scientific community, to convey information about the unique Ukrainian identity and freedom-loving Ukrainian mentality to the international scientific community.

However, it is worth noting that the implementation of foreign experience in the development of social-humanitarian education in Ukraine faces a number of significant challenges (Fig. 2). Among them, the most obvious are institutional and bureaucratic obstacles related to: the slowness of decision-making due to a complex bureaucratic mechanism for approving innovations at various levels; the lack of a unified strategy for selecting cases for their implementation; and the unreadiness of many educators to abandon traditional working methods. The introduction of new social-humanitarian programs, technologies, and methodologies requires significant investment in faculty development, modernization of educational premises, and updating of material and technical supplies. Therefore, many educational institutions refuse expenditures not directly related to the professional training of future specialists. The implementation of foreign experience is also hindered by: discrepancies in the transmission of social-humanitarian knowledge in Ukraine (knowledge-based paradigm, individual responsibility of the person for the quality of social-humanitarian skills) and EU countries (activity-based approach, state orientation toward developing critical thinking and social activity); insufficient proficiency in foreign languages, and a low level of access to foreign scientific sources and exchange programs.

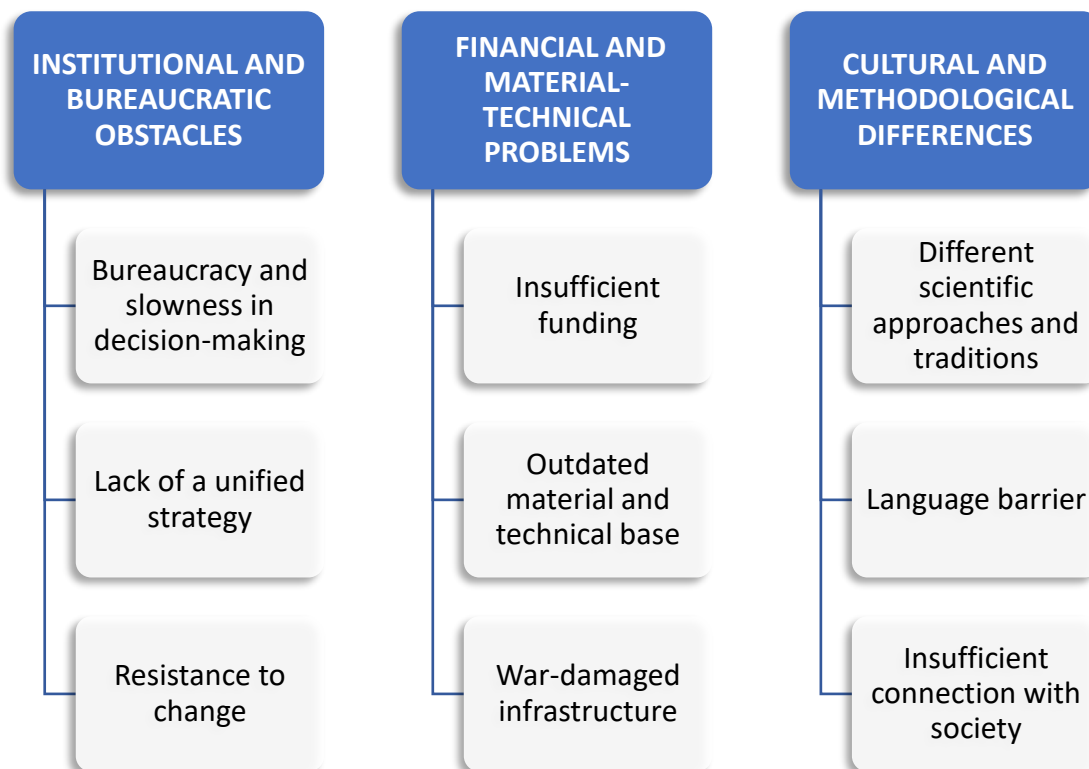


Fig. 2. Challenges for implementing foreign experience in the Ukrainian system of social-humanitarian education (Constructed by the author)

According to Ukrainian researchers (Chubina, Usov, Dmytrenko, Fedorenko, Kosiak, Voronovska, Kryshchal, & Dulherova, 2024, p. 58), the basis for the success of social-humanitarian training of youth in EU countries is the European model of state management of education, which envisages the presence of a certain algorithm: studying theory and practice in dynamics, studying foreign experience, analyzing the possibilities and effectiveness of its use, determining the main problems; developing proposals and drafting

regulatory documents aimed at their implementation. Thus, the prospects for implementing foreign experience in Ukrainian social-humanitarian education are significant but require systematic and balanced approaches. This can be facilitated by systematic state support for the tasks defined by the indicative algorithm for introducing successful foreign practices of social-humanitarian education development in Ukraine (Fig. 3).



Fig. 3. Algorithm for introducing successful foreign practices of social-humanitarian education development in Ukraine.

Constructed by the author taking into account the ideas set forth in the source: Chubina, Usov, Dmytrenko, Fedorenko, Kosiak, Voronovska, Kryshchal, & Dulherova, 2024.

Conclusions. The functioning of higher education institutions in many EU countries is influenced by three main factors: globalization (which caused a global trend toward the integration of educational and value systems), digital transformation (which radically changed teaching methods, promoted the development of online education and interdisciplinary research, strengthened the ties between science and society, significantly influenced value systems by transforming attitudes toward information, communication, identity, and privacy, exacerbating the problem of the ideal of an educated person capable of confidently navigating the virtual and real worlds), and the militarization of the information space (the war unleashed by Russia against Ukraine has forced the entire world to rethink approaches to forming the civic consciousness of its citizens and their readiness to defend democratic values, state sovereignty, and national identity).

Generalization of the development of social-humanitarian education in democratic countries of the

world made it possible to identify the following main trends: internationalization of education – the spread of international academic mobility, intercultural exchange, and joint scientific research aimed at forming global social-humanitarian competence of students; interdisciplinarity and transdisciplinarity – the integration of knowledge from various humanitarian, social, psychological, and economic disciplines to form a comprehensive understanding of societal processes; competence-based approach – orientation of educational programs toward the development not only of knowledge but also of key competencies (critical thinking, civic engagement, social responsibility); introduction of innovative technologies and teaching methods (interactive platforms, forums, social projects) – formation of skills for socially responsible behavior; focus on civic education and social responsibility – formation of an active civic stance, tolerance, respect for cultural diversity, and human rights; flexibility and adaptability of educational programs to changes in society,

economy, and politics – ensuring the compliance of the content of education with contemporary moral-ethical challenges and labor market needs; decentralization and democratization of education systems – promoting the development of autonomy of educational institutions and the involvement of local communities. These trends shape the modern context of the functioning of social-humanitarian education in countries of the democratic world, which is oriented toward the development of an innovative, responsible, and critically thinking citizen capable of assessing the opportunities and advantages of democracy and defending them.

Three main directions for applying foreign experience in Ukraine have been determined: for the development of the domestic higher education system, enhancing the capacity of civil society, strengthening democratic values, and preserving democracy.

It has been found that the development of the domestic higher education system can be achieved through: replacing outdated educational models with successful foreign ones (modernization of educational programs, increasing their flexibility and adaptability, introducing European and American practices of interdisciplinarity and problem-based learning, which will contribute to increasing the competitiveness of domestic personnel and growing employer trust in graduates of Ukrainian higher education institutions); improving the quality of domestic science (adopting standards of publication activity, academic integrity, and the peer review system, which will contribute to reducing the academic community's tolerance for plagiarism and scientific fraud, increasing public and international scientific community trust in Ukrainian scientific degrees); integrating domestic education and science into the global scientific and educational space (development of international academic mobility programs for applicants, pedagogical, scientific-pedagogical, and scientific workers, facilitating their access to international grant programs and projects, which will increase grant culture and form experience in successful educational, research, and project activities).

It is shown that the development of civil society will be stimulated by the systemic

implementation in the Ukrainian higher education system of the European practice of the "third mission" of universities, focused on ensuring social service and forming an active and responsible citizen. This practice contributes to the formation of: critical thinking (active use of analysis and discussion in the educational process, formation of skills for recognizing manipulations, propaganda, and fake news, which is critically important in conditions of information warfare); social responsibility (orientation of the educational process toward the interests of regional labor markets and local communities; involvement of students in business organization programs and social projects that foster economic patriotism and readiness for responsible leadership).

Strengthening democratic values and enhancing democracy can be achieved through the implementation in the higher education system of: foreign models of integrating humanities and social sciences with the public sector (shifting the competency focus to forming key skills necessary for life activities in conditions of external aggression and internal threats to democratic institutions; involving public organizations in forming the content of educational programs, determining their mission and vision); preparing students for creating and developing democratic institutions (high-quality education in legal and political sciences to prepare a new generation of activists, civic and political leaders, and public servants who will respect the rule of law); studying the history of the development of democratic countries (forming a conscious and responsible attitude of youth toward democratic rights and freedoms; understanding the value meaning of human rights and the necessity of their protection).

An important condition for the successful implementation of foreign experience in the development of social-humanitarian education in Ukraine should be not its blind copying, but systemic and creative use taking into account national interests. This is not only an academic task but also a strategic step for ensuring the future of Ukraine as a modern, democratic, and successful state.

List of references

- Бабкіна, О. В. (2019). Розвиток соціально-гуманітарної науки та освіти як чинник імплементації освітньої політики в європейський простір. In: В. П. Андрущенко, Ю. С. Шемшученко та ін. (ред.) *Чотирнадцяті юридичні читання. Матеріали Міжнародної наукової конференції, 17–18 квітня 2019 року*, (с. 29-32). Київ: Вид-во НПУ імені М. П. Драгоманова, <https://enpuirb.udu.edu.ua/server/api/core/bitstreams/32fdb437-1fb5-4d9f-9fea-52eb4e2e4235/content>
- Бородієнко, О., Вітренко, Ю., Ворона, В., Дебич, М., Паламарчук, О., Слюсаренко, О., & Таланова, Ж. (2022). *Аналіз провідного вітчизняного та зарубіжного досвіду щодо забезпечення ефективності освітньої діяльності в університетах в контексті євроінтеграції та в умовах воєнного стану і післявоєнного відновлення України : препринт (аналітичні матеріали)*. Київ : Інститут вищої освіти НАПН України. <https://doi.org/10.31874/978-617-7644-58-2-2022>
- Волинець, Л.Л., Єгоров, Г.С., Лавриченко, Н.М., Локшина, О.І., Мельниченко, Б.Ф., Першукова, О.О., & Шеверун, Н.В. (2011). *Світоглядний потенціал шкільної гуманітарної освіти в країнах ЄС та США* : Монографія. Київ: Ін-т педагогіки НАПН України. <https://lib.iitta.gov.ua/id/eprint/7192>
- Заєць, С. В. (2025). Порівняльна динаміка індексу академічної свободи України та країн світу. *Освітня аналітика України*, 2(35), 35-47. <https://doi.org/10.32987/2617-8532-2025-2-35-47>.
- Качан, Я. В., & Іванов, А. В. (2023). Перспективи імплементації європейського досвіду у реалізації соціальної та гуманітарної політики в Україні в умовах євроінтеграції. *Право та державне управління*, 2, 175-180. <https://doi.org/10.32840/pdu.2023.2.25>
- Когут, С.(2017). Європейські тенденції розвитку освіти та їхній вплив на професійну підготовку в Україні. *Вісник Черкаського національного університету імені Богдана Хмельницького. Серія: Педагогічні науки*, 17, 129–140. <https://doi.org/10.34767/SZP.2017.02.08>
- Луговий, В., Драч, І., Петроє О., Зінченко, В., Мелков, Ю., Жилиєв, І., Регейло, І., Камишин, В., & Базелюк, Н. (2022). *Аналіз провідного вітчизняного та зарубіжного досвіду з підвищення дослідницької спроможності університетів України в умовах війни та повоєнного відновлення у контексті імплементації концепції «Відкрита наука» : препринт (аналітичні матеріали)*. Київ : Інститут вищої освіти НАПН України. <https://dspace.lvduvs.edu.ua/handle/1234567890/7019>
- Петрук, Н.(2020). Стратегії розвитку гуманітарної освіти в добу технократизму та глобалізації. *Філософія освіти*, 26 (1), 54-67. <https://doi.org/10.31874/2309-1606-2020-26-1-3>
- Ситник, О. (2019). Філософія гуманітарної освіти в технічному вузі: постболонський період, *Інтернаціоналізація освіти: шляхи вдосконалення та розвитку: збірник тез I Міжнародної науково-практичної конференції / ред. кол. : [О. С. Островський та ін.]*, (с.159-161). Луцьк : Луцький національний технічний університет. https://lib.lntu.edu.ua/sites/default/files/2021-03/zb.tez_kon_ferenciyi_2019.pdf
- Barnett, R. (1990). *The Idea of Higher Education*. Society for Research into Higher Education. ISBN 0335094201, 9780335094202
- Barnett, R., Bengtsen, S. S. E., Davids, N., & Peters, M. A. (2023). *The Philosophy of Higher Education: A Critical Introduction*, by Ronald Barnett, Routledge, 2022. *Educational Philosophy and Theory*, 56(4), 392–398. <https://doi.org/10.1080/00131857.2023.2173065>
- Biesta, G. (2006). *Beyond Learning. Democratic Education for a Human Future*. New York: Routledge. <https://doi.org/10.4324/9781315635811>
- Birzea, C. (2000). *L'éducation a la citoyennete democratique: un apprentissage tout au long de la vie*. Strasbourg.
- Burnett, J.(2007). Tilling the soil of the European higher education area. *Connecting Research and Practice for Professionals and Communities*, 2(15), 283-293. <https://doi.org/10.1080/09650790701314973>
- Carnoy, M. (2024). *The Political Economy of Education*. California: Stanford University. <https://doi.org/10.1017/9781009364461>
- Coursera. (n.d.). Degrees, certificates, & free online courses. <https://www.coursera.org/> Digital Humanities : official website of the University of Amsterdam. Coursera. <https://www.uva.nl/en/programmes/masters/digital-humanities/digital-humanities.html> (дата звернення: 17.09.2025).
- Curaj, A., Hâj, C.M.,& Pricopie, R. (2024). Twenty-Five Years of Bologna Process. The Coexistence of Different Frameworks and the Challenges for the European Higher Education Area. In: *Curaj, A., Hâj, C.M.,*

Pricopie, R. (eds) *European Higher Education Area 2030: Bridging Realities for Tomorrow's Higher Education*. FOHE-BPRC 2024. Springer, Cham. https://doi.org/10.1007/978-3-031-75140-0_1

European Universities Initiative (n.d.). *European Commission* <https://education.ec.europa.eu/education-levels/higher-education/european-universities-initiative>

Gilbert, R. (1992). Citizenship, Education and Postmodernity. *British Journal of Sociology of Education*, 1(13), c. 51-68.

Green, A. (2013). *Education and State Formation: Europe, East Asia and the USA*. New York : Palgrave Macmillan. urn:oclc:record:864577181

Habermas, J. (1995). *Citizenship and National Identity: Some Reflections on the Future of Europe. Theorizing Citizenship Albania*. State University of New York Press.

Ichilov, O. (1998). Patterns of Citizenship in Changing World. In *Citizenship and Citizenship Education in Changing World*. Londres : The Woburn Press.

Kulalaieva, N., Romanov, L., Yershov, M-O., Romanova, G., & Yershova, L. (2024). The Application of Technologies for Developing Critical Thinking Skills of Vocational Education Learners in the Process of Teaching Economics. *Youth Voice Journal*. 14 (3), 77-85. <https://www.rj4allpublications.com/product/application-technologies-critical-thinking-skills-vocational-education-learners-economics/>

Kushnir, I. (2021). *The Bologna Reform in Ukraine: Learning Europeanisation in the Post-Soviet Context*. Emerald Publishing Limited. <https://doi.org/10.1108/9781839821141>

Londar, S., Bosenko, O., & Gaiduk, I. (2024). Ensuring the resilience of Ukrainian education during the war as an experience for improving the education systems in the EU countries. *Educational Analytics of Ukraine*, 6(32), 5-25. <https://doi.org/10.32987/2617-8532-2024-6-5-25>

Quinteri, M., & Kajee, J. (2025). Internationalisation or Europeanisation? Capturing Dynamic Concepts in Higher Education Institutions. In: Curaj, A., Hâj, C.M., Pricopie, R. (eds) *European Higher Education Area 2030: Bridging Realities for Tomorrow's Higher Education*. FOHE-BPRC 2024. Springer, Cham. https://doi.org/10.1007/978-3-031-75140-0_3.

Schleicher, A. (2018). *World Class: How to Build a 21st-century School System. Strong performers and successful reformers in education*. OECD. ISBN 9264299971, 9789264299979.

Standing, G. (2016). *The Precariat: The New Dangerous Class*. Bloomsbury Publishing. ISBN 1474294170, 9781474294171

Wihlborg, M. (2019). Critical viewpoints on the Bologna Process in Europe: Can we do otherwise? *European Educational Research Journal*, 2(18), 135-157. <http://dx.doi.org/10.1177/1474904118824229>

Translated & Transliterated

Babkina, O. V. (2019). Rozvytok sotsialno-humanitarnoi nauky ta osvity yak chynnyk implementatsii osvitnoi polityky v yevropeiskyi prostir [Development of social sciences and humanities and education as a factor in the implementation of educational policy in the European space]. In. V. P. Andrushchenko, Yu. S. Shemshuchenko ta in. (red.) *Chotyrynadtsiati yurydychni chytannia. Materialy Mizhnarodnoi naukovoï konferentsii, 17–18 kvitnia 2019 roku [Fourteenth Legal Readings. Proceedings of the International Scientific Conference, April 17–18, 2019]*, (s. 29-32). Kyiv: Vyd-vo NPU imeni M. P. Drahomanova [Dragomanov National Pedagogical University Publishing House], <https://enpuirb.udu.edu.ua/server/api/core/bitstreams/32fdb437-1fb5-4d9f-9fea-52eb4e2e4235/content>, [in Ukrainian].

Borodiienko, O., Vitrenko, Yu., Vorona, V., Debych, M., Palamarchuk, O., Sliusarenko, O., & Talanova, Zh. (2022). *Analiz providnoho vitchyznianoho ta zarubizhnoho dosvidu shchodo zabezpechennia efektyvnosti osvitnoi diialnosti v universytetakh v konteksti yevrointehratsii ta v umovakh voiennoho stanu i pisliavoiennoho vidnovlennia Ukrainy : prepyrnt (analytychni materialy) [Analysis of leading domestic and foreign experience in ensuring the effectiveness of educational activities at universities in the context of European integration and in the conditions of martial law and post-war recovery in Ukraine: preprint (analytical materials)]*. Kyiv : Instytut vyshchoi osvity NAPN Ukrainy [Institute of Higher Education of NAES of Ukraine]. <https://doi.org/10.31874/978-617-7644-58-2-2022>, [in Ukrainian].

Volynets, L.L., Yehorov, H.S., Lavrychenko, N.M., Lokshyna, O.I., Melnychenko, B.F., Pershukova, O.O., & Sheverun, N.V. (2011). *Svitohliadniyi potentsial shkilnoi humanitarnoi osvity v krainakh YeS ta SShA*:

- Monohrafiia [The worldview potential of school humanities education in the EU and the US: Monograph]*. Kyiv: In-t pedahohiky NAPN Ukrainy [Institute of Pedagogy of NAES of Ukraine]. <https://lib.iitta.gov.ua/id/eprint/7192>
- Zaiets, S. V. (2025). Porivnialna dynamika indeksu akademichnoi svobody Ukrainy ta krain svitu [Comparative dynamics of the academic freedom index in Ukraine and other countries]. *Osvitnia analityka Ukrainy [Educational Analytics of Ukraine]*, 2(35), 35-47. <https://doi.org/10.32987/2617-8532-2025-2-35-47>, [in Ukrainian].
- Kachan, Ya. V., & Ivanov, A. V. (2023). Perspektyvy implementatsii yevropeiskoho dosvidu u realizatsii sotsialnoi ta humanitarnoi polityky v Ukraini v umovakh yevrointehratsii [Prospects for implementing European experience in the implementation of social and humanitarian policy in Ukraine in the context of European integration]. *Pravo ta derzhavne upravlinnia [Law and Public Administration]*, 2, 175-180. <https://doi.org/10.32840/pdu.2023.2.25>, [in Ukrainian].
- Kohut, S.(2017). Yevropeiski tendentsii rozvytku osvity ta yikhni vplyv na profesiinu pidhotovku v Ukraini [European trends in education development and their impact on vocational training in Ukraine]. *Visnyk Cherkaskoho natsionalnoho universytetu imeni Bohdana Khmelnytskoho. Seriya: Pedagogichni nauky [Bulletin of Bohdan Khmelnytsky Cherkasy National University. Series: Pedagogical Sciences]*, 17, 129–140. <https://doi.org/10.34767/SZP.2017.02.08>, [in Ukrainian].
- Luhovyi, V., Drach, I., Petroie O., Zinchenko, V., Mielkov, Yu., Zhyliaiev, I., Reheilo, I., Kamyshyn, V., & Bazeliuk, N. (2022). Analiz providnoho vitchyznianoho ta zarubizhnoho dosvidu z pidvyshchennia doslidnytskoi spromozhnosti universytetiv Ukrainy v umovakh viiny ta povoiennoho vidnovlennia u konteksti implementatsii kontseptsii «Vidkryta nauka» : prepynt (analytychni materialy) [Analysis of leading domestic and foreign experience in improving the research capacity of Ukrainian universities in the context of war and post-war recovery in the context of implementing the concept of “Open Science”: preprint (analytical materials).]. Kyiv : Instytut vyshchoi osvity NAPN Ukrainy [Institute of Higher Education of NAES of Ukraine]. <https://dspace.lvduvs.edu.ua/handle/1234567890/7019>, [in Ukrainian].
- Petruk, N.(2020). Stratehii rozvytku humanitarnoi osvity v dobu tekhnokratyzmu ta hlobalizatsii [Strategies for the development of humanities education in the era of technocracy and globalization]. *Filosofia osvity [Philosophy of Education]*, 26 (1), 54-67. <https://doi.org/10.31874/2309-1606-2020-26-1-3>, [in Ukrainian].
- Sytynyk, O. (2019). Filsofiia humanitarnoi osvity v tekhnichnomu vuzi: postbolonskyi period, Internatsionalizatsiia osvity: shliakhy vdoskonalennia ta rozvytku: zbirnyk tez I Mizhnarodnoi naukovo-praktychnoi konferentsii / red. kol. : [O. S. Ostrovskyi ta in.], (s. 159-161) [The philosophy of humanities education in technical universities: the post-Bologna period, Internationalization of education: ways of improvement and development: collection of abstracts from the First International Scientific and Practical Conference / ed. by [O. S. Ostrovsky et al.], (pp. 159-161)]. Luts'k : Luts'kyi natsionalnyi tekhnichnyi universytet [Luts'k National Technical University]. https://lib.lntu.edu.ua/sites/default/files/2021-03/zb.tez_kon_ferencyi_2019.pdf, [in Ukrainian].
- Barnett, R. (1990). *The Idea of Higher Education*. Society for Research into Higher Education. ISBN 0335094201, 9780335094202, [in English].
- Barnett, R., Bengtsen, S. S. E., Davids, N., & Peters, M. A. (2023). The Philosophy of Higher Education: A Critical Introduction, by Ronald Barnett, Routledge, 2022. *Educational Philosophy and Theory*, 56(4), 392–398. <https://doi.org/10.1080/00131857.2023.2173065>, [in English].
- Biesta, G. (2006). *Beyond Learning. Democratic Education for a Human Future*. New York: Routledge. <https://doi.org/10.4324/9781315635811>, [in English].
- Birzea, C. (2000). *L'éducation a la citoyenneté démocratique: un apprentissage tout au long de la vie*. Strasbourg, [in French].
- Burnett, J.(2007). Tilling the soil of the European higher education area. *Connecting Research and Practice for Professionals and Communities*, 2(15), 283-293. <https://doi.org/10.1080/09650790701314973>, [in English].
- Carnoy, M. (2024). *The Political Economy of Education*. California: Stanford University. <https://doi.org/10.1017/9781009364461>, [in English].
- Coursera. (n.d.). Degrees, certificates, & free online courses. <https://www.coursera.org/> Digital Humanities : official website of the University of Amsterdam. Coursera. <https://www.uva.nl/en/programmes/masters/digital-humanities/digital-humanities.html>, [in English].
- Curaj, A., Hâj, C.M.,& Pricopie, R. (2024). Twenty-Five Years of Bologna Process. The Coexistence of Different Frameworks and the Challenges for the European Higher Education Area. In: *Curaj, A., Hâj, C.M.,*

Pricopie, R. (eds) *European Higher Education Area 2030: Bridging Realities for Tomorrow's Higher Education*. FOHE-BPRC 2024. Springer, Cham. https://doi.org/10.1007/978-3-031-75140-0_1, [in English].

European Universities Initiative (n.d.). European Commission <https://education.ec.europa.eu/education-levels/higher-education/european-universities-initiative>, [in English].

Gilbert, R. (1992). Citizenship, Education and Postmodernity. *British Journal of Sociology of Education*, 1(13), 51-68, [in English].

Green, A. (2013). *Education and State Formation: Europe, East Asia and the USA*. New York : Palgrave Macmillan. urn:oclc:record:864577181, [in English].

Habermas, J. (1995). *Citizenship and National Identity: Some Reflections on the Future of Europe*. Theorizing Citizenship Albania. State University of New York Press, [in English].

Ichilov, O. (1998). Patterns of Citizenship in Changing World. In *Citizenship and Citizenship Education in Changing World*. Londres : The Woburn Press, [in English].

Kulalaieva, N., Romanov, L., Yershov, M-O., Romanova, G., & Yershova, L. (2024). The Application of Technologies for Developing Critical Thinking Skills of Vocational Education Learners in the Process of Teaching Economics. *Youth Voice Journal*, 14 (3), 77-85. <https://www.rj4allpublications.com/product/application-technologies-critical-thinking-skills-vocational-education-learners-economics/>, [in English].

Kushnir, I. (2021). *The Bologna Reform in Ukraine: Learning Europeanisation in the Post-Soviet Context*. Emerald Publishing Limited. <https://doi.org/10.1108/9781839821141>, [in English].

Londar, S., Bosenko, O., & Gaiduk, I. (2024). Ensuring the resilience of Ukrainian education during the war as an experience for improving the education systems in the EU countries. *Educational Analytics of Ukraine*, 6(32), 5-25. <https://doi.org/10.32987/2617-8532-2024-6-5-25>, [in English].

Quinteri, M., & Kajee, J. (2025). Internationalisation or Europeanisation? Capturing Dynamic Concepts in Higher Education Institutions. In: Curaj, A., Hâj, C.M., Pricopie, R. (eds) *European Higher Education Area 2030: Bridging Realities for Tomorrow's Higher Education*. FOHE-BPRC 2024. Springer, Cham. https://doi.org/10.1007/978-3-031-75140-0_3, [in English].

Schleicher, A. (2018). *World Class: How to Build a 21st-century School System. Strong performers and successful reformers in education*. OECD. ISBN 9264299971, 9789264299979, [in English].

Standing, G. (2016). *The Precariat: The New Dangerous Class*. Bloomsbury Publishing. ISBN 1474294170, 9781474294171, [in English].

Wihlborg, M. (2019). Critical viewpoints on the Bologna Process in Europe: Can we do otherwise? *European Educational Research Journal*, 2(18), 135-157. <http://dx.doi.org/10.1177/1474904118824229>, [in English].

DOI: <https://doi.org/10.32835/2707-3092.2025.31.251-267>

СОЦІОГУМАНІТАРНА ОСВІТА В КРАЇНАХ ЄС: ДОСВІД І ПЕРСПЕКТИВИ ІМПЛЕМЕНТАЦІЇ В УКРАЇНСЬКУ ОСВІТНЮ СИСТЕМУ

Микола-Олег Єршов

доктор філософії, докторант Інституту педагогічної освіти і освіти дорослих, імені Івана Зязюна
НАПН України, Київ, Україна, <https://orcid.org/0000-0002-6839-622X>, e-mail: my.yershov@gmail.com

Реферат:

Актуальність вивчення зарубіжного досвіду розвитку соціогуманітарної освіти зумовлена в Україні суспільним запитом на: використання ефективних світових практик соціогуманітарної підготовки здобувачів вищої освіти до життя і професійної діяльності в умовах соціально-економічної та геополітичної невизначеності; формування державної освітньої політики, орієнтованої на зміцнення демократичних цінностей

і захист демократії; розроблення нової парадигми соціогуманітарної освіти майбутніх фахівців для підвищення стійкості і згуртованості українського суспільства в умовах війни та повоєнного відновлення.

Мета: визначення сучасних тенденцій розвитку соціогуманітарної освіти у закладах вищої освіти ЄС та обґрунтування напрямів імплементації кращого європейського досвіду в Україні для підвищення ефективності освітніх реформ, розвитку громадянського суспільства, збереження демократичних цінностей і прискорення повоєнного відновлення України.

Методи: інформаційно-пошуковий і комплексний аналіз джерел – для виявлення етапів і тенденцій розвитку досліджуваного феномена; теоретичний аналіз, порівняння й узагальнення – для визначення особливостей розвитку соціогуманітарної освіти в країнах ЄС; прогнозні сценарії – для виокремлення цілей і шляхів використання зарубіжного досвіду розвитку соціогуманітарної освіти в Україні).

Результати: виявлено тенденції розвитку соціогуманітарної освіти в країнах ЄС; спрогнозовано ймовірні напрями імплементації кращого європейського досвіду в систему освіти України, визначено виклики і перешкоди на шляху впровадження в українську систему освіти зарубіжного досвіду розвитку соціогуманітарної освіти; сформульовано практичні рекомендації і запропоновано алгоритм упровадження кращих зарубіжних практик у вітчизняну систему соціогуманітарної освіти.

Висновки: у сучасному науковому дискурсі відбувається переосмислення наслідків Болонського процесу; на функціонування закладів вищої освіти у країнах ЄС впливають глобалізація, цифрова трансформація, мілітаризація інформаційного простору; сучасний контекст соціогуманітарної освіти в країнах ЄС визначають тенденції, спрямовані на формування інноваційного, відповідального і критично мислячого громадянина (інтернаціоналізація освіти, міждисциплінарність і метапредметність, компетентнісний підхід, упровадження інноваційних технологій і методів навчання, фокус на громадянському вихованні й соціальній відповідальності, гнучкість і адаптивність освітніх програм, децентралізація і демократизація систем освіти); визначено три основні цілі застосування зарубіжного досвіду розвитку соціогуманітарної освіти в Україні (для розвитку вітчизняної системи освіти, посилення спроможності громадянського суспільства, зміцнення демократичних цінностей та збереження демократії); окреслено ймовірні шляхи його використання (модернізація програм із упровадженням зарубіжних практик, підвищення якості науки й освіти на основі міжнародних стандартів, інтеграція у світовий науково-освітній простір шляхом розвитку академічної мобільності, участь суб'єктів освітнього процесу у грантових програмах); успішна імплементація цього досвіду є не лише академічним, а й стратегічним завданням для захисту національних інтересів та збереження демократії в Україні.

Ключові слова: соціогуманітарна освіта, вища освіта, третя місія університетів, соціальна відповідальність, критичне мислення, демократичні цінності, цифровізація освіти, державна освітня політика.

Manuscript received	14.07.2025
Accepted for publication after peer review	03.11.2025
Published	11.12.2025



ADAPTATION OF CONTENT AND LANGUAGE INTEGRATED LEARNING (CLIL) METHODOLOGY TO THE SPECIFICS OF TRAINING FUTURE OFFICERS

Oksana Sovhar¹, Hanna Sovhar²

- 1 Candidate of Pedagogical Sciences, Associate Professor, Professor of the Foreign Languages Department, Hetman Petro Sahaidachnyi National Army Academy <http://orcid.org/0000-0002-3101-7409>, e-mail: okssov@yahoo.com
- 2 Senior Lecturer of the Foreign Languages Department, Hetman Petro Sahaidachnyi National Army Academy <http://orcid.org/0000-0003-1223-566X>, e-mail: annasovgar@gmail.com

Abstract

Relevance: The growing role of foreign-language professional communication in the activities of officers under the conditions of Ukraine's Euro-Atlantic integration, the expansion of international military cooperation, and the implementation of NATO standards in the military education system determine increased requirements for the level of language training of future officers. At the same time, traditional models of language training do not adequately combine linguistic knowledge with professional content, which necessitates adapting modern teaching methods to the specifics of higher military education.

Objective: The theoretical substantiation of adapting the Content and Language Integrated Learning (CLIL) methodology to the training of future officers.

Methods: Theoretical analysis – to study scientific sources on the integration of language and professional training and to identify modern approaches to implementing CLIL; synthesis – to generalize various theoretical positions and form a holistic view of the possibilities of integrating language and professional training of future officers; generalization – to systematize the results of previous research and determine the main trends in applying CLIL in higher education; comparative analysis – to compare approaches to implementing CLIL in civilian and military education, identifying specific requirements for cadets' professional training; forecasting – to determine effective models of integrating language and professional components and outline their potential for developing key professional competencies in the context of international military cooperation.

Results: The peculiarities of applying CLIL methodology in the system of higher military education have been analyzed, and the factors determining its adaptation have been outlined, including the regulated nature of the educational process, the professionally oriented character of the learning content, and the high requirements for accuracy in foreign-language communication in the military sphere; the expediency of using content- and language-oriented CLIL models, as well as digital technologies, simulations, and interdisciplinary projects for integrating language and professional training of cadets, has been established.

Conclusions: The main features of adapting CLIL methodology to the conditions of higher military education have been identified (application of content- and language-oriented models, integration of language training into professional disciplines, use of digital technologies and interdisciplinary tasks); the potential of CLIL methodology for developing cognitive competencies (ability to analyze, synthesize, and make decisions under complex conditions), communicative competencies (accuracy and functionality of foreign-language professional communication), and intercultural competencies (ability to interact effectively in multinational military formats) has been determined; the peculiarities of military education that define the specifics of CLIL implementation have been clarified (strict regulation of the educational process, high requirements for accuracy in foreign-language communication, focus on applied tasks, and the need to prepare for activity under stressful conditions); gaps in methodological support have been revealed

(limited number of adapted teaching materials, insufficient teacher training for using CLIL in the military context, and the need to create a system of professional development for educators in integrated learning).

Keywords: *Content and Language Integrated Learning, higher military school, professional language competence, “4C” model.*

Introduction. The transformation of the security environment and strengthening role of multinational military formats significantly change the requirements for the professional training of officers. A modern military specialist is increasingly involved in joint exercises, staff procedures, interaction with foreign colleagues, as well as working with technical documentation and standards of foreign origin. Under these conditions, a foreign language functions not as a separate educational component but as a working tool of management, coordination, and decision-making in the professional environment.

At the same time, the practice of language training in institutions of higher military education is characterized by a gap between language learning and professional disciplines. The acquisition of foreign-language vocabulary and grammatical structures mostly takes place outside the context of future service activities, which complicates the transfer of linguistic knowledge into real professional situations. Such fragmentation of the educational process reduces students' motivation and limits the possibilities of forming an integrated professional-language competence necessary for effective interaction in the international military environment.

In the scientific and pedagogical discourse, interest in integrated approaches aimed at overcoming this contradiction is growing. In particular, Content and Language Integrated Learning (CLIL) is considered as a concept capable of ensuring the combination of language training with the acquisition of professional content. At the same time, most scientific studies focus on the civilian sector of higher education, whereas the specifics of military training – regulated educational process, high level of responsibility, dominance of applied tasks, and stressful conditions of activity – require separate theoretical and methodological reflection on the possibilities and limits of applying integrated learning models.

The problem lies in the absence of a systemic vision of how CLIL can be adapted to the conditions

of higher military education without losing the depth of professional training and taking into account the requirements for operational interoperability and professional accuracy. The optimal models of integrating language and subject components, the role of the teacher in such a learning process, as well as the didactic conditions that ensure the effective formation of foreign-language competence combined with the development of professional thinking of future officers remain undefined.

This issue is directly related to the current tasks of modernizing Ukraine's military education system, oriented toward achieving interoperability with the armed forces of partner countries and implementing modern educational technologies. Theoretical reflection on the conceptual foundations of CLIL and analysis of the possibilities of its implementation in military institutions of higher education create the basis for updating curricula, improving methodological support, and enhancing the quality of officers' professional training in accordance with contemporary security challenges.

Sources: Theoretical analysis of the researched problem was carried out on the basis of scientific works devoted to the issues of integrating language and subject training in higher education, the development of professionally oriented foreign-language competence, and the modernization of foreign language teaching methods. The analysis of scientific publications shows that Content and Language Integrated Learning is the subject of active scholarly discussion in modern pedagogical science. The conceptual foundations of CLIL were formulated in the works of D. Marsh (2002), who introduced the term Content and Language Integrated Learning into academic discourse and defined it as an approach aimed at the simultaneous acquisition of professional content and a foreign language. Further development and theoretical substantiation of CLIL were provided in the studies of D. Coyle, P. Hood, and D. Marsh (2010), where the “4C” model (Content, Communication, Cognition, Culture) was presented as

the didactic basis of integrated learning. The principles of combining subject content and the language component were also outlined in the works of P. Ball and D. Lindsay (2010), as well as in subsequent studies by D. Marsh (2012). Terminological and conceptual aspects of CLIL methodology were analyzed in detail by D. Coyle (2005), who emphasized the interdisciplinary nature of integrated learning. The works of van E. Kampen, W. Admiraal, and A. Berry (2018) considered the use of narrative and genre forms as tools of learning in the context of subject-language integration. The research of H. Martínez-Soto and M. Prendes-Espinosa (2023) represents CLIL as a complex pedagogical technology aimed at achieving multidisciplinary outcomes in the process of foreign language learning. Practical aspects of implementing the methodology were highlighted in the works of A. Cendoya and V. Adibin (2012), who focused on the use of learning tasks and various genres as effective means of applying CLIL. At the same time, despite considerable scholarly attention to the implementation of CLIL in the educational process, the issue of using this methodology in the training of future military specialists remains insufficiently studied. A systematic analysis is required to determine how the integration of language and professional training can contribute to the development of competencies necessary for the professional activity of military specialists in the context of international cooperation and modern requirements for their training.

Purpose of the article is to substantiate the peculiarities of adapting the methodology of Content and Language Integrated Learning (CLIL) to the specifics of training future officers.

Research methods. The study employed a set of theoretical methods that ensured a comprehensive analysis of the problem of adapting CLIL to the training of future officers in institutions of higher military education. In particular, the method of analysis was used to study scientific sources on the integration of language and professional training and to identify modern approaches to implementing CLIL; synthesis – to generalize various theoretical positions and form a holistic view of the possibilities of integrating language and professional training of future officers; generalization – to systematize the results of previous research and determine the main trends in applying CLIL in higher education; comparative analysis – to compare approaches to

implementing CLIL in civilian and military education, identifying specific requirements for cadets' professional training; forecasting – to determine effective models of integrating language and professional components and to outline their potential for developing key professional competencies in the context of international military cooperation.

Results and Discussion. The methodology of Content and Language Integrated Learning is considered a key tool for the modernization of military education, as it ensures the organic combination of language learning with the acquisition of professional content. This allows for the formation of an integrated system of professional and linguistic competencies that meet modern requirements for officers capable of operating in conditions of international cooperation and multinational operations (Nikula et al., 2016). Compared to traditional methods of foreign language teaching, CLIL is not limited to mastering grammar or vocabulary but is aimed at the simultaneous acquisition of professional knowledge and language skills, which increases learners' motivation, fosters critical thinking, high-level cognitive skills, and intercultural competence.

Theoretically, CLIL methodology is based on the “4C” model (Content, Communication, Cognition, Culture) introduced by D. Coyle (2005), which views learning as the synergy of four interrelated components. The content component involves mastering professionally oriented knowledge and practical skills necessary for performing specific tasks in the military sphere. For example, within the course “Automotive Studies,” cadets learn the structure and principles of operation of engines, transmissions, armored vehicle control systems, technical specifications of weaponry, and maintenance protocols. Language in this context becomes a tool for accessing authentic sources of information, including technical manuals, regulatory documents, and NATO standards. This ensures not only the acquisition of knowledge but also the practical orientation of learning, enhances its motivational value, and develops cadets' professional competencies.

The communicative component of CLIL develops the ability to convey technical information in real professional situations. Language is regarded as both “language for learning” and “language through learning” (Coyle, 2007). For instance, during the study of automotive technology, cadets practice giving

commands during vehicle evacuation, writing reports on malfunctions, and coordinating unit actions in English. Special attention is paid to the functional effectiveness of communication: the correctness of terminology is more important than formal linguistic accuracy, which is critical in stressful combat conditions.

The cognitive component involves the development of both lower- and higher-order thinking processes according to Bloom's taxonomy (Bloom et al., 1956). Cadets not only reproduce terms but also analyze causes of breakdowns, evaluate the efficiency of different types of fuel, synthesize logistical plans, and make decisions under conditions of limited information. This approach fosters critical thinking and cognitive flexibility necessary for operational planning and unit management.

The cultural component is aimed at developing intercultural competence and awareness of professional interaction in an international environment (Rodríguez, 2025). It includes knowledge of NATO standards, ethics of interaction with representatives of foreign armed forces, and understanding of Ukraine's role in the system of collective security. Learning language through the prism of culture enables future officers to integrate into the international environment during joint training, ensuring interoperability in operations and peacekeeping missions.

An important aspect is the adaptation of the methodology to the specifics of military education. The application of CLIL is accompanied by challenges: high requirements for teachers' linguistic and methodological competence, limited teaching resources, and the need to adapt content to cadets' professional needs. The methodology allows for the integration of language training into the study of general military disciplines (tactics, strategy, logistics, military management, international humanitarian law) and specialized subjects, creating conditions for effective professional communication.

The modern CLIL paradigm in military higher education institutions provides for variability of models depending on the dominance of the language or subject component (Coyle, Hood & Marsh, 2010). The content-driven CLIL model emphasizes subject content, where English is used as a tool for acquiring technical knowledge. The language-driven CLIL model uses professional content to develop language

competence, reducing cognitive load and focusing on terminological accuracy (Lorenzo & Moore, 2007). Project-based and interdisciplinary models combine disciplines into complex tasks that stimulate all "4C" components and prepare cadets for work in multinational units (Cenoz et al., 2014).

International experience demonstrates a high level of institutionalization of CLIL. In Scandinavia and the Netherlands, the methodology is a standard of technical education, where language is used as the natural medium of professional communication (van Kampen, Admiraal & Berry, 2018). In Spain, CLIL has been successfully adapted in humanities and natural sciences, increasing the "linguistic capital" of graduates (Lasagabaster & de Zarobe, 2010). In Ukraine, the methodology is being implemented in pilot projects and faces specific challenges: the gap between NATO's high standards and the actual level of language training of cadets and teachers, insufficient methodological support, and limited material resources.

The Hetman Petro Sahaidachnyi National Army Academy demonstrates a systematic approach to CLIL, using both content- and language-driven models depending on the stage of training and cadets' level of competence. The concept follows O. Meyer's "CLIL planning pyramid" (2010) and includes 4 levels: content, communicative, cognitive, and cultural. An example is the study of the topic "Principles of operation and structure of the OSHKOSH system": analytical stage (Content) with authentic diagrams; cognitive stage (Cognition) with the development of principles of unit operation; communicative stage (Communication and Culture) with presentations and discussions; role-playing games to model professional activity.

Technological support of CLIL in military higher education institutions includes multimedia presentations, interactive platforms, VR simulations, training devices, and AI tools. This enables cadets to work with authentic documents and simulate real combat and technical scenarios in a foreign language, simultaneously developing linguistic, professional, and digital competence.

Assessment in CLIL is transformed: dual assessment includes subject competencies and language skills; dynamic assessment and peer-assessment allow progress to be analyzed in real time (de Boer et al., 2020). Checklists based on NATO

STANAG 6001 standards develop skills of objective analysis of subordinates' and colleagues' actions in a foreign language (NATO, 2014).

The integration of practical tasks within CLIL transforms the study of professional disciplines from passive knowledge acquisition into an active process of forming the officer's professional identity. Designing tasks that take into account cognitive and linguistic requirements, and using active methods (discussions, debates, case studies, role-playing games) stimulate the development of critical thinking, teamwork, and decision-making skills.

Conclusions. The peculiarities of adapting CLIL methodology to the conditions of higher military education have been identified: the use of content- and language-driven CLIL models depending on the stage of training and cadets' level of language competence; integration of language training into the study of general military and specialized disciplines (tactics, logistics, military management, technical courses); application of digital technologies, VR simulations, multimedia platforms, and interactive training devices to model professional situations in a foreign language; implementation of project-based and interdisciplinary tasks that stimulate the development of all components of the "4C" model (Content, Communication, Cognition, Culture); use of dual assessment (language and subject competencies) and checklists based on NATO STANAG 6001 standards to develop skills of

objective analysis. The potential of CLIL methodology for developing key professional competencies of future officers has been determined: cognitive (analysis, synthesis, decision-making under complex conditions); communicative (accuracy and functionality of foreign-language professional communication); intercultural (readiness for interaction in multinational military formats, knowledge of NATO standards and ethics of international cooperation). The peculiarities of applying CLIL in military education have been clarified, which include the regulated nature of the educational process, high requirements for accuracy in foreign-language communication, the dominance of applied tasks, and stressful conditions of activity. Gaps in methodological support and teacher training requiring further development have been revealed.

Prospects for further research involve conducting experimental studies on the effectiveness of different CLIL models in military education, developing standards of integrated learning for various types of military training, as well as creating digital platforms of authentic teaching materials and enhancing methodological support for systematic CLIL implementation. Such studies will allow for a scientific substantiation of the potential pedagogical effect of integrating subject and language learning in the professional training of future officers.

List of references

- Ball, P., & Lindsay, D. (2010). Teacher training for CLIL in the Basque Country: The case of the Ikastolas – An expediency model. In Lasagabaster, D. & Ruiz de Zarobe, Y. (2010) *CLIL in Spain: Implementation, results and teacher training* (pp. 162-187). Cambridge Scholars Publishing. <https://ru.scribd.com/document/269661444/Lasagabaster-and-Ruiz-de-Zarobe-Clil-in-Spain>
- Barwell, Richard. (2016). *A Bakhtinian Perspective on Language and Content Integration: Encountering the Alien Word in Second Language Mathematics Classrooms*. <https://doi.org/10.21832/9781783096145-008>.
- Bloom, B. S., Engelhart, M. D., Furst, E. J., Hill, W. H., & Krathwohl, D. R. (1956). *Taxonomy of Educational Objectives: The Classification of Educational Goals*. Handbook I: Cognitive Domain. <https://surl.li/zyzpnv>
- Bonnet, A., & Breidbach, S. (2017). CLIL teachers' professionalization: Between explicit knowledge and professional identity. In A. Llinares & T. Morton (Eds.), *Applied linguistics perspectives on CLIL* (pp. 269-285). John Benjamins. <https://doi.org/10.1075/llt.47.16bon>
- Cendoya, A. M., & Adibin, V. (2012). A CLIL experience based on the use of tasks and different genre types. *LACLIL*, 3(1), 11-17. <https://doi.org/10.5294/laclil.2010.3.1.2>
- Cenoz, J., Genesee, F., & Gorter, D. (2014). Critical analysis of CLIL: Taking stock and looking forward. *Applied Linguistics*, 35(3), 243-262. <https://doi.org/10.1093/applin/amt011>
- Coyle, D. (2005). *CLIL: Planning tools for teachers*. University of Nottingham. http://www.unifg.it/sites/default/files/allegatiparagrafo/20-01-2014/coyle_clil_planningtool_kit.pdf

- Coyle, D., Hood, P., & Marsh, D. (2010). *Content and language integrated learning*. Cambridge University Press. https://formacion.intef.es/pluginfile.php/214299/mod_imsdp/content/1/2013000000658.pdf
- Dalton-Puffer, C., Hüttner, J., & Llinares, A. (2022). CLIL in the 21st century: Retrospective and prospective challenges and opportunities. *Journal of Immersion and Content-Based Language Education*, 10(2), 182-206. <https://doi.org/10.1075/jicb.21021.dal>
- de Boer, M., & Leontjev, D. (Eds.). (2020). *Assessment and learning in content and language integrated learning (CLIL) classrooms: Approaches and conceptualisations*. Springer. <https://doi.org/10.1007/978-3-030-54128-6>
- European Council. (2002). Barcelona European Council: Presidency conclusions. <https://www.consilium.europa.eu/media/20930/71025.pdf>
- Lorenzo, F. (2007). An Analytical Framework of Language integration in L2 Content-based Courses: The European Dimension. *Language and Education*, 21(6), 502-514. <https://doi.org/10.2167/le708.0>
- Marsh, D. (2012) *Content and Language Integrated Learning (CLIL)*. A Development Trajectory. University of Córdoba: Servicio de Publicaciones de la Universidad de Córdoba. Campus de Rabanales. <https://core.ac.uk/download/pdf/60884824.pdf>
- Martínez-Soto, T., & Prendes-Espinosa, P. (2023). A systematic review on the role of ICT and CLIL in compulsory education. *Education Sciences*, 13(1), 73. <https://doi.org/10.3390/educsci13010073>
- Meyer, O. (2010). Introducing the CLIL-Pyramid: Key Strategies and Principles for CLIL Planning and Teaching. In *Basic Issues in EFL-Teaching* (pp. 295-313). Publisher: Universitätsverlag Winter GmbH Heidelberg Editors: Maria Eisenmann, Theresa Summer. https://www.researchgate.net/publication/275887754_Introducing_the_CLIL-Pyramid_Key_Strategies_and_Principles_for_CLIL_Planning_and_Teaching
- BILG. NATO OTAN. (n.d.). *STANAG 6001 – Language Proficiency Standard* (Edition 5, 2014). <https://natobilc.org/stanag-6001/>
- Nikula, T. Dafouz, E. Moore, P., & Smit U. (2016). Conceptualising integration in CLIL and multilingual education. *Multilingual Matters*. (101-120). <https://doi.org/10.21832/9781783096145-008>
- Rodríguez Gil, M. E. (2025). Meeting the training needs of CLIL educators? An analysis of master's programmes in bilingual education. *Porta Linguarum An International Journal of Foreign Language Teaching and Learning*, 44, 87–104. <https://doi.org/10.30827/portalin.vi44.31842>
- Skinnari, K., & Bovellan, E. (2016). CLIL teachers' beliefs about integration and about their professional roles: Perspectives from a European context. In T. Nikula, E. Dafouz, P. Moore, & U. Smit (Eds.), *Conceptualising integration in CLIL and multilingual education*, 2, 145-167. <https://doi.org/10.21832/9781783096145-010>
- Somers, T., & Llinares, A. (2021). Students' motivation for content and language integrated learning and the role of programme intensity. *International Journal of Bilingual Education and Bilingualism*, 24(6), 839-854. <https://doi.org/10.1080/13670050.2018.1517722>
- van Kampen, E., Admiraal, W., & Berry, A. (2018). Content and language integrated learning in the Netherlands: Teachers' self-reported pedagogical practices. *International Journal of Bilingual Education and Bilingualism*, 21(2), 222-236. <https://doi.org/10.1080/13670050.2016.1154004>

DOI: <https://doi.org/10.32835/2707-3092.2025.31.268-274>

АДАПТАЦІЯ МЕТОДИКИ ПРЕДМЕТНО-МОВНОГО ІНТЕГРОВАНОГО НАВЧАННЯ (CLIL) ДО СПЕЦИФІКИ ПІДГОТОВКИ МАЙБУТНІХ ОФІЦЕРІВ

Оксана Совгар¹, Ганна Совгар²

- 1 кандидат педагогічних наук, доцент, професор кафедри іноземних мов Національної академії сухопутних військ імені гетьмана Петра Сагайдачного, <http://orcid.org/0000-0002-3101-7409>, e-mail: okssov@yahoo.com
 - 2 старший викладач кафедри іноземних мов Національної академії сухопутних військ імені гетьмана Петра Сагайдачного, <http://orcid.org/0000-0003-1223-566X>, e-mail: annasovgar@gmail.com
-

Реферат:

Актуальність: зростання ролі іншомовної професійної комунікації у діяльності офіцерського складу в умовах євроатлантичної інтеграції України, розширення міжнародного військового співробітництва та впровадження стандартів НАТО у систему військової освіти зумовлює підвищені вимоги до рівня мовної підготовки майбутніх офіцерів. Водночас традиційні моделі мовної підготовки не забезпечують належного поєднання мовних знань із фаховим змістом, що зумовлює потребу адаптації сучасних методик навчання до специфіки вищої військової школи.

Мета: обґрунтувати особливості адаптації методики предметно-мовного інтегрованого навчання (CLIL) до специфіки підготовки майбутніх офіцерів.

Методи: аналізу – для вивчення наукових джерел з проблем інтеграції мовного та фахового навчання та визначення сучасних підходів до реалізації CLIL; синтезу – для узагальнення різних теоретичних положень і формування цілісного уявлення про можливості інтеграції мовної та професійної підготовки майбутніх офіцерів; узагальнення – для систематизації результатів попередніх досліджень і визначення основних тенденції застосування CLIL у вищій освіті; порівняльний аналіз – для зіставлення підходів до впровадження CLIL у цивільній та військовій освіті, виявлення специфічних вимог до професійної підготовки курсантів; прогнозування – для визначення ефективних моделей інтеграції мовної та фахової складових та окреслення їхнього потенціалу для розвитку ключових професійних компетентностей у контексті міжнародного військового співробітництва.

Результати: проаналізовано особливості застосування методики CLIL у системі вищої військової освіти та **окреслено особливості, що зумовлюють її адаптацію**, зокрема регламентованість освітнього процесу, професійно орієнтований характер навчального змісту та високі вимоги до точності іншомовної комунікації у військовій сфері; встановлено доцільність використання змістово та мовно орієнтованих моделей CLIL, а також цифрових технологій, симуляцій і міждисциплінарних проєктів для інтеграції мовної та фахової підготовки курсантів.

Висновки: з'ясовано основні особливості адаптації методики CLIL до умов вищої військової освіти (застосування змістово та мовно орієнтованих моделей, інтеграція мовної підготовки у професійні дисципліни, використання цифрових технологій та міждисциплінарних завдань); визначено потенціал методики CLIL для розвитку когнітивних компетентностей (здатність аналізувати, синтезувати та приймати рішення у складних умовах), комунікативних компетентностей (точність і функціональність іншомовної професійної комунікації) та міжкультурних компетентностей (уміння ефективно взаємодіяти у багатонаціональних військових форматах); з'ясовано особливості військової освіти, що визначають специфіку впровадження CLIL (жорстка регламентованість освітнього процесу, високі вимоги до точності іншомовної комунікації, орієнтація на прикладні завдання та необхідність підготовки до діяльності у стресових умовах); виявлено прогалини у методичному забезпеченні (обмежена кількість адаптованих навчально-методичних матеріалів, недостатня підготовка викладачів до використання CLIL у військовому контексті та потреба у створенні системи професійного розвитку педагогів для інтегрованого навчання).

Ключові слова: предметно-мовне інтегроване навчання, вища військова школа, професійно-мовна компетентність, модель «4С».

Manuscript received 06.08.2025

Accepted for publication after peer review 14.11.2025

Published 18.12.2025



CRITERIA-BASED DIAGNOSTIC APPROACH TO ASSESSING THE ECOLOGICAL CULTURE OF MEDICAL COLLEGE STUDENTS

Liudmyla Bazyl

Doctor of Pedagogical Sciences, Professor, Scientific Secretary, Leading Researcher of the Department of Education and Professional Career at the Institute of Vocational Education of the National Academy of Educational Sciences of Ukraine, <https://orcid.org/0000-0003-4130-5436>, e-mail: ljudmilabazyl@gmail.com

Abstract

Relevance: The urgency of assessing the ecological culture of medical college students stems from rising environmental health risks, exacerbated by the consequences of the Russian Federation's war against Ukraine, the necessity of ensuring environmental safety within healthcare, and the requirements of the updated professional medical education paradigm; this necessitates fostering an ecological world-view in future healthcare workers who are capable of responsible professional activity related to maintaining sanitary and hygienic standards, safely managing medical waste, and minimising negative environmental impacts.

Aim: To substantiate a criteria-based diagnostic approach for assessing the ecological culture of medical college students and to define the criteria, indicators, and levels of its development.

Methods: The study employed an analysis of scientific sources, psycho-pedagogical and socio-methodological literature, and regulatory documents in medical and environmental education to determine the extent of the problem's development; generalisation and systematisation were used to justify the theoretical foundations of the research and the structure of ecological culture among medical college students; definitive analysis served to clarify the conceptual content of "ecological culture of a future healthcare worker" and "criteria-based diagnostic approach"; modelling was applied to develop a system of criteria, indicators, and levels of ecological culture attainment.

Results: The study substantiates a criteria-based diagnostic approach for evaluating the ecological culture of medical college students; it identifies a system of criteria (motivational-evaluative, cognitive, and behavioural-activity), alongside corresponding indicators and development levels; furthermore, the findings establish that implementing comprehensive diagnostic instrumentation facilitates an objective assessment of future healthcare workers' readiness for environmentally safe professional practice, enhances the quality of their vocational training, and fosters a responsible attitude toward health preservation and environmental protection.

Conclusions: Utilising a criteria-based diagnostic approach to assess the ecological culture of medical college students provides a holistic understanding of its development level, allows for timely adjustments to the educational process, and promotes the evolution of ecological thinking, professional responsibility, and the readiness of future healthcare workers to ensure environmental safety within the healthcare sector.

Keywords: ecological culture, medical college student, criteria, indicators, diagnostics, vocational training, environmental safety.

Introduction. The current state of the environment in Ukraine is characterised by significant deterioration, accompanied by large-scale pollution of the atmosphere, water resources, and soil, as well as the destruction of critical infrastructure and

healthcare systems. According to international organisations, notably the United Nations Environment Programme (UNEP), military actions in Ukraine have led to the extensive generation of toxic waste resulting from the destruction of industrial

facilities, oil depots, chemical plants, and other infrastructure, accompanied by the release of hazardous substances into the environment (United Nations Environment Programme, 2025). International experts estimate that combat operations generate millions of tonnes of contaminated construction waste and debris containing hazardous components (asbestos, heavy metals, and ammunition residues), which substantially increases the total volume of dangerous waste (Hook & Marcantonio, 2022). Domestic scholars rightly conclude that military actions have caused a significant rise in the volume of hazardous waste, including medical waste requiring specialised handling and disposal, as well as increased risks of chemical and biological environmental contamination (Ministry of Education and Science of Ukraine, 2024). In the industrially burdened regions of Ukraine, accumulated toxic waste poses an additional environmental threat; specifically, eastern Ukraine contains significant volumes of industrial waste and tailings ponds, the damage of which due to hostilities creates risks of hazardous substances leaching into soil and water resources (Zoï, 2023). According to World Health Organization (2025) data, the synthesis of assessment studies by Ukrainian and international analytical groups indicates that, as of 2025, over 9,000 cases of environmental damage linked to military actions have been recorded, accompanied by the generation of hazardous waste and toxic emissions. In this regard, it is crucial to understand that nearly 25% of diseases are caused directly by the impact of environmental factors such as air quality, water quality, and public living conditions.

Under such conditions, the training of healthcare workers becomes particularly urgent; they must be capable not only of providing medical care but also of ensuring compliance with sanitary and epidemiological standards, performing safe medical waste management, and minimising environmental risks in professional practice, as medical activity involves both treatment and the prevention of diseases, a significant portion of which are environmentally determined.

Regulatory documents in healthcare and environmental safety (including requirements for medical waste management, sanitary legislation, and Ukraine's environmental policy) define the necessity of fostering environmental responsibility in healthcare workers as a component of their professional competence. However, "the vocational education system remains largely oriented towards

training personnel for traditional sectors, with an emphasis on productivity rather than environmental sustainability. Courses on product life-cycle management or recycling technologies are rare in vocational education programmes, which complicates the preparation of specialists for modern labour market requirements. Thus, a gap emerges between the needs of the economy and the supply of specialists" (Radkevych, 2025). In the practice of training medical college students, there is an insufficient development of tools for the objective assessment of their ecological culture levels, which complicates the monitoring of vocational training quality. This necessitates the development and implementation of a criteria-based diagnostic approach to assessing the ecological culture of future healthcare workers as a vital condition for ensuring environmental safety in the healthcare sector.

Issues regarding medical waste management, compliance with sanitary and hygienic norms, and the prevention of environmental risks in healthcare facilities are of particular importance. In this context, fostering the ecological culture of medical college students emerges as an integral part of their professional competence. At the same time, the problem of objectively assessing the level of ecological culture development in future healthcare workers remains insufficiently addressed.

Literature Review. The problem of ecological culture is examined in scientific works as an integrative formation that combines knowledge, values, and behavioural practices (Kremen, 2018; Lukyanova, 2019; Radkevych, 2025). Researchers emphasise its connection to the concept of sustainable development (Sovgira, 2023), national state interests (Tolochko, 2024), and vocational training (Nychkalo, 2020; Radkevych, 2024). In the context of vocational education, ecological culture is interpreted as a component of professional competence that ensures readiness for environmentally responsible activity (Bazyl & Rulevska, 2023; Klymenko et al., 2021; Yablunovska, 2019, 2020). Issues of pedagogical diagnostics are addressed through the definition of criteria, indicators, and levels of the qualities under study (Sysoieva, 2017).

However, the problem of assessing the ecological culture specifically of medical college students remains under-researched. While scholars focus on forming value orientations and world-view attitudes toward harmonising the "society-nature" system (Tolochko, 2024), and on the ecological knowledge and conservation skills of learners at various educational levels, they justify complexity,

the integration of individual and universal interests, and continuity as essential features of ecological culture formation. To objectively evaluate the development of this formation, researchers identify specific units of measurement: criteria, indicators, and levels. Nevertheless, scholars have not yet developed a criteria-based apparatus for diagnosing the ecological culture levels of future specialists in river and maritime transport, nor have they defined criteria and indicators for assessing the state of the studied phenomenon. Furthermore, the development of effective diagnostic instrumentation that allows for a comprehensive assessment of ecological culture levels specifically in vocational education learners requires further scientific substantiation.

The aim of the article is to substantiate a criteria-based diagnostic approach to assessing the ecological culture of vocational education learners and to define a system of criteria, indicators, and levels of its development.

Methods. The study employed an analysis of scientific sources, psycho-pedagogical and socio-methodological literature, and regulatory documents in medical and environmental education to determine the extent of the problem's development; generalisation and systematisation were used to justify the theoretical foundations of the research and the structure of ecological culture among medical college students; definitive analysis served to clarify the conceptual content of "ecological culture of a future healthcare worker" and "criteria-based diagnostic approach"; modelling was applied to develop a system of criteria, indicators, and levels of ecological culture attainment.

Results and Discussion. The ecological culture of medical college students is viewed as an integrative personal quality reflecting the level of awareness regarding the link between professional activity and environmental conditions, the development of ecological knowledge, value orientations, and readiness for environmentally safe practice.

The structure of ecological culture encompasses motivational-evaluative, cognitive, and behavioural-activity components. The identification of these components is based on the provisions of competence-based, activity-based, and axiological approaches, according to which any integrative personal formation is viewed as a unity of value orientations, knowledge, and practical activity (Nychkalo, 2020; Sysoieva, 2017). This approach aligns with international frameworks for core competence development, such as UNESCO and

OECD recommendations, where ecological competence is interpreted as a combination of cognitive, socio-emotional, and behavioural components; it also aligns with modern scientific views on the structure of ecological culture, which presupposes the interconnectedness of an individual's ecological consciousness, thinking, and behaviour.

The criteria-based diagnostic approach is grounded in the principles of pedagogical diagnostics and criteria-referenced assessment of learning outcomes developed within the competence-based approach (Sysoieva, 2017). Its essence lies in defining a system of criteria, indicators, and levels for the studied phenomenon, ensuring the objectivity and measurability of educational results. This approach corresponds with international educational frameworks (OECD, UNESCO), whereby competence assessment is conducted through a system of indicators reflecting the cognitive, evaluative, and behavioural aspects of an individual's activity.

A criterion is considered a generalised feature reflecting the essential characteristics of a phenomenon, while indicators are the specific, measurable manifestations of that feature. Consequently, the application of this approach enables: first, the monitoring of ecological culture development levels; second, the identification of problem areas in learner preparation; and third, the adjustment of the educational process in colleges.

The motivational-evaluative criterion characterises the attitude of vocational education learners toward environmental problems and their readiness for environmentally responsible behaviour. The indicators for this criterion include an awareness of the importance of ecological knowledge; the development of ecological value orientations; motivation for environmental preservation; and a positive attitude toward environmentally safe activity.

The cognitive criterion for assessing the ecological culture level of medical college students reflects the development of ecological knowledge. Its content is specified by the following indicators: awareness of modern environmental problems; understanding the environmental impact of medical activities; knowledge of the goals and principles of sustainable development; and the ability to apply ecological knowledge in professional practice.

The behavioural-activity criterion for assessing the level of ecological culture among medical college students characterises the implementation of ecological knowledge and values

in the practical professional activities of healthcare workers. The indicators for this criterion are defined as: compliance with environmental standards in quasi-professional and subsequent vocational activities; participation in environmental protection measures; the ability to make environmentally sound

decisions; and the development of skills for ecologically appropriate behaviour.

In accordance with the defined criteria and indicators, we consider it appropriate to differentiate medical college students into three levels of ecological culture development, which is graphically visualised in Table 1.

Table 1

**SYSTEM OF CRITERIA, INDICATORS, AND DIAGNOSTIC METHODS FOR THE
ECOLOGICAL CULTURE OF MEDICAL COLLEGE STUDENTS**

Criterion	Indicators	Diagnostic Methods	Levels
Motivational-evaluative	Awareness of the importance of ecological knowledge; development of value orientations; motivation for environmental preservation	Questionnaires, interviews, surveys	High, Medium, Low
Cognitive	Knowledge of environmental problems; understanding the impact of medical activity; awareness of sustainable development	Testing, written assignments	
Behavioural-activity	Compliance with environmental norms; participation in events; decision-making	Observation, activity analysis, case studies	

Compiled by the author

As shown in the table, medical college students with a high level of ecological culture development exhibit the following characterological traits: stable ecological motivation; systemic ecological knowledge; active, ecologically appropriate behaviour; and the ability to make environmental decisions independently.

Future specialists with a medium level of ecological culture are characterised by situational motivation; a sufficient volume of mastered ecological knowledge; partial implementation of ecological behaviour; and a need for pedagogical support during quasi-professional activities.

Students with a low level of ecological culture lack stable motivation for environmentally safe activity and possess fragmentary ecological knowledge. They are distinguished by passive or ecologically inappropriate behaviour, which is usually caused by a lack of practical skills.

The diagnostic toolkit for determining the levels of ecological culture among medical college students includes: oral and written surveys; pedagogical observation; analysis of activity results; and situational tasks (case studies).

The comprehensive application of these methods will ensure the objectivity of diagnostic results regarding the ecological culture levels of medical college students. Assessment can be

conducted on a scale (high – 3 points, medium – 2 points, low – 1 point). The validity of the diagnostic toolkit is ensured through expert evaluation and testing during the training process of medical college students.

Conclusions. Thus, the criteria-based diagnostic approach is an effective tool for assessing the level of ecological culture development in vocational education learners. The proposed system of criteria (motivational-evaluative, cognitive, and behavioural-activity), indicators, and levels allows for comprehensive pedagogical diagnostics and enhances the quality of vocational training.

The scientific novelty of the study lies in the development of a system of criteria and indicators for assessing the ecological culture specifically of medical college students. We see the practical significance of the article in the possibility of using the published results in the educational process of professional pre-higher education institutions to improve the quality of future healthcare worker training.

Perspectives for further research are linked to the development of digital tools for diagnosing the ecological culture of medical education learners and the creation of innovative methodologies for fostering ecological culture across various sectors of vocational education.

List of references

Базиль Л., & Рулевська, Т. (2023). Критерії й показники оцінювання рівнів розвиненості екологічної культури майбутніх фахівців річкового й морського транспорту. *Věda a perspektivy*, 7(26) 2023. [https://doi.org/10.52058/2695-1592-2023-7\(26\)-67-81](https://doi.org/10.52058/2695-1592-2023-7(26)-67-81)

Ворона, І. І. (2020). Професійна культура в контексті підготовки майбутнього лікаря. *Медицина освіти*, 1, 117–121. https://ojs.tdmu.edu.ua/index.php/med_osvita/article/view/11005

Клименко, М., Базиль, Л., Орлов, В., & Рулевська, Т. (2021). Економічні передумови розвитку екологічної культури майбутніх фахівців сфери транспорту. *Financial and Credit Activity Problems of Theory and Practice*, 3(38), 530-537. <https://doi.org/10.18371/fcaptp.v3i38.237485>

Кремень, В. (2018). *Філософія людиноцентризму в освіті*. Київ: Грамота.

Лузан, П. Г., Тітова, О. А., Мося, І. А., & Пашенко, Т. М. (2021). Методика оцінювання якості підготовки фахівців у закладах фахової передвищої освіти. *Професійна педагогіка*, 1(22), 169-184. <https://doi.org/10.32835/2707-3092.2021.22.169-184>

Лук'янова, Л. Б. (2006). *Екологічна освіта у професійно-технічних навчальних закладах: теоретичний і практичний аспекти: монографія*. Київ: Міленіум.

Наказ МОН України Про затвердження Державних санітарних норм та правил «Порядок управління медичними відходами, у тому числі вимоги щодо безпечності для здоров'я людини під час утворення, збирання, зберігання, перевезення, оброблення таких відходів» (2024, 31 жовтня). <https://zakon.rada.gov.ua/laws/show/z1938-24#Text>

Ничкало, Н. (2020). *Професійна освіта в умовах змін*. Київ: ІПТО НАПН України.

Толочко, С. В. (2024). Екологічна культура в структурі полікультурної особистості здобувачів освіти. *Суспільство та національні інтереси*, 4(4), 670-683. [https://doi.org/10.52058/3041-1572-2024-4\(4\)-670-683](https://doi.org/10.52058/3041-1572-2024-4(4)-670-683)

Сисоєва, С. (2017). *Педагогічна діагностика*. Київ: Університет.

Совгіра, С. (2023). Екологічна культура в аспекті освіти для сталого розвитку суспільства. *Збірник наукових праць Уманського державного педагогічного університету*, 2, 17-24. <https://doi.org/10.31499/2307-4906.2.2023.282448>

Яблуновська, К. О. (2020) Професійна підготовка викладачів аграрних закладів професійної освіти в педагогічній діяльності. *Педагогіка формування творчої особистості у вищій школі і загальноосвітніх школах*, 68 (1), 34-38. <https://doi.org/10.32840/1992-5786.2020.68-1.6>

Яблуновська, К. О. (2019). Методика формування екологічної компетентності студентів засобами інтерактивних технологій навчання. *Актуальні питання гуманітарних наук: міжвузівський збірник наукових праць молодих вчених Дрогобицького державного педагогічного університету імені Івана Франка*, 26 (2), 184–188. <https://doi.org/10.24919/2308-4863.2/26.195912>

Hook, K., & Marcantonio, R. (2022) Environmental dimensions of conflict and paralyzed responses: the ongoing case of Ukraine and future implications for urban warfare. *Small Wars & Insurgencies*. 34 (8): 1400–1428. <https://doi.org/10.1080%2F09592318.2022.2035098>

Radkevych, V. (2025). Principles of sustainable development in vocational education under the conditions of a circular economy. In T. Nestorenko & D. Kalita (Eds.), *Exploring AI and innovation across key sectors: Monograph* (pp. 151–165). The University of Technology in Katowice Press. <https://lib.iitta.gov.ua/id/eprint/748063>

United Nations Environment Programme (UNEP). The toxic legacy of the war in Ukraine. <https://www.unep.org/news-and-stories/story/toxic-legacy-ukraine-war>

World Bank; Government of Ukraine; European Commission; United Nations. Ukraine Rapid Damage and Needs Assessment (RDNA3). Washington, DC, 2024. <https://www.worldbank.org>

Zoï Environment Network, UNEP. Environmental impacts of the conflict in eastern Ukraine. <https://zoïnet.org/product/environmental-assessment-of-the-donbas>

Translated & Transliterated

Bazyl L., & Rulevska, T. (2023). Kryterii y pokaznyky otsiniuvannia rivniv rozvynenosti ekolohichnoi kultury maibutnikh fakhivtsiv richkovoho y morskoho transportu [Criteria and indicators for assessing the levels of ecological culture development of future specialists in river and sea transport]. *Věda a perspektivy*, 7(26) 2023. [https://doi.org/10.52058/2695-1592-2023-7\(26\)-67-81](https://doi.org/10.52058/2695-1592-2023-7(26)-67-81) , [in Ukrainian].

Vorona, I. I. (2020). Profesiina kultura v konteksti pidhotovky maibutnoho likaria [Professional culture in the context of training future doctors.]. *Medychna osvita [Medical Education]*, 1, 117–121. https://ojs.tdmu.edu.ua/index.php/med_osvita/article/view/11005, [in Ukrainian].

Klymenko, M., Bazyl, L., Orlov, V., & Rulevska, T. (2021). Ekonomichni peredumovy rozvytku ekolohichnoi kultury maibutnikh fakhivtsiv sfery transportu [Economic prerequisites for the development of ecological culture of future transport specialists]. *Financial and Credit Activity Problems of Theory and Practice [Financial and Credit Activity Problems of Theory and Practice]*, 3(38), 530-537. <https://doi.org/10.18371/fcaptp.v3i38.237485>, [in Ukrainian].

Kremen, V. (2018). *Filosofiia liudynotsentryzmu v osviti [Philosophy of human-centrism in education]*. Kyiv: Hramota, [in Ukrainian].

Luzan, P. H., Titova, O. A., Mosia, I. A., & Pashchenko, T. M. (2021). Metodyka otsiniuvannia yakosti pidhotovky fakhivtsiv u zakladakh fakhovoi peredvyshchoi osvity [Methodology for assessing the quality of training specialists in institutions of professional pre-higher education]. *Profesiina pedahohika [Professional Pedagogics]*, 1(22), 169-184. <https://doi.org/10.32835/2707-3092.2021.22.169-184>, [in Ukrainian].

Lukianova, L. B. (2006). Ekolohichna osvita u profesiino-tekhnichnykh navchalnykh zakladakh: teoretychnyi i praktychnyi aspekty: monohrafiia [Ecological education in vocational schools: theoretical and practical aspects: monograph]. Kyiv: Milenium, 2006.

Nakaz MON Ukrainy Pro zatverdzhennia Derzhavnykh sanitarnykh norm ta pravyl «Poriadok upravlinnia medychnymy vidkhodamy, u tomu chysli vymohy shchodo bezpechnosti dlia zdorovia liudyny pid chas utvorennia, zbyrannia, zberihannia, perevezennia, obroblennia takykh vidkhodiv» (2024, 31 zhovtnia) [Ministry of Education and Science of Ukraine. Order on approval of State sanitary norms and rules “Procedure for medical waste management, including requirements for human health safety during generation, collection, storage, transportation, processing of such waste” (2024, October 31)]. <https://zakon.rada.gov.ua/laws/show/z1938-24#Text>, [in Ukrainian].

Nychkalo, N. (2020). *Profesiina osvita v umovakh zmin [Vocational education in conditions of change]*. Kyiv: IPTO NAPN Ukrainy.

Tolochko, S. V. (2024). Ekolohichna kultura v strukturi polikulturnoi osobystosti zdobuvachiv osvity [Ecological culture in the structure of multicultural personality of applicants for education]. *Suspilstvo ta natsionalni interesy [Society and National Interests]*, 4(4), 670-683. [https://doi.org/10.52058/3041-1572-2024-4\(4\)-670-683](https://doi.org/10.52058/3041-1572-2024-4(4)-670-683), [in Ukrainian].

Sysoieva, S. (2017). *Pedahohichna diahnostyka [Pedagogical diagnostics]*. Kyiv: Universytet, [in Ukrainian].

Sovhira, S. (2023). Ekolohichna kultura v aspekti osvity dlia staloho rozvytku suspilstva [Ecological culture in the aspect of education for the sustainable development of society]. *Zbirnyk naukovykh prats Umanskoho derzhavnoho pedahohichnoho universytetu [Collection of Scientific Papers of Uman State Pedagogical University]*, 2, 17-24. <https://doi.org/10.31499/2307-4906.2.2023.282448>, [in Ukrainian].

Yablunovska, K. O. (2020) Profesiina pidhotovka vykladachiv ahrarynykh zakladiv profesiinoi osvity v pedahohichnii diialnosti [Professional training of teachers of agricultural vocational education institutions in pedagogical activity]. *Pedahohika formuvannia tvorchoi osobystosti u vyshchii shkoli i zahalnoosvitnikh shkolakh [Pedagogy of Creative Personality Formation in Higher School and Secondary Schools]*, 68 (1), 34-38. <https://doi.org/10.32840/1992-5786.2020.68-1.6>, [in Ukrainian].

Yablunovska, K. O. (2019). Metodyka formuvannia ekolohichnoi kompetentnosti studentiv zasobamy interaktyvnykh tekhnolohii navchannia [Method of formation of environmental competence of students by means of interactive technologies of learning]. *Aktualni pytannia humanitarnykh nauk [Current Issues of Humanities]*, 26 (2), 184–188. <https://doi.org/10.24919/2308-4863.2/26.195912>, [in Ukrainian].

Hook, K., Marcantonio, R. (2022) Environmental dimensions of conflict and paralyzed responses: the ongoing case of Ukraine and future implications for urban warfare. *Small Wars & Insurgencies*. 34 (8): 1400–1428 URL: <https://doi.org/10.1080%2F09592318.2022.2035098>, [in Ukrainian].

Radkevych, V. (2025). Principles of sustainable development in vocational education under the conditions of a circular economy. In T. Nestorenko & D. Kalita (Eds.), *Exploring AI and innovation across key sectors: Monograph* (pp. 151–165). The University of Technology in Katowice Press. <https://lib.iitta.gov.ua/id/eprint/748063>, [in Ukrainian].

United Nations Environment Programme (UNEP). The toxic legacy of the war in Ukraine. <https://www.unep.org/news-and-stories/story/toxic-legacy-ukraine-war>, [in English].

World Bank; Government of Ukraine; European Commission; United Nations. Ukraine Rapid Damage and Needs Assessment (RDNA3). Washington, DC, 2024. <https://www.worldbank.org>, [in English].

Zoï Environment Network, UNEP. Environmental impacts of the conflict in eastern Ukraine. <https://zoinet.org/product/environmental-assessment-of-the-donbas>, [in English].

DOI: <https://doi.org/10.32835/2707-3092.2024.31.275-281>

КРИТЕРІАЛЬНО-ДІАГНОСТИЧНИЙ ПІДХІД ДО ОЦІНЮВАННЯ ЕКОЛОГІЧНОЇ КУЛЬТУРИ СТУДЕНТІВ МЕДИЧНИХ КОЛЕДЖІВ

Людмила Базиль

доктор педагогічних наук, професор, учений секретар, провідний науковий співробітник відділу виховання і професійної кар'єри Інституту професійної освіти НАПН України, <https://orcid.org/0000-0003-4130-5436>, e-mail: ljudmilabazyl@gmail.com

Реферат:

Актуальність: оцінювання екологічної культури студентів медичних коледжів зумовлена зростанням екологічних ризиків для здоров'я населення, загострених наслідками війни РФ проти України, необхідністю забезпечення екологічної безпеки у сфері охорони здоров'я та вимогами оновленої парадигми професійної медичної освіти; потребує формування екологічного світогляду майбутніх медичних працівників, здатних до відповідальної професійної діяльності, пов'язаної з дотриманням санітарно-гігієнічних норм, безпечним поведінням із медичними відходами та мінімізацією негативного впливу на довкілля.

Мета: обґрунтувати критеріально-діагностичний підхід до оцінювання екологічної культури студентів медичних коледжів та визначити критерії, показники і рівні її сформованості.

Методи: аналіз наукових джерел, психолого-педагогічної та науково-методичної літератури, нормативно-правових документів у сфері медичної та екологічної освіти – для визначення ступеня розробленості проблеми; узагальнення і систематизація – для обґрунтування теоретичних засад дослідження та структури екологічної культури студентів медичних коледжів; дефінітивний аналіз – для уточнення змісту понять «екологічна культура майбутнього медичного працівника», «критеріально-діагностичний підхід»; моделювання – для розроблення системи критеріїв, показників і рівнів сформованості екологічної культури.

Результати: обґрунтовано критеріально-діагностичний підхід до оцінювання екологічної культури студентів медичних коледжів; визначено систему критеріїв (мотиваційно-ціннісний, когнітивний, поведінково-діяльнісний), відповідні показники та рівні її сформованості; встановлено, що застосування комплексного діагностичного інструментарію сприяє об'єктивному оцінюванню готовності майбутніх медичних працівників до екологічно безпечної професійної діяльності, підвищенню якості їхньої професійної підготовки та формуванню відповідального ставлення до збереження здоров'я і довкілля.

Висновки: використання критеріально-діагностичного підходу до оцінювання екологічної культури студентів медичних коледжів забезпечує цілісне уявлення про рівень її сформованості, дозволяє своєчасно коригувати освітній процес, сприяє розвитку екологічного мислення, професійної відповідальності та готовності майбутніх медичних працівників до забезпечення екологічної безпеки у сфері охорони здоров'я.

Ключові слова: екологічна культура, студент медичного коледжу, критерії, показники, діагностика, професійна підготовка, екологічна безпека.

Manuscript received: 15.06.2025

Accepted for publication after peer review: 06.10.2025

Published: 18.12.2025

CONTENTS

<i>Valentyna Radkevych</i> KEY TRENDS IN THE DEVELOPMENT OF THE QUALITY ASSURANCE SYSTEM FOR VOCATIONAL EDUCATION AND TRAINING IN GREAT BRITAIN.....	3
<i>Volodymyr Kryachko</i> MODERN TRENDS IN QUALITY ASSURANCE OF VOCATIONAL EDUCATION AND TRAINING IN FRANCE.....	21
<i>Lidiia Humenna</i> PROBLEM-BASED LEARNING TECHNOLOGY AS A MEANS OF ACTIVATING THE COGNITIVE ACTIVITY OF LEARNERS.....	31
<i>Dmytro Nahlyi</i> ASSESSING THE QUALITY OF PROFESSIONAL TRAINING OF SPECIALISTS IN ECONOMIC COLLEGES: TECHNOLOGICAL ASPECT.....	42
<i>Olga Orlova, Larysa Familiarska</i> PROFESSIONAL ACTIVITY OF THE HEAD OF A PRESCHOOL EDUCATION INSTITUTION UNDER THE CONDITIONS OF DIGITAL TRANSFORMATION OF THE EDUCATIONAL ENVIRONMENT.....	53
<i>Mykola Pryhodii, Liliia Luparenko</i> COMPETITIVE EVENTS AS A FORM OF DEVELOPMENT THE TEACHERS' PROFESSIONAL ACTIVITY (ON THE EXAMPLE OF THE "PLANET IT" COMPETITION).....	62
<i>Oleksandr Radkevych</i> CRITERIA AND INDICATORS FOR ELECTRONIC ASSESSMENT OF PROFESSIONAL ACTIVITY OF TEACHING STAFF IN GENERAL SECONDARY EDUCATION INSTITUTIONS.....	73
<i>Julia Lulkova</i> FEATURES OF QUALITY ASSURANCE IN VOCATIONAL EDUCATION AND TRAINING IN SWITZERLAND: AN ANALYSIS OF INSTITUTIONAL ARCHITECTURE AND PRACTICAL MECHANISMS.....	91
<i>Natalia Kulalaieva</i> INTERDISCIPLINARY APPROACH TO DESIGNING COMPETENCY MODELS FOR HIGHER EDUCATION STUDENTS.....	102
<i>Leonid Romanov</i> APPLICATION OF CASE TECHNOLOGY FOR THE DEVELOPMENT OF PROFESSIONAL COMPETENCE OF PEDAGOGICAL STAFF OF PROFESSIONAL COLLEGES.....	109
<i>Alina Oparina</i> INTERNATIONAL EXPERIENCE IN DEVELOPING THE INCLUSIVE COMPETENCE OF VOCATIONAL EDUCATION AND TRAINING STAFF.....	117
<i>Olena Antonova</i> THE POTENTIAL OF INNOVATIVE LEARNING TECHNOLOGIES IN PRESERVING THE EDUCATOR'S PROFESSIONAL HEALTH.....	127
<i>Iryna Drozich</i> USING ENERGY-EFFICIENCY PEDAGOGICAL TECHNOLOGIES IN PROFESSIONAL TRAINING OF FUTURE CONSTRUCTION WORKERS: EU EXPERIENCE.....	135
<i>Vitalii Svyrydiuk</i> MODERN PROBLEMS OF TRAINING FUTURE SPECIALISTS OF THE CONSTRUCTION INDUSTRY OF UKRAINE IN ENERGY-EFFICIENT TECHNOLOGIES.....	143
<i>Oksana Subina</i> THE CURRENT STATE OF IMPLEMENTATION OF VOCATIONAL-PRACTICAL TRAINING OF FUTURE CONSTRUCTION INDUSTRY SPECIALISTS IN THE VOCATIONAL EDUCATION SYSTEM OF UKRAINE.....	151
<i>Andrii Hurzhii, Mykola Pryhodii</i> ARTIFICIAL INTELLIGENCE IN VOCATIONAL EDUCATION: STRATEGIES FOR DIGITAL INTEGRATION AND PERSONALIZED LEARNING.....	164
<i>Volodymyr Artyushenko</i> FORMATION OF ENTREPRENEURIAL COMPETENCE OF INTERNALLY DISPLACED PERSONS IN THE RENEWABLE ENERGY SECTOR AS A FACTOR OF ECONOMIC STABILITY IN HOST COMMUNITIES.....	174
<i>Oleh Predmestnikov, Serhii Hulevych</i> THE USE OF VIRTUAL REALITY HARDWARE AND SOFTWARE COMPLEXES IN THE PROFESSIONAL TRAINING OF COMPUTER SCIENCE TEACHERS: STRATEGIES AND PERSPECTIVES FOR THE DIGITALIZATION OF THE EDUCATIONAL PROCESS.....	187
<i>Andrii Mykytiuk</i> REGULATORY AND LEGAL FRAMEWORK FOR THE TRAINING OF CONSTRUCTION PROFESSIONALS IN VOCATIONAL COLLEGES OF THE UNITED KINGDOM.....	197
<i>Iryna Lebid</i> PROFESSIONAL TRAINING OF FUTURE BACHELOR'S DEGREE HOLDERS IN TRANSPORT TECHNOLOGIES: TERMINOLOGICAL DISCOURSE.....	205
<i>Larysa Didkovska</i> A TRAUMA-FOCUSED APPROACH TO TEACHER EDUCATION AMIDST GLOBAL CHALLENGES.....	220
<i>Maksym Maksymov</i> EXPERIENCE IN DEVELOPING THE PROJECT COMPETENCE OF FUTURE ENVIRONMENT DESIGN SPECIALISTS IN HIGHER EDUCATION INSTITUTIONS OF UKRAINE AND ABROAD.....	227
<i>Oksana Lapa</i> FOREIGN EXPERIENCE IN RESEARCHING THE PROFESSIONAL CULTURE OF PRACTITIONER PSYCHOLOGISTS IN VOCATIONAL EDUCATION AND TRAINING (VET) INSTITUTIONS.....	238
<i>Mykola-Oleg Yershov</i> SOCIO-HUMANITARIAN EDUCATION IN EU COUNTRIES: EXPERIENCE AND PROSPECTS OF IMPLEMENTATION INTO THE UKRAINIAN EDUCATIONAL SYSTEM.....	251
<i>Oksana Sovhar, Hanna Sovhar</i> ADAPTATION OF CONTENT AND LANGUAGE INTEGRATED LEARNING (CLIL) METHODOLOGY TO THE SPECIFICS OF TRAINING FUTURE OFFICERS.....	268
<i>Liudmyla Bazyl</i> CRITERIA-BASED DIAGNOSTIC APPROACH TO ASSESSING THE ECOLOGICAL CULTURE OF MEDICAL COLLEGE STUDENTS.....	275

ЗМІСТ

<i>Валентина Радкевич</i> КЛЮЧОВІ ТЕНДЕНЦІЇ РОЗВИТКУ СИСТЕМИ ЗАБЕЗПЕЧЕННЯ ЯКОСТІ ПРОФЕСІЙНОЇ ОСВІТИ І ПІДГОТОВКИ У ВЕЛИКІЙ БРИТАНІЇ.....	3
<i>Володимир Крячко</i> СУЧАСНІ ТЕНДЕНЦІЇ ЗАБЕЗПЕЧЕННЯ ЯКОСТІ ПРОФЕСІЙНОЇ ОСВІТИ І ПІДГОТОВКИ У ФРАНЦІЇ.....	21
<i>Лідія Гуменна</i> ТЕХНОЛОГІЯ ПРОБЛЕМНОГО НАВЧАННЯ ЯК ЗАСІБ АКТИВІЗАЦІЇ ПІЗНАВАЛЬНОЇ ДІЯЛЬНОСТІ ЗДОБУВАЧІВ ОСВІТИ.....	31
<i>Дмитро Наглий</i> ОЦІНЮВАННЯ ЯКОСТІ ПРОФЕСІЙНОЇ ПІДГОТОВКИ ФАХІВЦІВ В ЕКОНОМІЧНИХ КОЛЕДЖАХ: ТЕХНОЛОГІЧНИЙ АСПЕКТ.....	42
<i>Ольга Орлова, Лариса Фамілярська</i> ПРОФЕСІЙНА ДІЯЛЬНІСТЬ КЕРІВНИКА ЗАКЛАДУ ДОШКІЛЬНОЇ ОСВІТИ В УМОВАХ ЦИФРОВОЇ ТРАНСФОРМАЦІЇ ОСВІТНЬОГО СЕРЕДОВИЩА.....	53
<i>Микола Пригодій, Лілія Лупаренко</i> КОНКУРСНІ ЗАХОДИ ЯК ФОРМА РОЗВИТКУ ПРОФЕСІЙНОЇ АКТИВНОСТІ ПЕДАГОГІЧНИХ ПРАЦІВНИКІВ (НА ПРИКЛАДІ КОНКУРСУ «ПЛАНЕТА ІТ»).....	62
<i>Олександр Радкевич</i> КРИТЕРІЇ ТА ПОКАЗНИКИ ЕЛЕКТРОННОГО ОЦІНЮВАННЯ ПРОФЕСІЙНОЇ ДІЯЛЬНОСТІ ПЕДАГОГІЧНИХ ПРАЦІВНИКІВ ЗАКЛАДІВ ЗАГАЛЬНОЇ СЕРЕДНЬОЇ ОСВІТИ.....	73
<i>Юлія Люлькова</i> ОСОБЛИВОСТІ ЗАБЕЗПЕЧЕННЯ ЯКОСТІ ПРОФЕСІЙНОЇ ОСВІТИ І ПІДГОТОВКИ У ШВЕЙЦАРІЇ: АНАЛІЗ ІНСТИТУЦІЙНОЇ АРХІТЕКТУРИ ТА ПРАКТИЧНИХ МЕХАНІЗМІВ.....	91
<i>Наталія Кулалаєва</i> МІЖДИСЦИПЛІНАРНИЙ ПІДХІД ДО ПРОЄКТУВАННЯ МОДЕЛЕЙ КОМПЕТЕНТНОСТІ ЗДОБУВАЧІВ ВИЩОЇ ОСВІТИ.....	102
<i>Леонід Романов</i> ЗАСТОСУВАННЯ KEY-ТЕХНОЛОГІЇ ДЛЯ РОЗВИТКУ ПРОФЕСІЙНОЇ КОМПЕТЕНТНОСТІ ПЕДАГОГІЧНИХ ПРАЦІВНИКІВ ФАХОВИХ КОЛЕДЖІВ.....	109
<i>Аліна Опаріна</i> ЗАРУБІЖНИЙ ДОСВІД РОЗВИТКУ ІНКЛЮЗИВНОЇ КОМПЕТЕНТНОСТІ ПЕДАГОГІЧНИХ ПРАЦІВНИКІВ ЗАКЛАДІВ ПРОФЕСІЙНОЇ (ПРОФЕСІЙНО-ТЕХНІЧНОЇ) ОСВІТИ.....	117
<i>Олена Антонова</i> ПОТЕНЦІАЛ ІННОВАЦІЙНИХ ТЕХНОЛОГІЙ НАВЧАННЯ У ЗБЕРЕЖЕННІ ПРОФЕСІЙНОГО ЗДОРОВ'Я ПЕДАГОГА.....	127
<i>Ірина Дрозіч</i> ЗАСТОСУВАННЯ ЕКООРІЄНТОВАНИХ ПЕДАГОГІЧНИХ ТЕХНОЛОГІЙ У ПРОФЕСІЙНІЙ ПІДГОТОВЦІ МАЙБУТНІХ КВАЛІФІКОВАНИХ РОБІТНИКІВ БУДІВЕЛЬНОЇ ГАЛУЗІ: ДОСВІД ЄС.....	135
<i>Віталій Свирідюк</i> СУЧАСНІ ПРОБЛЕМИ НАВЧАННЯ МАЙБУТНІХ ФАХІВЦІВ БУДІВЕЛЬНОЇ ГАЛУЗІ УКРАЇНИ ЕНЕРГОЕФЕКТИВНИМ ТЕХНОЛОГІЯМ.....	143
<i>Оксана Субіна</i> СУЧАСНИЙ СТАН РЕАЛІЗАЦІЇ ПРОФЕСІЙНО-ПРАКТИЧНОЇ ПІДГОТОВКИ МАЙБУТНІХ ФАХІВЦІВ БУДІВЕЛЬНОЇ ГАЛУЗІ В СИСТЕМІ ПРОФЕСІЙНОЇ ОСВІТИ УКРАЇНИ.....	151
<i>Андрій Гуржій, Микола Пригодій</i> ШТУЧНИЙ ІНТЕЛЕКТ У ПРОФЕСІЙНІЙ ОСВІТІ: СТРАТЕГІЯ ЦИФРОВОЇ ІНТЕГРАЦІЇ ТА ІНДИВІДУАЛІЗАЦІЇ НАВЧАННЯ.....	164
<i>Володимир Артюшенко</i> ФОРМУВАННЯ ПІДПРИЄМНИЦЬКОЇ КОМПЕТЕНТНОСТІ ВНУТРІШНЬО ПЕРЕМІЩЕНИХ ОСІБ У ВІДНОВЛЮВАЛЬНІЙ ЕНЕРГЕТИЦІ ЯК ЧИННИК ЕКОНОМІЧНОЇ СТАБІЛЬНОСТІ ПРИЙМАЮЧИХ ГРОМАД.....	174
<i>Олег Предместніков, Сергій</i> ВИКОРИСТАННЯ АПАРАТНО-ПРОГРАМНИХ КОМПЛЕКСІВ ВІРТУАЛЬНОЇ РЕАЛЬНОСТІ У ПРОФЕСІЙНІЙ ПІДГОТОВЦІ ВИКЛАДАЧІВ ІНФОРМАТИКИ: СТРАТЕГІЇ ТА ПЕРСПЕКТИВИ ЦИФРОВІЗАЦІЇ ОСВІТНЬОГО ПРОЦЕСУ.....	187
<i>Андрій Микитюк</i> НОРМАТИВНО- ПРАВОВЕ ЗАБЕЗПЕЧЕННЯ ПІДГОТОВКИ ФАХІВЦІВ БУДІВЕЛЬНОГО ПРОФІЛЮ У ПРОФЕСІЙНИХ КОЛЕДЖАХ ВЕЛИКОЇ БРИТАНІЇ.....	197
<i>Ірина Лебідь</i> ПРОФЕСІЙНА ПІДГОТОВКА МАЙБУТНІХ БАКАЛАВРІВ З ТРАНСПОРТНИХ ТЕХНОЛОГІЙ: ТЕРМІНОЛОГІЧНИЙ ДИСКУРС.....	205
<i>Лариса Дідковська</i> ТРАВМОФОКУСНИЙ ПІДХІД ДО ПІДГОТОВКИ ПЕДАГОГІВ В УМОВАХ ГЛОБАЛЬНИХ ВИКЛИКІВ.....	220
<i>Максим Максимов</i> ДОСВІД РОЗВИТКУ ПРОЄКТНОЇ КОМПЕТЕНТНОСТІ МАЙБУТНІХ ФАХІВЦІВ З ДИЗАЙНУ СЕРЕДОВИЩА У ЗВО УКРАЇНИ ТА ЗАРУБІЖЖЯ.....	227
<i>Оксана Лапа</i> ЗАРУБІЖНИЙ ДОСВІД ДОСЛІДЖЕННЯ ПРОБЛЕМИ ПРОФЕСІЙНОЇ КУЛЬТУРИ ПРАКТИЧНИХ ПСИХОЛОГІВ ЗАКЛАДІВ ПРОФЕСІЙНОЇ (ПРОФЕСІЙНО-ТЕХНІЧНОЇ) ОСВІТИ.....	238
<i>Микола-Олег Єришов</i> СОЦІОГУМАНІТАРНА ОСВІТА В КРАЇНАХ ЄС: ДОСВІД І ПЕРСПЕКТИВИ ІМПЛЕМЕНТАЦІЇ В УКРАЇНСЬКУ ОСВІТНЮ СИСТЕМУ.....	251
<i>Оксана Совгар, Ганна Совгар</i> АДАПТАЦІЯ МЕТОДИКИ ПРЕДМЕТНО-МОВНОГО ІНТЕГРОВАНОГО НАВЧАННЯ (CLIL) ДО СПЕЦИФІКИ ПІДГОТОВКИ МАЙБУТНІХ ОФІЦЕРІВ.....	268
<i>Людмила Базиль</i> КРИТЕРІАЛЬНО-ДІАГНОСТИЧНИЙ ПІДХІД ДО ОЦІНЮВАННЯ ЕКОЛОГІЧНОЇ КУЛЬТУРИ СТУДЕНТІВ МЕДИЧНИХ КОЛЕДЖІВ.....	275