

ISSN Online 2707-3092

Professional PEDAGOGICS

Професійна
ПЕДАГОГІКА

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

2(29)`2024

ISSN 2707-3092 (Online)

<https://doi.org/10.32835/2707-3092.2024.29>

Professional Pedagogics

No 2(29)'2024

Founded

April 07, 2011

Founder

The Institute of Vocational Education
of the NAES of Ukraine

Editor-in-chief

Valentyna Radkevych

Publication frequency: 2 times a year

From 2011 to 2019: "Scientific Herald of the Institute of Vocational Education and Training of the NAES of Ukraine. Professional Pedagogy" (The certificate of state registration of a print media: Series No 17626-6476P as of April 07, 2011)

Since 2020: "Profesiina pedahohika" / "Professional Pedagogics" (ISSN 2707-3092) – an electronic professional edition (The decision of the Academic Board of the Institute of Vocational Education of the NAES of Ukraine as of June 15, 2020, Minutes No 7)

Recommended for publishing

by the Academic Board of the Institute of
Vocational Education of the NAES of Ukraine
(Minutes No 7 as of June 15, 2020)

Papers are reviewed by editorial board members and
external reviewers

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The Journal is an electronic periodical (ISSN (Online) 2707-3092), **included in the B category of** the list of scientific professional editions of Ukraine, in which the results of theses for academic degrees of Candidate of Sciences, Doctor of Sciences and Doctor of Philosophy can be published (Order of the Ministry of Education and Science of Ukraine as of March 17, 2020, No 409).

Indexed in:

Index Copernicus International (since July 12, 2018)

CrossRef (since November 22, 2018)

ERIH PLUS (since January 20, 2020)

PKP index (since July 09, 2019)

Google Scholar (since August 25, 2014)

Academic Resource Index: ReserchBib (since January 01, 2019)

Added to the Ulrich's Periodicals Directory database since August 25, 2014)

Reviewed by: the Ukrainian abstract journal "Dzherelo" (Source), the abstract database "Ukrainika naukova" (Scientific Ukrainika), the sectoral abstract database of V. O. Sukhomlynskyi State scientific and pedagogical library of Ukraine, Directory of Open Access Journals, WorldCat, Education Resources Information Center (ERIC)

Archived by Vernadsky National Library of Ukraine

Represented in digital catalogues of Yaroslav Mudryi National Library of Ukraine, V. O. Sukhomlynskyi State Scientific and Pedagogical Library of Ukraine

The Institute of Professional Education of the National Academy of Pedagogical Sciences of Ukraine is an entity in the field of online media (Decision of the National Council on Television and Radio Broadcasting No. 1430 of 16.11.2023)

Kyiv 2024

<https://doi.org/10.32835/2707-3092.2024.29>

The journal substantiates topical issues of modernisation of professional and vocational higher education, including: search for new approaches to the formation of professional qualifications, development of professional standards, use of public-private partnership tools, creation of virtual educational space in educational institutions, ensuring quality control of professional training of future specialists, improving professional development of teachers, management of educational institutions as project-oriented organisations. The practical aspects of optimising distance learning, using networked educational and methodological complexes in the educational process, testing test tasks, developing the moral and volitional qualities of students, and forming their entrepreneurial, career, intercultural, and methodological competencies are revealed. The tendencies of transformational changes in vocational education in the era of Ukraine's independence are characterised.

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ISSN 2707-3092 (Online)

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PUBLIC-PRIVATE PARTNERSHIP IN THE FIELD OF VOCATIONAL EDUCATION: A DEVELOPMENT ROADMAP

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Abstract

Relevance. Public-private partnership in the field of vocational education is a crucial tool for modernizing the system of training future professionals, particularly in the context of globalization and rapid technological change. It enables the attraction of investments, the improvement of the material and technical resources of vocational education institutions, the implementation of innovative technologies, and the adaptation of the content and forms of the educational process to meet the demands of the modern labor market. In the context of vocational education reform in Ukraine, public-private partnership fosters the integration of the private sector into the professional training of qualified specialists and supports sustainable development of the state, national economy, and society.

Purpose: Based on research results, the article aims to identify and substantiate the key components, content, and structure of the development roadmap for public-private partnership in the field of vocational education.

Methods: The study involves analyzing scientific sources, legislative and regulatory documents, and empirical data on the development of public-private partnerships in vocational education to determine the state of the issue. Theoretical analysis and synthesis, as well as generalization of viewpoints on the researched problem, were used to identify and justify the main components, content, and structure of the development roadmap for public-private partnership in vocational education, followed by summarizing the conclusions.

Results: The key components of the development roadmap for public-private partnership in vocational education have been substantiated, which include the stages of cooperation between public and private entities, such as the legal regulation of the involvement of public and private partners in the professional training of future qualified specialists; the formation of institutional mechanisms for interaction between partnership participants; the creation of a flexible system for evaluating and monitoring the quality of vocational education; the stimulation of investments in improving the material and technical resources of vocational education institutions; and institutional mechanisms for supporting the implementation of strategies for teacher preparation and professional development. The content of the roadmap for developing public-private partnerships in vocational education is presented with the following structure: introduction; legal framework for regulating public-private partnerships; implementation and monitoring of pilot projects for public-private partnerships; scaling up successful pilot projects for public-private partnerships and integrating their results at the national level; mechanisms for improving public-private partnership projects and adapting them to changing conditions; conclusions and recommendations; appendices.

Conclusions: A well-structured roadmap for developing public-private partnerships in vocational education, which takes into account all partnership components, enables effective collaboration between the state and business. This leads to improved quality of vocational education, its adaptation to labor market needs, increased transparency of management, and the efficient regulation of contractual relations and private investments. For the development of public-private partnerships in vocational education based on the roadmap, the following recommendations are proposed: improving legislative and regulatory conditions for public-private partnership development; ensuring transparency and adapting legislation to new challenges and protecting the rights of all partnership participants; actively involving private companies in educational projects by creating additional financial and tax incentives, as well as expanding opportunities for collaboration between businesses and vocational education institutions; scaling successful public-private partnership

projects to the national level, taking into account the economic specificities of different regions; ensuring support and monitoring of public-private partnership projects to adapt them to local conditions and needs; creating infrastructure and a digital educational environment for online learning and the development of digital competence among partnership participants; developing financial mechanisms to support students, facilitating wider access to quality vocational education for all citizens; conducting systematic labor market monitoring and analysis to timely respond to changes in employer needs, regularly adjusting educational programs to meet current demands and trends; investing in the preparation and professional development of vocational education teachers, ensuring their access to modern knowledge and innovative teaching methodologies.

Keywords: *public-private partnership, roadmap, content, structure, vocational education, labor market, projects, specialists.*

Introduction. Public-private partnership (hereinafter referred to as PPP) is a modern form of interaction between public authorities and businesses in social and economic spheres aimed at sustainable economic development and social stability. PPP is also an important tool for developing the education system amid contemporary economic challenges and increasing globalization. In Ukraine, particularly in vocational education, PPP is gaining particular significance due to the need for enhancing material and technical infrastructure, introducing innovative technologies, and attracting private capital. The necessity of applying this type of partnership in vocational education is driven by the heightened interest of the state, businesses, and society in accelerating its transformation, considering the rapid technological advancements characterized by the expansion of digitalization processes, changes in management approaches at various levels, and more (Radkevych, 2024b). PPP entails expanding the capabilities of the public sector, as well as private capital, through "business actors" for the purpose of investing in the development of educational and social infrastructure, creating conditions for improving the quality of educational services, etc. (On Education, 2017). Ultimately, PPP contributes to more efficient use of resources and technologies to develop and enhance professional and other competencies in future specialists, as well as facilitate the rapid integration of vocational education graduates into production processes. Given this, PPP should be understood as a system of long-term mutually beneficial contractual economic and organizational relations between public and private entities, aimed at attracting additional investments for the development of vocational education, increasing the level of shared responsibility for decision-making in matters of public interest, and achieving pedagogical, social, and economic effects (Radkevych, 2022b).

An effective tool for the development of PPP in the field of vocational education is a roadmap,

aimed at creating a comprehensive system of cooperation between public institutions and private businesses to ensure that the vocational training of qualified specialists aligns with the needs and demands of the labor market. When developing a PPP roadmap, it is particularly important to define the main directions and stages of partner cooperation, the disclosure of which allows for an understanding of the specific steps and actions necessary for the successful implementation of PPP project goals; approaches to regulating and supporting PPP; specific PPP objectives and strategies for engaging partnership participants in pilot PPP projects in vocational education; mechanisms for monitoring and evaluating the effectiveness of PPP pilot projects; conditions for creating effective management structures that ensure clear coordination between all partnership participants; a training program for educators; criteria for aligning educational and training programs with labor market needs; mechanisms for improving PPP projects and adapting them to changing labor market and educational needs.

Sources. The legal framework regulating the participation of public and private partners in the vocational training of qualified specialists includes the Law of Ukraine "On Education" (Verkhovna Rada of Ukraine, 2017). This law serves as the foundation for the development of all educational subsystems and processes, including vocational education. It defines the principles of PPP and provides for enterprise participation in personnel training through specialized educational programs. General provisions regarding the organization and development of vocational education in the country, and the possibilities for cooperation between

vocational education institutions and the private sector, are regulated by the Law of Ukraine "On Vocational (Vocational-Technical) Education" (Verkhovna Rada of Ukraine, 1998). This law sets the requirements for the development of educational programs aimed at training skilled workers and specialists, defining the rights and responsibilities of all participants in the educational process. The law also defines the forms and mechanisms for financing vocational education, including private investments. According to Article 81 of the Law of Ukraine "On Professional Pre-Higher Education" (Verkhovna Rada of Ukraine, 2019), PPP involves: the introduction of innovative educational technologies, new educational content, and an innovative environment; joint assessment of graduates by private partners and professional pre-higher education institutions that partnered in their training; recognition of informal and non-formal education, partial and full professional qualifications; financing of training for labor market needs through educational programs jointly developed with private partners; joint training of students; private partner financing of educational needs, organizational, material, and staffing support; implementation of a dual education system; and the ability for students to choose an individual educational trajectory.

The interaction between public and private entities in various sectors, including vocational education, is regulated by the Law of Ukraine "On Public-Private Partnership" (Verkhovna Rada of Ukraine, 2010), which outlines the rules for forming, implementing, and financing PPP projects that involve both public institutions and private enterprises that provide investments, technologies, or expert assistance in education. Approaches to the development of vocational education based on PPP are outlined in the provisions of the National Economic Strategy for the period until 2030 (Cabinet of Ministers of Ukraine, 2021), the Decree of the President of Ukraine "On the Sustainable Development Goals of Ukraine for the period until 2030" (Verkhovna Rada of Ukraine, 2019), the State Regional Development Strategy for 2021-2027 (Verkhovna Rada of Ukraine, 2020), the Concept for the Implementation of State Policy in the Field of Vocational (Vocational-Technical) Education "Modern Vocational (Vocational-Technical) Education" for the period until 2027 (Verkhovna

Rada of Ukraine, 2019), the Concept for the Training of Specialists in Dual Education (Verkhovna Rada of Ukraine, 2018), the Ukraine Recovery Plan (2022), and other regulatory documents that govern partnerships in vocational education: The Order of the Ministry of Labor and Social Policy and the Ministry of Education and Science of Ukraine "On the Approval of the Regulation on Vocational Training of Workers in the Workplace" (2001), which defines the process of vocational training in production, the order of interaction between enterprises and educational institutions, and the rules for organizing workplace training for working professions, including employer participation in developing educational programs and the practical training of specialists; The Order of the Ministry of Education and Science of Ukraine "On the Approval of the Regulation on Dual Form of Vocational (Vocational-Technical) Education" (2019), which regulates the introduction of dual education elements and provides for the integration of the educational process with workplace practice.

In the development of PPP in the field of vocational education, Ukraine is guided by international agreements and documents such as the European Qualifications Framework (Europass, n.d.), which sets out requirements for the vocational training and certification of specialists in the European Union. The integration of international standards into national legislation fosters PPP development by applying widely accepted standards and methodologies for the professional training of specialists. These legislative and regulatory documents form the legal foundation for ensuring cooperation between the public and private sectors in vocational education, contributing to the effective preparation of personnel in line with the needs of the modern economy.

Theoretical foundations of the development of vocational education have been explored in the works of both domestic and foreign scholars. In particular, the principles of PPP development and the potential for incorporating them into the establishment of cooperation between educational institutions, government bodies, local authorities, social partners, public organizations, and private businesses have been substantiated by V. Radkevych (2022a). The legal foundations of PPP

development and their impact on the expansion of legislative initiatives in the field of vocational education have been revealed by S. Kravets (2022). The specifics of social partnership in theory and practice have been discussed by Ye. Tsaryova (2022), while the peculiarities of PPP models in vocational training to meet the current needs of the labor market have been elaborated by Yu. Liulkova (2024). The algorithm for determining and implementing the powers of PPP actors in the field of innovative development has been refined by S. Svirko, T. Vlasiuk, O. Shevchuk, and I. Suprunova (2023). These researchers have also improved the institutional model of PPP in terms of the functions and powers of state regulatory actors. The role of PPP in building a socially oriented economy in Ukraine and the necessary economic and social factors for cooperation between government, business, and institutional organizations have been highlighted in the scientific works of V. Uzunov (2013), V. Yemelianov (2012), Ye. Horban (2023), as well as in the research of scholars from the Institute of Vocational Education of the National Academy of Pedagogical Sciences of Ukraine (Radkevych et al., 2023a, 2023b, 2023c).

Foreign researchers' works are also of scientific interest, in which the specifics of the preparation and implementation of public-private partnership projects have been discussed (I. Hussain, Z. Faroog, W. Akhtar, 2012); the monitoring and evaluation through digital platforms (J. Roehrich, M. Lewis, G. George, 2014); and mechanisms for attracting investors (E. Engel, R. Fischer, A. Galetovic, 2010), among others. At the same time, the content and structure of the roadmap for PPP development in the field of vocational education in Ukraine remain insufficiently researched.

The aim of the article is to identify and substantiate the key components, content, and structure of the roadmap for public-private partnership development in vocational education based on the research results.

Methods: studying scientific sources, legislative and regulatory documents, and empirical data on the development of public-private partnerships in vocational education to identify the state of the research problem; theoretical analysis and synthesis, generalization of views on the research problem to determine and substantiate the

key components, structure, and content of the roadmap for public-private partnership development in vocational education, and summary of conclusions.

Results and discussion. The roadmap for PPP development in vocational education is primarily based on legislative and regulatory provisions that ensure the legal regulation of the participation of public and private partners in the process of vocational training of future qualified specialists. This legal framework encompasses all aspects of the parties' interaction, from regulating contractual relations to monitoring and controlling the outcomes of educational processes. Legislative initiatives include clear provisions regarding the rights and responsibilities of state institutions, private enterprises, and vocational education institutions involved in the training process. This enables a balance of interests and prevents abuse by any party involved in the partnership. Legislation must define mechanisms for funding and co-investing in PPP projects. This pertains to both direct investments in vocational education from the private sector (Yescombe & Farquharson, 2018) and public-private initiatives that include material and technical support for educational processes. Proper legal regulation of this aspect guarantees the transparent use of funds and the development of long-term relationships between businesses and vocational education institutions. Private companies may receive tax incentives or other stimulating measures in exchange for investments in educational and training programs, which should also be clearly enshrined in legislative acts. This allows vocational training to align with the real needs of the labor market and reduces the gap between theoretical knowledge and practical skills. Such cooperation is the key to improving the quality of vocational training and the successful adaptation of graduates to the demands of employers. Additionally, the legal framework should provide for liability in cases of non-compliance with cooperation conditions and inefficient use of resources. This includes both control mechanisms by government authorities and procedures for independent audits or evaluations of PPP project effectiveness. Transparency in matters of funding, resource allocation, and the effectiveness of educational and training programs is essential for achieving long-term PPP results in vocational

education. At the same time, the role of each party in fulfilling its obligations must be clearly defined, involving regular reporting and checks.

In addition to national legislation, the implementation of international standards and practices plays an important role in promoting PPP in vocational education institutions. For instance, international agreements may regulate joint projects with transnational companies and international organizations. This could include the exchange of experience, the introduction of best practices, and the use of global standards in workforce training. Thus, the legal framework not only fosters transparency in cooperation but also ensures the adaptation of the national vocational education system to international requirements. In general, the legal regulation of private sector involvement in vocational training should be comprehensive, considering both national needs and international trends. Implementing transparent mechanisms for funding, standardization, and evaluating learning outcomes ensures not only the improvement of vocational training quality but also creates a stable platform for economic growth and the development of innovations in various sectors of the economy.

The next component of the roadmap for PPP development is the formation of institutional mechanisms for interaction, which facilitate the development of joint PPP infrastructure projects and educational platforms. This enables the alignment of interests between both parties in the partnership and helps determine the priorities of joint initiatives in the field of vocational education. The formation of PPP institutional mechanisms in vocational education is a key factor for achieving effective cooperation between public institutions and businesses. These mechanisms establish structures and procedures that regulate collaboration at all stages of PPP project implementation, from planning to execution and monitoring. An important aspect is the creation of coordination councils, working groups, or specialized agencies that are responsible for developing joint educational programs and implementing PPP infrastructure projects. Such institutions ensure effective communication between partners to coordinate priorities, allocate resources, and ensure accountability. Laws and regulations govern the terms of contract agreements, the distribution of

financial obligations, as well as the rights and responsibilities of each party. Legal instruments should also regulate the process of creating joint educational and training programs that meet labor market needs and ensure quality control in their implementation. It is crucial for legislation to be flexible, allowing adaptation to changes in the economic and technological environments.

To support PPP infrastructure projects in vocational education, financial mechanisms need to be established to attract investments from private companies. These could include special funds that finance the construction of new vocational education institutions, equipping them with modern technologies and equipment, among other things. Public institutions should provide guarantees or preferential conditions for investors who invest in the development of the infrastructure of vocational education institutions. Joint infrastructure projects may also involve the establishment of training and practical centers where vocational education students can gain hands-on experience with modern equipment.

A crucial component of the PPP development roadmap in vocational education is the creation of educational platforms that integrate the resources of both the public and private sectors to enhance its quality. Educational platforms can act as hubs of knowledge and technology, integrating best practices in learning, research, and innovation development. These platforms provide access to online courses, training, webinars, and other forms of education, enabling students and workers to update their knowledge and skills in line with the demands of the modern labor market (Pryhodiya et al., 2023). Private companies can participate in the creation of such platforms by developing educational content, sponsoring, or providing technical support.

Institutional mechanisms should also include monitoring and evaluation systems for the effectiveness of joint PPP projects. This can be achieved through regular audits, reports, or independent expert evaluations, which help track the results of educational programs and infrastructure projects. Moreover, as noted by O. Radkevych (2022d), the involvement of social partners and civil society organizations in assessing PPP project

effectiveness ensures transparency and accountability in the process.

Thus, the formation of institutional mechanisms for interaction among PPP participants in vocational education contributes to creating a sustainable and effective system for training qualified personnel (Simak, 2016). In particular, the established cooperation between the state and business enables the introduction of modern teaching technologies, the development of educational and social infrastructure, and the creation of educational platforms that meet the needs of the economy and society. In this context, the foreign experience of creating centers of vocational excellence, where institutional cooperation mechanisms between public institutions, educational institutions, and private companies are implemented, is of scientific interest. The goal of such centers is to integrate educational programs with labor market needs. The centers provide training for qualified personnel, develop infrastructure for learning with modern equipment, and create educational platforms that bring together resources for continuous professional training and skill development.

For example, the result of institutional cooperation between public bodies and the private sector in Germany is the dual education system. The Federal Institute for Vocational Education and Training (BiBB) (Federal Institute for Vocational Education and Training, n.d.) develops standards, educational and training programs, and coordinates their implementation in collaboration with companies that provide students with practical experience directly in the workplace. This contributes to creating an effective system for workforce training that meets the needs of the German economy. In Ireland, the platform "Skillnet Ireland" (Skillnet Ireland, n.d.) operates as an educational hub, bringing together the resources of various companies and educational institutions to develop professional skills. Private companies and public institutions collaborate on the development of upskilling and retraining programs that align with labor market demands. In Italy, the "Fondazioni ITS" platform (Regione Piemonte, n.d.) unites educational institutions, private companies, and regional administrations and provides access to

training programs, workshops, and consultations for workers in various sectors of the economy.

In Ukraine, as part of the collaboration between private companies and vocational education institutions, PPP projects are being implemented to create training and practical centers in fields such as construction, mechanical engineering, maintenance, and more. These centers function as PPP infrastructure projects that provide the training of qualified personnel, the creation of new educational platforms oriented towards specific economic sectors, and so on. IT companies also invest in the establishment of modern training centers where vocational education students acquire digital skills using state-of-the-art equipment. These examples demonstrate how institutional mechanisms of interaction within PPP can successfully contribute to ensuring the quality training of skilled specialists, modernizing infrastructure, and creating innovative educational platforms for the joint management of vocational education programs.

An essential component of the roadmap for PPP development is the establishment of a flexible system for evaluating and controlling the quality of vocational education. Government bodies, together with private partners, must ensure regular monitoring of learning outcomes and the alignment of vocational education graduates with market demands. This can be achieved by creating professional standards that define the level of knowledge and skills they possess (Korotkova, 2020). Such an approach enhances the efficiency of vocational education and reduces the gap between theory and practice, a common issue in many countries around the world. The formation of a flexible system of evaluation and quality control of vocational education based on PPP principles is a key tool for ensuring that workforce training meets the modern labor market demands. This system should consider the interests of both state institutions and private companies, ensuring constant monitoring and adaptation of educational programs to the rapidly changing conditions of the economy and technologies.

The main goal of the system is to create an effective, transparent, and dynamic evaluation model that improves the quality of vocational training through collaboration between the state and

business. One of the key aspects of forming such a system is the introduction of quality standards developed jointly by government bodies and private sector representatives. The standards should be flexible enough to meet current technological trends and labor market requirements. Private companies can participate in developing evaluation criteria, which allows for the determination of the level of necessary competencies and skills for specific professional areas. This enables vocational education students to acquire relevant knowledge and skills, while enterprises ensure their production processes are supported by qualified workers.

A current approach in vocational education is the dual system of evaluating learning outcomes. Its uniqueness lies in accounting for both the theoretical and practical components of vocational education. Such a system can include regular assessments of vocational education students' performance based on theoretical knowledge and their practical achievements in real working conditions at enterprises (Radkevych, 2023c). This not only allows measuring the level of theoretical knowledge acquisition by future professionals but also assesses their ability to apply this knowledge in practice. Employer involvement in the evaluation process guarantees that the training of future professionals meets the real demands and standards of work at enterprises.

To ensure the flexibility and adaptability of the evaluation system, it is important to implement digital technologies and platforms (Radkevych, 2023d). These can include electronic portfolios, platforms for monitoring and evaluating competencies, allowing employers and vocational education institutions to track students' academic achievements in real-time. Such systems increase the speed and transparency of the evaluation process, and also facilitate interaction between vocational education institutions and businesses (Pryhodyi et al., 2023). The use of data analytics also supports the adaptation of educational and training programs to market trends and needs.

Quality control of vocational education within the PPP framework involves regular audits and independent evaluations of educational program effectiveness. Experts from both state and private structures may be involved in this process, conducting audits of the quality of teaching

materials, teaching methodologies, and their compliance with workforce training standards. Private companies can act not only as service clients but also as partners in quality control, providing infrastructural and expert support. This approach ensures that the learning outcomes meet the requirements of the real economic sector.

Overall, a flexible evaluation and quality control system based on PPP principles should be multi-level and dynamic, allowing rapid adaptation to changes in the labor market. Joint development of quality standards, integration of theoretical and practical training content, and the use of digital technologies and data analytics contribute to improving the quality of vocational education and ensure that trained specialists meet the modern needs of the economy. In this context, it is appropriate to reference examples of PPP-supported educational and practical centers, where the quality of vocational education is evaluated based on real production processes. The evaluation is carried out jointly by vocational education staff and employers. This allows for controlling the quality of specialists' training directly in the process of performing work at enterprises. These examples demonstrate how a flexible evaluation and quality control system can operate based on PPP principles, involving businesses in the process of training and evaluating specialists who meet modern labor market requirements.

Another important component of the PPP development roadmap is stimulating investment in the development of vocational education institutions' material and technical base. Private companies can provide necessary resources as well as expert support to improve the practical orientation of vocational training content and ensure access to modern technologies widely used in production. In the context of rapid technological progress, vocational education institutions need to update their infrastructure, including new equipment, digital technologies, and modernized training laboratories. To achieve this goal, the state actively cooperates with private companies through PPP mechanisms. This enables the attraction of additional financial resources and business expertise.

One effective way to stimulate investment is through the creation of tax incentives for private companies that invest in vocational education

development. These incentives may include tax relief for enterprises that finance the creation or modernization of educational and practical centers, provide equipment, or upgrade the material and technical base of vocational education institutions. This form of stimulation creates an economic motivation for businesses to participate in the process of training qualified specialists, which in the future may become a foundation for the stable development of these companies.

Another mechanism for stimulating investment is the creation of joint PPP infrastructure projects involving the state and private companies. The state may provide partial funding for such projects or offer guaranteed support in obtaining loans for developing vocational education infrastructure. For example, the joint construction of sectoral educational and practical centers, where private companies invest in modern equipment, and the state covers the costs of construction and management of the facilities. This collaboration ensures access to the latest technologies and teaching methods, improving the quality of future professionals' training.

Additionally, grant programs and vocational education development funds play a significant role in encouraging businesses to invest in the material and technical base of educational institutions. Such programs may be provided by state and international organizations to support innovative projects in vocational education.

Another effective tool for stimulating investment in PPP development is the dual form of vocational education, where private companies not only invest in the infrastructure of vocational education institutions but also engage future professionals in work at their enterprises (Strilets, 2021). This form of cooperation allows private companies to directly control the quality of workforce training and provide vocational education students with practical skills that will be beneficial in their future professional careers. Investments in equipment, training materials, and infrastructure within the framework of dual education create conditions for enhancing the quality of educational processes, thereby facilitating the integration of vocational education graduates into the production process.

The dual form of vocational education, along with the integration of practical training in the workplace with theoretical knowledge, serves as an effective tool for developing the professional competence of teaching staff. Modern educators need not only possess academic knowledge but also have practical skills that align with the demands of rapidly evolving industries and technologies (Lyakhovets, 2014). In this context, institutional mechanisms play a significant role in supporting the implementation of the strategy for teacher training and professional development. At the state level, programs for financing the training of vocational education teachers should be established, including through grants, scholarships, and public investments in higher education, while the private sector should contribute resources for the development of educational programs, as well as for the methodological and technological support of the educational process. Such cooperation ensures the adequate preparation of teachers for professional activities within the dual education system for future skilled professionals.

It is essential to highlight the need for a strategy aimed at preparing teaching staff capable of adapting to the new requirements of professional activities under public-private partnerships (PPP). This involves upgrading the qualifications of teachers in vocational education institutions, enabling them to master modern management and communication technologies that foster cooperation with employers and other stakeholders. Teacher qualification enhancement ensures that the content of education meets practical needs and guarantees a high standard of vocational training for future skilled professionals. This strategy aims to create a flexible, integrated, and dynamic system for the training and professional development of vocational education teachers. The first task of such a strategy is to define new competencies required for preparing vocational education teachers in the context of PPP. Here, close collaboration with business is crucial. Private companies can offer expert assistance in identifying the key knowledge and skills needed to work with the latest technologies and production processes, and they can support teacher participation in specialized training programs.

The second task of the strategy is to implement a continuous system of professional

development for teachers based on PPP. This can encompass various forms of learning: training sessions, internships at enterprises, participation in seminars and conferences, as well as distance learning courses. Participation in such programs enables teachers to continually update their professional knowledge and skills in the subjects they teach, improve their communication, management, and legal competencies, and adapt to changes in the labor market, production, and educational technologies (Tsarova, 2021).

The strategy should also prepare teachers to work in a digital educational environment (Humenny, 2022). Digital technologies can provide teachers and vocational training instructors with access to the latest learning materials and interactive platforms that help adapt educational programs to the needs of vocational students and the demands of the labor market. The use of digital tools in teacher training and professional development enhances their competence in working with online resources and digital technologies, which is vital in the context of the ongoing digitalization of vocational education.

Lastly, the strategy should include systems for monitoring and evaluating the effectiveness of the professional activities of vocational education teachers (Radkevych, 2024c). This can be realized through regular assessments of their knowledge and skills, as well as independent audits, which evaluate, among other things, the effectiveness of professional development programs for teaching staff. Overall, the development of a strategy for the preparation and professional development of vocational education teachers under PPP is a critical task that ensures the vocational education system meets modern demands (Kruchek et al., 2023). Such a strategy encompasses the development of new competencies, continuous professional development, close cooperation with business, and the implementation of digital technologies, enabling teachers to adapt to new realities and ensure high-quality training for future skilled professionals.

Successful examples of developing and implementing strategies for preparing teachers for new types of professional activities under PPP include initiatives from the European Union countries. For instance, Siemens' "Teach the Teacher" initiative (Germany) (Siemens AG., n.d.)

aims to prepare teachers to use the latest technologies in the educational process. The company organizes training sessions for teachers, where they gain practical skills in working with new equipment and technologies used in the industry. This initiative allows teachers to adapt their knowledge to current market demands and contribute to more effective specialist training. Another example is "WorldSkills International" (WorldSkills International, n.d.), which aims to raise professional training standards worldwide. Within this program, teachers undertake internships at enterprises and gain access to the latest technologies and practices used in the industry. The strategy entails close collaboration between businesses and educational institutions, allowing vocational education teachers to constantly update their knowledge and skills in response to modern challenges.

Additionally, Finland's national teacher training program focuses on preparing educators to work with the latest technologies and innovative teaching methods. Private companies are actively involved in developing training programs for teachers, providing opportunities for them to intern in production (McKinsey & Company, 2022). This helps teachers better understand market needs and adapt their educational programs to real working conditions. Switzerland's dual system for training vocational education teachers (SECO, 2024) also exemplifies successful cooperation between private companies and educational institutions within dual education, offering teachers the opportunity to intern at enterprises. They work in real production environments, acquiring practical skills they later use in their teaching activities. This approach ensures that teachers' knowledge is continuously updated, allowing them to adapt to new technologies and production processes.

Another example is Canada's "Industry Educators" initiative (OECD, n.d.), through which vocational education teachers collaborate with enterprises across various sectors to develop their competencies. Teachers are given the opportunity to work directly at enterprises for a certain period, allowing them to familiarize themselves with modern technologies and methods of operation. This initiative helps teachers integrate practical knowledge into their educational programs,

enhancing the quality of student training. These examples illustrate how PPP can contribute to the professional development of teaching staff, helping them adapt to new types of professional activities and ensure high-level specialist training.

Conclusions. Based on the aforementioned, public-private partnerships (PPP) in vocational education are founded on the principles of a systemic approach, encompassing legal, organizational, and institutional aspects. The key components of the roadmap for the development of PPP in vocational education, covering the stages of cooperation between public and private entities, include: legal regulation of the participation of public and private partners in the vocational training of future skilled specialists; the formation of institutional mechanisms for interaction between partnership participants; the creation of a flexible system for evaluating and monitoring the quality of vocational education; incentivizing investments in the development of the material and technical base of vocational education institutions; and institutional mechanisms to support the implementation of strategies for teacher training and professional development. The roadmap for PPP development takes into account all these components, and its content can be structured as follows: *introduction* (highlights: the results of an analysis of the current state of vocational education, an assessment of the infrastructural capacities of vocational education institutions, human resources potential; the main problems and challenges hindering the effective implementation of partnerships; economic, social, and political factors influencing PPP; international experience and opportunities for adapting best global practices to Ukrainian realities. Based on this, the goals and key tasks of the roadmap for PPP development in vocational education are determined); *legal framework for PPP regulation* (highlights: legislative acts regulating PPP, as well as the need for the development of new ones; conditions for creating specialized structures to manage and oversee the implementation of PPP; results of the identification and analysis of potential PPP participants, including government bodies, vocational education institutions, private businesses, and public organizations; mechanisms for financing and incentivizing the participation of private businesses, protecting the interests of all partnership

participants. To achieve this, it is important to develop a strategy for attracting and retaining these participants, considering their interests and needs); *implementation and monitoring of PPP Pilot Projects* (highlights: criteria for selecting and launching PPP pilot projects in cooperation with private companies willing to invest in the development of educational and social infrastructure, the modernization of educational and training programs, as well as creating new jobs for the employment of vocational education graduates, providing internships for students, and the training and professional development of teaching staff; features of monitoring and evaluating the results of PPP pilot projects, enabling the assessment of their effectiveness and adjustments for future planning; specific and measurable indicators for evaluating the success of PPP projects in vocational education).

Scaling Successful PPP Projects and Integrating Their Results at the National Level (highlights: results of disseminating successful projects to vocational education institutions in other regions; mechanisms for long-term financing and support of PPP projects; conditions for holding regular meetings, consultations, and forums to share experiences and ensure constant feedback from partnership participants. To achieve this, it is important to define the roles and responsibilities of each partnership participant, develop decision-making procedures, conflict resolution methods, ensure the transparency and sustainability of PPP projects, and establish mechanisms for long-term financing and support); *mechanisms for improving PPP and their adaptation to changing conditions* (highlights: key performance indicators of PPP; mechanisms for improving PPP projects and adapting them to changing labor market conditions and educational needs; features of implementing digital technologies in the development of PPP and the digital competencies of partnership participants; results of systematic labor market monitoring and analysis; criteria for adjusting educational and training programs according to labor market needs; conditions for ensuring equal access to quality vocational education for all citizens); *conclusions and recommendations* (highlights: the results of implementing the PPP development roadmap in vocational education, recommendations for applying the results of PPP projects in vocational

education institutions); *appendices* (highlights: legislative acts regulating PPP in vocational education; a list and description of PPP pilot projects and their results; materials on international experience and best practices). In sum, the implementation of the tasks outlined in each section of the PPP development roadmap aims to create a flexible and innovative system for training specialists based on the integration of public and private sector resources and opportunities to improve the quality and accessibility of vocational education.

For further PPP development in vocational education, based on the roadmap, the following recommendations are pertinent: improving the legislative and regulatory conditions for PPP development; ensuring transparency and adaptation of legislation to new challenges and protecting the rights of all partnership participants; actively engaging private companies in educational PPP projects by creating additional financial and tax incentives, as well as expanding opportunities for interaction between businesses and vocational education institutions; scaling successful PPP projects at the national level, taking into account the

economic specifics of different regions; ensuring support and monitoring of PPP projects, allowing their adaptation to local conditions and needs; creating infrastructure and a digital learning environment for online education, developing the digital competencies of partnership participants; developing financial mechanisms to support students, helping to reduce barriers to accessing quality vocational education for all citizens, regardless of their social and economic status; conducting systematic labor market monitoring and analysis, allowing timely responses to changes in employer needs and regular adjustments to educational programs according to current requirements and trends; investing in the training and professional development of vocational education teachers, ensuring their access to modern knowledge and innovative teaching methods.

The implementation of these recommendations will ensure the training of qualified specialists capable of working effectively in a dynamically changing professional environment, competitive in both national and international labor markets.

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DOI: <https://doi.org/10.32835/2707-3092.2024.29.3-20>

ДЕРЖАВНО-ПРИВАТНЕ ПАРТНЕРСТВО У СФЕРІ ПРОФЕСІЙНОЇ ОСВІТИ: ДОРОЖНЯ КАРТА РОЗВИТКУ

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Реферат:

Актуальність. Державно-приватне партнерство у сфері професійної освіти є важливим інструментом модернізації системи підготовки майбутніх фахівців, особливо в умовах глобалізації та стрімких технологічних змін. Воно забезпечує можливість залучення інвестицій, удосконалення матеріально-технічної бази закладів професійної освіти, впровадження інноваційних технологій та адаптацію змісту й форм організації освітнього процесу до вимог сучасного ринку праці. У контексті реформування професійної освіти в Україні, державно-приватне партнерство сприяє інтеграції приватного сектора у професійну підготовку кваліфікованих фахівців та підтримує сталий розвиток держави, національної економіки й суспільства.

Мета статті: на основі результатів дослідження визначити та обґрунтувати основні складники, зміст і структуру дорожньої карти розвитку державно-приватного партнерства у сфері професійної освіти.

Методи: вивчення наукових джерел, законодавчих, нормативно - правових документів, емпіричних даних щодо розвитку державно-приватного партнерства у сфері професійної освіти – для виявлення стану проблеми дослідження; теоретичний аналіз і синтез, узагальнення поглядів щодо досліджуваної проблеми – для

визначення та обґрунтування основних складників, змісту і структури дорожньої карти розвитку державно-приватного партнерства у сфері професійної освіти, узагальнення висновків.

Результати: обґрунтовано основні складники дорожньої карти розвитку державно-приватного партнерства у сфері професійної освіти, що охоплює етапи співпраці між державними та приватними суб'єктами, а саме: правове регулювання участі державних і приватних партнерів у професійній підготовці майбутніх кваліфікованих фахівців; формування інституційних механізмів взаємодії учасників партнерства; формування гнучкої системи оцінювання та контролю якості професійної освіти; стимулювання інвестицій у розвиток матеріально-технічної бази закладів професійної освіти; інституційні механізми підтримки реалізації стратегії підготовки та професійного розвитку педагогів. Зміст дорожньої карти розвитку державно-приватного партнерства у сфері професійної освіти розкрито в такій структурі: вступ; нормативно-правова база регулювання державно-приватного партнерства; впровадження та моніторинг пілотних проєктів державно-приватного партнерства; масштабування успішних пілотних проєктів державно-приватного партнерства та інтеграція їх результатів на національному рівні; механізми вдосконалення проєктів державно-приватного партнерства та їх адаптація до змінних умов; висновки і рекомендації; додатки.

Висновки: Завдяки правильно структурованій дорожній карті розвитку державно-приватного партнерства у сфері професійної освіти, що враховує всі складники партнерства, уможливується ефективна співпраця між державою та бізнесом. Це дає змогу підвищити якість професійної освіти, адаптувати її до потреб ринку праці, забезпечити прозорість управління, а також ефективність регулювання договірних відносин і приватних інвестицій. Для розвитку державно-приватного партнерства у сфері професійної освіти на основі дорожньої карти рекомендується: *вдосконалення законодавчих і регуляторних умов розвитку державно-приватного партнерства; забезпечення прозорості й адаптації законодавства до нових викликів та захисту прав усіх учасників партнерства; активне залучення приватних компаній до освітніх проєктів шляхом створення додаткових фінансових і податкових стимулів, а також на основі розширення можливостей для взаємодії між бізнесом і закладами професійної освіти; масштабування успішних проєктів державно-приватного партнерства на національному рівні, враховуючи економічну специфіку різних регіонів; забезпечення підтримки та моніторингу проєктів державно-приватного партнерства, що дасть змогу адаптувати їх до місцевих умов і потреб; створення інфраструктури та цифрового освітнього середовища для онлайн-навчання, розвитку цифрової компетентності учасників партнерства; розроблення фінансових механізмів підтримки здобувачів освіти, що сприяють розширенню доступу до якісної професійної освіти для всіх громадян; проведення систематичного моніторингу та аналізу ринку праці, що дасть змогу вчасно реагувати на зміни у потребах роботодавців, регулярно коригувати освітні програми відповідно до актуальних вимог і тенденцій; інвестування у підготовку та професійний розвиток педагогічних працівників закладів професійної освіти, забезпечуючи їм доступ до сучасних знань та інноваційних методик викладання.*

Ключові слова: державно-приватне партнерство, дорожня карта, зміст, структура, професійна освіта, ринок праці, проєкти, фахівці.

Received: 02 April 2024

Accepted: 01 July 2024



The publication has been prepared as part of the research tasks conducted by the Institute of Vocational Education of the National Academy of Educational Sciences of Ukraine, titled "Trends in the Development of Public-Private Partnerships in the Field of Vocational (Vocational-Technical) Education" (State Registration Number 0122U000539; project duration: 2022-2024).

INDICATORS FOR EVALUATING THE EFFECTIVENESS OF PUBLIC-PRIVATE PARTNERSHIP PROJECTS IN THE FIELD OF VOCATIONAL EDUCATION: EUROPEAN EXPERIENCE

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Abstract

Relevance. It is determined by the European integration trends of vocational education in Ukraine, which requires the study and implementation of the best practices of implementing public-private partnership projects in the EU; a system of indicators for assessing the effectiveness of PPP projects in the field of vocational education in Ukraine has been developed.

Aim: to identify the main indicators for assessing the impact of public-private partnerships on the quality of vocational education in the EU and to develop a system of indicators for assessing the quality of PPP projects in vocational education in Ukraine.

Methods: analysis – to determine the main indicators for assessing the effectiveness of the implementation of PPP projects in vocational education; generalization – to formulate conclusions and recommendations for improving the system of indicators for assessing the quality of PPP projects in vocational education in Ukraine.

Results: it was found that the key quality indicators of PPP projects in the vocational education system include the following ones: Relevance and Alignment with Labor Market Needs; Quality of Training Delivery; Learner Outcomes and Satisfaction; Sustainability and Scalability; Stakeholder Engagement; Regulatory Compliance and Quality Assurance; Equity and Accessibility; Innovation and Responsiveness; Impact on Economic and Social Development; Monitoring and Evaluation.

Conclusions: it is determined that public-private partnership in the vocational education system are an effective tool to overcome the key challenges faced by vocational education institutions. Thanks to the participation of the private sector, which is at the forefront of industry trends, vocational education institutions can provide students with the practical skills and knowledge necessary for a successful career. The partnership contributes to improving the quality of education by providing access to modern equipment and the experience of industry professionals, improving the social situation in the region and the development of the local community. Adopting a comprehensive set of indicators to evaluate vocational education PPP projects increases their effectiveness and relevance. These indicators not only measure educational outcomes, but also allow for a comprehensive approach to assessing the effectiveness of project implementation. By using the experience and best practices of EU members, Ukraine can create a reliable framework for evaluating PPP projects, thereby improving the quality and impact of vocational education across the country.

Keywords: vocational education, public-private partnership (PPP), PPP quality indicators, PPP quality measures, vocational education institutions, quality monitoring.

Introduction. The ever-evolving labor market requires a skilled workforce with industry-specific knowledge and practical skills. Vocational education plays a key role in addressing this issue by preparing young people for productive work in the production and service sectors. However, vocational (technical) education institutions (hereinafter: VET institutions) often struggle to keep up with rapid technological changes and the shifting needs of industry. This is where the significance of public-private partnerships (PPP) emerges as a powerful tool for improving vocational education and ensuring its continuous innovative development (Voronina-Pryhodii & Kravets, 2022, p. 43).

One of the main advantages of PPP in vocational education is its ability to bridge the gap between the skills required by industry and the level of professional training provided by educational institutions. The private sector, being at the forefront of industry trends, possesses invaluable insights into the specific skills necessary for success. Through partnerships, this knowledge can be directly integrated into curriculum development, ensuring that vocational education graduates acquire precisely the skills employers need (Voronina-Pryhodii, 2022, p. 51-52).

For instance, a partnership between a VET institution and a technology company can lead to the development of an educational program focused on the latest programming languages and software. This ensures that graduates possess the specific skill set necessary for effective professional activity in an ever-changing technological landscape (Bernd, 2022, p. 25-27). PPP can significantly strengthen the practical component of vocational education, as private companies provide vocational education students with access to the latest equipment, facilities, and real industry experience. This is done through internships, guest lectures from industry professionals, or the development of graduation projects that solve real-world problems faced by companies. For example, a partnership between a culinary school and a renowned restaurant chain allows vocational education students to gain valuable practical experience during internships in

restaurant kitchens, learning not only cooking techniques but also restaurant operations and customer service (Marschnig, 2022).

VET institutions often face resource shortages, limiting their ability to invest in modern equipment, facilities, and teacher training. PPP offers a way to increase funding and share resources. Private companies can contribute financially, provide equipment and materials, and share expertise, while creating opportunities for teacher professional development. This collaborative approach helps create a more sustainable and well-resourced vocational education system.

The private sector is a driver of innovation. PPP can foster a culture of innovation in vocational education, leading to the development of new, more effective teaching methods and the application of educational technologies. Furthermore, continuous dialogue between educators and industry representatives allows for quicker adaptation of curricula and educational programs to meet the evolving needs of the labor market.

For example, by partnering with a leading robotics company, a VET institution can introduce robotics training into its educational programs, preparing vocational education students for the growing demand for automation skills across various industries (Fischer, 2021).

Public-private partnerships have enormous potential to improve the vocational education system. By leveraging the expertise, resources, and innovative spirit of the private sector, PPP can bridge the skills gap, enhance practical training, and ensure that the labor market is supplied with adequately trained professionals. However, careful planning and transparent implementation are essential to ensure that these partnerships benefit all stakeholders and contribute to the creation of a reliable and adaptable vocational education system (Radkevych et al., 2023, p. 7).

To assess the effectiveness of PPP in ensuring the quality of vocational education, it is necessary to collect data on quality indicators, implement changes, and monitor outcomes. Additionally, feedback from vocational education students, teachers, employers, and other

stakeholders must be considered. Ensuring the quality of vocational education involves monitoring student success and continuously updating training programs based on the results obtained (Radkevych, 2023, p. 18-19).

In the European Union, the leaders in implementing PPP projects in the vocational education system include Germany, Austria, Switzerland, the Netherlands, Denmark, and others. It is essential to study the experience of evaluating the results of joint activities between vocational (technical) education institutions and the private sector and, based on this analysis, identify the indicators of the impact of public-private partnerships on the quality of vocational education in EU countries.

The purpose of this article is to identify the key indicators for assessing the impact of PPP on the quality of vocational education in EU countries and to provide recommendations for a system of indicators for evaluating the quality of PPP projects in Ukrainian vocational education.

Research methods: analysis – to identify the key indicators for assessing the effectiveness of PPP projects in vocational education; comparative analysis – to identify similarities and differences in the system of indicators for assessing the effectiveness of PPP projects in the EU and Ukraine; generalization – to formulate conclusions and recommendations for improving the system of quality indicators for PPP projects in Ukrainian vocational education.

Sources. In the European Court of Auditors' specialized report *"Public Private Partnerships in the EU: Widespread Shortcomings and Limited Benefits"* (2018), it is noted that a PPP contract must define and discuss all aspects related to project implementation, financing, operation, and maintenance, including performance indicators and measurement systems, which are not usually part of a typical contract but take more time to justify than the subject of the contract itself (p. 23-24). This highlights how complex it is to agree on the indicators for assessing the effectiveness of PPP projects. Indicators ensure that both the public and private sectors effectively contribute to the training

of a skilled workforce. Key quality indicators for PPP projects in vocational education include: relevance and alignment with labor market needs (Masson & McBride, 2006, p. 6); quality of training delivery (Nercessian, 2017); learner outcomes and satisfaction (Glaß, 2021, p. 56-57); sustainability and scalability (Moreno, 2013, p. 82-89); stakeholder engagement (Niebel et al., 2013, p. 3-4); regulatory compliance and quality assurance (Sattlegger & Hertin, 2023, p. 23-25); equity and accessibility (Wirtschafts- und Infrastrukturbank Hessen, 2016, p. 9); innovation and responsiveness (Binder & Weinhardt, 2013, p. 46-48); impact on economic and social development (Cedefop, 2009, p. 130-132); monitoring and evaluation costs (Küpfer & Semper, 2012, p. 15).

Results and Discussion. The evaluation of a PPP project based on the indicator "Relevance and Alignment with Labor Market Needs" involves determining how well the project meets current and future labor market demands.

This requires analyzing data on employment trends, skill demands, and industry growth. It is essential to use sources such as government labor market reports, industry publications, and academic research. Consultations should be organized with industry leaders, employers, educational institutions, and workforce development agencies to understand their needs and expectations (Masson & McBride, 2006).

The key indicators for evaluating this criterion are: *skill demand alignment* – Skills and competencies that are in high demand, as well as those expected to be needed in the future, are identified. The assessment should evaluate how well the PPP project provides vocational education students with the skills and competencies that are in high demand in the labor market. It is advisable to use the *Skill Demand Index (SDI)*, which is calculated as the ratio of the frequency of skill mentions in job vacancies (FSMV, Frequency of Skill Mentions in Vacancies) and the skill importance weight (WI, Weight of Importance) to the total number of vacancies (TNV, Total Number of Vacancies) (Darabi et al., 2018):

$$SDI = \frac{FSMV \cdot WI}{TNV} \quad (1)$$

Skill Importance Weight – this is an assessment based on employer surveys or expert evaluations. For instance, if a skill is critically important for a specific position, its weight can be high (e.g., 0.8 or 80%).

Based on the calculated indices, it can be concluded that certain skills are in higher demand in the labor market compared to others, despite having a lower importance weight. This index helps direct efforts towards adapting educational programs to meet the actual needs of the labor market.

Quality and relevance of training – this refers to the assessment of the quality of educational programs, curricula, and certificates offered to the

project participants, as well as their marketability in the labor market.

Employment outcomes – this involves measuring the employability of the project participants after completing the training program, including employment rate, salary level, and career advancement.

The use of the "Practical Training Quality" indicator in assessing a PPP project includes consideration of various indicators of the practical training conducted, evaluating its alignment with standards and planned outcomes (Table 1): relevance, efficiency, promptness, satisfaction, and thoroughness (Nercessian, 2017).

Table 1

SYSTEM FOR ASSESSING THE QUALITY OF PRACTICAL TRAINING			
Indicators	Metric	Data Collection Method	Frequency
Relevance	Alignment of the practical training content with the participants' needs and the PPP project goals	Survey	Before training
Effectiveness	Improvement of skills and competencies	Tests and assessment of practical tasks before and after training	Before and after training
Timeliness	Adherence to the time budget and training schedule	Measurement of time expenditure and deadlines for conducting practical training	During and after training
Satisfaction	Participant satisfaction	Survey	After training
Thoroughness	Long-term retention of knowledge/skills	Survey/interview	3-6 months after training

The "retention" indicator can be calculated using the Ebbinghaus method and applied to assess

how quickly knowledge fades over time (Mokin & Voitsekhovska, 2019, pp. 49-51):

$$R(t) = R_0 \cdot e^{-\lambda t} \quad (2)$$

Where: $R(t)$ – the knowledge retention level (in %) after time t (in days), R_0 – the initial knowledge level (in %), λ – the forgetting constant (mnemonic techniques: $\lambda \approx 0.01 - 0.05$ per day; facts and figures: $\lambda \approx 0.05 - 0.10$ per day; conceptual knowledge: $\lambda \approx 0.02 - 0.10$ per day; language skills: $\lambda \approx 0.01 - 0.03$ per day).

The evaluation of the PPP project's effectiveness according to the indicator "Learning outcomes and satisfaction of vocational education

recipients" involves determining the project's impact on educational results and overall participant satisfaction (Glaß, 2021). This indicator includes three criteria:

1. Learning outcomes (analysis of academic performance, graduation rates, competency assessments, etc.).

2. Satisfaction of vocational education recipients (using focus groups, interviews, surveys, and questionnaires to assess satisfaction with the

quality of education, provided resources, and overall learning experience).

3. Engagement of education recipients (collecting data on class attendance and participation in extracurricular activities).

To ensure the long-term sustainability and identify the growth potential of a PPP project in vocational education, two important evaluation criteria can be used: sustainability and scalability (the indicator "Sustainable development and capacity building").

Sustainability, in the context of a PPP project, refers to the project's ability to maintain its

activities, deliver planned outcomes, and achieve its set goals in the long term. Key indicators to consider include financial sustainability, environmental sustainability, social sustainability, operational sustainability, etc. (Moreno, 2013).

The financial sustainability of a project can be assessed using an indicator such as the "Interest Coverage Ratio" (ICR). This indicator demonstrates the project's ability to cover its interest obligations (IE, Interest Expense) through operating profit (EBIT, Earnings Before Interest and Taxes):

$$ICR = \frac{EBIT}{IE} \quad (3)$$

If the interest coverage ratio (ICR) is ≥ 2 , it is a good indicator of financial stability, indicating that the project has sufficient profits to cover its interest expenses with a certain margin; 1.5 – 2 is an acceptable level but requires caution; $ICR < 1.5$ indicates potential financial difficulties; $ICR < 1$ is a critical level – the project does not generate enough profit to cover its interest expenses.

The assessment of a project's environmental sustainability often involves writing a document or report that describes various aspects of the project's impact on the environment. This document may include analysis and evaluation of indicators such as emissions, resource use, impact on biodiversity, and other environmental parameters.

The levels are distinguished as follows: Basic Level – the project complies with minimum legal requirements and standards related to environmental protection; Intermediate Level – the project has established environmental goals and control mechanisms to achieve them; Advanced Level – the project or product actively contributes to sustainable resource use and environmental conservation.

To assess the social sustainability of the project, it is necessary to determine the level of involvement and support from the local community – how actively local residents or organizations interact with the project, how they support it, and how willing they are to participate in its implementation.

The operational sustainability of the project is related to its ability to function effectively and achieve its goals despite potential challenges such as

technical failures, cyberattacks, natural disasters, or other unforeseen events. The key aspects of a project's operational sustainability include: infrastructure reliability; information security; recoverability; continuity of functions and services; flexibility and adaptability.

Scalability refers to the potential of the PPP project to expand or be replicated in other conditions or locations. Factors to consider include: market potential; technical capability; financial viability for expansion (revenue forecasts and capital needs); the availability of regulatory frameworks and political support for expansion; and the maturity of organizational capacity.

To define the indicators for the "Sustainable Development and Expansion Capabilities" metric, a SWOT analysis (strengths, weaknesses, opportunities, and threats) should be conducted to understand the internal and external factors affecting the sustainability and scalability of the PPP project.

Public-private partnerships are built on the interaction of public authorities, private sector partners, local communities, workers, financial institutions, regulatory bodies, non-governmental organizations, and advocacy groups.

Accordingly, the assessment of a PPP project based on the "Stakeholder Engagement" indicator involves determining how effectively communication has been established and how well stakeholder needs have been met within the project (Niebel et al., 2013).

The main indicators for assessing stakeholder engagement are: communication (frequency, transparency, and effectiveness of

communication with stakeholders); interaction (level of participation in stakeholder meetings regarding decision-making processes); feedback mechanisms (the availability and timeliness of feedback channels for stakeholders; responsiveness to stakeholder feedback); satisfaction (overall stakeholder satisfaction with the engagement process); and impact effectiveness (how stakeholder contributions have influenced project outcomes) (Amelina & Voronina, 2015, p. 131).

One of the important indicators for evaluating a PPP project is "Compliance with Regulatory Requirements and Quality Assurance," as this determines whether the project meets legal requirements and quality standards. This indicator helps ensure that the project is implemented in accordance with existing regulatory acts and maintains quality standards throughout its lifecycle (Sattlegger & Hertin, 2023).

The evaluation system for this indicator consists of two groups of metrics. The first group is compliance indicators: – legal compliance

(adherence to all applicable laws and regulations); – permits and licensing (timely acquisition of all necessary permits and licenses); – financial accountability (full financial transparency, compliance with financial regulations, including accurate reporting and auditing); – compliance with health, safety, and environmental protection standards.

The second group is quality assurance indicators: – standard compliance (adherence to industry, educational, and professional standards through the evaluation of key performance indicators in the field of vocational education); – inspections and testing (regular inspections and testing of the quality of specialist training).

For example, a comprehensive assessment of this indicator uses an evaluation sheet (Table 2) and thoroughly evaluates all aspects of regulatory compliance and quality assurance, providing a clear understanding of the PPP project's adherence to established requirements.

Table 2

COMPLIANCE AND QUALITY ASSURANCE EVALUATION MATRIX

Indicators	Weight	Score (1-10)	Comments
Compliance with legislation	20%		Full adherence to all regulations
Permits and licensing	10%		Minor delays in licensing
Financial compliance	20%		Complete financial transparency
Health and safety	15%		Compliance with safety standards
Environmental compliance	10%		Some environmental issues
Adherence to quality standards	20%		Meets most quality standards
Inspections and testing	5%		Transparency and regularity of inspections

The evaluation of a PPP project in terms of equity and accessibility involves setting clear objectives, using appropriate indicators, collecting data, and analyzing results. It is crucial to maintain transparency and engage stakeholders throughout the entire evaluation process to ensure that the project provides fair and inclusive access to its benefits for various groups involved in the educational process.

The "Equity and Accessibility" indicator of the project is assessed using the relevant metrics, specifically (Wirtschafts- und Infrastrukturbank Hessen, 2016): physical access (average distance to the nearest service point); infrastructure adaptability (accessibility of infrastructure for people with disabilities); availability of educational services

(service hours); frequency and reliability of educational services; clarity of information (availability of service information in different languages and formats); and awareness level (percentage of the population informed about available educational services).

The analysis of a PPP project using the "Innovation and Responsiveness" indicator takes into account how effectively the project incorporates new solutions and adapts to changing conditions or stakeholder needs (Binder & Weinhardt, 2013).

Innovations in PPP projects in vocational education refer to the implementation of new or improved technologies and methodologies that enhance the outcomes of professional training for

future specialists. The evaluation can be conducted using various qualitative and quantitative indicators:

- Innovation novelty (assesses the extent to which the project implements new or improved methodologies, technologies, and practices that have not been widely used before, measured as a percentage of the project's total cost).
- Innovation impact (evaluates the tangible benefits of innovative aspects in terms of productivity, efficiency, cost and time savings, or satisfaction of educational process participants).
- Flexibility in planning and execution (measures the project's ability to adapt its plan or execution in response to changes or unforeseen events – the number of plan revisions, the time required to implement changes, response time to issues, etc.).
- Risk management and mitigation (evaluates the project's ability to identify, assess, and mitigate risks throughout its lifecycle – the number and severity of identified risks, and the effectiveness of risk mitigation strategies).

The impact of a PPP project on economic growth, social justice, and the well-being of project participants is assessed using the "Impact on Economic and Social Development" indicator (Cedefop, 2009).

The economic aspect of the project is determined by the following indicators:

- Creation of a material base for organizing the training of education seekers (number of educational and job positions created during and after the project's completion).
- Income level (changes in the average income of teachers and vocational education seekers in the project's implementation area).
- Investment attraction (amount of additional private or public investments generated by the project).
- Tax revenues (increase in local or national tax revenues due to economic activity induced by the project).

The social aspect of project implementation is characterized by the following indicators:

- Quality of life (changes in living standards and quality, such as housing conditions, public safety, use of infrastructure, etc.).

- Social justice (impact on vulnerable populations, reduction of social inequality).

- Community engagement (the level of community representatives' involvement in the project and their satisfaction with the outcomes of preparing future professionals for the local labor market).

The specific features of evaluating the indicators of this dimension lie in considering the temporal characteristics of the effects of PPP project implementation in vocational education, namely:

- Direct effect (immediate changes caused by the project).
- Indirect effect (secondary impact on the local economy and community, such as increased local business activity or improved social cohesion).
- Long-term effect (sustainable benefits or drawbacks observed over a prolonged period).

As an example of evaluating financial costs in comparison to economic and social benefits, the "Cost-Benefit Analysis" approach can be used, which includes the calculation of net present value (NPV) and internal rate of return (IRR) (Cost-Benefit Analysis, 2024).

Using the "Social Return on Investment (SROI)" indicator, the social value created by the PPP project can be assessed relative to the investments made in the vocational education system. This approach translates social outcomes into monetary terms (Solopun & Ponomarova, 2019, p. 144-145).

The effectiveness of project implementation depends on monitoring features, which require additional time and financial resources. Thus, the evaluation of the PPP project includes the "Monitoring and Evaluation Costs" indicator, which characterizes the expenses associated with overseeing the project's implementation and measuring its effectiveness (Küpper & Semper, 2012). Within this indicator, two metrics are traditionally used.

First, the Monitoring and Evaluation (M&E) Cost Ratio – this ratio helps understand the proportion of resources allocated to monitoring and evaluation (Total M&E Costs) in comparison to the total project costs (Total Project Costs):

$$\text{M\&E Cost Ratio} = \frac{\text{Total M\&E Costs}}{\text{Total Project Costs}} \quad (4)$$

Secondly, the *Cost per Monitoring Activity*—this indicator provides an understanding of the efficiency of the monitoring process by taking into account the resources allocated for monitoring

and evaluation (Total M&E Costs) and the number of monitoring activities (Number of Monitoring Activities):

$$\text{Cost per Monitoring Activity} = \frac{\text{Total M\&E Costs}}{\text{Number of Monitoring Activities}} \quad (5)$$

Although there is no universal average M&E Cost Ratio, a general guideline is between 2% and 10% of the total project costs, depending on the project's complexity, industry, and specific requirements. In the education sector, it is generally recommended to allocate between 3% and 7%, depending on the project's size, complexity, and

specific demands. By allocating sufficient resources to monitoring and evaluation activities, educational projects can ensure effective implementation, accountability, and continuous improvement. Based on the analysis of quality indicators for PPP projects in the vocational education system, an evaluation sheet has been developed (Table 3).

Table 3

ASSESSMENT SHEET OF PPP PROJECT QUALITY INDICATORS IN THE VOCATIONAL EDUCATION SYSTEM

Indicator	Metric	Characteristic	Range of Values	Score
Relevance and Alignment with Labor Market Quality and relevance of training Employment outcomes	Skill demand alignment	Skill Demand Index (SDI)	0<SDI≤0.01: Very low demand – 1, 2 points; 0.01<SDI≤0.05: Low demand – 3, 4 points; 0.05<SDI≤0.1: Medium demand – 5, 6 points; 0.1<SDI≤0.2: High demand – 7, 8 points; SDI>0.2: Very high demand – 9, 10 points.	
	Expert evaluation of the liquidity of training programs in the labor market	High – 8, 9, 10 points; Medium – 5, 6, 7 points; Low – 1, 2, 3, 4 points.		
	Percentage of individuals employed in their field	High (75%-100%) – 8, 9, 10 points; Medium (50%-75%) – 5, 6, 7 points; Low (0%-50%) – 1, 2, 3, 4 points.		
Quality of Training Delivery Effectiveness Timeliness Satisfaction Thoroughness	Relevance	Expert evaluation of practical training content alignment with participant needs and PPP project goals	High – 8, 9, 10 points; Medium – 5, 6, 7 points; Low – 1, 2, 3, 4 points.	
	Evaluation of practical tasks improving skills and abilities	High – 8, 9, 10 points; Medium – 5, 6, 7 points; Low – 1, 2, 3, 4 points.		

	Adherence to the schedule of practical sessions	High – 8, 9, 10 points; Medium – 5, 6, 7 points; Low – 1, 2, 3, 4 points.	
	Participant (stakeholder) satisfaction with practical training	High – 8, 9, 10 points; Medium – 5, 6, 7 points; Low – 1, 2, 3, 4 points.	
	Long-term knowledge retention (measured using Ebbinghaus' method after 6 months)	High (80%-100%) – 9, 10 points; Medium (40%-80%) – 4, 5, 6, 7, 8 points; Low (0%-30%) – 1, 2, 3 points.	
Learner Outcomes and Satisfaction Vocational learner satisfaction Learner engagement	Learning outcomes	Academic performance (score)	High (90-100) – 9, 10 points; Medium (70-89) – 7, 8 points; Low (0-69) – 1, 2, 3, 4, 5, 6 points.
	Satisfaction with the state of vocational training	High – 8, 9, 10 points; Medium – 5, 6, 7 points; Low – 1, 2, 3, 4 points.	
	Class attendance rate (%)	High (80%-100%) – 9, 10 points; Medium (40%-80%) – 4, 5, 6, 7, 8 points; Low (0%-30%) – 1, 2, 3 points.	
Sustainability and Scalability Environmental sustainability Social sustainability Operational sustainability Scalability Regulatory framework and political support	Financial stability	Measured by the Interest Coverage Ratio (ICR)	ICR: 2-4 – 6, 7, 8, 9, 10 points; ICR: 1.5-2 – 4, 5 points; ICR<1.5 – 2, 3 points; ICR<1 – 1 point.
	Expert evaluation of the project's environmental impact	High – 8, 9, 10 points; Medium – 5, 6, 7 points; Low – 1, 2, 3, 4 points.	
	Survey-based assessment of community engagement and support	High – 8, 9, 10 points; Medium – 5, 6, 7 points; Low – 1, 2, 3, 4 points.	
	Expert evaluation of operational efficiency and goal achievement	High – 8, 9, 10 points; Medium – 5, 6, 7 points; Low – 1, 2, 3, 4 points.	
	Expert evaluation of the project's potential for expansion or replication under different conditions	High – 8, 9, 10 points; Medium – 5, 6, 7 points; Low – 1, 2, 3, 4 points.	

	Expert evaluation of the presence of regulatory frameworks and political support	High – 8, 9, 10 points; Medium – 5, 6, 7 points; Low – 1, 2, 3, 4 points.
Stakeholder Engagement Interaction Satisfaction Impact effectiveness	Communication	Assessment of the frequency, transparency, and effectiveness of stakeholder communication
	Level of participation in stakeholder meetings for decision-making processes	High (regular and ad-hoc) – 8, 9, 10 points; Medium (scheduled) – 4, 5, 6, 7, 8 points; Low (episodic) – 1, 2, 3 points.
	Overall stakeholder satisfaction with the engagement process	High (representative) – 8, 9, 10 points; Medium (observers, advisors) – 4, 5, 6, 7, 8 points; Low (episodic) – 1, 2, 3 points.
	Expert evaluation of stakeholder contributions to project outcomes	High – 8, 9, 10 points; Medium – 5, 6, 7 points; Low – 1, 2, 3, 4 points.
Regulatory Compliance and Quality Assurance Permits and licensing Financial responsibility Health and safety Standards compliance Inspections and exams	Legal compliance	Adherence to all applicable laws and regulations
	Timely acquisition of all necessary permits and licenses	High – 8, 9, 10 points; Medium – 5, 6, 7 points; Low – 1, 2, 3, 4 points.
	Expert evaluation of financial transparency, compliance with financial norms, including accurate reporting and auditing	High – 8, 9, 10 points; Medium – 5, 6, 7 points; Low – 1, 2, 3, 4 points.
	Compliance with health, safety, and environmental protection standards	High – 8, 9, 10 points; Medium – 5, 6, 7 points; Low – 1, 2, 3, 4 points.
	Adherence to industry, educational, and professional standards	High – 8, 9, 10 points; Medium – 5, 6, 7 points; Low – 1, 2, 3, 4 points.
	Regular inspections and quality testing of specialist training	High (regular and ad-hoc) – 8, 9, 10 points; Medium (scheduled) – 4, 5, 6, 7, 8 points; Low (episodic) – 1, 2, 3 points.

		(episodic) – 1, 2, 3 points.	
Equity and Accessibility Infrastructure adaptability Hours of service availability Frequency and reliability of service provision Clarity of information Awareness level	Physical access	Average distance to the nearest service point	High (up to 1 km or within 20 minutes by transport) – 8, 9, 10 points; Medium (up to 2 km or within 40 minutes by transport) – 4, 5, 6, 7, 8 points; Low (more than 3 km or over 1 hour by transport) – 1, 2, 3 points.
	Accessibility of infrastructure for people with disabilities	High – 8, 9, 10 points; Medium – 5, 6, 7 points; Low – 1, 2, 3, 4 points.	
	Hours during which educational services and infrastructure are accessible	High (7:00-22:00) – 8, 9, 10 points; Medium (8:00-16:00) – 4, 5, 6, 7, 8 points; Low (presence of restrictions and limitations) – 1, 2, 3 points.	
	Evaluation of the regularity and availability of educational services	High – 8, 9, 10 points; Medium – 5, 6, 7 points; Low – 1, 2, 3, 4 points.	
	Availability of service information in various languages and formats	High – 8, 9, 10 points; Medium – 5, 6, 7 points; Low – 1, 2, 3, 4 points.	
	Percentage of the population aware of available educational services	High (80%-100%) – 9, 10 points; Medium (40%-80%) – 4, 5, 6, 7, 8 points; Low (0%-30%) – 1, 2, 3 points.	
Innovation and Responsiveness Innovation impact Flexibility in planning and execution Risk management and mitigation	Novelty of solution	Expert evaluation of the implementation of new or improved methods, technologies, and practices	High – 8, 9, 10 points; Medium – 5, 6, 7 points; Low – 1, 2, 3, 4 points.
	Expert evaluation of the benefits of innovative aspects in terms of productivity, efficiency, cost, and time savings	High – 8, 9, 10 points; Medium – 5, 6, 7 points; Low – 1, 2, 3, 4 points.	
	Number of plan revisions, time required to implement changes, response time to issues	High (regular reviews) – 8, 9, 10 points; Medium (after completion of phase) – 4, 5, 6, 7, 8 points; Low	

		(to address operational issues) – 1, 2, 3 points.	
	Number and criticality of identified risks, effectiveness of risk mitigation strategies	High (anticipated and mitigated risks) – 8, 9, 10 points; Medium (prompt response to risks) – 4, 5, 6, 7, 8 points; Low (mitigating consequences of risks) – 1, 2, 3 points.	
Impact on Economic and Social Development Income level Investment attraction Tax revenues Quality of life of project participants Social justice	Creation of material base for student training	Expert evaluation of the number of educational and workplace opportunities created during and after the project	High – 8, 9, 10 points; Medium – 5, 6, 7 points; Low – 1, 2, 3, 4 points.
	Changes in average income of teachers and vocational education students in the project area	High (increase) – 8, 9, 10 points; Medium (expected income growth) – 5, 6, 7 points; Low (no income growth or potential losses) – 1, 2, 3, 4 points.	
	Volume of additional private or public investments generated by the project	High (over 30%) – 8, 9, 10 points; Medium (10%-30%) – 5, 6, 7 points; Low (up to 10%) – 1, 2, 3, 4 points.	
	Increase in local or national tax revenues generated by the project	High – 8, 9, 10 points; Medium – 5, 6, 7 points; Low – 1, 2, 3, 4 points.	
	Changes in living standards (housing conditions, public safety, infrastructure use, etc.)	High – 8, 9, 10 points; Medium – 5, 6, 7 points; Low – 1, 2, 3, 4 points.	
	Does the project impact vulnerable populations and reduce social inequality	High (benefits for the community) – 8, 9, 10 points; Medium (benefits for project staff) – 5, 6, 7 points; Low (benefits for project participants) – 1, 2, 3, 4 points.	
	Monitoring and evaluation cost ratio	Calculation of monitoring and evaluation cost ratio (M&E Cost Ratio)	High (over 7%) – 8, 9, 10 points; Medium (3%-7%) – 5, 6, 7 points; Low (up to 3%) – 1, 2, 3, 4 points.
Monitoring and Evaluation Cost per monitoring event	Monitoring and evaluation cost ratio	Calculation of monitoring and evaluation cost ratio (M&E Cost Ratio)	High (over 7%) – 8, 9, 10 points; Medium (3%-7%) – 5, 6, 7 points; Low (up to 3%) – 1, 2, 3, 4 points.

	Calculation and expert evaluation of costs	High (sufficient level) – 8, 9, 10 points; Medium (in line with established norms) – 5, 6, 7 points; Low (overestimated costs) – 1, 2, 3, 4 points.
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Conclusions. Public-private partnerships in the vocational education system are an effective tool that enables the overcoming of key challenges faced by vocational education institutions. Through the involvement of the private sector, which is at the forefront of industry trends, vocational education institutions can provide students with the practical skills and knowledge necessary to build a successful career. This partnership contributes to enhancing the quality of vocational education by ensuring access to modern equipment and the expertise of industry professionals, while also improving the social

situation in the region and fostering local community development. The use of a comprehensive set of indicators for evaluating PPP projects in vocational education enhances their effectiveness and relevance. These indicators not only measure educational outcomes but also allow for a comprehensive assessment of project implementation effectiveness. By leveraging the experience and best practices of EU countries, Ukraine can establish a solid foundation for evaluating PPP projects, thereby improving the quality and impact of vocational education across the country.

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Публікація підготовлена в рамках виконання завдань наукового дослідження Інституту професійної освіти НАПН України «Тенденції розвитку державно-приватного партнерства у сфері професійної (професійно-технічної) освіти» (державний реєстраційний номер 0122U000539; роки виконання: 2022-2024)

ІНДИКАТОРИ ОЦІНЮВАННЯ ЕФЕКТИВНОСТІ ПРОЄКТУ ПУБЛІЧНО-ПРИВАТНОГО ПАРТНЕРСТВА У ГАЛУЗІ ПРОФЕСІЙНОЇ ОСВІТИ: ЄВРОПЕЙСЬКИЙ ДОСВІД

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Реферат:

Актуальність статті обумовлена євроінтеграційними трендами професійної освіти України, що потребують вивчення та імплементації кращого досвіду реалізації проєктів публічно-приватного партнерства (далі: ППП) у ЄС; розроблена система показників оцінювання ефективності реалізації проєктів ППП у галузі професійної освіти України.

Мета: виявлення основних індикаторів оцінювання впливу ППП на якість професійної освіти у країнах ЄС та обґрунтування рекомендацій щодо системи показників оцінювання якості проєктів ППП у професійній освіті України.

Методи: аналіз – для визначення основних індикаторів оцінювання ефективності реалізації проєктів ППП з професійної освіти; компаративний аналіз – для пошуку спільного і відмінного у системі показників оцінювання ефективності реалізації проєктів ППП у ЄС та в Україні; узагальнення – для формулювання висновків і рекомендацій щодо вдосконалення системи показників оцінювання якості проєктів ППП у професійній освіті України.

Результати: встановлено, що до ключових індикаторів якості проєктів ППП у системі професійної освіти можна віднести: актуальність та відповідність потребам ринку праці; якість практичної підготовки; результати навчання та задоволеність здобувачів професійної освіти; сталий розвиток та розширення можливостей; залученість зацікавлених сторін; відповідність нормативним вимогам та забезпечення якості; справедливості і доступності; інновації та оперативності реагування; вплив на економічний та соціальний розвиток; витрати на моніторинг та оцінювання.

Висновки. ППП в системі професійної освіти є ефективним інструментом, що дозволяє подолати ключові виклики, з якими стикаються заклади професійної освіти. Завдяки участі приватного сектору, що перебуває на передовій галузевих тенденцій, заклади професійної освіти можуть надавати здобувачам професійної освіти практичні навички та знання, необхідні для побудови успішної кар'єри. Партнерство сприяє підвищенню якості професійної освіти, забезпечуючи доступ до сучасного обладнання та досвіду професіоналів галузі покращуючи соціальну ситуацію в регіоні та розвиток місцевої громади. Використання комплексного набору індикаторів для оцінки проєктів ППП у професійній освіті підвищує їхню ефективність та актуальність. Ці індикатори не лише вимірюють освітні результати, але й дозволяють комплексно підійти до оцінювання ефективності реалізації проєкту. Використовуючи досвід і кращі практики країн ЄС, Україна може створити надійну основу для оцінювання проєктів ППП, тим самим підвищуючи якість і вплив професійної освіти по всій країні.

Ключові слова: професійна освіта, публічно-приватне партнерство (ППП), індикатори якості ППП, показники якості ППП, заклади професійної освіти, моніторинг якості.

Received: 27 March 2024

Accepted: 01 July 2024



THEORETICAL ANALYSIS OF DISSERTATION RESEARCH ON THE ISSUES OF PREPARING YOUTH FOR ENTREPRENEURIAL ACTIVITY

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Abstract

The relevance of this article is determined by the need to prepare students for the post-war economic recovery of Ukraine through the development of their entrepreneurial competence and the importance of cultivating young people's readiness and capability for a conscious choice of entrepreneurship as a trajectory in their educational and professional journey. This requires extensive scientific research into the theoretical and applied aspects of this pressing educational and socio-economic issue.

Objective: The study aims to quantify the body and dynamics of the flow of psychological-pedagogical dissertation research on preparing youth for entrepreneurial activities carried out in independent Ukraine; to identify specializations and a range of pressing issues insufficiently addressed in dissertation research in this area; and to highlight the contributions of scholars at the National Academy of Pedagogical Sciences of Ukraine to the scientific and methodological support for the modernization and development of education in this field.

Methods: Quantitative and qualitative analysis was used to assess the body and dynamics of dissertation research focused on preparing youth for entrepreneurial activity.

Results: The study has identified a collection of dissertation research on preparing youth for entrepreneurial activity and analyzed it based on criteria including "scientific field," "specialization," and "academic degree." Additionally, the study outlines the contributions of researchers at institutions within the National Academy of Pedagogical Sciences of Ukraine towards solving this issue. It identifies specializations within the fields of "Pedagogical Sciences" and "Psychological Sciences" as pertinent and promising for dissertation research on this topic, particularly relevant under martial law and for the post-war recovery of Ukraine.

Conclusions: The analysis of dissertation research on the preparation of youth for entrepreneurial activity indicates a quantitative predominance of dissertations in the educational field, specifically within "Pedagogy." Despite Ukraine's economic needs for post-war recovery and the trends in educational development, the number of completed dissertations on the use of information and communication technologies for preparing youth for entrepreneurial activities, the integration of this preparation within inclusive education, and consulting on youth entrepreneurship remains insufficient. Furthermore, there is limited coverage of relevant international experiences.

Keywords: *youth, preparation for entrepreneurial activity, economic training, youth entrepreneurship consulting, dissertation research.*

Introduction. The Russian military aggression has adversely affected the domestic economy, causing a slowdown and reducing the business activity of economic entities. Post-war economic recovery in Ukraine will require active

involvement from entrepreneurs, as entrepreneurship is not only an economically productive form of economic activity but also an effective means of ensuring employment, including for graduates from educational institutions. An informed choice by

student youth of entrepreneurship as a direction for their educational and professional trajectory presupposes the provision of psychological and pedagogical support for this process, which, in turn, necessitates conducting comprehensive scientific research on the theoretical and applied aspects of this pressing socio-economic issue.

Sources: Preparing student youth for entrepreneurial activity has been the subject of scientific inquiries by Ukrainian researchers since the second half of the 1980s. The introduction of market economy elements into the planned economy of the USSR during the second half of the 1980s necessitated the preparation of students for entrepreneurial labor activities, thus intensifying domestic scientific research in this area. Ukraine's attainment of independence and the choice of a market economy as the main direction for developing its economic foundation underscored the importance of preparing student youth for entrepreneurial activity. Today, the problem of preparing youth for entrepreneurial activity and the psychological-pedagogical support for this process is considered in the context of Russian aggression and Ukraine's post-war recovery (Bazil, 2022; Bazil & Orlov, 2022; Bazil, Baidulin, Hrytsenok, Yershova, Orlov, Savchenko, Telovata, & Titova, 2022; Yershova, 2022; Education of Ukraine under martial law, 2022, etc.); however, successfully addressing it requires studying, creatively rethinking, and utilizing the results of previous research on this topic. It is worth noting that approaches to solving the theoretical and practical issues of preparing student youth for entrepreneurial activity have been highlighted in a significant number of dissertations, but a qualitative and quantitative analysis of their array and flow has not been conducted.

Purpose of the Article: The purpose of this article is to quantify the array and dynamics of the flow of psychological-pedagogical dissertations on the issue of preparing student youth for entrepreneurial activity conducted in independent Ukraine; to identify specialties and clusters of current issues insufficiently covered in dissertations in this area; and to highlight the contributions of researchers from the National Academy of Educational Sciences (NAES) of Ukraine to the scientific and

methodological support for the modernization and development of education in this area.

Methods: To achieve the goal, a quantitative and qualitative analysis was conducted on the array and flow dynamics of dissertations on the issue of preparing student youth for entrepreneurial activity.

Results and Discussion: Preparing the younger generation for future professional activity is one of the most significant socio-pedagogical issues of society. Its resolution became a subject of scientific inquiry even before Ukraine gained independence. It is worth noting that the problem of preparing individuals for entrepreneurial activity is closely related to the problem of economic preparation for youth, which, on one hand, is a necessary element for life and work in a market environment, irrespective of the field of professional activity, and on the other, is a leading component of readiness for entrepreneurial activity.

The development of economic training for students in Ukraine began in the early 1920s. According to § 107 of the "Code of Laws on Public Education of the Ukrainian SSR," adopted in 1922 (Ryaboshapko, 1991), educational institutions were provided with land plots, operated on the principles of a production collective, enjoying all rights and privileges granted to cooperative associations. This form of organizing students' labor activities included economic training, which was implemented in various forms. This period ended in 1937, along with the abolition of labor education (Shpak, 2000).

Economic education and upbringing of schoolchildren became an independent area of pedagogical research at the end of the 1950s (Pobirchenko, 1999). During the same period, the term "economic preparation of youth" gained prominence. The components of economic preparation included economic education and economic upbringing, which were conducted in the context of solving the broader task of improving economic preparation for workers. Despite systemic deficiencies typical of the ideologically biased interpretation of economic education and upbringing for youth, numerous studies on the content, forms, and methods of economic training for students of general secondary, vocational, and higher education institutions were conducted before Ukraine gained independence. Research conducted in the Ukrainian

SSR played a positive role in addressing psychological and pedagogical issues in this area. One of the main theoretical-methodological achievements of pedagogical science in the field of economic training for student youth was the position on the necessity of its implementation in real learning and practical economic activities. Several dissertations on the issues of economic education for schoolchildren (Nysymchuk, 1990; Smolyuk, 1987; Shpak, 1984) and students of secondary vocational schools (Nosachenko, 1978), as well as the psychological characteristics of developing economic thinking among student youth (Dudyk, 1990), were completed. However, even during the period of attempts to reform the Soviet economy (such as reforms related to planning, pricing, financing, etc., the development of the cooperative movement, the gradual transition of state enterprises to cost accounting, etc.), which created certain conditions for developing entrepreneurship, economic preparation for student youth did not gain significant traction, due to its ambivalent nature. On one hand, its tasks were determined by the content of communist education for youth and remained outside the realm of young people's everyday lives, families, and immediate environment; on the other, despite its declared ideological significance, economic preparation lacked adequate organizational, and especially personnel, and psychological-pedagogical support.

With Ukraine's independence and the reorientation of the economic basis of Ukrainian society, a situation emerged concerning the economic preparation of youth that was opposite to what existed in Soviet schools. In the latter, the initiative for economic preparation came from "above," as it was considered an essential component of the ideological education of youth; however, in a real market

transition, it was the students and their families who were primarily interested in economic preparation, as it became a leading component in preparing them for life and work under market conditions.

The necessity of preparing youth for life and professional activity in a market-oriented economy in an independent Ukraine stimulated psychological-pedagogical research into a range of issues related to preparing youth for entrepreneurial activity. In this context, economic training was considered its natural integral component. It is precisely this set of issues that formed the basis of numerous dissertations defended after August 1991.

The search for dissertation research was conducted in the electronic dissertation database and dissertation collection of the V. O. Sukhomlynskyi State Scientific and Pedagogical Library of Ukraine using keywords such as "economic training," "economic education," "preparation for entrepreneurial activity," and "entrepreneurial competence," among others. The search results identified 106 dissertation studies within the fields of "Pedagogical Sciences" (95 dissertations) and "Psychological Sciences" (11 dissertations). Out of the 106 dissertation studies, 11 were defended for the degree of Doctor of Pedagogical Sciences (9 dissertations) and Doctor of Psychological Sciences (2 dissertations), indicating that doctoral dissertations constitute 10.4% of the total body of research on preparing youth for entrepreneurial activity. Specifically, doctoral dissertations in pedagogical sciences account for 10.8% of the total, while those in psychological sciences comprise over 18% of their field's total. Figure 1 illustrates the distribution of defended dissertation studies on youth preparation for entrepreneurial activity according to parameters such as scientific field and academic degree.

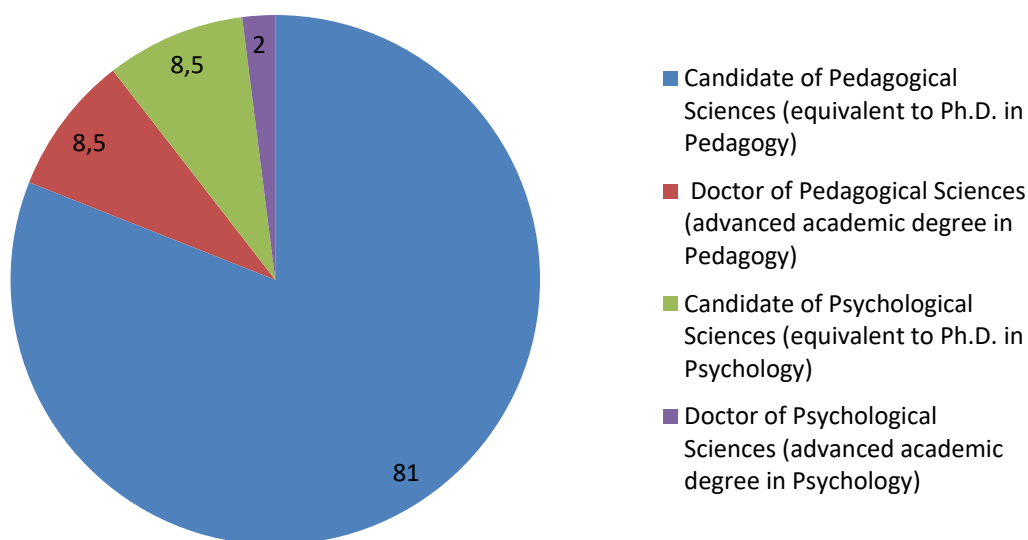


Fig. 1. Distribution of defended dissertation research on issues related to preparing young students for entrepreneurial activities (in %).

After the defense of the first dissertation in October 1991, no dissertations on this research topic were defended between 1992 and 1995. This can be attributed to the fact that the shift in the political framework and economic base of Ukrainian society required researchers to reassess the goals, objectives, forms, and methods of preparing young students for entrepreneurial activities under conditions of independence and a developing market economy. The relevant experience accumulated during the Soviet period could not be fully extrapolated to the new context. The highest number of dissertations (eight in pedagogy and one in psychology) was defended in 2013. Seven dissertations were defended in 2010, 2011, and 2020, and five dissertations were defended in 1997, 1999, 2008, and 2009.

The analysis of the body of dissertation research allowed for differentiation based on the educational component. There are 88 such works (8.3% of the total). Issues of economic education and

preparation for entrepreneurial activities related to preschool education are addressed in three dissertations (2.8% of the total); general secondary education in 30 dissertations (28.3%); specialized education in two (1.9%); extracurricular education in one (0.9%); vocational (vocational-technical) education in six (5.6%); professional pre-tertiary education in four (3.8%); and higher education in 44 dissertations (41.5%). In five studies (4.7% of the total), historiographical aspects of the problem's development are addressed, and seven studies (6.6%) explore international experience on the research topic. The remaining dissertations are dedicated to general theoretical issues related to economic education and the preparation of young students for entrepreneurial activity.

The distribution of defended dissertations by specialty within the fields of "Pedagogical Sciences" and "Psychological Sciences" is presented in Table 1.

Table 1

Distribution of Dissertation Research on the Issues of Preparing Young Students for Entrepreneurial Activity by Specialty

Code	Field of Science, Specialty Group, Specialty	Number of Defended Dissertations	of Including Doctoral Dissertations
13	PEDAGOGICAL SCIENCES	95	9
13.00.01	General Pedagogy and History of Pedagogy	24	3
13.00.02	Theory and Methods of Teaching (in areas of knowledge)	17	1
13.00.03	Correctional Pedagogy	1	0
13.00.04	Theory and Methods of Vocational Education	37	4
13.00.05	Social Pedagogy	2	0
13.00.06	Theory and Methods of Education Management	0	0
13.00.07	Theory and Methods of Upbringing	6	0
13.00.08	Preschool Pedagogy	1	0
13.00.09	Theory of Learning	6	1
13.00.10	Information and Communication Technologies in Education	1	0
19	PSYCHOLOGICAL SCIENCES	11	2
19.00.01	General Psychology, History of Psychology	1	1
19.00.02	Psychophysiology	0	0
19.00.03	Psychology of Work; Engineering Psychology	0	0
19.00.04	Medical Psychology	0	0
19.00.05	Social Psychology; Psychology of Social Work	2	0
19.00.06	Legal Psychology	0	0
19.00.07	Pedagogical and Developmental Psychology	3	1
19.00.08	Special Psychology	0	0
19.00.09	Psychology of Activity in Special Conditions	0	0
19.00.10	Organizational Psychology; Economic Psychology	5	0
19.00.11	Political Psychology	0	0

Thus, the highest number of dissertations in the field of "Pedagogical Sciences" were defended in the specialties "Theory and Methods of Vocational Education" (38.9% of dissertations in this field and 37.9% of the total number of dissertations addressing the issue of preparing students for entrepreneurial activities), "General Pedagogy and History of Pedagogy" (25.3% and 22.6%, respectively), and "Theory and Methods of Teaching (in areas of knowledge)" (17.9% and 16.1%, respectively). No dissertations were identified in the specialty "Theory and Methods of Education Management," despite the

role of economic and entrepreneurial activities as key components in the functioning of educational institutions and associations within a market economy. This gap suggests that the issues of entrepreneurship in the educational field are underrepresented in dissertation research. Only one dissertation (Antonyuk, 2018) was defended in the specialty "Information and Communication Technologies in Education," a situation that contrasts with international practices where ICTs are increasingly utilized in preparing youth for entrepreneurial endeavors. The issues of economic

and entrepreneurial training through inclusive education have also received insufficient attention [with only one dissertation in this area (Fedorenko, 2015)]. Furthermore, dissertation research does not adequately cover the challenges related to preparing students to pursue entrepreneurial careers as part of their educational-professional trajectories. Accordingly, it would be advisable to conduct research on youth entrepreneurship counseling, as this area holds significant relevance for Ukraine's post-war recovery.

In the field of "Psychological Sciences," the largest number of dissertations were defended in the specialties "Organizational Psychology; Economic Psychology" (45.5% of dissertations in this field and 4.7% of the total number of dissertations on student preparation for entrepreneurial activities) and "Pedagogical and Developmental Psychology" (27.3% and 2.8%, respectively). Notably, dissertations were identified in only four of the eleven specialties within the "Psychological Sciences" field.

Researchers from the institutions of the National Academy of Pedagogical Sciences of Ukraine (hereinafter referred to as NAPS of Ukraine) have made significant contributions to addressing the complex issues associated with preparing students for entrepreneurial activities. This is evidenced by dissertation research conducted on this topic. Within the specialized academic councils of the Institute of Pedagogy of the NAPS of Ukraine, 11 dissertations were defended (10.4% of the examined body of work), including 2 doctoral dissertations (18.2% of the total number of doctoral dissertations). At the H.S. Kostiuk Institute of Psychology of the NAPS of Ukraine, 7 dissertations were defended (6.6%),

including 1 doctoral dissertation (9.1%). The Ivan Zyazyun Institute of Pedagogical and Adult Education of the NAPS of Ukraine had 5 defended dissertations (4.7%), including 2 doctoral dissertations (18.2%). The Institute of Problems of Upbringing of the NAPS of Ukraine reported 3 defended dissertations (2.8%), including 1 doctoral dissertation (9.1%). The Institute of Higher Education and the Institute of Vocational Education of the NAPS of Ukraine each had 1 candidate dissertation defended (0.9% each). Thus, over 26% of the total number of dissertations on preparing students for entrepreneurial activities were defended within the scientific institutions of the NAPS of Ukraine, with more than 54% of doctoral dissertations being defended.

Conclusions. The analysis of the body of dissertation research on student preparation for entrepreneurial activities demonstrates a quantitative predominance of dissertations in the field of "Pedagogy." However, the proportion of doctoral dissertations is relatively higher in the specialties within the "Psychology" field. More than half of the doctoral dissertations in pedagogy and psychology were defended at the NAPS of Ukraine's institutions. Contrary to trends in educational development, the number of dissertations on using information and communication technologies in preparing students for entrepreneurial activities, inclusive education in entrepreneurial training, and youth entrepreneurship counseling remains low. Additionally, relevant international experience has not been sufficiently highlighted. The preparation of students for entrepreneurial activities is a highly pertinent issue for Ukraine's post-war recovery.

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DOI: <https://doi.org/10.32835/2707-3092.2024.29.38-46>

ТЕОРЕТИЧНИЙ АНАЛІЗ ДИСЕРТАЦІЙНИХ ДОСЛІДЖЕНЬ З ПРОБЛЕМ ПІДГОТОВКИ МОЛОДІ ДО ПІДПРИЄМНИЦЬКОЇ ДІЯЛЬНОСТІ

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Реферат:

Актуальність статті зумовлена: необхідністю підготовки здобувачів освіти до повоєнного відновлення економіки України через формування в них підприємницької компетентності; важливістю формування в молоді готовності і здатності до усвідомленого вибору підприємництва як напряму реалізації освітньо-професійної траєкторії, що потребує проведення комплексу наукових досліджень теоретичних і прикладних аспектів цієї актуальної освітньої і соціально-економічної проблеми.

Мета: квантифікація масиву та динаміки потоку психолого-педагогічних дисертаційних досліджень з проблем підготовки учнівської молоді до підприємницької діяльності, виконаних у незалежній Україні; виявлення спеціальностей та сукупності актуальних проблем, за якими недостатньо висвітлено зазначену проблему у дисертаційних роботах; висвітлення внеску наукових працівників НАПН України щодо науково-методичного забезпечення модернізації та розвитку освіти за цим напрямом.

Методи: кількісний та якісний аналіз масиву та динаміки потоку дисертаційних досліджень з проблем підготовки учнівської молоді до підприємницької діяльності.

Результати: визначено масив дисертаційних досліджень стосовно підготовки учнівської молоді до підприємницької діяльності; здійснено його аналіз за параметрами «галузь науки», «спеціальність», «науковий ступінь»; висвітлено внесок наукових працівників установ НАПН України щодо розв'язання цієї проблеми; виявлено спеціальності галузей знань «Педагогічні науки» та «Психологічні науки», що є актуальними та перспективними для дисертаційних досліджень із зазначеної проблематики в умовах воєнного стану та для повоєнного відновлення України.

Висновки: аналіз масиву дисертаційних досліджень з проблем підготовки учнівської молоді до підприємницької діяльності свідчить про кількісну перевагу дисертаційних досліджень за спеціальностями освітньої галузі «Педагогіка»; всупереч актуальним потребам економіки України щодо повоєнного відновлення економіки та тенденціям розвитку освітнього простору недостатньою є кількість захищених робіт стосовно використання інформаційно-комунікативних технологій при підготовці учнівської молоді до підприємницької діяльності, здійснення такої підготовки в рамках інклюзивної освіти, консультування з молодіжного підприємництва; недостатньо висвітлено релевантний зарубіжний досвід.¹

Ключові слова: *учнівська молодь, підготовка до підприємницької діяльності, економічна підготовка, консультування з молодіжного підприємництва, дисертаційні дослідження.*

Received: 03 February 2024

Accept: 01 July 2024



CURRENT STATE OF EDUCATIONAL AND METHODOLOGICAL SUPPORT FOR THE TRAINING OF SKILLED WORKERS IN THE ENERGY SECTOR FOR ENTREPRENEURIAL ACTIVITIES

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Abstract

Relevance is driven by several factors reflecting the contemporary challenges of Ukraine's education system and the energy sector's operation. The urgent need for a comprehensive analysis of existing educational programs, instructional materials, and pedagogical approaches in terms of their compliance with modern requirements has become critical, especially in the context of the rapid development of renewable energy. Additionally, there is an increased need to assess the readiness of the developed educational and methodological framework to foster not only technical skills in students but also entrepreneurial thinking tailored to industry-specific needs. Identifying the strengths and weaknesses in the system for training skilled workers and determining directions for its improvement and modernization are also essential in alignment with current requirements for the installation and maintenance of renewable energy systems.

Objective: To present the findings of an analysis of the current state of educational and methodological support for preparing skilled workers in the energy sector for entrepreneurial activities, identifying the strengths and weaknesses of existing methodologies for organizing the educational process in institutions of vocational (technical) education.

Methods: A theoretical analysis of official, scientific sources, and internet resources was conducted to ascertain the research problem's state of investigation, create its theoretical basis, and identify key concepts and approaches to educational and methodological support for preparing skilled workers in the energy sector for entrepreneurship. Praximetric methods were applied to study and analyze progressive pedagogical experience in developing educational and methodological support, curricular plans of institutions of vocational (technical) education involved in training specialists in renewable energy, as well as educational programs, textbooks, and instructional materials. A comparative method was used to examine various approaches to planning the educational process for preparing future skilled workers for entrepreneurship and its methodological support. Modeling was used to develop a conceptual model of educational and methodological support, providing a holistic view of the structure and components of an effective educational and methodological complex. Generalization and forecasting were employed to identify successful practices in developing educational and methodological support for training skilled workers for entrepreneurship, recognize existing challenges, and propose possible solutions.

Results: Based on the theoretical analysis of the source base, the current research status of educational and methodological support for the educational process was assessed. An analysis of various approaches to planning the educational process revealed advanced pedagogical experiences in developing educational programs, textbooks, and instructional materials for future skilled workers, while also identifying several significant shortcomings that require comprehensive resolution. By comparing different approaches to preparing future skilled workers for entrepreneurial activities, the primary components for enhancing the effectiveness of educational and methodological support were modeled, and key strategies were developed to address challenges in its development.

Conclusions: The content of Ukraine's regulatory and legal framework, along with the scientific foundation for educational and methodological support for entrepreneurial skill development, especially for future renewable energy specialists, includes legislative acts, scientific publications, and contemporary internet resources. There is a necessity to develop educational resources that not only foster general entrepreneurial skills but also account for the unique aspects and

challenges of specific professional fields. This would allow students to gain a more comprehensive and practical understanding of entrepreneurship within the context of their future specialization, enhancing their preparedness for real labor market conditions and potential entrepreneurial activities in their chosen fields. The analysis of educational and methodological support for forming entrepreneurial competence in future energy sector specialists identified several significant shortcomings: a gap between theoretical concepts of entrepreneurship and their practical application in renewable energy, insufficient integration of modern digital technologies and simulation models, a lack of emphasis on developing "soft skills," limited implementation of an interdisciplinary approach, and the absence of integrated business incubators and accelerators focused on the energy sector's specifics. Fundamental research in pedagogy and renewable energy should serve as the foundation for creating innovative teaching methods aimed at developing entrepreneurial competence in future renewable energy specialists.

Keywords: *educational and methodological support, vocational (technical) education, educational process, renewable energy, educational programs, entrepreneurial competence, teaching methodology.*

Introduction. In light of modern global trends and the pursuit of sustainable development, establishing a resilient economic model has become a key priority for Ukraine. This model must not only safeguard national security but also strengthen the country's position on the international stage, ensuring a decent standard of living for every Ukrainian. Experts are paying particular attention to the renewable energy sector, viewing it as a promising avenue for economic growth and a means to bolster the nation's energy independence (Ukraine 2030: Doctrine of Balanced Development, 2017).

At the same time, Russian aggression, culminating in the full-scale invasion of 2022, has dealt a severe blow to Ukraine's energy security. Targeted attacks by the occupiers on key energy infrastructure—from generation facilities to distribution networks—not only threaten energy supply stability but also endanger the very functioning of the country's critical infrastructure. This unprecedented situation necessitates a fundamental rethinking of energy security strategy, the development of innovative solutions, and the implementation of flexible mechanisms to ensure energy resilience amid an ongoing armed conflict.

In Ukraine's efforts to create a sustainable economic model and mitigate the impacts of Russian aggression on the energy sector, human capital development emerges as a crucial success factor. Building a strong workforce in renewable energy is essential for achieving the ambitious goals of energy independence and sustainable national development.

The vocational education system must respond flexibly to contemporary challenges by adapting educational programs to the new realities of

the energy industry. Training qualified professionals must consider both global trends in alternative energy and the specific needs of Ukraine in post-war recovery. Such an approach will not only facilitate the restoration and modernization of energy infrastructure but will also provide the country with specialists capable of implementing innovative solutions to enhance Ukraine's energy resilience and competitiveness on the global stage.

The integration of modern energy concepts and economic principles must become the cornerstone of educational strategies in renewable energy. This paradigm should permeate educational programs at all levels, especially within the vocational (technical) training system. A key aspect of this approach is the synergy between technical proficiency and economic acumen. Future professionals should not only be well-versed in the specifics of energy systems and equipment but also cultivate a thorough understanding of the economic mechanisms governing the industry. This dual competency will help create a new type of specialist—technically skilled, economically aware, and entrepreneurially oriented. Consequently, high-quality instructional materials for workforce training in renewable energy are crucial, encompassing the latest technological trends while integrating components of entrepreneurship education. This includes the development of interdisciplinary curricula that combine technical knowledge with the fundamentals of business planning, project management, and marketing within the energy sector.

Therefore, quality educational resources focused on developing entrepreneurial skills have become one of the key factors in preparing specialists

capable of effectively contributing to Ukraine's energy independence and economic growth.

Research sources emphasize the importance of developing educational resources, particularly those focused on building entrepreneurial competence in future skilled workers in the energy sector. This need is reflected in several regulatory documents: the Law of Ukraine "On Education" (2017), the Law of Ukraine "On Vocational Education" (1998), the Cabinet of Ministers of Ukraine's resolution "On Approving Licensing Conditions for Educational Activities" (2015), orders from the Ministry of Education and Science of Ukraine "On Approving Regulations for the Organization of Educational-Production Processes in Vocational Institutions" (2006), "On Approving Regulations for General Education Classrooms" (2004), and "On Approving Regulations for Science and Math Classrooms in General Education Institutions" (2012).

Developing effective educational resources to foster entrepreneurial competence among future skilled workers is the subject of intensive research both nationally and internationally. Numerous domestic researchers focus on the theoretical foundations and practical methodologies aimed at preparing future specialists for successful entrepreneurial activities. Their studies cover a broad range of topics, from the conceptual foundations of integrating entrepreneurship education into technical specialties to creating innovative pedagogical technologies and educational materials adapted to the specifics of vocational education. The research of scholars such as V. Radkevych (2022, 2023, 2024), L. Yershova (2023, 2024), L. Bazyl (2020), S. Alekseeva (2021), N. Malaniuk (2020), and O. Lebid (2024) warrants particular attention in the context of this or related subjects.

Researchers underscore the need to transform vocational education, which requires a fundamental rethinking of its paradigm. Entrepreneurial training must cease to be a peripheral component of the educational process and instead integrate as a core element of the entire educational system. This integration calls for a comprehensive approach, where entrepreneurial competencies are cultivated not only through specialized courses but are embedded throughout the full spectrum of educational activities (Radkevych, 2023).

This reconceptualization implies that developing entrepreneurial thinking and skills should become an integral part of every discipline, practical training, internship, and extracurricular activity. This demands the creation of appropriate educational resources that will transform entrepreneurial training from an optional addition into a central element of vocational education, shaping a new generation of professionals capable not only of fulfilling their professional duties but also of creating innovative business solutions, adapting to shifting economic conditions, and actively contributing to the rebuilding and development of the country's economy in the post-war period.

Analyzing the current state of educational resources for fostering entrepreneurial skills in future specialists in the energy sector plays a critical role in improving the educational process and enhancing its effectiveness. This analysis enables the identification of both strengths and weaknesses in current methodological approaches, laying a foundation for their further development. The specificity of training specialists in the energy sector lies in the need to combine deep technical knowledge with an understanding of the economic mechanisms of the energy market. Future entrepreneurs must be able to predict technological trends and assess the investment potential of innovative energy projects. An important aspect is building knowledge and practical skills in energy efficiency and renewable energy sources, which are increasingly significant for entrepreneurial development within the modern energy sector.

Thus, a comprehensive analysis of the current state of educational and methodological support not only reveals its strengths and weaknesses but also establishes a foundation for developing new educational approaches. These approaches must meet the modern demands of the energy sector and foster a new generation of energy entrepreneurs capable of effectively operating amidst continuous change and innovation.

The purpose of this article is to present the results of an analysis of the educational and methodological support system for training qualified workers in the energy sector for entrepreneurial activities, identifying the strengths and weaknesses of existing methodological developments for organizing

the educational process in vocational (vocational-technical) education institutions.

Research methods: theoretical analysis of official, scientific sources, and internet resources – to determine the current understanding of the research problem and establish the theoretical foundation of the study, identifying the main concepts and approaches to educational and methodological support for training qualified workers in the energy sector for entrepreneurship; praxiometric methods – to study and analyze advanced pedagogical experiences in developing educational and methodological support, the working curricula of vocational (vocational-technical) education institutions providing training in renewable energy systems, as well as the educational and training programs for preparing future qualified workers, textbooks, and teaching and methodological manuals; the comparison method – for contrasting various approaches to planning the educational process in terms of preparing future qualified workers for entrepreneurial activity and its methodological support; modeling – to develop a conceptual model of educational and methodological support, creating a comprehensive understanding of the structure and components of an effective educational and methodological complex; generalization and forecasting – to identify positive experiences in creating educational and methodological support for the educational process in preparing qualified workers for entrepreneurial activities, identifying existing challenges in developing such support, and devising potential solutions.

Results and discussion. Ukraine's educational market offers a diversified system for training in entrepreneurial activities. This system integrates formal and non-formal educational approaches aimed at developing entrepreneurial competence. The methodological toolkit includes traditional academic classes, training sessions, personalized consultations, distance learning courses, and interactive discussion platforms. Additionally, practice-oriented formats are employed, such as innovative business idea and startup project competitions, which foster the development of entrepreneurial thinking and practical skills among learners (Bazyli, 2020).

The rapid development of the renewable energy sector, characterized by the implementation of

advanced technologies and innovative equipment, generates an increasing demand for highly skilled professionals. This trend underscores the need to modernize approaches to vocational training for specialists in the installation and maintenance of renewable energy systems. To ensure their competitiveness in the labor market and to cultivate their capacity as agents of innovative change, there is an urgent need to develop advanced training models. These models must integrate current industry requirements and focus on developing competencies that align with the dynamic changes within the renewable energy field.

Educational and methodological support is a fundamental element in the vocational training system for learners, playing a crucial role in developing the entrepreneurial competence of future specialists. This comprehensive set of tools and materials covers all stages of the educational process: from the transfer and assimilation of learning information to its practical application and the subsequent evaluation of acquired skills. Structurally, educational and methodological support represents a coordinated set of informational and regulatory resources that are necessary and sufficient to effectively develop entrepreneurial competence within vocational education. By combining the goals, content, and organizational forms of the educational process, this system creates a holistic informational-methodological environment focused on ensuring the quality acquisition of entrepreneurial knowledge and the development of relevant skills.

The components of educational and methodological support include educational and training programs, author course programs, methodological materials for conducting seminars, practical and laboratory classes, resources for organizing independent student work, methods for forming relevant knowledge and their assessment, diagnostic tools, criteria for evaluating the level of entrepreneurial competence, materials for interim and final assessments, a list of essential and supplementary literature, and information sources (Aleksieieva, 2021). Thus, educational and methodological support functions as an integrated system providing a comprehensive approach to developing the entrepreneurial competence of future specialists, particularly qualified workers in renewable energy, laying the foundation for their

effective professional activities in a rapidly changing economic environment.

In the context of developing educational and methodological support, the content of education serves as a foundational basis. Considering the educational system in its complex dimension, it can be argued that it is the mechanism by which the content of education is transformed into learning content through the implementation of educational activities.

The content of vocational (vocational-technical) education has its normative reflection in the state educational standards for specific professions, developed based on professional standards or, in their absence, qualification characteristics that consider labor market demands/needs (Resolution of the Cabinet of Ministers of Ukraine “On Approval of the State Standard of Vocational (Vocational-Technical) Education,” 2021). The learning content materializes within the components of educational and methodological support, such as working curricula, educational programs, course syllabi, textbooks, manuals, methodological guides, and various didactic materials.

State educational standards, which hold the status of regulatory documents in the field of vocational (vocational-technical) education, set the requirements for the training of qualified workers at each qualification level. These standards function as a regulatory tool, ensuring the unity of the educational space and criteria for determining the quality of the educational process. Thus, a hierarchical structure is formed, whereby the content of education, enshrined in state educational standards based on professional standards or qualification characteristics, is transformed through the education system into learning content, which, in turn, is implemented through educational and methodological support. This structure ensures systematization and continuity in developing the professional competencies of future specialists, meeting the current labor market demands and the strategic educational objectives of the state.

The development and implementation of the professional standard for the occupation 8169 “Master of Installation and Maintenance of Renewable Energy Systems” (2022) is a key factor in ensuring the high-quality training of qualified

personnel in vocational (vocational-technical) education that meets the modern requirements of the energy sector. The professional standard serves as a multifunctional regulatory document that integrally defines the specification of job functions, qualification requirements, and necessary professional competencies. This document is the fundamental basis for developing the state educational standard aimed at obtaining worker qualifications for the defined profession. Hence, it plays a key role in aligning educational programs with the current labor market demands within the renewable energy sector.

The professional standard for occupation 8169, “Master of Installation and Maintenance of Renewable Energy Systems,” encompasses a comprehensive set of competencies, covering both highly specialized professional skills and general competencies. Among the latter, a range of key abilities is highlighted, correlating with the development of entrepreneurial competence in future specialists.

These competencies include the ability to make responsible decisions within professional activities with subsequent personal accountability for their outcomes; adherence to professional and ethical standards within the work environment; effective interpersonal interaction and teamwork skills; the ability to prevent and constructively resolve conflicts; developed adaptability, stress tolerance, and emotional stability; competence in ensuring the protection of clients' personal data in accordance with applicable legislation; professional mobility and the capacity for flexible adaptation in a transforming work environment (Professional Standard “Master of Installation and Maintenance of Renewable Energy Systems,” 2022).

This integration of general competencies into the professional standard reflects a holistic approach to training qualified specialists capable not only of performing specific technical tasks but also of functioning effectively in today’s dynamic professional environment.

While the professional standard does not provide an exhaustive description of entrepreneurial competence in its entirety, the aforementioned key competencies form a foundational base for the development of entrepreneurial thinking, leadership qualities, communication skills, and the ability to

solve complex problems. At the same time, a detailed definition of the substantive and structural components of entrepreneurial competence, including its elements, is provided in the state educational standard regulating the preparation of respective professionals.

The state educational standard for occupation 8169, "Master of Installation and Maintenance of Renewable Energy Systems" (2024), regulates various forms of professional training for qualified workers, including initial professional training, retraining, vocational (technical) education, and advanced training. Within this standard, key competencies are defined as a complex of general abilities and skills encompassing psychological, cognitive, social-personal, informational, and communicative aspects. These competencies enable an individual to adequately perceive situations, achieve success in personal and professional dimensions, gain social autonomy, and effectively implement professional and interpersonal interaction.

The development of key competencies is a continuous process that begins with the start of an educational program and continues throughout one's life. This process takes place not only within formal education but also through non-formal and informal learning.

It is noteworthy that the key competencies outlined in the mentioned standard demonstrate a high degree of correlation with the general competencies outlined in the corresponding professional standard, indicating systemic alignment between educational and professional requirements.

In the early stages of training, priority is given to developing digital, personal, social, learning, and civic competencies. Communicative, environmental, energy efficiency, and mathematical competencies are integrated into the educational process according to the specific learning outcomes. Special attention is given to the development of entrepreneurial competence, recommended for formation at the final stages of the educational program.

Entrepreneurial competence, as defined in the state educational standard, encompasses a wide range of knowledge and skills essential for successful performance in a modern business environment. The student is expected to acquire fundamental knowledge of the market economy, legal aspects of entrepreneurship in Ukraine, and the procedures for

starting one's own business. An understanding of economic mechanisms, including wage systems and personnel incentives, is crucial. The curriculum includes mastering project management principles and business planning. Practically, the student must learn to apply regulatory acts, analyze innovation processes, make financial decisions, and communicate effectively in a business environment. Special emphasis is placed on developing skills for team motivation and business plan development (State Educational Standard for the Occupation "Master of Installation and Maintenance of Renewable Energy Systems," 2024). This comprehensive training is aimed at developing a well-rounded specialist capable of effectively operating within the modern economy and implementing entrepreneurial initiatives.

State educational standards serve as a regulatory basis for the formation of educational programs that are developed and implemented by vocational (technical) education institutions as well as manufacturing enterprises and organizations engaged in professional workforce training.

The analysis of educational and methodological support for the educational process in occupation 8169, "Master of Installation and Maintenance of Renewable Energy Systems," aimed at developing entrepreneurial skills in vocational (technical) education institutions (State Educational Institution "Kyiv Vocational College with Enhanced Military and Physical Training"; State Vocational-Technical Education Institution "Dnipro Center of Vocational-Technical Education"; State Educational Institution "Ternopil Vocational College with Enhanced Military and Physical Training"; State Educational Institution "Shostka Vocational Training Center") reveals its compliance with basic requirements, while indicating the need for substantial modernization and adaptation considering the dynamic changes in the energy sector.

Based on the state educational standard, vocational (technical) education institutions have developed corresponding educational programs within the context of modernizing the preparation of qualified workers for the energy sector of the economy, ensuring a unified approach to the educational process.

The structure of educational programs envisages the integration of general professional,

theoretical, and practical training, focusing on the development of a complex of professional competencies, including foundational, profile, and general competencies. Educational programs set clear criteria and mechanisms for the awarding of professional qualifications and contain detailed correlation tables that demonstrate the relationship between competencies and educational components. Special attention is paid to the development of entrepreneurial skills through the implementation of a specialized course, "Fundamentals of Sectoral Economics and Entrepreneurship," ranging from 8 to 17 instructional hours, aimed at enhancing the practical orientation of entrepreneurial skill development. These educational programs represent a comprehensive approach to training highly qualified specialists in the field of renewable energy, providing a synergy of technical knowledge, practical skills, and entrepreneurial thinking.

The curriculum of the course "Fundamentals of Sectoral Economics and Entrepreneurship" is focused on forming a comprehensive system of economic knowledge in future specialists, essential for effective entrepreneurial activity in the renewable energy sector. The priority task in the context of developing professional competencies is mastering a fundamental system of economic concepts, categories, patterns, and trends characterizing entrepreneurial activity. The program includes the acquisition of key concepts and categories of economic theory, principles of the market economy, pricing mechanisms, and competitive interaction. Additionally, it covers the study of theoretical foundations and practical aspects of marketing, logistics, human resource management, and the tax system in entrepreneurial activity.

In general, the pedagogical objectives of the course "Fundamentals of Sectoral Economics and Entrepreneurship" are aimed at constructing a modern entrepreneurial paradigm of thinking, forming a professional culture, and developing specific professional competencies necessary for the effective implementation of innovative entrepreneurial activities.

Quantitative and qualitative analysis of educational programs in vocational (vocational-technical) education institutions reveals an insufficient allocation of instructional time dedicated to the study of the course "Fundamentals of Industry

Economics and Entrepreneurship" to ensure the proper level of entrepreneurial skill development among future professionals. In light of this, the implementation of an interdisciplinary approach appears advisable, integrating an entrepreneurial component into other educational aspects of the curriculum, particularly those related to the technical aspects of renewable energy. This educational strategy would facilitate the simultaneous development of entrepreneurial thinking and relevant skills alongside students' mastery of field-specific technological knowledge and abilities. Such an approach would contribute to shaping a holistic professional worldview and enhancing the competitiveness of future specialists.

The analysis of curriculum structures indicates that elective courses account for 25 to 45 instructional hours over the complete training cycle, depending on its duration. Vocational (vocational-technical) education programs offer several elective courses aimed at developing entrepreneurial competence, such as "Financial Literacy," "Fundamentals of Innovative Entrepreneurship," "Marketing Technologies," and "Business Planning." The content of these educational components covers key aspects of entrepreneurial activity, including business idea generation, business model development, marketing strategies, financial planning, legal aspects, and other essential elements of effective business operations. Significant emphasis within these courses is placed on the industry-specific context of renewable energy. Additionally, the curricula of these disciplines emphasize the development of "soft" skills essential for effective entrepreneurial activity, including leadership, communication abilities, teamwork skills, creative thinking, problem-solving, and change management. These skills are integral to the professional profile of a successful entrepreneur, as they facilitate effective team management, networking, decision-making under uncertainty, and adaptability to a dynamic business environment.

Currently, vocational (vocational-technical) education institutions face a significant shortage of high-quality educational resources, especially up-to-date textbooks and teaching materials that align with modern trends and challenges in the field of entrepreneurship and effectively foster entrepreneurial competencies. The Ministry of

Education and Science of Ukraine has initiated the process of creating a new generation of instructional materials in entrepreneurship that will meet international standards, integrate the latest advancements and best practices in the field, emphasize practical application, and employ innovative pedagogical methodologies.

Particular attention in the development process will be given to ensuring industry specialization in educational publications, adapting their content and structural organization to various educational levels and target audiences. This initiative aims to improve the quality of vocational training for future specialists and foster a comprehensive set of competencies necessary for successful entrepreneurial activity in a dynamic economic environment (Ministry of Education and Science of Ukraine Letter “On the List of Textbook Titles for Vocational (Vocational-Technical) Education Students,” 2022).

Within the context of vocational education, there has been some progress in supplying quality didactic materials in entrepreneurship. Available educational resources reflect current trends in entrepreneurial activity and meet modern requirements for the development of professional competencies. It is noteworthy that these developments are the result of targeted collaboration between the academic and pedagogical community and industry practitioners, focused on enhancing the effectiveness of the entrepreneurial component in vocational education and fostering related skills among students of professional qualifications.

In promoting economic education and entrepreneurial competence, the instructional publication *Fundamentals of Economic Literacy and Entrepreneurship* (Aleksieieva, Bazyl, Baidulin, Hrytsenok, Yershova, Zakatnov, Orlov, & Sokhatska, 2021) has been published. This textbook is intended for a broad audience in the field of vocational education and entrepreneurship. Its target audience includes vocational (vocational-technical) education students, academic, pedagogical, and scientific-pedagogical staff, methodologists, and practicing entrepreneurs. The textbook aims to impart fundamental economic knowledge and develop entrepreneurial skills, which are critically important in the context of modern economic realities and labor market demands.

The textbook *"Fundamentals of Economic Knowledge"* (Kudinova, Kulaha, & Lopukh, 2023) is a comprehensive educational resource aimed at a broad audience, including students of vocational (technical) education, individuals independently mastering economic activities, instructors of economic disciplines, and professionals across various fields. This publication was developed within the “*EU4Skills: Better Skills for a Modern Ukraine*” program, funded by the European Union and its member states: Germany, Finland, Poland, and Estonia. The content of the textbook covers essential aspects of economic theory and practice, including analyses of economic phenomena, market structures, principles of entrepreneurial activity, and mechanisms for economic development. A distinctive feature of this textbook is its integration of theoretical material with practical cases, statistical data, and applied tasks, which fosters a comprehensive understanding of economic processes. The methodological approach employed in the textbook emphasizes the multifaceted nature of economics and entrepreneurship, highlighting their importance as subjects of scientific inquiry and areas of practical individual activity. This structure promotes the development of critical thinking and practical skills in the field of economics, a particularly relevant aspect in the context of modern labor market demands and economic realities.

The educational textbook *"Fundamentals of Entrepreneurship"* (Karpyuk, 2021), developed within the framework of the United Nations Peacebuilding and Recovery Program with financial support from the European Union and approved for use in vocational (technical) educational institutions, serves as a comprehensive didactic publication adapted to Ukraine's contemporary economic realities. The content of the textbook spans a wide range of theoretical and practical aspects of entrepreneurial activity. It discusses the conceptual foundations of entrepreneurship as a unique form of economic activity, analyzes the regulatory framework for conducting business in Ukraine, and offers practice-oriented guidelines for the establishment and operation of business entities, with a particular emphasis on the activities of individual entrepreneurs. The methodological approach in this textbook focuses not on providing ready-made business models or guaranteed financial success

strategies but on fostering a systemic understanding of the entrepreneurial process. The core concept of the publication lies in a sequential presentation of the stages of entrepreneurial activity, from generating a business idea to its practical implementation and the subsequent development of the enterprise.

In the context of enhancing the quality of the educational process, the issue of methodological support becomes increasingly relevant. Specifically, the methodological guide *"Entrepreneurial Competence of Future Professionals"* (Alekseeva, Bazyl, Baidulin, Hrytsenok, Yershova, Orlov, & Sokhatska, 2021) is a comprehensive resource aimed at a wide range of educational sector professionals, including scientific, pedagogical, and scientific-pedagogical staff, methodologists, psychologists, and social educators. The content of the guide presents a methodological system for developing entrepreneurial competence in future professionals, based on contemporary pedagogical concepts and considering the specifics of vocational education. The publication contains detailed methodological recommendations for implementing innovative pedagogical technologies aimed at developing entrepreneurial competence.

These technologies include stimulating business activity, enhancing financial literacy, integrating self-management elements, and applying project-based learning. Special attention is given to the method of optimizing the synchronous implementation of multiple technologies for developing entrepreneurial competence in the educational process of vocational (technical) educational institutions. The guide incorporates integrated tools aimed at increasing the effectiveness of forming entrepreneurial competence in vocational students by improving pedagogical approaches and methodologies. This publication contributes to advancing the methodological foundation of vocational education and enhancing its alignment with the modern labor market and economic demands.

The practical manual *"Youth Entrepreneurship in Wartime Conditions"* (Bazyl, Baidulin, Hrytsenok, Yershova, Orlov, Savchenko, & Telovata, 2022) provides methodological recommendations for organizing advisory support for students of vocational (technical) education in the field of youth entrepreneurship, adapted to the

conditions of wartime and prospects for post-war economic recovery. Based on a comprehensive analysis of the career centers and other structural units within vocational educational institutions, which focus on developing career and entrepreneurial competencies of future professionals, it was found that youth entrepreneurship consulting is generally carried out in four main areas: professional, psychological, business, and legal counseling. Accordingly, the publication presents scientifically substantiated recommendations for organizing each of these types of consulting activities, considering the specifics of starting and conducting business in wartime conditions. A separate section is dedicated to forms and methods for developing entrepreneurial competence among future professionals within the educational process. The target audience of the publication includes managers, educators, coordinators, and staff members of career centers, business centers, and other structural units of vocational (technical) education institutions engaged in developing the career and entrepreneurial competencies of future professionals, preparing them to start and manage their own businesses to ensure dignified employment in the context of post-war economic recovery and sustainable societal development.

The methodological guidelines *"From Business Idea to Entrepreneurial Success"* (Hrytsenok, Baidulin, & Savchenko, 2021) are designed for vocational education students aiming to initiate their own entrepreneurial activities and achieve economic success, thereby contributing to both personal well-being and the economic development of the country. These guidelines are of high practical value to a wide range of professionals, including vocational (technical) education instructors, potential entrepreneurs, and specialists involved in developing entrepreneurial competencies for future skilled workers.

The guidelines outline the conceptual foundations and socio-economic significance of entrepreneurial activity in the context of Ukraine's market economy transformation, as well as the strategic goals and tactical tasks of entrepreneurship in current economic conditions. The publication provides practical instructions for starting a business, including step-by-step guidance for novice entrepreneurs and an explanation of the registration

procedure for business entities in Ukraine. Special attention is paid to the necessity of preparing youth for entrepreneurial activity and fostering financial literacy as a key factor in the long-term stabilization of the financial system, improving quality of life standards, and ensuring the economic security of the population in the long term. The guidelines offer a detailed analysis of the stages of business creation, encompassing the formation of sustainable positive motivation for entrepreneurial activity, the generation and selection of an innovative business idea as the foundation of the future enterprise, the development of a preliminary business plan within the educational process in vocational (technical) educational institutions, as well as the practical implementation of the business idea and the accumulation of initial entrepreneurial experience. This comprehensive approach ensures the systematic formation of entrepreneurial competencies in vocational students.

The reference book *"Preparing Future Skilled Workers for Youth Entrepreneurship"* (Bazyl, Baydulyn, Hrytsenok, Yershova, Orlov, Savchenko, Telovata, & Titova, 2022) provides structured information on the operation of structural units within vocational (vocational-technical) education institutions, whose activities focus on preparing young students for entrepreneurial endeavors. This publication offers an overview of essential official sources, whose familiarity is critically important for initiating and managing one's own business, as well as for organizing effective career counseling for vocational education students. The reference book consolidates scientific, educational, practical, and reference materials, along with pedagogical innovations developed by researchers from the Institute of Vocational Education of the National Academy of Pedagogical Sciences of Ukraine in the area of youth entrepreneurship training. The target audience of the publication includes a broad range of professionals in vocational (vocational-technical) education, including administrative staff, educators, organizers, and employees of career centers, business centers, and other specialized units within educational institutions. The materials are particularly valuable for specialists whose work is directly connected to developing students' career and entrepreneurial competencies and preparing them for independent entrepreneurial activities.

The monograph *"Preparing Future Skilled Workers for Entrepreneurial Activities in Small Business: Theory and Practice"* (Aleksieieva, Bazyl, Hrytsenok, Yershova, Zakatnov, Orlov, & Sokhatska, 2020) warrants special attention in the context of educational and methodological support for this area. This monograph is a comprehensive study of the theoretical and applied aspects of preparing future skilled workers for entrepreneurship within the context of small business development. The authors propose and substantiate a pedagogical system model aimed at fostering entrepreneurial competence among future specialists. The methodological foundations for preparing students in vocational (vocational-technical) education for entrepreneurship are thoroughly examined, with detailed clarification of the content and innovative forms of its implementation.

Special attention is given to the analysis of pedagogical conditions and technologies that encourage business initiative among students in vocational education institutions. The necessity of implementing self-management technologies as an effective tool for cultivating entrepreneurial competence among future skilled workers is substantiated. Key directions for developing entrepreneurial skills within project activities are characterized. This publication is directed at a wide range of vocational education professionals, including educators in vocational education institutions, staff of training and methodological centers (cabinets) for vocational and technical education, representatives of the State Employment Service of Ukraine, as well as higher education faculty, students, postgraduate students, and doctoral candidates with research interests in entrepreneurship education.

An analysis of instructional materials, particularly those targeting students and aimed at developing entrepreneurial competence, reveals a significant shortfall in the form of insufficient industry-specific specialization and a lack of consideration for the unique characteristics of specific professional fields. This issue is especially pertinent in industries with highly specific business conditions, regulatory environments, and technological-ecological requirements, such as renewable energy. Renewable energy is characterized by a complex set of unique aspects, including the use

of alternative energy sources, the implementation of innovative technologies, the specificity of investment processes, and risk management practices. Accordingly, specialists aspiring to engage in entrepreneurship within this field require a specialized knowledge base (Benmenni, 2020). Most available educational resources (textbooks, manuals) on entrepreneurship are generalized and do not consider industry-specific details. They overlook the particularities of initiating and developing businesses in renewable energy, omitting issues such as industry-specific regulatory frameworks, financing of "green" projects, marketing of renewable energy sources, and management of environmental risks.

To address this issue, it is necessary to initiate the development of specialized textbooks and manuals dedicated to entrepreneurship within specific sectors of economic activity. These educational resources should cover the full range of relevant topics, including industry trends, technological innovations, legal regulations, financial support, environmental considerations, and risk management specific to the energy sector.

The digital transformation of education requires the integration of new information and communication technologies into the educational process of vocational (technical) education institutions. An important step in this direction was the digital learning platform "Vocational Education Online," presented by the Ministry of Education and Science of Ukraine in 2022. This platform is an effective tool for developing entrepreneurial skills among learners and offers extensive opportunities for remote learning. It allows students to master vocational professions online, enables educators to enrich the learning process with modern digital content, and provides everyone interested with the chance to obtain vocational education or improve their qualifications remotely.

The implementation of this platform creates significant advantages for fostering entrepreneurial skills among learners: it helps develop critical, creative, systemic, and strategic thinking, enhances communication skills, teamwork abilities, problem-solving, and decision-making skills. A critical aspect is the improvement of digital literacy among all participants in the educational process. These skills are crucial for effective entrepreneurial activities in today's conditions. Therefore, the online platform

becomes an essential tool for building entrepreneurial competence within vocational (technical) education.

Conclusions. Analyzing the regulatory framework and scientific basis for the educational and methodological support in developing entrepreneurial skills, especially for future renewable energy technicians, reveals its comprehensiveness, encompassing legislative acts, scientific publications, and modern internet resources. Domestic researchers focus on advancing theoretical foundations to create practice-oriented methodologies, covering a wide range of issues: from conceptual foundations of integrating entrepreneurial education into vocational education to developing innovative pedagogical technologies and educational materials.

Despite the availability of well-developed educational and methodological resources aimed at fostering entrepreneurial skills, there remains a pressing need for specialized materials that consider the specific professional activities of future graduates. The general approaches to forming entrepreneurial competence do not fully meet the energy sector's requirements, underscoring the necessity of developing a specialized educational and methodological complex. Such a complex should integrate general principles of entrepreneurship with the specific features of renewable energy, including regulatory specifics, technological aspects, financial considerations, and risk management practices. Creating this educational and methodological support would enhance the effectiveness of entrepreneurial skill formation for future specialists, aid their better adaptation to the real labor market, and stimulate the innovative development of the renewable energy sector as a whole.

Based on the conducted analysis of the educational and methodological support for developing entrepreneurial competence in future energy sector specialists, several significant shortcomings requiring comprehensive solutions have been identified.

Firstly, there is a considerable gap between theoretical entrepreneurship concepts and their practical implementation in the context of installation and maintenance of renewable energy systems. This leads to a fragmented understanding of business processes specific to the energy sector, potentially reducing graduates' competitiveness in the labor market.

Secondly, there is a notable lack of integration of modern digital technologies and simulation models in the educational process across most educational materials. In particular, the absence of interactive platforms for simulating energy markets severely limits the acquisition of practical skills in forecasting and analyzing market trends in the energy sector.

Thirdly, there is insufficient emphasis on developing “soft skills” essential for successful entrepreneurial activities in the energy sector. The development of skills in strategic planning, risk management, and crisis management remains critically underdeveloped, especially in the face of the energy market’s high volatility.

Fourthly, there is limited implementation of an interdisciplinary approach within educational programs. This is evident from the insufficient synergy of technical, economic, and environmental knowledge, which is a key factor in forming a comprehensive understanding of modern energy trends, particularly in the context of the global shift to renewable energy sources.

Finally, the absence of integrated business incubators and accelerators in educational programs tailored to the energy sector significantly restricts the development of practical entrepreneurial skills among future specialists.

Identifying the above-mentioned issues establishes a scientific basis for developing and implementing comprehensive strategies to enhance educational and methodological support aimed at increasing the effectiveness of entrepreneurial competence formation in alignment with the specific requirements of the energy sector. These strategies would contribute to improving the quality of vocational training for future energy specialists, enhancing their competitiveness and innovative potential amidst the global transformations in the energy market.

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The core aspect of improving educational and methodological support should be the implementation of an approach that synthesizes technical, economic, and environmental aspects of renewable energy with the fundamentals of entrepreneurship. This involves the development of integrated learning modules or courses that combine the study of energy technologies with business planning and innovative management.

A crucial direction involves strengthening practice-oriented training through the introduction of business simulations, case studies, and the creation of training and production laboratories where students can develop entrepreneurial skills in a realistic energy sector context. This is complemented by enhancing the digital component of education, including the use of interactive platforms for modeling energy markets and business processes.

Special attention should be given to developing “soft skills” and strategic thinking, which are critical for successful entrepreneurial activity in the energy sector. This includes incorporating courses on communication skills, leadership, risk management, and decision-making under uncertainty within educational programs.

Considering global trends and strategies, it is necessary to foresee the creation of specialized entrepreneurship modules in the renewable energy sector and the development of projects aimed at creating circular business models in energy supply.

Implementing these interconnected strategies will enable the creation of flexible and adaptive educational and methodological support, facilitating the effective development of entrepreneurial competence in future specialists within the field, preparing them to meet the challenges and opportunities of today’s dynamic energy market.

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Translated & Transliterated

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СТАН НАВЧАЛЬНО-МЕТОДИЧНОГО ЗАБЕЗПЕЧЕННЯ ПІДГОТОВКИ КВАЛІФІКОВАНИХ РОБІТНИКІВ ГАЛУЗІ ЕНЕРГЕТИКИ ДО ПІДПРИЄМНИЦЬКОЇ ДІЯЛЬНОСТІ

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Реферат:

Актуальність дослідження зумовлюється низкою факторів, що відображають сучасні виклики освітньої системи й функціонування галузі енергетики України: критичного значення набуває необхідність всебічного аналізу наявних освітніх програм, навчальних, методичних матеріалів і педагогічних підходів з точки зору їх відповідності сучасним вимогам, особливо в контексті стрімкого розвитку відновлюваної енергетики; посилення необхідності оцінки готовності розробленого навчально-методичного комплексу до формування у здобувачів освіти не лише технічних навичок, але й підприємницького мислення, адаптованого до галузевої специфіки; виокремлення сильних і слабких сторін системи підготовки кваліфікованих робітників, визначення напрямів її вдосконалення й модернізації відповідно до сучасних вимог щодо монтажу й обслуговування систем відновлювальної енергетики.

Мета полягає у висвітленні результатів аналізу стану навчально-методичного забезпечення підготовки кваліфікованих робітників галузі енергетики до підприємницької діяльності, визначенні сильних і слабких сторін наявних методичних напрацювань для організації освітнього процесу в закладах професійної (професійно-технічної) освіти.

Методи: теоретичний аналіз офіційних, наукових джерел та інтернет-ресурсів – задля з'ясування стану вивченості проблеми дослідження й створення його теоретичного підґрунтя, виявлення основних концепцій і підходів до навчально-методичного забезпечення підготовки кваліфікованих робітників в галузі енергетики до підприємництва; *праксиметричні методи* – для вивчення й аналізу прогресивного педагогічного досвіду щодо розробки навчально-методичного забезпечення, робочих навчальних планів закладів професійної (професійно-технічної) освіти, що провадять освітню діяльність з підготовки фахівців з відновлювальної енергетики, освітніх і навчальних програм підготовки майбутніх кваліфікованих робітників, підручників, навчальних і методичних посібників; *метод порівняння* – для зіставлення різних підходів до планування освітнього процесу в частині підготовки майбутніх кваліфікованих робітників до підприємницької діяльності та його методичного забезпечення; *моделювання* – для розробки концептуальної моделі навчально-методичного забезпечення, створення цілісного уявлення про структуру й компоненти ефективного навчально-методичного комплексу; *узагальнення й прогнозування* – для виявлення позитивного досвіду щодо створення навчально-методичного забезпечення освітнього процесу з підготовки кваліфікованих робітників до підприємницької діяльності, наявних проблем у розробці такого забезпечення й вироблення можливих шляхів їх подолання.

Результати: на основі теоретичного аналізу джерельної бази вивчено стан дослідженості проблеми розробки навчально-методичного забезпечення освітнього процесу; на основі аналізу різних підходів до планування освітнього процесу виявлено прогресивний педагогічний досвід щодо розробки освітніх і навчальних програм підготовки майбутніх кваліфікованих робітників, підручників, навчальних і методичних посібників, а також виявлено ряд суттєвих недоліків, які потребують комплексного вирішення; на підставі зіставлення різних підходів до підготовки майбутніх кваліфікованих робітників до підприємницької діяльності змодельовано основні компоненти підвищення ефективності навчально-методичного забезпечення освітнього процесу й вироблено основні шляхи подолання проблем у його розробці.

Висновки: змістовна вітчизняна нормативно-правова база й наукове підґрунтя навчально-методичного забезпечення формування підприємницьких навичок, зокрема у майбутніх майстрів з відновлювальної енергетики, включають в себе законодавчі акти, наукові публікації, сучасні інтернет-ресурси; існує необхідність у розробці таких освітніх ресурсів, які б не лише формували загальні підприємницькі навички, але й враховували унікальні аспекти й виклики, притаманні певним професійним сферам, що дозволить здобувачам освіти отримати більш цілісне й практико-орієнтоване розуміння підприємництва в контексті їхньої майбутньої спеціалізації,

підвищуючи їхню готовність до реальних умов ринку праці й потенційної підприємницької діяльності в обраній галузі; аналіз навчально-методичного забезпечення формування підприємницької компетентності у майбутніх фахівців енергетичного сектору виявив ряд суттєвих недоліків: розрив між теоретичними концепціями підприємництва та їх практичним застосуванням у сфері відновлювальної енергетики, недостатня інтеграція сучасних цифрових технологій і симуляційних моделей, дефіцит уваги до розвитку «м'яких навичок», обмежена імплементація міждисциплінарного підходу, відсутність інтегрованих бізнес-інкубаторів та акселераторів, орієнтованих на специфіку енергетичного сектору; фундаментальні дослідження у сфері педагогіки й відновлювальної енергетики мають стати основою для створення інноваційних методик навчання, орієнтованих на розвиток підприємницької компетентності у майбутніх фахівців з відновлювальної енергетики.

Ключові слова: *навчально-методичне забезпечення, професійна (професійно-технічна) освіта, освітній процес, відновлювальна енергетика, освітні програми, підприємницька компетентність, методика навчання.*

Received: 23 March 2024

Accept: 01 July 2024



THEORETICAL ANALYSIS OF THE PHENOMENON OF "CAREER COMPETENCE" IN THE CONTEXT OF PROFESSIONAL TRAINING OF FUTURE BACHELORS IN ENTERPRISE ECONOMICS

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Abstract

The relevance of this study is driven by societal and economic demands for creative, proactive, and ambitious economists capable of guiding the national economy out of crisis, ensuring stable economic growth, and contributing to the post-war reconstruction of the country.

Objective: To conduct a theoretical analysis of the pedagogical phenomenon of "career competence" within the context of training future bachelors in enterprise economics.

Methods: This study utilizes scientific literature review, analysis of legislative and regulatory documents, and empirical data examination to assess the current development of the problem. It also employs theoretical analysis, synthesis, and generalization to substantiate the importance of fostering career competence among future bachelors in enterprise economics for the post-war reconstruction of Ukraine.

Results: A theoretical analysis of scholarly sources was conducted (covering the philosophy, history, and didactics of vocational education; development of personal and professional qualities of specialists; continuous professional education; theoretical foundations of economist competence development; and career competence development within vocational education systems in Ukraine and abroad). The analysis confirmed the importance of developing career competence among future bachelors in enterprise economics for the country's post-war recovery.

Conclusions: The issue of preparing young people for career choice, planning, implementation, and career competence development is relatively new for domestic psychological-pedagogical science. The traditional approach to professional training for future bachelors in enterprise economics does not foster their understanding of the profound psychological phenomena of self-knowledge, nor does it aid in identifying their abilities and personal resources, or motivate them to actively participate in Ukraine's post-war reconstruction. Studying factors that influence the development of individual career competence will help reveal the patterns of personal and professional self-improvement and career success of future bachelors in enterprise economics within the disrupted labor market context caused by the war. The need to design and experimentally validate effective pedagogical conditions and models for career competence development in the professional training of future bachelors in enterprise economics, considering wartime and post-war economic recovery needs, is underscored. Social and pedagogical conditions favorable for developing career competence among future bachelors in enterprise economics are identified (positive changes in sociocultural policies; rapid digitalization of all spheres of social life and economy; reform processes in the national educational system; shifts in Ukraine's socio-political and economic landscape; creation of pedagogical conditions and psychological-pedagogical technologies and methods aimed at forming ideas about professional success, motivation for self-knowledge and self-development, and readiness for lifelong learning).

Keywords: *professional career, bachelor in enterprise economics, career competence, self-improvement, higher economic education, personal resource potential.*

Introduction. Preparing future professionals for entrepreneurial activities and career growth is a vital condition for sustainable educational development and its significant contribution during economic recovery both under wartime conditions and in the post-war period. The issue of preparation for professional careers and career competency development is relatively new to the domestic psychological and pedagogical sciences. Most scholars view career building as a process of professional self-determination, rooted in the "self-concept" of the individual—a unique holistic formation that gradually evolves as a person matures, leading to transformations in life and professional perspective choices. Recent scientific research justifies the understanding of the essence of a professional career in relation to the "main stages of professional formation" within the framework of social and pedagogical psychology, as well as the theory and methodology of vocational education. The professional career of a specialist is perceived as an essential indicator of human development within a social system, associated with gaining professional self-identity, achieving professional mobility, adopting professional culture, including embracing the value orientations of professional activity, social responsibility, continuous self-education, self-development, and self-actualization (Bazyli, 2021; Orlov, 2017; Zakatnov, 2016). Agreeing with researchers, we generalize that a professional career is an individual trajectory of a person's life and professional path, projected during the stage of professional training.

At the same time, domestic science has not yet fully achieved its main goal in this regard—that is, forming clear perceptions of career success prospects among graduates of higher education institutions, especially future bachelor's degree holders in business economics. These perceptions should be supported by processes of conscious professional self-determination, aligned with each individual's unique traits, abilities, and capacities, taking into account all areas of their development, as well as the demands of the modern labor market. Therefore, it should be noted that the traditional approach to training business economists does not provide a complete characterization for understanding the deeper psychological phenomena

of self-awareness, identifying abilities, and assessing an individual's resource potential.

The development of career competency depends on a multitude of closely interrelated determinants. Studying the factors influencing career competency development among future bachelor's degree holders in business economics will contribute to identifying patterns in their personal-professional self-improvement and success in professional activity and career growth. Consequently, there is an objective need to develop, theoretically substantiate, and experimentally test pedagogical conditions and a model for developing career competency among future bachelor's degree holders in business economics during their professional training.

In this context, it is worth noting that the complex issues related to preparing individuals for building and realizing a professional career have been studied by scientists in Western Europe, the USA, and Japan since the mid-20th century. They closely link career competency formation with globalization of the world economy, the information-technology revolution, modernization, and technological advancement in production, as well as the rapid development of information and communication technologies. They emphasize the need for fundamental changes in higher technical education to train a new generation of business economics specialists.

Sources. The theoretical basis of this article is rooted in the research of foreign specialists in career development in economically advanced countries, including D. Super, J. Holland, D. Hall, S. Covey, V. Patton, M. McMahon, L. Iacocca, and others. We relied on the concept of career building as a process of professional self-determination, founded on the individual's "self-concept"—a holistic formation that gradually changes as a person matures and continuously faces choices concerning life path and professional prospects (R. Burns, J.M. Ivancevich, O. Moll, D. Super, R. Turner, E. Hug, and others). In recent years, a number of studies have been conducted (D. Berenova, A. Derkach, D. Zakatnov, S. Covey, V. Tolochev, and others). A common theme among these studies is that they reflect a new understanding of the concept of "professional career" from the perspectives of social and pedagogical psychology, pedagogy of

vocational education, expanding its conceptual framework, and establishing connections among career, professional, and personal development.

The concept of our study was also built upon the views of domestic scholars who studied the internal mechanisms and external conditions of professionalization (Y. Golovakha, O. Ignatyuk, I. Kankovsky, O. Kovalenko, P. Luzan, L. Lukyanova, N. Nychkalo, V. Radkevych, O. Romanovsky, T. Sushchenko, and others). Works applying a psycho-acmeological approach to the professional training of future bachelor's degree holders in business economics and their subsequent career development are of particular interest (L. Bazyl, V. Biskup, V. Bochelyuk, L. Yershova, L. Karamushka, Y. Mogilovkin, V. Orlov, L. Pochebut, and others). Additionally, issues concerning the quality of vocational education, employment, labor market integration, and career development of graduates from professional (vocational) educational institutions have been covered (S. Alekseeva, I. Androshchuk, D. Zakatnov, O. Kucheryavy, V. Lozovetska, A. Poplavska, and others).

Of particular interest to us are comparative studies in vocational pedagogy concerning the training of economic specialists in other countries. Specifically, this includes L. Otroshchenko's research "Organization and Implementation of Professional Training of Future Foreign Economic Profile Specialists in Germany" (2011), A. Naidionova's "Professional Training of Agribusiness Economists in British Universities" (2015), N. Voinarovska's "Bachelor's Training in Economics in Higher Educational Institutions of the USA" (2011), V. Ilyina's "Establishment and Development of Higher Economic and Business Education in the United States under Modern Conditions" (2006). Especially relevant, due to the territorial and historical proximity of the countries, is A. Zagorodnya's study (2019), which is devoted to a comparative analysis of the professional training of future economists in Poland and Ukraine. This research presents a comparative analysis of the organizational-methodological foundations of professional training of specialists in the economic field in higher education institutions, outlining commonalities and differences in the training of economic specialists in the Republic of Poland and Ukraine (Prospectiveness, 2019). These works

mainly reflect the results of studies on professional competence development, while also including integrative elements where success in professional development depends on the realization of career success by future bachelor's degree holders in business economics.

We also focused on research on the historical and methodological aspects of professional orientation and career development (V. Baidulin, O. Boiko, N. Velychko, M. Vovkovinsky, L. Zlochevskaya, M. Klymenko, Yu. Kurnishev, and others). Additionally, the peculiarities of preparing youth for a professional career in the digital society have been studied (Gurzhi, Radkevych, Zaichuk, & Prygodi, 2021; Bazelyuk, 2021; Yershov, 2019; 2023).

Despite a significant number of studies, domestic science has not yet established the theoretical and methodological foundations for forming clear perceptions of career success prospects among future bachelor's degree holders in business economics, supported by processes of conscious professional self-determination aligned with each individual's unique characteristics, abilities, and capabilities, considering all spheres of personal development as well as labor market demands. In this sense, it is worth noting that the use of the traditional test (verbal) approach to training future bachelor's degree holders in business economics does not fully characterize the deeper psychological phenomena of self-awareness, the determination of abilities, and the assessment of resource capacities as both a person and a professional.

The aim of the study is to conduct a theoretical analysis of the pedagogical phenomenon of "career competence" in the context of the professional training of future bachelor's students in enterprise economics.

Methods: An examination of scientific sources, legislative, and regulatory documents, as well as empirical data, to determine the extent of development on the issue; theoretical analysis, synthesis, and generalization to demonstrate the importance of developing career competence among future bachelor's students in enterprise economics for Ukraine's post-war recovery.

Results and Discussion: Researchers prioritize concerns for humanity's future,

identifying ways to jointly address new higher education challenges, activating integration processes, ensuring high-quality training of bachelor's students in enterprise economics, creating a flexible system for access to continuous education, developing a nomenclature of economic specializations aligned with global standards, transforming the content of bachelor's training in enterprise economics, sharing experiences, and forming a unified European space in economic education.

Theoretical analysis of the scientific literature on the research problem reveals an insufficient level of development in the issue of career competence development among future bachelor's students in enterprise economics, underscoring its relevance. This relevance is shaped by several contradictions between:

- the growing societal need for economists motivated to develop career competence and the insufficient theoretical and practical elaboration of pedagogical conditions that support this development within the learning and training process;
- a focus on technical knowledge acquisition and insufficient psychological and pedagogical support for forming modern understandings of professional success, employability, and competence development in building a career within a market economy;
- the objective need to improve the process of professional training for future bachelor's students in enterprise economics and the inadequacy of existing pedagogical and digital technologies in educational institutions that would facilitate the integration of professional and career competence development processes for these students;
- the significance of determinants in forming and developing career competencies as factors enhancing the effectiveness of future bachelor's students' professional activities in enterprise economics, and the insufficient consideration of these factors in designing their professional career development trajectory.

Addressing these contradictions requires the development and implementation of new approaches to the career competence development of future bachelor's students in enterprise economics, drawing on both domestic and

international practices. This underscores the necessity of clarifying the methodological foundations for acquiring and systematizing knowledge about careers, ensuring a holistic understanding of their essence (an ontological framework), and developing a scientifically grounded concept for managing the career development of future bachelor's students in enterprise economics.

The issue of improving the quality of training for future bachelor's students in enterprise economics (particularly based on the positive principles of Western European and American experience) remains under-researched but has shown some positive progress. It has been found that the training of economic professionals in domestic and foreign higher education institutions shares certain common features (such as broad-based foundational training, the possibility of sequential and parallel acquisition of multiple specializations, awareness of professional choice by students and their interest in realizing it, development of creative abilities, professional orientation of curricula, learning organization forms, etc.), as well as specific characteristics (curriculum and program structure, alignment of content with economic needs, training directions, organization of various types of practice, student workload distribution, organization of independent work, length of studies, tuition fees, accreditation of professionals, humanization and humanitarian aspects of education, material and methodological support, informatization and digitization of the educational process, connection between educational institutions and the production sector, etc.).

Conditions and circumstances favorable for developing career competence in future bachelor's students in enterprise economics include positive shifts in sociocultural policy, rapid digitalization across all spheres of social and economic life, reform processes in the national educational system, changes in Ukraine's socio-political and economic landscape, and the creation of pedagogical conditions and psychological-pedagogical technologies and methods for forming concepts of professional success, motivation for self-knowledge and self-development, and readiness for lifelong learning.

The study shows that analyzing the factors contributing to an individual's career competence development will help identify patterns of personal and professional self-improvement and career success among future bachelor's students in enterprise economics in a war-disrupted labor market. This emphasizes the need to develop and experimentally verify the effectiveness of pedagogical conditions and a model for career competence development in the professional training of future bachelor's students in enterprise economics.

Conclusions: Career competence is a condition for individual self-realization, reflecting a person's knowledge and understanding of their strengths and weaknesses, abilities, and the ability to

foresee prospects for personal, professional, and career development, even amid martial law and post-war recovery. Career competence, as a component of professional competence and a set of corresponding life and professional skills of a self-sufficient individual, facilitates the effective integration of future bachelor's students in enterprise economics into various professional and social structures, accelerating the post-war recovery of the national economy. However, achieving this requires significant effort, extensive knowledge, access to diverse information, technical equipment, and strong self-motivation; during their professional training, students must acquire instrumental, interpersonal, and systemic skills that comprise the general structure of career development.

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ТЕОРЕТИЧНИЙ АНАЛІЗ ФЕНОМЕНА «КАР'ЄРНА КОМПЕТЕНТНІСТЬ» У КОНТЕКСТІ ПРОФЕСІЙНОЇ ПІДГОТОВКИ МАЙБУТНІХ БАКАЛАВРІВ З ЕКОНОМІКИ ПІДПРИЄМСТВА

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Реферат:

Актуальність визначається запитом суспільства й економіки на креативних, активних та амбітних економістів, здатних вивести вітчизняну економіку з кризового стану, забезпечивши її стабільне економічне зростання й повоєнне відновлення країни.

Мета: здійснити теоретичний аналіз педагогічного феномена «кар'єрна компетентність» у контексті професійної підготовки майбутніх бакалаврів з економіки підприємства.

Методи: вивчення наукових джерел, законодавчих, нормативно-правових документів, емпіричних даних – для з'ясування ступеня розробленості проблеми; теоретичний аналіз, синтез і узагальнення – з метою доведення важливості розвитку кар'єрної компетентності майбутніх бакалаврів з економіки підприємства для повоєнного відновлення України.

Результати: здійснено теоретичний аналіз наукових джерел (з філософії, історії і дидактики професійної освіти; формування особистісних і професійних якостей фахівця; неперервної професійної освіти; теоретичних основ формування компетентності економіста; розвитку кар'єрної компетентності у системі професійної освіти в Україні і зарубіжних країнах); доведено важливість розвитку кар'єрної компетентності майбутніх бакалаврів з економіки підприємства для повоєнного відновлення країни.

Висновки: проблема підготовки молоді до вибору, планування й реалізації професійної кар'єри та розвитку кар'єрної компетентності для вітчизняної психолого-педагогічної науки є відносно новою; використання традиційного підходу до професійної підготовки майбутніх бакалаврів з економіки підприємства не сприяє усвідомленню ними глибинно-психологічних феноменів самопізнання, визначенню ними здібностей і ресурсних можливостей особистості і не мотивує до активної участі у повоєнному відновленні України; вивчення чинників розвитку кар'єрної компетентності особистості сприятиме виявленню закономірностей особистісно-професійного самовдосконалення і кар'єрного успіху майбутніх бакалаврів з економіки підприємства в умовах розбалансованого війною ринку праці; актуалізовано необхідність розроблення й експериментальної перевірки ефективності педагогічних умов та моделі розвитку кар'єрної компетентності майбутніх бакалаврів з економіки підприємства у професійній підготовці з урахуванням потреб воєнного стану й повоєнного відновлення економіки; визначено соціально-педагогічні обставини й умови, сприятливі для розвитку кар'єрної компетентності майбутніх бакалаврів економіки підприємства (позитивні зміни у соціокультурній політиці; стрімка цифровізація усіх сфер суспільного життя й економіки; реформаційні процеси, що відбуваються у вітчизняній освітній системі; зміни в соціально-політичному та економічному житті України; створення педагогічних умов і психолого-педагогічних технологій та методик формування уявлень про професійний успіх, мотивації до самопізнання і саморозвитку та готовності до неперервної освіти).

Ключові слова: професійна кар'єра, бакалавр з економіки підприємства, кар'єрна компетентність, самовдосконалення, вища економічна освіта, ресурсні можливості особистості.

Received: 05 April 2024

Accept: 08 July 2024



CURRENT STATE OF TRAINING FOR AUTOMOTIVE MECHANICS IN VOCATIONAL (TECHNICAL) EDUCATION INSTITUTIONS

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Abstract

The relevance of this article is driven by the importance of professional training for automotive mechanics in the current environment, where the automotive industry is undergoing rapid and significant changes. The advancement of technological progress and the introduction of new technologies such as electric vehicles, hybrid cars, and autonomous transportation systems pose new challenges and set additional requirements for the training of specialists.

Objective: The study aims to analyze the current state and trends in the professional training of automotive mechanics within vocational (technical) education institutions.

Methods: Theoretical analysis of scientific literature, review of regulatory frameworks, and examination of curriculum planning documentation were conducted to assess the development level of this issue and to identify directions for further research. Comparison was used to explore different scientific approaches to addressing this issue, while analysis and synthesis were employed to elucidate trends in the professional training of automotive mechanics and to substantiate the formation of their professional competencies.

Results: The main issues in preparing future automotive mechanics have been identified at the levels of general pedagogy, psychology, and didactics. Core didactic and innovative aspects for forming the professional competence of future automotive mechanics are characterized.

Conclusions: The essence of automotive mechanics training is characterized as a multifaceted process encompassing technical education, personal development, and adaptation to new technologies and labor market demands. The purpose of this training is defined as the sustainable development of the automotive industry, enhancement of vehicle safety and operational efficiency, and support for the economic stability of enterprises. Current trends in the professional training of automotive mechanics are identified, including a focus on improving educational quality, developing competencies aligned with digital labor market demands, and preparing specialists capable of working with the latest production technologies. Key strategies for enhancing the competitiveness of graduates from vocational (technical) education institutions in the global labor market, and their readiness to meet the challenges of the modern automotive industry, are outlined. These include implementing international education standards, readiness to utilize modern equipment and software, development of soft skills, collaboration with businesses, and fostering continuous education and professional growth.

Keywords: *automotive industry, future automotive mechanic, professional competence, competency-based approach, learners.*

Introduction. The professional training of automotive mechanics is a key aspect of the development of the automotive industry. Amidst rapid technological advancement and globalization, there is a growing need for highly qualified specialists who can

adapt to new conditions and labor market demands. Due to the constant renewal of the vehicle fleet and the introduction of cutting-edge technologies and systems, such as electric vehicles, hybrid cars, autonomous transport, and telematics systems, modern mechanics

must possess comprehensive knowledge in various technical fields and information technologies.

The importance of high-quality professional training cannot be overstated, as it ensures road safety, efficient vehicle operation, and the economic stability of companies engaged in automotive maintenance and repair. Highly skilled mechanics are capable not only of performing quality repairs and maintenance but also of diagnosing complex systems, identifying and rectifying malfunctions at early stages, which prevents severe breakdowns and accidents.

Educational programs for automotive mechanics must consider current trends and innovations in the automotive sector. This entails constant updates to curricula, the adoption of new teaching methods, and the use of modern equipment in the training process. Collaboration between educational institutions and automotive companies or service centers is also essential, as it allows students to gain practical skills in real-world settings.

It is worth noting that professional training for automotive mechanics includes not only technical knowledge and skills but also the development of qualities such as attentiveness, responsibility, decision-making autonomy, and teamwork ability. Mechanics must be prepared for continuous learning, as technologies and market requirements are constantly evolving.

Modern mechanics should be familiar with the basics of electronics, diagnostic systems, information technology, and software used for vehicle maintenance. They need to work with computer control systems, understand the principles of electric motors, batteries, and be acquainted with the basics of telematics and autonomous driving systems.

Additionally, mechanics should possess knowledge in ecology and energy conservation, as the contemporary automotive industry increasingly focuses on the development and implementation of environmentally friendly technologies. This includes the use of alternative fuels, reduction of harmful emissions, and improvements in energy efficiency.

Achieving a high level of professional training requires access to modern instructional materials, equipment, and technologies. Educational institutions must continuously invest in developing their material and technical base, attract highly qualified specialists for teaching, and collaborate with companies and organizations in the automotive sector.

Thus, professional training of automotive mechanics is a multifaceted process that includes not

only technical training but also the development of personal qualities, adaptation to new technologies, and market demands. This ensures sustainable growth in the automotive industry, enhances vehicle safety and operational efficiency, and contributes to the economic stability of enterprises.

Sources

The issue of professional training for future specialists has been thoroughly studied at the level of general pedagogical, psychological, and didactic principles, as explored by A. Aleksyuk (1998), V. Bondar (2013), S. Honcharenko (1997), R. Hurevych (2011), I. Zyazyun (2001), V. Kremen (2003), N. Kuzmina (2011), N. Nychkalo (2008), V. Yahupov (2002), among others. The challenges in training future specialists, as identified at the general pedagogical, psychological, and didactic levels, include several main aspects, such as:

- Inadequacy of curriculum content with current professional requirements;
- Lack of integration of theoretical knowledge with practical skills;
- Low interest in the chosen profession;
- Lack of intrinsic motivation for independent learning and professional development;
- Use of outdated and ineffective teaching methods;
- Insufficient implementation of innovative technologies and interactive teaching methods;
- Lack of a systematic approach to developing professional competencies;
- Discrepancies between expected competencies and actual learning outcomes.

These issues are complex and require a systematic approach to address them, involving collaboration between educational institutions, employers, and students.

Regarding the training of specialists in the transportation sector, this topic has been examined by M. Kozlenko (2008) and O. Kravets (2019). Didactic aspects of training future automotive industry specialists have been studied by D. Homeniuk (2014), O. Dubinina, V. Radkevych, P. Luzan, T. Pashchenko (2022), A. Kononenko (2016), V. Manko, H. Romanova, and L. Nesterova (2014). Their works focus on various educational process aspects, including theoretical training, practical exercises, and the use of modern technologies and teaching methodologies.

Key didactic aspects of automotive industry training, as proposed by scholars, include:

- Study of mechanics, electrotechnics, and vehicle construction fundamentals;
- Mastery of regulatory documents and standards governing the automotive sector;
- Conducting lab work and practicums, enabling students to consolidate theoretical knowledge through practical application;
- Organizing internships at automotive companies where students can gain real-world experience;
- Integrating information technology into the educational process, using specialized software for modeling and analyzing transportation processes;
- Using virtual labs and simulators for training;
- Applying problem-based learning, fostering critical thinking and problem-solving skills, among others.

The works of these scholars contribute significantly to the development of methodological approaches and the improvement of the automotive industry training system, which is vital for ensuring the quality of education and the professional competency of graduates.

Innovative aspects of vocational training, highlighted by researchers such as M. Artyushyna (2014), N. Kulalaeva, and H. Romanova (2019), include key elements such as:

- Integrating ICT in the educational process to enhance learning efficiency, develop digital competencies, and provide access to current knowledge and resources;
- Development and implementation of modular programs, allowing students more flexible mastery of educational materials and adapting the learning process to individual needs and capabilities;
- Utilizing online platforms and distance learning technologies to provide access to educational programs regardless of students' geographical location;
- Focusing the educational process on forming key competencies necessary for professional activities, which includes the development of critical thinking, creativity, and problem-solving skills;
- Engaging students in real-life projects to develop practical skills and apply theoretical knowledge in practice;
- Using interactive methods (discussions, role-playing, simulations) to increase student engagement and activity in the educational process;
- Encouraging students to conduct research and experiments as part of the educational process;

- Developing individual educational plans and programs that consider students' personal interests, abilities, and needs;
- Integrating knowledge from different fields to create a comprehensive understanding of professional activities and complex problem-solving;
- Regularly updating curricula and materials according to current labor market requirements and scientific-technological progress.

These aspects enhance the quality of vocational education, make it more adaptable to societal and economic changes, and prepare students for effective professional activities in today's fast-changing world.

The competency-based approach in vocational education institutions has been developed, implemented, and realized by V. Radkevych (2012), T. Herlyand (2013), P. Luzan, V. Yahupov, H. Lukianenko, T. Pyatnychuk (2015), among others.

The introduction of new technologies, such as electric vehicles, hybrid cars, and autonomous vehicles, presents new challenges and requirements for specialist competencies. An analysis of the current state of mechanic training in vocational education institutions reveals major trends and issues that need to be addressed to ensure efficient and safe vehicle operation.

Purpose: To analyze the current state and trends in the professional training of automotive mechanics in vocational education institutions.

Methods: Theoretical analysis of scholarly works, examination of regulatory requirements, and academic planning documentation to assess the level of problem development and directions for further research; comparison for studying different scientific approaches to the problem; analysis and synthesis to identify trends in professional training of automotive mechanics and justify the content for forming their professional competencies.

Results and Discussion: Since February 24, 2022, due to the full-scale invasion of Russia on the territory of Ukraine, war has been ongoing in our country, which undeniably affects the economy and the labor market. Although car sales declined initially, 2023 has seen a resurgence. Analytical data indicate (Orel, 2023) that:

- In the first half of 2023, Ukrainians purchased 29,314 new passenger cars worth nearly \$1 billion;
- The number of cars sold in the first half of 2023 increased by 58% compared to the first half of 2022;

- The record year for Ukraine was 2021, with nearly 104,000 new cars sold.

These data suggest that the car sales market in 2023 has practically reached 2021 levels, meaning the

labor market requires highly qualified specialists capable of quality automotive service.

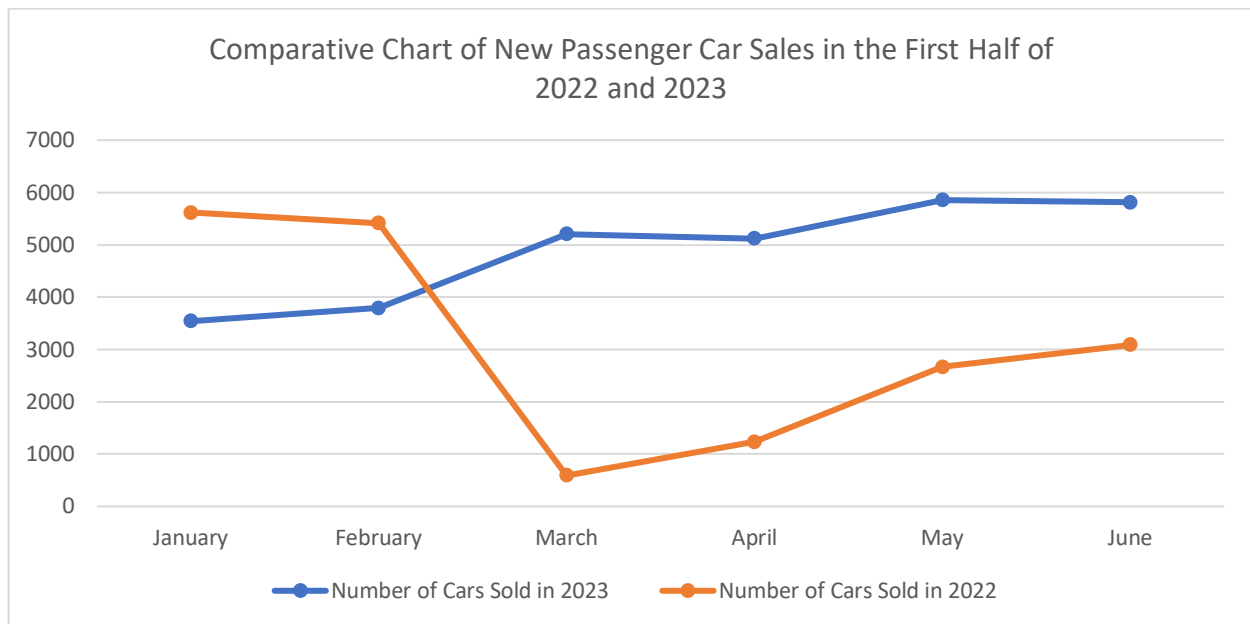


Fig. 1. Comparative Chart of New Passenger Car Sales in the First Half of 2022 and 2023 (Orel, 2023).

The current characteristics of the domestic automobile sales market include:

- A significant share of premium car sales, constituting 20% in 2023 compared to 14-15% in 2022.

- The main drivers of market growth: government agencies, law enforcement, and business sectors, rather than the general population.

Published research results reveal that the most popular car brands on the sales market in 2023 were "Toyota," "Renault," "Volkswagen," "Skoda," "BMW," and others (see Fig. 2).



Fig. 2. Top ten automobile brands in Ukraine by sales in the primary market (Orel, 2023).

The above-listed points, on the one hand, indicate the need for highly qualified specialists in the repair and maintenance of wheeled vehicles and, on the other hand, underscore the heightened training requirements for these specialists, particularly in relation to the use of vehicles by law enforcement agencies during wartime.

In Appendix B of the Handbook of Occupational Qualification Characteristics for Employees, presented in Issue No. 69, “Automobile Transport,” specific qualification characteristics related to our research topic are provided, specifically for professions (specializations) such as: service mechanic for wheeled vehicles, electromechanical technician for wheeled vehicles, and reception-delivery mechanic for technical services of wheeled vehicles. This document states that the Handbook forms part of the foundation for establishing a company's professional system, setting qualification requirements for knowledge and skills of automotive transport workers, defining their tasks, duties, and conditions for skill level advancement. It may also serve as a basis for developing professional standards, higher education standards, and state standards for vocational (technical) education while emphasizing the importance of regulatory legal acts and documents in shaping the company's professional system. These documents include (Official Portal of the Parliament of Ukraine, 2006):

- The updated national classifier of Ukraine “Classifier of Occupations DK 003:2010,” which defines job titles, their classification, organization, and coding;
- Updated Issue 69, “Automobile Transport,” of the Handbook of Occupational Qualification Characteristics for Employees;
- Professional standards as outlined by the Law of Ukraine “On Vocational (Technical) Education”;
- Higher education standards in accordance with the Law of Ukraine “On Higher Education”;
- State standards of vocational and technical education according to the Law of Ukraine “On Vocational (Technical) Education.”

These documents play a crucial role in organizing the educational process within institutions that prepare future specialists in the automotive sector. Additionally, the educational program is a

mandatory document in the educational process. The specifics of professional training for future automotive mechanics can be observed in the educational program “Automobile Maintenance and Repair” at the Kyiv Professional College of Automotive Transport Technologies, where the educational-qualification level is junior bachelor, field of knowledge: 27 “Transport,” specialization: 274 “Automobile Transport,” qualification: “mechanic.”

The program's scope comprises 120 ECTS credits, covering a two-year study period. The program's objective is to provide students with general and professional competencies in the transport (automotive) sector, enabling graduates to solve standard production tasks and situations in fulfilling their professional duties in positions aligned with their specialty. The orientation of the program is professional training of students for making effective professional decisions in automobile transport maintenance and repair.

The program's main focus is on the graduates' ability to carry out production activities in automobile and engine maintenance and repair at automotive service enterprises. This goal is achievable through integrating general professional and theoretical training specific to automobile and engine maintenance and repair.

It is noteworthy that, as indicated in the educational program, a junior bachelor in the specialty 274 “Automobile Transport” can be employed in the following positions:

- Mechanic;
- Fleet Mechanic (garage);
- Transport Repair Mechanic;
- Division Mechanic;
- Workshop Mechanic;
- Production Mechanic;
- Design Technician (mechanics);
- Process Technician (mechanics);
- Vocational Training Instructor in Driving.

It should be noted that the profession of an auto mechanic is in high demand in the labor market. As of June 17, 2024, there are 425 job vacancies for this profession listed on the website of the State Employment Service. The number of vacancies by region is shown in Fig. 3.

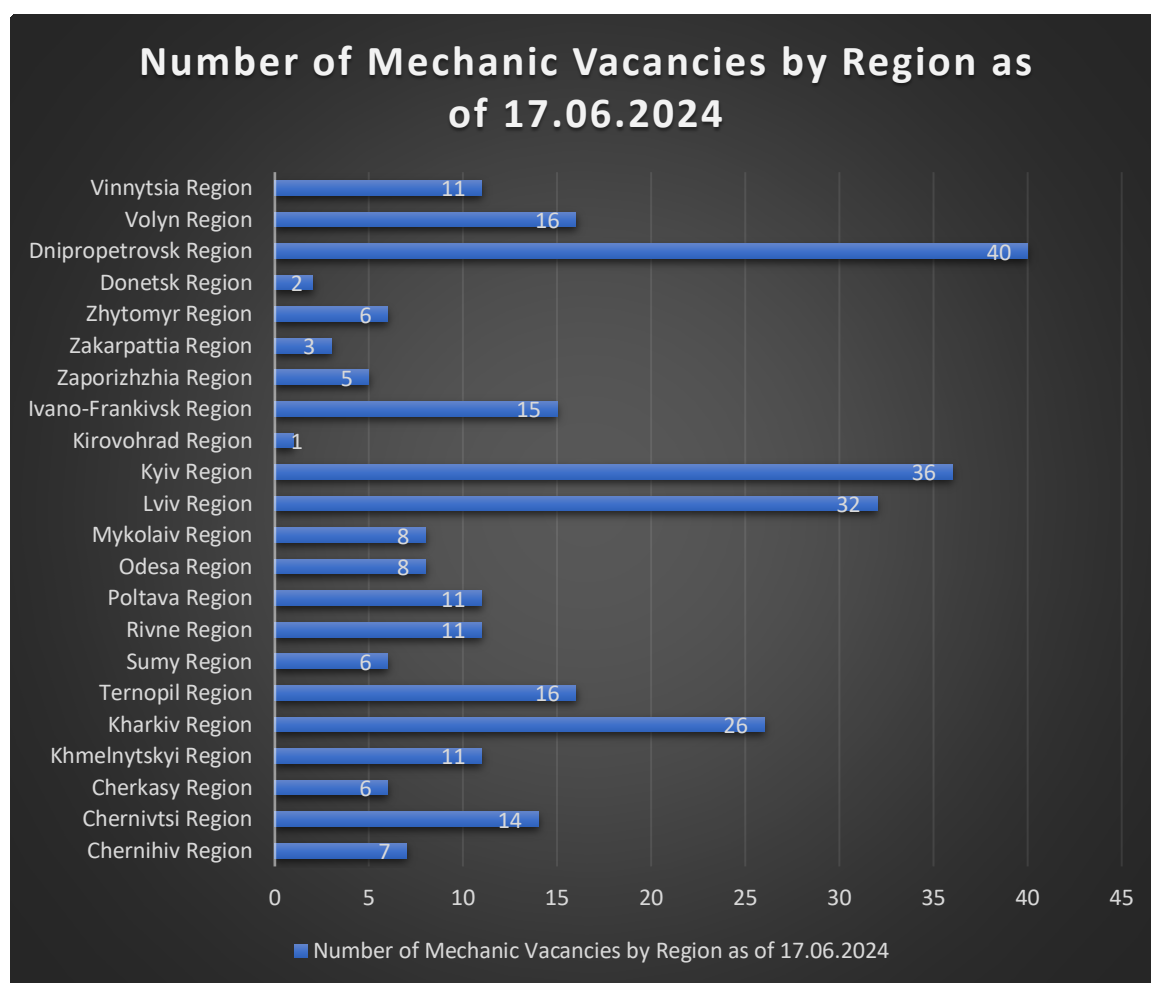


Figure 3. Number of Mechanic Job Openings by Region as of 06/17/2024

As shown, the highest numbers of job openings are observed in the Dnipropetrovsk, Kyiv, and Lviv regions, while the lowest numbers are in the Donetsk, Zakarpattia, and Kirovohrad regions, influenced by various factors, including the ongoing war led by the Russian aggressor against the Ukrainian people.

An important indicator of demand is represented by job openings in Kyiv city, where 132 vacancies as of 06/17/2024 indicate an acute need for training future mechanics within the capital.

It is worth noting that the salary range for this profession spans from UAH 7,500 to UAH 70,000. The tasks and requirements for applicants in these positions are detailed in Table 1 below.

Table 1

**Primary Responsibilities and Requirements for Automotive Mechanic Positions
(State Employment Service, 2024)**

Location	Tasks	Requirements
Kyiv, "Autonomy Auto Service"	– Diagnosis and repair of vehicles; – Execution of scheduled and current technical maintenance; – Detection and resolution of vehicle malfunctions.	– Minimum of 2 years of experience in a similar role; – Knowledge of modern automotive systems; – Ability to work in a team and demonstrate responsibility; – Willingness to continuously improve skills.
Kharkiv, "BMW Garage Racer"	– Diagnosis and repair of BMW and Mini vehicles.	– Understanding of vehicle operation principles, structure, and repair technology; – Responsibility;

Location	Tasks	Requirements
		– Teamwork skills; – Openness in communication; – Willingness to develop; – Ability to acquire new information.
Zaporizhzhia, "Progress LLC"	– Conduct diagnostics and preventive inspections of vehicles; - Reject defective parts after disassembly and cleaning; – Perform mechanical processing of parts, static balancing of components and assemblies; – Disassemble, repair, and assemble units and mechanisms in accordance with the manufacturer's technical standards and other regulatory documents; – Install, adjust, and replace spare parts, assemblies, and equipment as per work orders; – Address identified defects and malfunctions after consultation with the shift supervisor; – Ensure high-quality work completion.	– - Knowledge of disassembly, defect assessment, and repair principles of parts, assemblies, and devices; – Experience is preferred; - Relevant education.

An analysis of the Unified Job Portal of the State Employment Service reveals that certain job listings pertain to the repair and maintenance of military vehicles. For instance, the duties listed for an auto mechanic position include (State Employment Service, 2024):

- Diagnosing and repairing various makes and models of vehicles utilized by the military unit;
- Planning and performing regular vehicle maintenance according to military unit standards;
- Detecting and correcting breakdowns and faults within mechanical, electrical, and electronic vehicle systems;
- Parts and tools management: ordering and ensuring the availability of spare parts and tools necessary for repairs;
- Maintaining cleanliness and order at the workstation.

The requirements are as follows:

- Experience in vehicle repair and maintenance;
- Knowledge of automotive technology, electricity, and electronics;
- Proficiency in using diagnostic equipment and tools;
- Ability to work in a team and adhere to a set work schedule;

- Responsibility, attention to detail, and the ability to make quick decisions.

An analysis of the listed duties, tasks, and requirements for candidates in these positions shows that essential conditions for their professional activity include the development of both soft skills and hard skills, or key, general, and professional competencies.

Concerning soft skills, these include teamwork, responsibility, a desire for continuous skills enhancement, openness to communication, readiness for development, and the ability to learn new information, among others. These qualities contribute to the formation of general competencies. According to the educational and professional program "Maintenance and Repair of Vehicles and Engines" at the Kyiv College of Automotive Transport Technologies, these competencies include:

- GC1 – Social competence: the ability to work in a team and take responsibility for specific tasks.
- GC2 – Communicative competence: the ability to communicate effectively both orally and in writing in one's native language, as well as using foreign language skills in professional activities.
- GC3 – Civic competence: the ability to apply knowledge of Ukrainian legal and regulatory acts in the operation, repair, and maintenance of vehicles and their systems.

- GC4 – Ethical competence: the capacity to shape a worldview that encompasses human existence, society, nature, physical, and spiritual culture.

- GC5 – Interdisciplinary competence: the ability to utilize fundamental knowledge of mathematics and physics when solving tasks in mechanics, electromechanics, and electronics.

- GC6 – Health preservation competence: possessing knowledge about the basic principles of human, society, and nature interaction; understanding the impact of anthropogenic factors on the environment; and methods for managing natural resource use.

A key trend in the professional training of automotive mechanics within vocational (technical) education institutions is the integration of international education standards. The Bologna Process, initiated in 1999, represents a significant step in the harmonization of educational standards across Europe (State Employment Service, 2024). Its objective is to establish a European Higher Education Area, enabling mobility for students and teachers and mutual recognition of diplomas and qualifications across countries. For automotive mechanics, this entails access to internationally recognized education and opportunities for participation in educational programs and internships abroad.

The integration of international standards contributes to enhancing the quality of education and ensuring the global competitiveness of graduates. Moreover, it allows educational institutions to implement best practices and teaching methods proven effective in leading countries worldwide.

Incorporating international education standards into the vocational training of automotive mechanics facilitates alignment of educational programs with global requirements and standards, enhancing mobility and competitiveness in the international labor market. It also ensures a higher quality of training, meeting current labor market demands and the technological advancements in the automotive industry.

One such standard is ISO 21001:2018, which specifies quality management system requirements for educational organizations. This standard aims to improve the educational process and learning outcomes by establishing transparent and effective quality management and control mechanisms. ISO 21001:2018 provides a framework for evaluating the quality of educational programs, teaching staff, and administrative processes.

Implementing ISO 21001 standards in the vocational training of automotive mechanics involves several key aspects:

1. Harmonization of training programs. Using international standards enables the development of educational programs that align with global requirements, thus preparing professionals who can work in any country where similar standards are upheld.

2. Improving the quality of education. ISO 21001 standards offer mechanisms for assessing and controlling the quality of the educational process, which contributes to raising the knowledge and skills levels of students.

3. Professional mobility. Through the alignment of educational programs with international standards, graduates can more easily obtain recognition of their qualifications abroad, thereby enhancing their competitiveness in the global labor market.

4. Development of Professional Competencies. International standards establish clear requirements for professional competencies, which promote the formation of contemporary skills and knowledge in future specialists.

An example of successfully implementing international standards in the training of automotive mechanics is the use of the ISO 21001 methodology in educational institutions across Europe and the United States. In these countries, automotive mechanics programs have been reviewed and adapted to meet ISO 21001 standards, leading to significant improvements in educational quality and alignment of educational processes with the current demands of the labor market.

Despite the evident advantages, the implementation of international educational standards presents certain challenges. Key among these are the need to adapt existing curricula to new requirements, ensure a sufficient level of instructor training, and secure substantial financial investment for modernizing educational institutions.

However, overcoming these challenges holds substantial promise for the development of the educational system. Specifically, the implementation of ISO 21001 standards can contribute to creating a more competitive labor market, enhancing specialist training levels, and ensuring a higher quality of education.

The integration of international educational standards, such as ISO 21001, into the vocational training of automotive mechanics is a crucial step toward enhancing educational quality and aligning

curricula with modern labor market requirements. This alignment promotes the harmonization of educational programs with global standards, ensuring workforce mobility and competitiveness on the international labor market. Despite the challenges, the implementation of international standards opens new avenues for advancing the educational system and preparing qualified specialists in automotive mechanics.

The modern labor market demands that automotive mechanics possess not only deep technical knowledge but also the ability to work with the latest technologies. This includes not only vehicle maintenance and repair but also diagnostics, vehicle management, and other systems (AutoWorld, 2024).

One significant trend is the use of advanced equipment and software in the educational process. For instance, educational institutions are increasingly integrating simulators, diagnostic complexes, and other tools into their programs, allowing students to acquire practical skills in settings that closely resemble real-world conditions. Additionally, the rise of electromobility and alternative energy sources imposes new requirements for training mechanics, who must now be familiar with electric motors, hybrid systems, and other cutting-edge technologies.

Developing professional competencies that meet modern labor market requirements involves not only technical knowledge and skills but also the cultivation of soft skills. These include communication, teamwork, critical thinking, and adaptability to change.

Employers, in particular, increasingly value specialists' ability to communicate effectively with clients and colleagues, quickly adapt to new environments and technologies, and work in multifunctional teams. Consequently, educational programs incorporate courses aimed at developing these skills and regularly conduct various training sessions and workshops (Business Inform, 2024).

The collaboration between educational institutions and automotive companies is a vital component of an effective educational process. This partnership enables students to gain practical experience in real workplaces, thus providing relevant knowledge and experience.

Many educational institutions, in particular, have signed agreements with car service centers, dealerships, and automobile manufacturers. These partnerships allow students not only to become acquainted with modern technologies and equipment but also to secure employment opportunities after

graduation. Additionally, companies often supply educational institutions with training equipment and materials and organize workshops and lectures for students.

Despite numerous positive trends, there are also challenges that must be addressed. For instance, the rapid pace of technological advancement necessitates continuous curriculum updates and instructor professional development. Furthermore, ensuring access to modern equipment and software for all students may require significant financial resources.

At the same time, the outlook for vocational training in automotive mechanics is optimistic. Integrating international standards, utilizing innovative technologies, developing professional competencies, and fostering collaboration with businesses contribute to the formation of highly qualified specialists who meet the demands of the modern labor market.

Current trends in vocational training for automotive mechanics focus on providing high-quality education, developing essential competencies, and preparing specialists capable of working with the latest technologies. Key aspects of this process include implementing international educational standards, using advanced equipment and software, fostering soft skills, and promoting business collaboration. These changes enable graduates of vocational (technical) education institutions to become globally competitive and ready to meet the challenges of the contemporary automotive industry (Vocational-Technical Education, 2024).

The vocational training of automotive mechanics is undergoing significant transformations due to global trends and technological progress. Considering the rapid development of the automotive industry, there is an increasing demand for specialists who possess not only technical knowledge but also skills in working with cutting-edge technologies (President of Ukraine, 2024). This article aims to highlight current trends in the preparation of specialists in this field, focusing on ensuring high-quality education, developing necessary competencies, and preparing competitive specialists.

Conclusions. The vocational training of automotive mechanics is a multifaceted process that encompasses technical instruction, personal development, adaptation to new technologies, and responding to market demands. This ensures sustainable growth in the automotive industry,

enhances vehicle safety and operational efficiency, and supports the economic stability of enterprises. Current trends in vocational training for automotive mechanics focus on ensuring high-quality education, developing essential competencies, and preparing specialists capable of working with the latest technologies. The key components of vocational training for automotive mechanics include

implementing international educational standards, using modern equipment and software, fostering soft skills, and promoting business partnerships. These changes make graduates of vocational (technical) education institutions more competitive on the global labor market and prepared to face the challenges of the modern automotive industry.

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СУЧАСНИЙ СТАН ПІДГОТОВКИ МЕХАНІКІВ АВТОМОБІЛЬНОГО ТРАНСПОРТУ В ЗАКЛАДАХ ПРОФЕСІЙНОЇ (ПРОФЕСІЙНО-ТЕХНІЧНОЇ) ОСВІТИ

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Реферат:

Актуальність статті обумовлена тим, що професійна підготовка механіків автомобільного транспорту є надзвичайно важливою в сучасних умовах, коли автомобільна індустрія зазнає швидких і значних змін. Зростання технологічного прогресу, впровадження новітніх технологій (електромобілі, гібридні автомобілі, автономні транспортні засоби) створює нові виклики і вимоги до підготовки фахівців.

Мета: аналіз сучасного стану і тенденцій професійної підготовки механіків автомобільного транспорту в закладах професійної (професійно-технічної) освіти.

Методи: теоретичний аналіз наукових праць, вивчення вимог нормативно-правової бази, навчально-плануючої документації – для визначення рівня розробленості проблеми та напрямів подальших наукових досліджень; порівняння – для вивчення різних наукових підходів до вирішення проблеми; аналіз і синтез – для з'ясування тенденцій розвитку професійної підготовки механіків автомобільного транспорту та обґрунтування змісту формування їх професійної компетентності.

Результат: визначено основні проблеми підготовки майбутніх механіків автотранспортної галузі на рівні загальних положень педагогіки, психології та дидактики; схарактеризовано основні дидактичні та інноваційні аспекти формування професійної компетентності майбутніх механіків автомобільного транспорту.

Висновки: охарактеризовано сутність професійної підготовки механіків автомобільного транспорту (багатогранний процес, що передбачає навчання технічним аспектам, розвиток особистісних якостей, адаптацію до нових технологій і вимог ринку праці); визначено його призначення (сталий розвиток автомобільної індустрії, підвищення безпеки й ефективності експлуатації транспортних засобів, сприяння економічній стабільності підприємств); виявлено сучасні тенденції професійної підготовки механіків автомобільного транспорту (орієнтація на підвищення якості освіти, розвиток затребуваних цифровими ринком праці компетентностей, підготовка фахівців, здатних працювати з новітніми виробничими технологіями); виявлено основні шляхи підвищення конкурентності випускників закладів професійної (професійно-технічної) освіти на глобальному ринку праці та їх готовності до викликів сучасної індустрії автомобільного транспорту (впровадження міжнародних стандартів освіти, готовність до використання сучасного обладнання та програмного забезпечення, розвиток м'яких навичок, співпраця з бізнесом, здатність до безперервної освіти і професійного розвитку).

Ключові слова: *автомобільний транспорт, майбутній механік автомобільного транспорту, професійна компетентність, компетентнісний підхід, здобувачі освіти.*

Received: 23 February 2024

Accepted: 08 July 2024



PRACTICAL TRAINING CENTRES AS INNOVATIVE STRUCTURAL UNITS FOR PROFESSIONAL TRAINING OF SPECIALISTS BASED ON PUBLIC-PRIVATE PARTNERSHIP

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Abstract

Relevance: In the era of innovation, practical training centres within professional (vocational) education institutions are pivotal in preparing personnel that contribute to the economic stability of regions and the nation. To revitalise Ukraine's national economy, it is crucial to improve the quality of human capital by incorporating advanced technologies and materials into the educational framework.

Aim: to examine the role of practical training centres, based on public-private partnerships, in developing highly skilled workers in Ukraine; to establish their importance for advancing professional (vocational) education in an innovative society.

Methods: content analysis (to review documents and materials, identifying key trends and approaches); systematic analysis (to view practical training centres as part of the P(V)E system and clarify their interactions with stakeholders); an activity-based approach (to evaluate the objectives, functions and roles of these centres in P(V)E).

Results: The activities of PTCs in Ukraine dedicated to enhancing P(V)E are detailed as follows: Lviv Professional College of Service and Printing (the Interregional PTC for Computer Technologies "Digital Learning" improves training for both students and teachers, introduces new technologies and organizes courses and seminars; the PTC for the Use of Materials and Technologies from Sniezka-Ukraine LLC focuses on new construction technologies, professional development courses and student certification); Chernihiv Professional Lyceum of Railway Transport (the PTC for training installers of sanitary engineering systems offers specialized courses, ensures high-quality training and participates in professional skill competitions); Khmelnytskyi Centre for Vocational Education in the Field of Services (the PTC for Current Sewing Technologies and Design provides training and professional development for sewing operators; the PTC for Technological Innovations in the Food Industry and Restaurant Business organizes seminars and training sessions aimed at improving nutrition in educational institutions). These PTCs actively collaborate with enterprises, implement specialist training projects and integrate advanced technologies.

Conclusions: practical training centres, operating through partnerships with external stakeholders, foster new professional training methodologies and create platforms for formal and non-formal education. They play a significant role in training and retraining unemployed individuals, enhancing the qualifications of industrial training instructors and P(V)E teachers, as well as introducing cutting-edge technologies and advanced equipment.

Keywords: *practical training centre, public-private partnership, professional (vocational) education institution, innovative society.*

Introduction. Today, a significant challenge for an innovative society is the need for highly skilled workers, as their professionalism is crucial

for the economic stability of both regions and the nation as a whole. A key element in the revitalization of Ukraine's national economy is the quality of its human capital, which encompasses the attributes of

individuals engaged in innovative processes that create and produce advanced products, serving as a source of income. In this light, professional (vocational) education acts as vital capital for both individuals and society, providing a theoretical framework for enhancing professional qualifications tailored to diverse population groups (Radkevych, 2024). The current system of professional (vocational) education should aim to develop future specialists comprehensively, while also centring the curricula of professional (vocational) education institutions (hereinafter "PVEIs") on students' mastery of new technologies and materials.

Materials. The strategic advancement of the system for training highly skilled workers and the long-term strategy for human resource development, particularly in the context of building an innovative economy and a civilized market, is highly complex. This complexity arises from the fact that successful solutions depend on the synergistic interplay of numerous factors. One significant factor that determines the competitiveness of innovative systems is a highly qualified workforce (Kravets et al., 2023; Liulkova, 2023; Radkevych et al., 2023; Radkevych, 2024; Tsarova, 2022; Voronina-Pryhodii et al., 2022).

According to the Law of Ukraine "On Education" (2017), public-private partnership (PPP) in the field of professional (vocational) education (hereinafter "PVE") is an important prerequisite for establishing a highly qualified workforce amid rapid technological changes (Verkhovna Rada Ukrainy, 2017). This partnership involves attracting investments, improving educational infrastructure and enhancing the quality of educational services.

To ensure the quality of P(V)E, Radkevych (2022) defines PPP as "a system of long-term relationships characterized by contractual economic and organized interactions between state and non-state entities, aimed at attracting additional investments for P(V)E development, increasing shared responsibility in decision-making of common interest and achieving pedagogical, social and economic outcomes" (p. 2). The effectiveness of PPP largely relies on the intentional and systematic collaboration among employers, business representatives, government authorities, local self-governance bodies, professional associations, educational institutions and

others, all working together to advance the P(V)E system (Liulkova, 2023).

Thus, in light of the need for innovative economic development in the country, it became vital to create practical training centres for preparing qualified workers.

According to the Regulations on Practical Training Centres at Professional (Vocational) Educational Institutions (2012), a practical training centre (hereinafter "PTC") is a structural unit within a P(V)EI that is owned by the state or local government (Ministerstvo osvity i nauky, molodi ta sportu Ukrainy, 2012). The primary objective of the PTC is to enhance theoretical and practical training of students, as well as to improve the qualifications of teaching staff and employees of economic entities through the delivery of non-formal educational programmes in various formats.

As part of the material and technical facilities of a P(V)EI, the PTC offers access to equipment for various user categories, including 1) students pursuing P(V)E; 2) unemployed individuals and professionals currently employed who wish to change their careers; 3) employees from other companies sent for professional development; 4) practical training instructors from other P(V)EIs who are completing internships.

The operation of PTCs based on PPPs is essential for P(V)E development for several reasons:

1. *Enhancing workforce training quality.* PTCs integrate theoretical knowledge with practical skills, thereby increasing the competitiveness of graduates.

2. *Updating curricula.* Collaboration between state educational institutions and businesses enables the rapid adaptation of educational programmes to meet market demands, incorporating the latest technologies.

3. *Infrastructure development.* PPPs provide funding and resources for equipping PTCs with the latest equipment, which improves the learning environment.

4. *Teacher professional development.* PTCs serve as platforms for professional development of teachers who implement new technologies into the educational process.

5. *Collaboration with businesses.* Strong connections between education and enterprises create opportunities for practical internships for students.

6. *Innovations and technologies.* PTCs facilitate the integration of new technologies into the educational process, enhancing its effectiveness.

Thus, PTCs based on PPPs are a vital component of the professional (vocational) education system, contributing to the improvement of workforce training quality and the adaptation of educational programmes to market needs.

The draft state budget for 2024 allocates 500 million hryvnias for the transformation of P(V)E in Ukraine, which includes the establishment of 100 PTCs (workshops) based at PVEIs (Ministerstvo osvity i nauky Ukrainy, 2023). These centres will be equipped with the advanced equipment to train students in the most in-demand professions necessary for the country's reconstruction.

The demand for skilled trades continues to grow, with 85% of job vacancies on the Work.ua platform corresponding to professions available at PVEIs. Forecasts from the Ministry of Economy indicate that by 2027, the key sectors of the economy will include construction and telecommunications (Ministerstvo ekonomiky Ukrainy, 2024). Many professionals in these fields are currently serving on the front lines, which further increases the need for skilled trades. To secure funding for the establishment of PCTs, PVEIs will participate in a transparent competition, demonstrating their readiness to create PTCs and collaborate with businesses.

The establishment of 100 workshops will create new educational opportunities for over 50,000 students, contributing to the overall development of PVEIs ((Ministerstvo osvity i nauky Ukrainy, 2023).). This initiative will enable institutions to learn how to develop project plans, analyze market trends and forecast professional needs, while also laying the groundwork for their autonomy and financial sustainability. The workshops will encompass various profiles, including agriculture, repair, fashion design and culinary arts, with specific profiles determined in collaboration with local authorities and businesses based on regional needs. Students from grades 9 and 11, as well as adults, including veterans and internally displaced persons, will have

the opportunity to train in these workshops. Additionally, PVEIs will be able to reissue training licenses without going through the licensing process ((Ministerstvo osvity i nauky Ukrainy, 2023).).

Aim: to examine the role of practical training centres, based on public-private partnerships, in developing highly skilled workers in Ukraine; to establish their importance for advancing professional (vocational) education in an innovative society.

Methods. To accomplish the objectives of the article, the following methods were employed: *content analysis*, which involved examining documents, reports, curricula and other materials related to the activities of PTCs to identify key trends and approaches; *systematic analysis*, which viewed PTCs as components of a larger P(V)E system, including an examination of the relationships among stakeholders (educational institutions, businesses and government agencies); *a functional approach*, which assessed the activities of PTCs concerning their tasks, functions and roles within the P(V)E system.

Results and discussions. The labour market situation in Ukraine today is largely influenced by employers, who justifiably demand that P(V)EIs equip students with knowledge and skills that align with the current level of technological and technical advancement in various economic sectors. Simultaneously, P(V)EIs emphasize to employers that the preparation of qualified workers is a shared challenge that requires a comprehensive approach (Kravets et al., 2023). To effectively meet employers' demands for the quality of professional training for future skilled workers and swiftly respond to shifts in the labour market, a robust system of collaboration with employers is essential. This includes, in particular, the creation of innovation-based structural units within P(V)EIs under public-private partnership (PPP) principles. Additionally, employers play a key role in the employment of graduates and actively contribute to shaping the educational process. This collaboration is evolving into new directions, taking the form of specific mechanisms and models of social partnership, as well as proposals from social partners to enhance curricula and programmes for vocational-theoretical and vocational-practical training, aimed at ensuring students master the latest technologies (Tsarova, 2022). The organization of

round-table discussions and seminars facilitates adjustments to the educational process to meet enterprise requirements, while also providing informational and methodological support for the training, retraining and advanced training of students.

To begin with, two PTCs have been established at Lviv Professional College of Service and Printing. They are as follows: the Interregional Practical Training Centre for Computer Technologies, known as “Digital Learning”, and the Practical Training Centre for the Use of Materials and Technologies from Sniezka-Ukraine LLC. The primary aim of “Digital Learning” is to enhance theoretical and practical training of P(V)E students, improve the qualifications of teaching staff and specialists and integrate the latest technologies into the educational process. Key areas of its activity include: 1) collaborating with businesses and organizations to introduce innovations in P(V)E through advanced technologies; 2) implementing cutting-edge methods for professional training in computer and office equipment; 3) creating a system of training methods based on current practices; 4) computerizing the educational process (Lvivskyi profesiynyi koledzh sfery obsluhovuvannia ta polihrafi, 2024a).

Additionally, the “Digital Learning” PTC fulfils several important functions: a) enhancing the quality of professional training for students, retraining unemployed individuals and upgrading employees’ qualifications; b) organizing courses for training, retraining and advanced training; c) improving working curricula for the study of new technologies; d) offering consultations and practical assistance in the adoption of new technologies; e) developing methodological support, educational materials and software resources; f) hosting seminars and conferences on the integration of new technologies in workforce training (Lvivskyi profesiynyi koledzh sfery obsluhovuvannia ta polihrafi, 2024a).

At the same time, the activities of the Practical Training Centre for the Use of Materials and Technologies from Sniezka-Ukraine LLC focus on enhancing practical and theoretical training of students by implementing the latest production technologies with building materials from the “ŚNIEŻKA” brand (Lvivskyi profesiynyi koledzh sfery obsluhovuvannia ta polihrafi, 2024b). This is accomplished through ongoing collaboration between the

enterprise and the educational institution. The key functions of the TPC include 1) organizing training and professional development courses for students and teaching staff at P(V)EIs; 2) equipping classrooms and workshops with products from the “ŚNIEŻKA” and “VIDARON” brands, along with visual materials; 3) issuing certificates to students upon course completion (Lvivskyi profesiynyi koledzh sfery obsluhovuvannia ta polihrafi, 2024b).

Collaboration with the PTC’s social partners involves established interactions with printing companies in Lviv region and participation in educational-industrial clusters.

Through the Ukraine-Switzerland project “Public-Private Partnership to Improved Sanitary Education in Ukraine”, a practical training centre for training installers of sanitary engineering systems was established at Chernihiv Professional Lyceum of Railway Transport in 2016 (EdUP, 2024). This initiative is supported by the Swiss Agency for Development and Cooperation, Geberit Trading LLC and the Ministry of Education and Science of Ukraine (Chernihivskyi profesiynyi litsei zaliznychnoho transport, 2024). The PTC’s opening has provided the opportunity to learn about current plumbing technologies and equipment, thereby improving the quality of training for students and enhancing the appeal of the lyceum. Students earn diplomas as qualified workers while training for the profession of “Installer of Sanitary Engineering Systems and Equipment” based on their basic secondary education. Additionally, the PTC offers paid courses for adults, which help update equipment and cover material expenses. Participants receive certificates as qualified workers. Since 2016, students have also engaged in national professional skill competitions, securing prize-winning positions. Beyond student training, the PTC supports professional development of educational institution leaders, including assistance in creating a business plan for a centre that will provide housing restoration services. Educators improve their qualifications through courses and conferences organized by the EdUP project, which align with professional standards.

Two practical training centres operate within the public educational institution “Khmelnitskyi Centre for Vocational Education in the Field of Ser-

vices”. They are the following: the Practical Training Centre for Current Sewing Technologies and Design, as well as the Practical Training Centre for Technological Innovations in the Food Industry and Restaurant Business. This innovative and practice-oriented educational space focuses on fulfilling tasks related to both practical training and overall development of students, retraining unemployed individuals, enhancing the qualifications of specialists in the sewing industry, food industry and restaurant business, as well as providing training for P(V)E teachers (Khmelnyska miska rada, 2024; Khmelnytskyi tsentr profesiino-tekhnichnoi osvity sfery posluhy, 2024).

Professions in the sewing industry, restaurant business and food industry are consistently in demand in the labour market. As a result, preparing qualified workers in these fields has become a key priority for the country’s economic development.

The Practical Training Centre for Current Sewing Technologies and Design, which trains workers for the roles of “sewing operator”, “tailor” and “cutter”, was established at the public educational institution “Khmelnyskyi Centre for Vocational Education in the Field of Services” in line with the Ministry of Education and Science of Ukraine Order No 1335 issued on November 4, 2016. It aims to achieve several objectives: 1) to enhance the professional-practical and professional-theoretical training of students; 2) to enhance the qualifications of specialists in sewing enterprises; 3) to retrain unemployed individuals; 4) to provide internships and advanced training for engineering educators in PVEIs (Khmelnyskyi tsentr profesiino-tekhnichnoi osvity sfery posluhy, 2024). The practical training centre engages in active collaboration with various enterprises in Khmelnytskyi, including T-Styl LLC, Pollardi Fashion Group LLC, BEMBI LLC, Anna Sposa TM, Azhur TM, Alvina TM and others, which serve as active social partners.

Also, the Practical Training Centre for Current Sewing Technologies and Design consistently offers advanced training for various categories of specialists. Since its inception, the PTC has facilitated professional development for 105 individuals in the profession of tailoring. Furthermore, it has organized workshops and practical seminars for 573 students from the educational institution, focusing on the latest production technologies for clothing

manufacturing and the use of the CAD-system Julivi for design.

During internships at the centre, P(V)E teachers gain expertise in using information and resource tools for training specialists in the light industry. They learn about the latest production technologies and, through practical sessions, become proficient in applying innovative small-scale mechanization tools and the latest sewing equipment. Additionally, they familiarize themselves with mobile applications relevant to the sewing and fashion industries, including tools for clothing design, augmented reality in fashion, and the Wizer.me platform for conducting asynchronous lessons during remote learning with vocational students, among other applications (Khmelnyskyi tsentr profesiino-tekhnichnoi osvity sfery posluhy, 2024).

The Practical Training Centre for Technological Innovations in the Food Industry and Restaurant Business is dedicated to practical training and professional development for P(V)E students, retraining the unemployed and enhancing the skills of workers in the food industry and restaurant sectors, as well as P(V)E teachers in Khmelnytskyi region. The centre also conducts seminars on topics such as “Regulatory and Technological Foundations for Creating an Innovative Healthy Eating Menu in Educational Institutions” and “CultFood: How to Transform Nutrition in Educational Institutions”. These seminars provide participants with valuable insights into the key principles and programmes for implementing HACCP in the food service sectors of P(V)Es, secondary schools and preschools (Khmelnyska miska rada, 2024).

Moreover, at these centres, within the framework of the “Professional” agency, joint practical sessions for city school students are held. This initiative supports the career orientation of young students toward professional (vocational) education.

Conclusions. Therefore, the activities of practical training centres within P(V)EIs, grounded in public-private partnership principles, facilitate the development and refinement of professional training methods. They provide a professional platform for various formal and non-formal educational initiatives and enhance the quality of training and retraining for unemployed individuals, as well as advanced training for industrial training instructors and P(V)E

teachers. Their objectives include studying and applying the latest technologies and acquiring proficiency with advanced equipment and tools. Additionally, the centres aim to deliver high-quality educational services to target audiences, promote skilled

trades in relevant environments and strengthen the reputation of P(V)EIs through various events.

Future research should explore foreign experience in enhancing practical training for future specialists, particularly through the activities of practical training centres in the P(V)E system.

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НАВЧАЛЬНО-ПРАКТИЧНІ ЦЕНТРИ ЯК ІННОВАЦІЙНІ СТРУКТУРНІ ПІДРОЗДІЛИ ПРОФЕСІЙНОЇ ПІДГОТОВКИ ФАХІВЦІВ НА ЗАСАДАХ ДЕРЖАВНО-ПРИВАТНОГО ПАРТНЕРСТВА

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Реферат:

Актуальність: в умовах інноваційного суспільства, навчально-практичні центри (НПЦ) в закладах професійної освіти відіграють ключову роль у підготовці кадрів, що впливають на економічну стабільність регіонів і держави. Для відновлення національної економіки України важливо підвищити якість людського капіталу через впровадження новітніх технологій і матеріалів в освітній процес.

Мета: проаналізувати роль навчально-практичних центрів на основі державно-приватного партнерства у підготовці висококваліфікованих кадрів в Україні; обґрунтувати їхню значущість для розвитку професійної освіти в умовах інноваційного суспільства.

Методи: контент-аналіз (аналіз документів та матеріалів для виявлення основних тенденцій і підходів); системний аналіз (розгляд НПЦ як частини системи професійної освіти та взаємозв'язків між стейкхолдерами); діяльнісний підхід (аналіз завдань, функцій і ролі НПЦ у професійній освіті).

Результати: детально охарактеризовано діяльність НПЦ в Україні, що вдосконалюють професійну освіту, зокрема, Львівський професійний коледж сфери обслуговування та поліграфії (Міжрегіональний НПЦ комп'ютерних технологій «Digital Learning» поліпшує підготовку учнів і педагогів, впроваджує нові технології, організовує курси і семінари; НПЦ з використання матеріалів та технологій ТзОВ «Снежка-Україна» займається впровадженням нових будівельних технологій, проводить курси підвищення кваліфікації та сертифікацію учнів); Чернігівський професійний ліцей залізничного транспорту (НПЦ з підготовки монтажників санітарно-технічних систем проводить курси, забезпечує якісну підготовку та участь у конкурсах фахової майстерності); ДНЗ «Хмельницький центр професійно-технічної освіти сфери послуг» (НПЦ сучасних швейних технологій та дизайну проводить підготовку і підвищення кваліфікації швейних фахівців; НПЦ технологічних інновацій харчової промисловості організовує семінари і тренінги для покращення харчування в закладах освіти). Вказані НПЦ активно співпрацюють з підприємствами, реалізують проекти з підготовки фахівців і впроваджують новітні технології.

Висновки: Навчально-практичні центри працюють на основі партнерства із зовнішніми стейкхолдерами, розвиваючи платформи новітніх методик професійного навчання і створюючи майданчики для формального та неформального навчання. Вони займаються підготовкою і перепідготовкою незайнятого населення, підвищенням кваліфікації робітників і педагогів, впроваджуючи новітні технології та сучасне обладнання.

Ключові слова: навчально-практичний центр, державно-приватне партнерство, заклад професійної освіти, інноваційне суспільство.

Received: 30 February 2024

Accepted: 08 July 2024



THE CONCEPT OF "PUBLIC-PRIVATE PARTNERSHIP IN THE SPHERE OF VOCATIONAL EDUCATION" IN THE DRAFT LAW OF UKRAINE "ON VOCATIONAL EDUCATION"

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Abstract

Relevance of this article lies in the necessity of defining the concept of "public-private partnership in the sphere of vocational education" to construct prospective and effective models of collaboration between public and private partners in vocational education. This is essential to enhance the quality of training for future specialists tailored to the demands of the wartime labor market and to accelerate post-war recovery in the country.

Purpose. The purpose of the article is to analyze how the concept of "public-private partnership in the sphere of vocational education" is represented in the draft Law of Ukraine "On Vocational Education" as a distinctive framework for the development of vocational education.

Methods. The research methodology includes theoretical methods (analysis to identify the set of characteristics of public-private partnerships in vocational education; abstraction to highlight essential features and distinguish them from other attributes; synthesis to ensure consistency in defining the concept; comparison to establish a generic concept and differentiate specific features; generalization to formulate the definition) and empirical methods (studying literary sources, scientific works, and regulatory documents).

Results. Based on the analysis of regulatory documents and scientific sources, the study identifies the essential characteristics of public-private partnerships in the sphere of vocational education and formulates a definition of "public-private partnership in the sphere of vocational education."

Conclusions. In the context of the provisions of the draft Law of Ukraine "On Vocational Education," the concept of "public-private partnership in the sphere of vocational education" is defined as a collaboration between public partners (state or municipal vocational education institutions) and private partners (enterprises, institutions, organizations, excluding economic entities in the public and municipal sectors of the economy). This partnership is carried out under a contractual framework to enhance the quality of vocational training, retraining, and advanced training for youth and adults.

Keywords: *Public-private partnership, vocational education, vocational education institutions, concept definition, characteristics, purpose, draft Law "On Vocational Education"*

Introduction. Public-Private Partnership (PPP) as a phenomenon is the result of a prolonged evolution in the interaction between the state and private capital. The intensive institutionalization of PPP in developed economies occurred during the second half of the 20th century. The beginning of the 21st century is characterized by the structural and functional diversification of PPP models and the

increasing complexity of PPP relations. From classical concession agreements to progressive forms of joint management and innovative partnerships, each model is adapted to specific needs and conditions. Consequently, at the national level, we observe a diverse interpretation of PPP, even when the relationships between partners remain similar. The practice of implementing PPP across

industries and sectors further complicates the system of relationships between participants and necessitates a more adaptive approach to management and regulation. Such typical challenges have also affected the development of PPP in Ukraine.

The scope of PPP project implementation is critical, as it influences the choice of partnership models, the mobilization of appropriate resources, and the establishment of specific project goals and objectives. The scope determines how relationships between public and private partners are structured, what legislative requirements are applied, and how the interests of all stakeholders are considered.

Thus, the application scope defines the essential characteristics of PPP in vocational education. One notable feature is the unique objective of collaboration, which combines the interests of public and private partners with societal interests—improving the quality of vocational training for future skilled workers. Therefore, it is inappropriate to define "public-private partnership in vocational education" as a derivative of the generic terms "public-private partnership" or "public-private partnership in education."

The development directions of PPP in vocational education are determined by the corresponding foundations of state policy, principles, and concepts enshrined in legislative acts. The central legislative framework is the specialized Law of Ukraine "On Vocational (Vocational-Technical) Education." The draft law "On Vocational Education" may replace the current law in the future, institutionalizing a certain vision of the essence of PPP in vocational education for a prolonged period and establishing the potential for implementing its prospective models. Thus, in this study, the draft law "On Vocational Education" is viewed as a kind of concept for the development of PPP in vocational education.

Sources: The term "public-private partnership" was first defined in Ukrainian legislation by the Law of Ukraine "On Public-Private Partnership" (2010) as cooperation between state authorities, local self-government bodies, and legal entities (excluding state and municipal enterprises) or individual entrepreneurs based on a contract (Paragraph 1, Part 1, Article 1). In essence, the law primarily focuses on the concession of

existing, reconstructed, or newly created large property complexes, infrastructure facilities, and natural resources. Only on May 24, 2016, was the scope of PPP extended to include the provision of educational services, along with the clarification of PPP characteristics, which were incorporated into the definition of "public-private partnership" (On Amendments to Certain Laws of Ukraine to Remove Regulatory Barriers for the Development of Public-Private Partnership and Stimulate Investment in Ukraine (First Edition), 2016, Subparagraph 1, Paragraph 5, Section I).

On September 28, 2017, the new Law of Ukraine "On Education" (2017) recognized PPP as a foundation of state policy in the field of education (Paragraph 33, Part 1, Article 6) and specified the directions for implementing PPP in education (Part 3, Article 81). However, this list does not allow for a clear understanding of the content and scope of the concept of PPP in education. The new Law of Ukraine "On Education" (2017) also created a legal conflict by limiting the range of public PPP partners in education solely to state authorities (Part 2, Article 81). On October 20, 2019, with the entry into force of the new Law of Ukraine "On Concessions" (2019), the term "public-private partnership" was further specified (Paragraph 2, Subparagraph 19, Paragraph 1, Section XII). The public partner is the state body authorized to manage the corresponding state-owned object. Private partners no longer include individual entrepreneurs. However, this law did not resolve the aforementioned legal conflict.

On April 2, 2024, the Ministry of Education and Science of Ukraine presented a draft law "On Vocational Education" (Ministry of Education and Science presents a draft of the new law "On Vocational Education," 2024), which proposes significant changes to the regulatory framework for public-private partnerships (PPP) in the field of vocational education. These changes will, in turn, affect the definition and scope of the concept of "public-private partnership in vocational education." The draft law "On Vocational Education" introduces the following innovations:

- Exclusion of PPP in vocational education from the regulation of the Law of Ukraine "On

Public-Private Partnership" (Draft Law "On Vocational Education," 2024, subparagraph 15, paragraph 4, Section X). As a result, PPP in vocational education will lose mandatory attributes, such as the creation or reconstruction of a partnership object and/or its management; the long-term nature of the relationship; the transfer of part of the risks to the private partner; and the private partner's investment in the PPP object. This also applies to the principles of public-private partnership, including the principle of ensuring greater efficiency than if the activity were carried out by the public partner without private partner involvement.

- Clarification of the list of PPP areas in vocational education in the Law of Ukraine "On Education" (paragraph 39, subparagraph 20, paragraph 4, Section X).

- Establishment of a broad list of PPP areas in vocational education (Part 4, Article 69).

- Narrowing or changing the range of public partners exclusively to vocational education institutions (VEIs) (Part 10, Article 69).

- Removal of the prohibition on transferring state and/or municipal property to private partners for operational management, lease, or concession (paragraphs 42, 52, subparagraph 20, paragraph 4, Section X).

- Preservation of the principle of competitive selection of a private partner in cases where there are two or more applicants, with the terms of the competition approved by the supervisory board of the VEI (paragraph 14, Part 4, Article 44, Part 3, Article 69).

O. Slobodyanyk (2022, p. 168), based on an analysis of a wide range of foreign and domestic scientific sources, defines the essence of "public-private partnership in vocational (vocational-technical) education" as "the interaction of vocational education institutions and business structures based on mutual interests to achieve common goals; as cooperation between the state and business to implement educational projects based on legislative acts and special agreements." Z. Ryabova (2022, p. 248) interprets PPP in vocational education as "cooperation between an educational institution and private organizations in the implementation of an investment project in a specific area of societal activity and achieving a specific social effect during

the project's implementation; as a combination of the joint efforts of an educational institution and private organizations to implement specific projects, resulting in the development of a competitive specialist."

Research by scholars has also revealed that PPP in vocational education is "a system of long-term relationships between public and non-public entities, enabling the expansion of their capabilities for jointly determining goals, assuming responsibility for decision-making, attracting additional investments to improve the quality and accessibility of vocational (vocational-technical) education, modernizing educational infrastructure, improving management technologies, and developing the professional competencies of employees of enterprises and institutions" (Radkevych, Popova et al., 2023, p. 175).

V. Radkevych (2022, p. 110), exploring the principles of PPP development in vocational education, defines PPP in vocational education as "a system of long-term, mutually beneficial contractual economic and organizational relationships between public and non-public entities to attract additional investments for the development of vocational education, increase the level of shared responsibility for decision-making in the public interest, and achieve pedagogical, social, and economic effects."

S. Kravets (2022, p. 132), analyzing the effectiveness of the legal framework for PPP in the development of vocational education, concludes that updating the Law of Ukraine "On Vocational (Vocational-Technical) Education" with the implementation of innovative partnership models and developing a PPP development concept in vocational education based on updated legislation are key pathways for reforming this system.

Thus, scientific research primarily focuses on establishing the essence of the concept of "public-private partnership in vocational education." However, insufficient attention has been paid to identifying a set of attributes for this concept to ensure the consistency of its definition. Moreover, the concept of "public-private partnership in vocational education" has not been studied in the context of prospective changes to special laws regulating the field of vocational education.

Purpose: To analyze the conceptualization of "public-private partnership in vocational

education" as presented in the draft Law of Ukraine "On Vocational Education" as a distinctive framework for the development of vocational education.

Methods: The study employs theoretical methods, including analysis (to identify the set of characteristics of public-private partnerships (PPP) in education), abstraction (to highlight essential features and differentiate them from others), synthesis (to ensure coherence in defining the concept), comparison (to establish a generic concept and specific distinctions), and generalization (to formulate the concept of PPP). Empirical methods were also used, such as the examination of literary sources, scientific works, and regulatory documents. The method of analysis was applied to distinguish the characteristics of PPP in vocational education, abstraction was used to isolate essential features, synthesis facilitated the alignment of the definition, comparison identified general and specific aspects, and generalization enabled the formulation of the concept. Empirical methods supported the analysis of relevant literature, scientific studies, and legal frameworks.

Results and Discussion: PPP can be viewed both as a process and a phenomenon, depending on the context and perspective. As a process, PPP is characterized by dynamism, continuous sequences of actions, and interactions between public and private sectors aimed at achieving a common goal. As a process, PPP unfolds in developmental stages: initiation, planning, implementation, operation and management, evaluation, and closure.

PPP as a phenomenon represents a socio-economic construct—a broad concept reflecting general trends in state-private sector interactions, established models and forms of collaboration, and the social significance of partnership. PPP exists as an influential factor shaping societal and economic structures.

In scholarly literature, the relationships between public and private partners are predominantly characterized by collaboration, cooperation, and interaction. Collaboration and cooperation are often used synonymously (Busel, 2005, p. 1367). The term "interaction" is broader and may refer to relationships between objects and phenomena (Busel, 2005, p. 125). In comparison, "cooperation" implies: a shared goal among

participants, complementary contributions utilizing unique resources for better outcomes than individually possible, coordination of actions and responsibilities, ongoing open communication, and conflict resolution. In this context, PPP should be regarded as a process of cooperation—a sequence of actions by public and private entities to achieve a shared goal. Therefore, cooperation is the closest generic concept for refining the meaning of "public-private partnership in vocational education."

The essence of "public-private partnership in vocational education" lies in the set of characteristics defining PPP as a cooperative process, distinguishing it from other forms of cooperation and rendering it unique. These characteristics should sufficiently unify various PPP processes in vocational education as elements of a single class. The concept encompasses the following key features: the foundation for cooperation, participants, and the purpose of cooperation.

Foundation for Cooperation: The basis of cooperation is an agreement. Legislation establishes that PPP cooperation occurs based on a contract (On Public-Private Partnership, 2010, para. 2, Part 1, Art. 1; On Education, 2017, Part 2, Art. 81). The draft law "On Vocational Education" proposes not only to maintain this approach in vocational education but also to advance it by introducing model PPP agreements specific to vocational education. Developing and approving these agreements would fall under the jurisdiction of the Ministry of Education and Science of Ukraine (Draft Law "On Vocational Education," para. 9, Art. 56, para. 1, 3, Part 1, Art. 69). O. Vynnyk (2023, p. 1, 3) emphasizes that while the contractual form of PPP dominates, international experience underscores the effectiveness of institutional forms. The absence of institutional PPP forms and conditions for their application is considered a shortcoming of Ukraine's current PPP regulatory framework. The draft law "On Vocational Education" proposes amendments to the Law "On Education," introducing co-ownership of educational institutions and legal entities involved in educational activities within PPPs (Draft Law "On Vocational Education," para. 41, subpara. 20, p. 4, Sect. X). Establishing joint educational institutions constitutes the institutional form of PPP (Radkevych, 2024, p. 4). However, this formulation in the draft law may lead to legal

contradictions rather than expand PPP implementation beyond contractual forms.

Participants: The participants are public and private partners, representing the contracting parties in PPPs for vocational education. According to O. Radkevych, the PPP structure comprises public, private, and community sectors. Public sector representatives include authorized state agencies capable of entering into PPP contracts. Private sector participants are legal entities, such as private companies and consortia. The community sector involves financiers, operational consultants, and the general public (Radkevych, 2022, pp. 215–217). Since community sector involvement is optional, only public and private partners are considered essential characteristics of the PPP concept in vocational education.

Legislation categorizes public partners as state bodies managing state assets and local government authorities, while private partners include legal entities other than state and municipal enterprises, institutions, and organizations (On Public-Private Partnership, 2010, para. 2, Part 1, Art. 1). The draft law "On Vocational Education" limits public sector representation to vocational education institutions and includes enterprises, institutions, and organizations without specification in the private partner category (Draft Law "On Vocational Education," para. 1, Part 1, Art. 69). This broad formulation blurs the distinction between public and private sectors, hindering the clear classification of subjects as public, private, or ineligible PPP partners in vocational education. Clarifying the scope of "private partner" requires excluding entities from the state and municipal economic sectors (Commercial Code of Ukraine, 2003, Part 2, 3, Art. 22, Part 3, Art. 24). Similarly, the category of public partners (vocational education institutions) should be limited to state and municipal institutions.

Purpose of Cooperation: The diverse forms of PPP collaboration in vocational education make defining its essence complex, particularly by listing actions or forms of cooperation. The interaction of partners in cooperation aims to achieve a shared goal. While initiating cooperation, each partner pursues individual goals and interests, but some overlap, resulting in a common goal for cooperation.

The cooperation of a private partner with vocational education institutions (VEIs) may be of interest for the following reasons:

- Training employees for their own needs: VEIs prepare workers to meet the specific needs of the private partner's activities, equipping them with the necessary knowledge and skills from the very first day of employment.
- Preparing workers to work with their products: During their training, workers acquire specialized competencies for handling materials, equipment, or technologies produced or supplied by the private partner.

The goals of VEIs, as public partners, are limited to their primary statutory activity—education. Cooperation within the framework of public-private partnerships (PPP) enables VEIs to improve the organization, provision, and implementation of the educational process by utilizing the means prescribed by law and specified in agreements.

Thus, by cooperating with private partners, VEIs aim to enhance the quality of their educational activities, defined as the level of organization, provision, and implementation of the educational process that ensures individuals receive quality education in compliance with the requirements established by legislation and/or the contract for the provision of educational services (*On Education*, 2017, para. 30, part 1, article 1).

The means of improving the quality of educational activities include: funding VEIs by private partners; updating and modernizing the infrastructure and material-technical base of VEIs; revising standards and curricula to align with labor market needs; introducing modern forms, methods, and technologies of teaching and practical training; and ensuring industrial practice or internships are provided by private partners (Lulkova, 2023, pp. 123-125).

Therefore, the shared goal of cooperation between public and private partners in vocational education is to enhance the quality of vocational training, retraining, and skills upgrading for youth and adults.

The defining characteristics of cooperation in the field of vocational education are the set goal of cooperation and the specific category of public partners—vocational education institutions.

Other characteristics of PPPs, such as "long-term relationships, combining the assets and managerial skills of public and private partners, mutual benefits, risk distribution, maintaining public or communal ownership of PPP facilities, ensuring the provision of high-quality and cost-effective services (as an indicator of PPP efficiency), and meeting public interests" (Dutko, 2020, p. 111), are not considered essential attributes of the concept of public-private partnerships in vocational education. Additionally, the long-term nature of relationships as a characteristic must have quantitative parameters proportionate to different forms of cooperation. The integration of assets and management skills (resources) of public and private partners, mutual benefits, and risk sharing are attributes partially encompassed by the broader concept of "cooperation" and are material terms of PPP agreements. Ensuring the provision of high-quality and cost-effective services, as well as meeting public

interests, is incorporated into the defined goal of partnership in vocational education.

Conclusions: Summarizing the concept of "public-private partnership in vocational education" within the context of the draft law *On Vocational Education*, we define it as cooperation between public partners (state or communal VEIs) and private partners (enterprises, institutions, organizations, excluding business entities in the state and communal sectors of the economy) based on a contract aimed at enhancing the quality of vocational training, retraining, and skills upgrading for youth and adults. This specific definition allows for the construction of promising and effective models of cooperation between VEIs and private partners in the context of their practical implementation and enables a comparative analysis of theoretically defined conceptual directions for the development of PPPs in vocational education.

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ЗМІСТ ПОНЯТТЯ «ДЕРЖАВНО-ПРИВАТНЕ ПАРТНЕРСТВО У СФЕРІ ПРОФЕСІЙНОЇ ОСВІТИ» У ПРОЄКТІ ЗАКОНУ УКРАЇНИ «ПРО ПРОФЕСІЙНУ ОСВІТУ»

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Реферат:

Актуальність статті зумовлена необхідністю визначення змісту поняття «державно-приватне партнерство в сфері професійної освіти» для побудови перспективних та ефективних моделей співпраці державних і приватних партнерів у сфері професійної освіти для підвищення якості підготовки майбутніх фахівців для воєнного ринку праці і прискорення повоєнного відновлення країни

Мета: проаналізувати представлення поняття «державно-приватне партнерство у сфері професійної освіти» у змісті проєкту Закону України «Про професійну освіту» як своєрідної концепції розвитку професійної освіти.

Методи: теоретичні (аналізу – для виділення сукупності ознак державно-приватного партнерства у сфері професійної освіти, абстрагування – для виділення істотних ознак і відокремлення їх від інших характеристик, синтезу – для забезпечення співмірності визначення поняття; порівняння – для встановлення родового поняття і видової відмінності; узагальнення – для формулювання поняття), емпіричні (вивчення літературних джерел, наукових праць, нормативно-правових документів).

Результати: на основі аналізу нормативно-правових документів і наукових джерел визначено сутнісні ознаки державно-приватного партнерства в сфері професійної освіти, сформульовано поняття «державно-приватне партнерство у сфері професійної освіти».

Висновки: в контексті положень проєкту закону «Про професійну освіту» поняття «державно-приватне партнерство у сфері професійної освіти» визначено як співпрацю між державним партнером (державними або комунальними закладами професійної освіти) та приватними партнерами (підприємствами, установами, організаціями, крім суб'єктів господарювання державного та комунального сектора економіки), що здійснюється на основі договору з метою підвищення якості професійної підготовки, перепідготовки та підвищення кваліфікації молоді та дорослого населення.

Ключові слова: державно-приватне партнерство, професійна освіта, заклади професійної освіти, зміст поняття, ознаки, мета, проєкт закону «Про професійну освіту».

Received: 13 March 2024

Accept: 08 July 2024



THE ROLE OF ADVISORY BODIES IN THE DEVELOPMENT OF VOCATIONAL EDUCATION

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Abstract

The relevance of the article is driven by the need to develop vocational education and adapt it to rapid changes in the labor market and technological innovations. Advisory bodies play a crucial role in this process by facilitating the integration of vocational education with economic demands. They ensure that educational programs align with contemporary professional standards and support the introduction of new technologies and teaching methodologies. Engaging representatives from business and civil society in advisory bodies expands the practical components of vocational training. Moreover, advisory bodies initiate innovative projects that enhance the competitiveness of vocational education graduates in the labor market. This synergy improves the quality of vocational training for future skilled workers, aligning it with employers' requirements.

The purpose of this study is to substantiate the role of advisory bodies in the development of vocational education and their impact on improving the quality of skilled workforce training in line with the demands of the modern labor market.

Research methods. The study employed an analysis of scientific literature and regulatory documents governing the activities of advisory bodies to examine them as an integral part of the vocational education system. A comparative method was used to analyze international experiences and documents outlining the role of advisory bodies in the development of educational programs and curricula to meet labor market needs. The interpretative method facilitated the formulation of conclusions and recommendations aimed at enhancing the effectiveness of advisory bodies in advancing vocational education.

Results. The study investigated key advisory bodies influencing the development and quality assurance of vocational education, substantiating their main functions (consultative, expert-analytical, coordination, informational-educational, monitoring, and evaluation). It clarified the composition and purposes of participation in such bodies, characterized the primary challenges they face, and formulated recommendations to improve their effectiveness.

Conclusions. Advisory bodies play a pivotal role in establishing connections between vocational education institutions, the labor market, governmental structures, and public organizations. Their main functions include analyzing economic trends, developing recommendations for modernizing vocational education content, participating in the formation of strategies and policies, fostering democratization in decision-making, adapting vocational education to current economic challenges, and integrating it into the international educational space. The influence of advisory bodies is determined by broad representation of various stakeholder groups, their authority, and experience in workforce training. Through their activities, graduates of vocational education institutions acquire competitive skills aligned with the needs of the modern labor market. Particular emphasis is placed on partnerships with businesses, ensuring the integration of practical experience into the educational process and promoting the development of dual education models. However, advisory bodies also face challenges, such as limited resources, inadequate funding, legal uncertainties, and weak communication among partnership participants. Improving their organization requires more precise definitions of their status, powers, and mechanisms of interaction with other educational process participants, enhanced funding, diversified formats of work, increased participation in international projects, and digitalization of communication processes.

Keywords: vocational education, advisory bodies, labor market, employer councils, vocational education development councils, regional vocational education councils.

Introduction. Under modern conditions, vocational education plays a key role in ensuring a country's economic growth and social development. Technological progress, globalization, and dynamic changes in the labor market require educational systems, and vocational education in particular, to be flexible and adaptive to new challenges (European Commission, 2020). In this context, advisory bodies have become an integral part of the modernization process in vocational education, contributing to its alignment with the contemporary needs of the economy and society. According to UNESCO recommendations, advisory bodies in education are defined as groups of experts and stakeholders that provide consultations to governments and educational institutions regarding policies and practices in education, particularly vocational education and training (UNESCO, 2019). These bodies ensure interaction between educational institutions, employers, government authorities, and other stakeholders to improve the quality of education and align it with labor market demands (World Economic Forum, 2020).

In Ukraine, where the vocational education system is undergoing reform, the role of advisory bodies is particularly significant. They are established to facilitate effective collaboration among educational institutions, governmental authorities, employers, and other stakeholders, aiming to develop and implement state policy in the field of vocational education. They serve as platforms for analyzing current trends, exchanging experiences, and providing recommendations for improving educational programs and enhancing the quality of professional training for specialists. In other words, advisory bodies in vocational education are collegial structures established to offer expert consultations and recommendations and to assist in decision-making related to the development of vocational education. The involvement of advisory bodies in shaping state educational policy, management, and the development of educational and training programs enables the integration of advanced technologies and innovations into the educational process, ensuring professional training of future qualified specialists in line with employers' requirements. Advisory bodies also facilitate the introduction of European standards into vocational education to improve its quality and competitiveness

on the international level (Ministry of Education and Science of Ukraine, 2020).

Sources: The functioning of advisory bodies in the vocational education sector in Ukraine is regulated by several legal acts that define their status, powers, and principles of operation. The principles include transparency, collegiality, and accountability for decisions made. These principles are widely applied in the development of public-private partnerships in vocational education to ensure transparency in management as well as the efficiency of contractual relations and private investment regulation (Radkevych, 2022a). Key documents regulating the operation of advisory bodies in vocational education include: the Law of Ukraine "On Education" (2017), which provides for the possibility of creating advisory bodies to ensure public participation in education management. Article 28 of this law states that public self-governance in an educational institution is implemented through the activities of public councils and other advisory structures, which have the right to collectively address issues related to the organization and provision of the educational process, protection of the rights and interests of participants in the educational process, organization of leisure and health improvement, participation in public oversight (control), and in the management of the educational institution within the powers defined by the law and the institution's founding documents; the Law of Ukraine "On Vocational (Vocational-Technical) Education" (1998), which specifies norms regarding the creation of sectoral and regional councils for vocational education that perform consultative and coordinating functions. The law emphasizes the importance of cooperation with employers and their associations in shaping educational content; the Law of Ukraine "On Professional Pre-Higher Education" (2019), which, in Article 39, "Working and Advisory Bodies of Professional Pre-Higher Education Institutions," establishes the right to create advisory or advisory-consultative bodies (such as employer councils, investor councils, business councils, and educational-methodological councils) to develop strategies and directions for the educational and other activities of the institution, unless otherwise provided

by its founding documents; the Law of Ukraine "On Public Associations" (2012), which regulates the legal status of public organizations that may act as public advisory bodies in vocational education and defines the procedure for creating, operating, and terminating public associations that have the right to influence educational policy. According to Article 22 of this law, public authorities and local self-government bodies may involve public associations in the process of forming and implementing state policy and resolving local issues, including through consultations with public associations on significant matters of state and public life, developing draft normative legal acts, and establishing consultative and advisory bodies at state and local levels involving representatives of public associations.

Advisory bodies are the subject of research by many international organizations as they play a key role in aligning vocational education with labor market needs and improving its quality. According to UNESCO (2015), advisory bodies act as a bridge between vocational education and the labor market, ensuring the adaptation of educational programs to current economic needs. Research by the OECD (2019) highlights the active involvement of employers in the work of advisory bodies in vocational education institutions in EU countries to develop relevant educational and training programs and improve graduate employability. Such collaboration positively impacts the reduction of the gap between the skills provided to future specialists by educational institutions and those required in the workplace. Analyses of foreign sources underscore the critical role of regional and sectoral councils in vocational education in aligning educational programs with the needs of regional economies and specific industries. Scientific literature examines their role, challenges, and prospects for development. Regional councils, in particular, facilitate coordination between educational institutions, local authorities, and employers. They help identify regional labor market needs and adapt educational programs accordingly (Cedefop, 2013). According to research by the European Training Foundation (ETF, 2018), countries with developed vocational education and training systems have effectively functioning advisory bodies that actively cooperate with businesses and other partners. This ensures the flexibility of vocational education systems and their

ability to respond promptly to economic changes. For example, in countries like Germany and Switzerland, regional and sectoral councils, through collaboration between the state, business, and educational institutions, effectively influence the development of educational standards and programs, positively impacting the quality of professional training for specialists (Busemeyer & Trampusch, 2012). Studies of the specific functions of sectoral councils (OECD, 2010) show that they unite representatives of specific economic sectors and play a key role in developing professional standards and qualification requirements. At the same time, M. Pilz (2016) notes challenges in engaging all stakeholders in the activities of sectoral councils, as the interests of employers, educational institutions, and government authorities do not always align. As emphasized by Cedefop (2020), such challenges include insufficient coordination between different levels of governance and limited resources. According to ETF (2015), in certain EU countries, regional councils face difficulties in influencing national educational policy, reducing their effectiveness.

The theoretical foundations of the functioning of advisory bodies in vocational education have also been explored in the works of Ukrainian researchers. Specifically, the role of sectoral councils in the development of vocational education has been substantiated by O. Kozak (2017). He analyzed the necessity of active participation of sectoral councils in the formation of educational standards and curricula, considering the alignment of graduates' skills with modern technological requirements. In view of this, the researcher recommends improving the regulatory and legal support for the functioning of regional and sectoral councils, ensuring proper funding, and stimulating employers' participation in this process.

The peculiarities of the functioning of public consultative-advisory bodies, taking into account international experience, have been studied by T. Andriychuk (2024), particularly the dependence of this form of interaction with civil society not only on formal factors (type of bodies, method of formation, legal status) but also on integrity and attitude towards cooperation with the public. The features of interaction between public governance bodies and consultative-advisory bodies have been researched by I. Kovbas et al. (2022), and V. Nesterovych (2017)

explored the content of the concept of "consultative-advisory bodies" as a category of constitutional law. He stated that these bodies are currently a widespread organizational and legal form of direct interaction between the public and public authorities. The role of these bodies lies in ensuring interaction between state structures and civil society.

The prospects for the functioning of public advisory bodies have been revealed by L. Usachenko (2009). The article considers formal factors such as the types of bodies, methods of their formation, and legal status, as well as informal aspects, including integrity and attitude towards cooperation with the public. The author emphasizes the importance of public advisory bodies in the decision-making process and their impact on improving the quality of public administration. At the same time, insufficiently studied are the issues of the influence of advisory bodies on the development of vocational education, its adaptation to rapid changes in the labor market and technological innovations.

The purpose of the study is to substantiate the role of advisory bodies in the development of vocational education and their impact on improving the quality of training qualified workers in accordance with the needs of the modern labor market.

Research methods: analysis of scientific literature and regulatory-legal documents that regulate the activities of advisory bodies – to consider them as part of the integrated system of vocational education; comparative method – to analyze foreign experience and documents that define the role of advisory bodies in the development of educational programs and curricula and their compliance with labor market needs; interpretative method – to formulate conclusions and recommendations that allow increasing the effectiveness of the influence of advisory bodies on the development of vocational education.

Results and discussion. Advisory bodies, as instruments of public self-governance in vocational education, contribute to the democratization of management processes and ensure transparency in decision-making. They can function at various levels – from national to local – and cover a wide range of issues related to the development of vocational education. Advisory bodies often unite representatives of business and industry, which

allows ensuring the relevance of educational and training programs and the compliance of skills of graduates from vocational education institutions with the real requirements of employers. They can participate in the development of professional and educational standards, accreditation of educational programs, evaluation of the quality of vocational education, and the implementation of innovative teaching methods. Advisory bodies also play an important role in policy formation in the field of vocational education, providing recommendations to state bodies regarding strategic directions of its development, financing, and regulatory-legal regulation. This contributes to more effective use of resources and increases the competitiveness of future qualified specialists in national and international labor markets.

The main purpose of the activities of advisory bodies is to promote the integration of vocational education with the needs of the modern labor market, ensuring high employment prospects for graduates; analyzing and evaluating educational programs and standards; involving experts from various sectors of the economy in developing recommendations for improving the content of educational programs, increasing the level of their practical component, and so on. In particular, the participation of advisory bodies in the processes of monitoring and evaluating educational programs allows identifying problematic issues and implementing measures to improve them, taking into account the principles of inclusivity and ensuring equal access to quality vocational education for all categories of the population. This positively affects the adaptation of educational programs to the needs of persons with special educational needs, ensuring their compliance with modern labor market requirements and technological trends. Advisory bodies monitor the compliance of educational programs with international requirements, implement pedagogical innovations in the educational process, initiate pilot projects, and create conditions for the application of digital technologies in vocational education, supporting the development of online learning, virtual and augmented reality technologies, and other digital tools. This expands access to quality vocational education. Advisory bodies also promote the professional development of teaching staff by conducting trainings, seminars, and exchanging

experiences, which positively affects the increase of their innovative competence (Radkevych, 2023).

Advisory bodies perform several critical functions aimed at developing and enhancing the quality of vocational education: a *consultative* function to provide recommendations on shaping educational policy, developing strategies for vocational education improvement, and refining the regulatory framework; an *expert-analytical* function to study labor market needs, analyze current trends in vocational education, and evaluate the effectiveness of educational and training programs; a *coordination* function to ensure collaboration among vocational education institutions, employers, government bodies, and other stakeholders for harmonizing joint actions (Ministry of Education and Science of Ukraine, 2021); an *informational-educational* function to disseminate information about innovative educational technologies, advanced teaching methods, and successful practices from other countries; and a *monitoring and evaluation* function to oversee the quality of vocational education, conduct audits, and accredit educational programs.

In the context of vocational education, advisory bodies may include representatives from: vocational education institutions, to provide information about educational and training programs and resource needs; employers and trade unions, to ensure the relevance of skills and competencies acquired in vocational institutions; government bodies, to align educational policy with national development priorities; and civil society organizations and experts, to incorporate social aspects and innovative approaches into vocational education.

Advisory bodies in vocational education can be classified by their status, field of activity, and level of influence. The main types of such bodies include state, public, and international advisory bodies. Specifically, *state advisory bodies* are established by the government or relevant ministries to provide expert recommendations on the development of vocational education at the national level. They participate in forming national educational policies, developing state standards and qualification requirements, and ensuring that vocational education meets economic demands. An example of such a body in Ukraine is the *National Qualifications Agency*, a key collegial body in the field of vocational

education and qualifications, which coordinates the implementation of the National Qualifications Framework (Cabinet of Ministers of Ukraine, 2019). The agency is responsible for developing and implementing the National Qualifications Framework, collaborating with sectoral councils, and ensuring the alignment of qualifications with labor market needs.

A common form of interaction between state authorities, local governments, and civil society institutions or citizens is *public advisory (consultative) bodies*. These bodies can be established both at the national level (by governments, executive authorities, and, less frequently, parliaments or presidents) and at the local level (by local self-government bodies, communities, or non-governmental organizations). Each has specific functions and tasks, and their structure can be complex, involving agreements between parties, including the state (Radkevych, 2022c). Such bodies include professional associations, employer unions, non-governmental organizations, and other entities representing public and business interests. They help establish connections between vocational education institutions and the labor market, provide recommendations on the content of educational and training programs, organize internships and practical training for students, and ensure the flexibility and adaptability of vocational education to contemporary challenges. A notable example is the *Council for the Development of Vocational Education* under the President of Ukraine (Presidential Decree, 2021). Its primary tasks include monitoring the development of vocational education and ensuring citizens' right to quality and accessible vocational education; analyzing Ukrainian legislation in vocational education and preparing proposals for its improvement; studying labor market trends and forecasting priority directions and pathways for the development of vocational education; proposing the formation of modern professional competencies necessary for personal and professional development; addressing issues related to enhancing the capacity of vocational education institutions, including improving financing mechanisms; and fostering collaboration among state authorities, local governments, enterprises, institutions, and vocational education establishments to create a modern educational environment that ensures citizens' rights

to quality and accessible vocational education and respects the rights of participants in the educational process.

In the formation and implementation of regional policy in vocational education, *regional councils for vocational education* play a crucial role (Ministry of Education and Science of Ukraine, 2017). Their main tasks include promoting the formation and implementation of regional vocational education policies; providing proposals for developing regional strategies for vocational education; initiating studies on the state and trends of regional labor markets; preparing forecasts for skilled labor needs in regional labor markets; developing proposals for regional training orders for workers and specialists based on labor market analyses; approving regional training orders for workers and specialists; recommending the development of vocational education networks and their financing; ensuring access to vocational education; supporting the modernization of the material and technical base of vocational education institutions and introducing modern production technologies into the educational process; attracting domestic and foreign investors and international projects to support regional vocational education; fostering public-private partnerships; promoting the implementation of dual education and workplace training; and providing recommendations on defining regional policies in career guidance and creating lifelong learning opportunities.

Advisory bodies also play an important role in the development and updating of professional standards, ensuring consistency between educational outcomes and professional requirements. For instance, *sectoral expert councils*, in collaboration with employers, develop professional standards that define the requirements for professional competencies (National Qualifications Agency, 2023). This enhances the quality of vocational education and facilitates the recognition of qualifications at both national and international levels. Furthermore, *employers' councils at vocational education institutions* help establish effective links between vocational schools and employers to improve the quality of vocational training through systematic collaboration with enterprises and organizations. Their role includes identifying priority areas for vocational training in response to labor market needs, developing strategies

for vocational institutions considering current trends and technological changes in various industries, conducting expert evaluations of educational program content, providing recommendations for improving the quality of practical training, supporting the modernization of the material and technical resources of vocational training facilities to introduce new production technologies, analyzing regional employment opportunities for graduates, and attracting additional funding for vocational institutions.

Taking into account that Ukraine is a member of international organizations such as UNESCO (2019) and the International Labour Organization (2023), it assumes obligations to implement their recommendations regarding the development of advisory structures in vocational education. Specifically, these recommendations concern participation in the design of educational and training programs, assessment of the quality of vocational education, and ensuring that the content of training aligns with labor market needs. Advisory structures also contribute to discussions on the prospects for developing and improving the vocational education system, addressing key challenges faced by advisory bodies, and identifying potential solutions. These efforts are guided by trends in public-private partnerships in vocational education and training within the European Union (Radkevych, 2022b). Consequently, international advisory bodies operate in Ukraine at both global and regional levels, influencing the development of vocational education by facilitating the exchange of experiences and promoting the academic mobility of students and teaching staff. These bodies support the harmonization of Ukraine's vocational education system with international standards, foster innovation, and provide access to best practices. For example, UNESCO's Recommendations on Technical and Vocational Education and Training (2015) emphasize the importance of partnerships between the state, employers, and educational institutions.

Conclusions: The main advisory bodies influencing the development and quality assurance of vocational education include the Council for the Development of Vocational (Technical) Education under the President of Ukraine, regional councils for vocational (technical) education, sectoral expert

councils, employer councils at vocational education institutions, and international advisory bodies. These bodies perform several functions aimed at enhancing and developing vocational education. Their roles include: *consultative*, providing recommendations on educational policy formation, the development of strategies for vocational education, and improvements to the legal and regulatory framework; *expert-analytical*, studying labor market needs, analyzing current trends in vocational education development, and assessing the effectiveness of educational and training programs; *coordinative*, ensuring collaboration among vocational education institutions, employers, government bodies, and other stakeholders, and aligning joint actions; *informational-educational*, disseminating information about the latest educational technologies, innovative teaching methods, and successful international experiences; *monitoring and evaluation*, conducting quality control of vocational education, including audits and accreditation of educational programs.

Advisory bodies may include representatives from vocational education institutions, who provide information on educational programs and resource needs; employers and professional unions, who ensure the relevance of skills and competencies; government bodies, who align educational policies with national development priorities; and public organizations and experts, who address social aspects and innovative approaches in vocational education.

Advisory bodies play a pivotal role in developing vocational education by fostering links between vocational institutions, the labor market, and government structures, facilitating the integration of education with economic needs. They analyze economic sector trends and provide recommendations on the knowledge and skills future specialists should acquire. This enables vocational education graduates to remain competitive and in demand in the labor market. Representatives of advisory bodies participate in designing strategies and policies in vocational education, providing expert recommendations to government bodies to support informed decision-making and efficient resource use. Advisory bodies are also drivers of reform, focusing on modernizing vocational education, aligning it with European standards, and democratizing decision-making processes by incorporating diverse

stakeholder perspectives and ensuring transparency in their activities.

The impact of advisory bodies on vocational education development is significant and multifaceted. They act as catalysts for change, enhancing the quality of education and its alignment with current labor market demands while facilitating integration into the international educational space. Effective operation of advisory bodies ensures synergy among all stakeholders and creates conditions for the sustainable development of vocational education. Through these bodies, partnerships between educational institutions and employers are established. Their influence involves adapting vocational education content to contemporary economic requirements, increasing the practical orientation of training, and providing learners with real-world work experience (Ministry of Education and Science of Ukraine, 2020). Advisory bodies support the development of a continuous vocational education system, enabling professionals to update their knowledge and skills throughout their careers. Notably, partnerships with businesses and industries make it possible to engage employers in organizing internships and apprenticeships for vocational education students and sharing resources. Moreover, involving the public and vocational education students in advisory bodies helps consider the needs and expectations of learners, parents, and communities, thus improving the quality and accessibility of vocational education.

Despite their significant role, advisory bodies face several challenges, including limited resources and funding (insufficient financial support restricts the implementation of educational programs), inadequate legal support (a lack of clear legislative regulation complicates the activities of advisory bodies and reduces their efficiency), and communication barriers (insufficient interaction among stakeholders leads to uncoordinated actions and decision-making).

To enhance the functioning of advisory bodies in vocational education, the following measures are essential: developing and implementing legislative acts that clearly define their status, authority, and mechanisms for interaction with other educational process stakeholders; allocating sufficient financial resources to support their activities, which would allow for the engagement of

qualified experts and the implementation of strategic projects; organizing training sessions, seminars, and programs to exchange experiences among advisory body members to improve their competence and effectiveness; active participation in international projects to exchange best practices and implement innovations; integrating digital tools into the activities of advisory bodies to optimize management processes and improve communication; actively involving business representatives in advisory bodies to adapt vocational education to labor market needs;

and introducing a dual system of vocational education that combines theoretical training with practical work in enterprises.

Thus, advisory bodies serve as platforms for collaboration among various stakeholders in the educational process. They play a crucial role in shaping a flexible and adaptive vocational education system capable of responding promptly to economic and technological changes, ensuring high-quality training for future specialists in line with labor market demands.

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РОЛЬ ДОРАДЧИХ ОРГАНІВ У РОЗВИТКУ ПРОФЕСІЙНОЇ ОСВІТИ

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Реферат:

Актуальність статті зумовлена необхідністю розвитку професійної освіти, її адаптації до швидких змін на ринку праці й у технологічних інноваціях. Дорадчі органи відіграють важливу роль у цьому процесі, сприяючи інтеграції професійної освіти з економічними потребами. Вони забезпечують відповідність освітніх програм сучасним професійним стандартам і підтримують впровадження нових технологій і методик навчання. Залучення представників бізнесу та громадськості до участі в дорадчих органах сприяє розширенню практичного складника змісту професійного навчання. Дорадчі органи також ініціюють інноваційні проєкти, що підвищують рівень конкурентоспроможності випускників закладів професійної освіти на ринку праці. Така синергія підвищує якість професійної підготовки майбутніх кваліфікованих робітників професійної освіти відповідно до вимог роботодавців.

Метою дослідження є обґрунтування ролі дорадчих органів у розвитку професійної освіти та їх впливу на підвищення якості підготовки кваліфікованих робітників відповідно до потреб сучасного ринку праці.

Методи дослідження: аналіз наукової літератури та нормативно-правових документів, що регламентують діяльність дорадчих органів – для розгляду їх як частини інтегрованої системи професійної освіти; порівняльний метод – для аналізу зарубіжного досвіду та документів, які визначають роль дорадчих органів у розробленні освітніх програм і навчальних планів та їх відповідності потребам ринку праці; інтерпретаційний метод – для формулювання висновків і рекомендацій, що дає змогу підвищити ефективність впливу дорадчих органів на розвиток професійної освіти

Результати: досліджено основні дорадчі органи, що мають вплив на розвиток і забезпечення якості професійної освіти; обґрунтовано основні їхні функції (консультативну; експертно-аналітичну; координаційну; інформаційно-просвітницьку; моніторингово-оцінювальну); з'ясовано, хто і з якою метою може входити до їх складу; охарактеризовано основні виклики, з якими їм доводиться стикатися; сформульовано рекомендації з підвищення результативності діяльності.

Висновки: дорадчі органи відіграють ключову роль у забезпеченні зв'язку між закладами професійної освіти, ринком праці, державними структурами та громадськими організаціями; основні їх функції охоплюють аналіз економічних тенденцій, розроблення рекомендацій для модернізації змісту професійної освіти, участь у формуванні стратегій і політик, сприяння демократизації прийняття рішень, адаптації професійної освіти до сучасних економічних викликів та її інтеграції в міжнародний освітній простір; впливовість дорадчих органів визначається широким представництвом різних груп стейкхолдерів, їх авторитетом і досвідом роботи у сфері підготовки робітничих кадрів; завдяки діяльності дорадчих органів випускники закладів професійної освіти отримують конкурентоспроможні навички, що відповідають потребам сучасного ринку праці; особлива увага ними приділяється партнерству з бізнесом, що забезпечує інтеграцію практичного досвіду в освітній процес та розвиток дуальної форми здобуття професійної освіти; дорадчі органи стикаються також із викликами (обмежені ресурси, недостатнє фінансування, правова невизначеність, слабка комунікація між учасниками партнерства); потребують удосконалення механізми організації їхньої роботи (більш чітке визначення статусу, повноважень і механізмів взаємодії з іншими суб'єктами освітнього процесу; удосконалення фінансування; урізноманітнення форм роботи; активізація участі у міжнародних проєктах; цифровізація комунікаційних процесів тощо).

Ключові слова: *професійна освіта, дорадчі органи, ринок праці, ради роботодавців, ради розвитку професійної освіти, регіональні ради професійної освіти.*

Received: 13 March 2024

Accept: 08 July 2024



INNOVATIVE COMPETENCY OF INSTRUCTORS AS A TOOL FOR MODERNIZING VOCATIONAL EDUCATION

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Abstract

The relevance of this article is dictated by the need to develop the innovative competencies of vocational education instructors, considering the dynamic changes in the labor market as well as processes of globalization and digitalization, which actively influence the transformation of the educational system. Modern employers require from professionals not only the presence of professional knowledge but also the ability to adapt to new production conditions, to think critically, and to solve complex tasks. Consequently, vocational education must modernize in response to contemporary challenges, and instructors must be prepared for innovative professional activity to integrate cutting-edge technologies into the educational process.

The aim of this article is to identify and substantiate the key components of the innovative competency of vocational education instructors and contemporary approaches to its development in the context of labor market requirements and technological changes in economic sectors.

Research methods: analysis of scientific sources, legislative and regulatory documents, empirical data to determine the extent of research problem development; surveys for gathering quantitative data on the state of development of the instructors' innovative competencies; semi-structured interviews to identify barriers hindering the integration of new technologies into the educational process; observation for the objective evaluation of instructors' use of innovative approaches in their work; and synthesis and systematization to formulate conclusions, recommendations, and perspectives for further research.

Results: The main components of the innovative competency of vocational education instructors have been identified; traditional and modern approaches to the development of innovative competencies have been substantiated; organizational, psychological, and technological barriers that limit the development of innovative competencies have been identified; modern forms of professional development for vocational education instructors that foster innovative competency have been substantiated; the role of digital technologies in stimulating innovative competency has been revealed; recommendations for enhancing the level of innovative competency of vocational education instructors have been formulated.

Conclusions: The study has determined that the innovative competency of vocational education instructors is a key factor in modernizing the educational process and ensuring its alignment with the contemporary labor market demands. The key components of the instructors' innovative competency include professional knowledge and skills, creative thinking, research skills, skills in pedagogical innovation, communication skills, teamwork and collaboration skills, and adaptability and flexibility. The development of instructors' innovative competency is based on traditional (classical, informational-reproductive) and modern (competency-based, problem-oriented learning, constructivist, project-based, acmeological, interactive, inclusive, digital) approaches. Modern forms of professional development for vocational education instructors that develop innovative competency include short-term courses and trainings; online courses and webinars; coaching and mentorship; participation in international projects; self-development and self-education; internships, etc.

Survey results confirmed the importance of developing digital skills and the ability of instructors to integrate new technologies into the educational process. However, the main obstacles to effective innovation implementation were found to be certain objective and subjective barriers, including insufficient technical support and limited resources, fear of change, and low motivation for professional development. This highlights the need for a comprehensive approach to developing instructors' innovative competency, which includes targeted professional development programs, their support, and stimulation of innovative activity.

Keywords: instructors, innovative competency, vocational education, professional development, labor market, digital technologies.

Introduction. Under modern conditions, vocational education in Ukraine is undergoing dynamic changes driven, on the one hand, by scientific and technological progress and globalization processes, and on the other, by evolving labor market demands. Contemporary employers increasingly seek professionals with digital technology skills, which are now an essential component of professional qualifications across many industries. At the same time, the widespread adoption of artificial intelligence and automated production management systems requires workers to have a deep understanding of technological processes and the ability to quickly adapt to new professional environments. Employers also emphasize the importance of soft skills such as constructive communication, critical thinking, creativity, and teamwork. Moreover, labor market globalization heightens the need to prepare specialists capable of working in international companies, understanding the nuances of various cultures, and being proficient in foreign languages. Consequently, vocational education, as a key segment in training a skilled workforce for the national economy, must meet these demands. This requires not only modernizing educational programs and teaching methodologies but also implementing new approaches to organizing the educational process in vocational education institutions. In this context, the innovative competency of instructors is a crucial tool for modernizing the preparation of future specialists. The ability of instructors to develop and implement new approaches, forms, and methods of teaching directly influences the quality of vocational education (Radkevych, 2024a).

Sources: Developing the innovative competency of instructors in vocational education institutions is a priority of contemporary educational reforms in Ukraine and many other countries. These reforms focus on modernizing vocational education by encouraging educators to apply a competency-based approach and innovative teaching methods. The Law of Ukraine "On Education" (2017) defines the formation of innovative competency among teaching staff as a key aspect of education development. Particular attention is given to fostering digital

competency and integrating digital resources into the educational process, aligning with global trends in the digitalization of education and the economy. This is evidenced by the introduction of new professional standards emphasizing digital literacy, critical thinking, creativity, and entrepreneurship among educators (Schleicher, 2018). Furthermore, significant emphasis is placed on the continuous professional development of instructors through qualification enhancement programs and online courses, which enable rapid acquisition of new methodologies and digital tools (European Commission, 2022).

The theoretical foundations of developing the innovative competency of vocational education instructors have been elaborated in the works of domestic and foreign researchers. These studies focus on approaches to defining the content of innovative competency in educators, specifically the ability of individuals to successfully conduct innovative pedagogical activities. Such competency is based on a balanced combination of theoretical knowledge in pedagogical innovation; domain-specific, methodological, and methodological knowledge; skills for creating, evaluating, mastering, and applying pedagogical innovations in organizing the educational process; and moral and ethical values. It also encompasses interests and aspirations for innovation, alongside essential qualities such as creativity, a commitment to continuous innovation, perseverance in self-development and self-improvement, self-criticism, high creative potential, diverse interests, tolerance, and broad-mindedness. These attributes contribute to high levels of education and training among vocational education students (Kurok & Korotych, 2024). Research explores instructors' ability to integrate scientific and technological advancements into the educational process, thereby preparing specialists with competencies relevant to the labor market, and their readiness to seek new solutions to pedagogical challenges, implement innovative technologies, and create interactive learning environments that foster critical thinking among vocational education students (Radkevych, 2022a). The studies also examine instructors' possession of

methodological and pedagogical skills necessary for organizing the educational process at a contemporary level, effective communication with students, and adapting curricula to meet individual needs (Dubaseniuk, 2010). Additionally, they investigate educators' proficiency in digital literacy, their ability to use distance learning tools, and their capacity to integrate information technology into the educational process (Tolochko, 2021). The ability to work in teams, communicate effectively with colleagues, and ensure productive collaboration, especially in the context of implementing reforms in vocational education, is also highlighted (Ternopilska, 2012). Furthermore, instructors are expected to manage the educational process, plan and organize students' learning activities, and design and implement educational projects, coordinate teamwork, and adapt programs to contemporary market needs. In light of technological innovations and new labor market requirements, instructors are becoming not only knowledge transmitters but also mentors who guide students in independent information retrieval, critical thinking, and self-education skills development (Ishchenko et al., 2018).

Researchers argue that developing innovative competency requires continuous professional development and self-education among vocational education instructors. Instructors cannot afford to halt their development, as the demands on vocational education evolve with societal and technological advancements. Professional enhancement involves not only raising the level of instructors' subject-matter and pedagogical competency but also fostering innovative thinking, which enables them to effectively integrate new approaches into the educational process (Kovalchuk, 2015). This is particularly critical in the context of vocational education modernization, where new approaches to teaching and training that meet contemporary requirements must be established. Instructors should serve as change agents, actively implementing innovative teaching methods, collaborating with employers to align educational programs with labor market needs, and fostering partnerships with other educational and research institutions (Shevchenko, 2019).

Theoretical contributions include the findings of Kyriyenko (2020), who revealed the connection between increasing the level of innovative competency

among vocational education instructors and their mastery of new methods for fostering innovative thinking. Ogiyenko (2013) emphasizes that innovative competency is linked to instructors' readiness to take risks when implementing new pedagogical technologies. Additionally, foreign researchers such as Garzón Artach, Martínez, Ortega Martin, Marin Marin, and Gomez Garcia (2020) substantiate the importance of lifelong learning as a key factor in developing instructors' innovative competency. Studies by the European Commission (2022) underscore the significance of digital skills within the structure of innovative competency, particularly under the conditions of distance learning, which became highly relevant during the COVID-19 pandemic.

The purpose of the article is to identify and substantiate the key components of innovative competency in vocational education instructors and modern approaches to its development in the context of labor market demands and technological changes across economic sectors.

Research methods: The study involved analyzing scientific sources, legislative and regulatory documents, and empirical data to assess the extent to which the research problem has been addressed. Surveys were conducted to collect quantitative data on the state of innovative competency development among vocational education instructors. Semi-structured interviews were utilized to uncover barriers hindering the integration of new technologies into the educational process, while observations provided an objective evaluation of instructors' use of innovative approaches in their work. The data were synthesized and systematized to formulate conclusions, recommendations, and directions for future research.

Results and discussion: Considering technological advancements and increasing demands for specialist training, the innovative competency of vocational education instructors is not only a competitive advantage but a necessity for those aiming to organize the educational process on an innovative foundation and in alignment with labor market requirements. The ability to achieve such transformations lies in the readiness of instructors to promptly respond to changes in technologies, methods, and teaching tools. For instance, the integration of online platforms, artificial intelligence, virtual laboratories, simulators, and other advanced

teaching methods into the educational process requires instructors to possess a high level of digital skills. Instructors who develop innovative competencies can not only integrate digital educational tools into professional training but also adapt them to the specifics of the subject, thereby enhancing learners' comprehension of educational content (Radkevych, 2024c).

Innovative competency also plays a crucial role in improving instructors' professional mobility and readiness to update educational program content by integrating the latest scientific achievements and practical knowledge. Instructors possessing this competency can quickly adopt new teaching methodologies, such as gamification, project-based learning (Kravets, 2024), and blended learning (Kruchek, 2022; Radkevych, 2022b), making the educational process more dynamic and engaging for learners. Furthermore, innovative competency equips instructors with the ability to tailor educational content to the specifics of industries, particularly those experiencing rapid technological and production process developments. For instance, in fields like information technology or mechanical engineering, changes occur so rapidly that traditional educational programs and methodologies often lag behind new demands. Ultimately, innovative competency enables instructors to adapt to these changes in vocational education by fostering new forms of interaction with learners, focusing on student-centered approaches. These approaches emphasize not only the transmission of knowledge but also the creation of conditions for learners to independently acquire professional knowledge, skills, and abilities. Instructors with innovative competencies can implement such approaches to ensure high motivation among learners and their readiness for independent professional development. Thus, innovative competency encompasses a wide range of knowledge, skills, abilities, and motivational attitudes that enable vocational education instructors to manage educational projects aligned with the demands of the modern knowledge economy, create interactive educational environments, employ new teaching forms, methods, and tools, as well as foster learners' critical thinking, readiness for independent and responsible decision-making, and ability to effectively solve professional tasks and non-standard problems.

The key components of innovative competency among vocational education instructors, forming the foundation of their innovative professional activities, include:

- *Professional knowledge and skills*: These ensure a deep understanding of the subject area and continuous knowledge updating in line with the latest scientific and practical advancements. Instructors should not only possess theoretical knowledge but also be able to apply it in practice, ultimately improving the quality of professional training for future specialists. Additionally, instructors need to be familiar with the latest digital tools, distance learning platforms, and tools for visualizing educational content. This makes education more dynamic and accessible while meeting the demands of a digital society.

- *Creative thinking*: This is essential for developing and implementing innovative approaches to professional education. Creativity allows instructors to generate original ideas (Yershova, 2024), find effective solutions to pedagogical problems, design unconventional teaching methods, adapt educational material to the individual needs of vocational learners, and stimulate creative thinking, preparing them for innovative professional activities.

- *Research skills*: These enable instructors to systematically analyze their own teaching practices and improve them based on scientific data. They include the ability to plan and conduct pedagogical research, collect and interpret data, and draw well-founded conclusions.

- *Pedagogical innovation skills*: These involve the ability to develop and implement new educational strategies, methods, and technologies in line with the demands of modern society. Instructors with such skills constantly seek ways to enhance the educational process, experiment with new teaching forms, and create conditions for developing the innovative potential of learners.

- *Communication skills*: These facilitate effective interaction between instructors, colleagues, stakeholders, and vocational learners. Instructors with advanced communication skills successfully build trust-based relationships, motivate future specialists to learn, contribute to their personal development, and effectively convey information, listen actively, and respond to feedback.

– *Collaboration and teamwork skills:* These enable instructors to work effectively with colleagues in developing and implementing innovative practices, jointly plan, share experiences, and support each other in professional growth. Instructors with these skills can create team synergy to improve the quality of the educational process. This also serves as a model for learners, teaching them teamwork skills essential in professional life.

– *Adaptability and flexibility:* These skills allow instructors to effectively implement new ideas, adjust their organizational approach to teaching depending on circumstances and audience needs, respond swiftly to labor market changes, and adapt to new technologies, methods, and the needs of vocational learners. This contributes to creating an innovative educational environment that aligns with the demands of the time.

The development of innovative competency among vocational education instructors is a complex process based on the provisions of various methodological approaches. These approaches are categorized into traditional and modern, each with distinct characteristics and advantages. Traditional approaches include the classical approach, which employs conventional teaching methods such as lectures, seminars, and practical lessons. The goal of this approach is to transfer knowledge with minimal use of innovative technologies. While effective in certain contexts, this method does not necessarily foster innovative competency, as it focuses on transmitting existing knowledge rather than generating new ideas. Similarly, the informational-reproductive approach emphasizes the reproduction of information. Instructors primarily work with existing knowledge without substantial engagement in research activities or the pursuit of new ideas. This approach supports knowledge acquisition but does not cultivate innovative thinking.

Modern approaches include the competency-based approach, which emphasizes the development of key competencies, particularly innovative ones, through active involvement of learners in the educational process. Instructors act as mentors, guiding learners to develop skills in independent thinking and problem-solving. Tools associated with this approach include project-based learning, research activities, and collaboration with other stakeholders in

the educational process. Problem-based learning focuses on solving real-world problems through teamwork and critical thinking. Learners are presented with problems to solve, motivating them to seek new approaches and use interdisciplinary knowledge. In this context, instructors develop learners' professional competencies through mentorship and problem-solving support.

The constructivist approach centers on the idea that knowledge is constructed by future professionals through active interaction with instructors, peers, and an interactive educational environment. Constructivism encourages instructors to use innovative methods to enhance learners' motivation, engagement, and critical thinking skills. The project-based approach organizes learning around the creation of projects that stimulate innovative thinking and teamwork. Instructors serve as facilitators, helping learners integrate knowledge from various disciplines to achieve their final objectives. This approach fosters innovative solutions and technological advancements.

The acmeological approach focuses on achieving the highest levels of professional mastery, allowing instructors to enhance their innovative competency through continuous self-improvement and the expansion of professional experience. This approach emphasizes self-realization and creative exploration. The interactive approach enables the use of interactive teaching methods, such as simulations, group discussions, and case studies, fostering active learner engagement in problem-solving activities. Interactivity promotes the integration of theoretical knowledge with practical experience, which is particularly important for developing innovative competency.

The inclusive approach involves designing educational programs and technologies that adapt teaching methods for future professionals with varying levels of knowledge and abilities. Instructors working in inclusive settings are encouraged to explore new approaches to effectively integrate learners into the inclusive educational process. The digital approach leverages digital technologies in teaching and professional development. Instructors enhance their competencies by mastering tools for distance learning, digital educational platforms, and the use of artificial intelligence for adaptive learning. Modern approaches, unlike traditional ones, focus on developing

instructors' critical thinking, research skills, and creativity, which are essential components of their innovative competency and are better aligned with contemporary requirements.

Instructors' professional development plays a vital role in enhancing their innovative competency, particularly in response to the challenges of today's knowledge- and technology-based society. Various forms of professional development are geared towards fostering innovative competency. One of the most common forms is short-term courses and training programs that allow instructors to acquire new knowledge and skills in a condensed timeframe. Online courses and webinars are also popular, enabling instructors to gain new competencies regardless of their location. Platforms such as Coursera and EdX offer a wide selection of courses on innovative pedagogy, digital technologies, and teaching methods.

Teaching methodologies within professional development programs are also evolving, emphasizing interactive methods that engage instructors actively in the educational process. Project-based methods are an essential component of professional development programs, allowing instructors to apply acquired knowledge in real-world situations, such as developing innovative teaching materials or integrating advanced technologies into the educational process. Coaching and mentoring have emerged as effective forms of professional development. These approaches involve experienced instructors or experts providing guidance to less experienced colleagues in mastering new tools and teaching methods. Such programs are effective because they ensure a personalized approach and address the specific needs of each instructor (EducateMe.com.ua, n.d.).

An equally important aspect is the engagement of instructors in international projects. This expands their access to international experience and academic mobility programs, enabling them to adopt best practices in organizing innovative education and adapt these practices to national conditions. Programs such as Erasmus+ promote professional mobility and encourage instructors to continuously improve their skills, which is a crucial component of innovative competency. In this context, the experience of developing the innovative competency of vocational education instructors in Finland is of particular

scientific interest, as it emphasizes the development of creativity, critical thinking, and digital tool proficiency. The Finnish education system prioritizes providing instructors with opportunities to engage in research activities, fostering the creation of new pedagogical technologies and the implementation of innovations in the educational process. A key feature of this system is the creation of conditions for continuous professional development, including participation in various seminars, training sessions, and experience exchange programs where instructors can learn new approaches and methods (Li & Dervin, 2018).

Germany also demonstrates successful approaches to developing the innovative competency of vocational education instructors. Considering that Germany's vocational education system actively integrates innovations through dual education models, instructors, in collaboration with industry professionals, equip students with practical skills required in the labor market. They also regularly attend professional development courses to master modern technologies and methodologies, enabling them to adapt quickly to labor market changes. Instructors are also involved in international educational projects, where they can exchange experiences with colleagues from other countries (Zutavern & Seifried, 2022).

In the United States, the development of instructors' innovative competency focuses on creating a flexible teacher training system that addresses the ongoing technological advancements and societal challenges. Open online courses (MOOCs) offered by universities such as Harvard and Stanford are actively utilized by instructors for individual development. An integral part of the American education system is the creation of professional communities, where instructors exchange new pedagogical approaches, explore innovations in educational technologies, and enhance their interaction skills with students (Misra, 2018).

A notable aspect of international experience in developing the innovative competency of vocational education instructors is the emphasis on collaboration between educational institutions and enterprises. This practice is widespread in countries such as Singapore, Australia, and Canada. In particular, Singapore has implemented a model of continuous teacher training based on the concept of lifelong learning. Under this

model, instructors have access to government training programs offering courses focused on improving digital skills, managing the educational process with innovative technologies, and integrating artificial intelligence. The success of Singapore's education system is often attributed to the high level of government involvement in the development of instructors' professional competencies, creating a stable and adaptive platform for implementing innovative practices in the educational process. Instructors receive not only technical support but also opportunities to develop leadership qualities and innovative thinking (Zhou et al., 2023).

Australia has developed several national initiatives aimed at enhancing instructors' innovative competency. These include professional development programs based on researching new teaching methods within the context of digital transformation. A distinctive feature of the Australian education system is the close collaboration between universities and vocational schools, facilitating the direct application of research findings in educational practice. Through this partnership, instructors not only acquire new knowledge but also conduct experiments and test new methodologies and technologies, enabling them to improve their innovative competency and adapt to changes in the educational environment (Department of Education, Australian Government, 2022).

In Canada, professional development programs for instructors often include modules dedicated to the use of innovative technologies, such as virtual reality (VR) and augmented reality (AR), which enhance the quality of educational process organization and make it more interactive and effective. Furthermore, Canadian educational institutions actively collaborate with technology companies to develop and implement new educational tools that instructors can use to enhance their innovative competency (Dick, 2021).

Modern professional development programs must also ensure the integration of elements of scientific research and self-education. In this context, a key role is assigned to self-development and self-education. In particular, the constant aspiration of instructors for personal and professional growth ensures the relevance of their knowledge and skills necessary for organizing a high-quality educational process. It is also important to emphasize the role of

self-reflection and continuous evaluation of one's own performance as key elements in the development of innovative competency. Instructors must be able to analyze their own experiences, identify weaknesses in their work, and promptly adapt the methods they use to new challenges and opportunities. This ability for self-correction and self-education is a critical tool for maintaining the relevance of knowledge and skills in a dynamic educational environment.

Instructors who actively master new technologies, methodologies, and approaches to teaching independently earn respect among vocational education learners and colleagues, which motivates them to further improvement. This is particularly relevant in conditions where the requirements for vocational education are changing, aiming to develop competencies in future specialists that align with the demands of the modern economy. Moreover, innovative competency in instructors enhances their ability to collaborate with various participants in the educational process, particularly employers and other stakeholders, on the principles of public-private partnership (Radkevych, 2024b). Such interdisciplinary interaction is essential for the professional training of future specialists who can effectively work and adapt to the complex conditions of the contemporary professional world.

One of the important forms of professional development that stimulates the growth of innovative competency is internships for instructors at enterprises or institutions where modern technologies are utilized. These internships allow them not only to familiarize themselves with real working conditions but also to observe the application of innovative technologies. This enables them to critically evaluate technological advantages and select those most aligned with the needs of vocational education learners, integrating them into their own professional activities. After all, innovative technologies and teaching methods, such as project-based learning or simulations, help instructors create conditions for practical mastery of knowledge and skills by future specialists, increasing their level of preparedness for real-world production activities.

An increasing number of professional development programs focus on digital educational resources that expand instructors' access to the latest scientific materials, methodological developments, and innovative practices. These resources stimulate the

development of digital skills, facilitate adaptation to new professional conditions, and automate educational processes. Digital educational tools assist in automating various aspects of instructors' work, such as lesson planning, assessment of students' knowledge and skills, and monitoring their progress (Savchuk, 2024; Radkevych, 2011, 2023b). For instance, platforms like Moodle and other Learning Management Systems (LMS) enable instructors to follow flexible learning schedules while mastering new technological tools that they can later integrate into the educational process. Blended learning, combining traditional face-to-face sessions with online courses, has proven especially effective for developing innovative competency among vocational education instructors. This method provides valuable experience in employing modern educational technologies in conjunction with diverse teaching approaches, which are critical elements of innovative competency.

The impact of digital technologies on the development of vocational education instructors' innovative competency can be observed in several key aspects. Personalization of learning is achieved by creating individual learning trajectories tailored to the needs, interests, and preparedness of vocational education students. Opportunities for self-directed learning are supported by online resources such as video lectures, electronic textbooks, and interactive exercises, allowing students to learn at their own pace and review material as often as needed (Pryhodiyy et al., 2022). Digital technologies also foster the development of 21st-century skills, including critical thinking, teamwork, problem-solving, and digital literacy, which are essential for successful professional activity in the modern world. Furthermore, continuous professional development is facilitated through access to online courses, webinars, forums, and distance learning platforms like Coursera, Udemy, and Prometheus. These platforms enable educators to stay informed about the latest advancements in their fields, mastering new teaching methods and technologies. In the context of rapid digitalization in vocational education, this has become an indispensable part of fostering instructors' innovative competency.

Collaboration and experience exchange are also enhanced by digital technologies, opening up new opportunities for cooperation among educators, both within individual vocational education institutions and

internationally. Social media, professional community forums, and collaborative platforms such as Google Docs and Microsoft Teams provide opportunities for sharing experiences, developing joint educational projects, and crafting new pedagogical innovations. Moreover, mobility and accessibility of educational resources are significantly improved through modern digital tools, including mobile applications, interactive textbooks, and online platforms. These tools allow instructors to remain adaptable to different teaching environments, enhancing the efficiency of the educational process and increasing accessibility for future professionals regardless of their location. Digital platforms such as Google Classroom or Moodle also streamline the assessment and monitoring of students' progress, providing instructors with detailed performance analytics. This functionality allows for swift adjustments to learning content based on students' individual needs (Radkevych, 2023a).

Digital technologies contribute to the development of innovative pedagogical culture by encouraging instructors to explore new ways of improving educational quality, creating innovative teaching methods, and adopting the latest pedagogical approaches. This supports the creation of an interactive learning environment that fosters a creative approach to organizing the vocational education process for future skilled professionals.

To investigate the state of innovative competency development among vocational education instructors, three data collection methods were employed: surveys, interviews, and observation. Each method has its unique features, advantages, and limitations, which were taken into account during the analysis. The survey enabled the collection of quantitative data on the level of innovative competency among vocational education instructors. Questionnaires created using Google Forms included questions designed to measure the levels of competency formation. Based on the responses from 1,313 instructors, it was found that a significant proportion actively employ innovative approaches but face challenges integrating digital technologies into the educational process. Only 22.7% of instructors confirmed their readiness for innovative activities, while 63.6% expressed uncertainty, 11.8% reported a lack of confidence, and 1.9% were entirely unprepared for the integration of digital technologies into teaching.

Regarding the frequency of using innovative teaching methods, such as project-based learning and gamification, only 8.8% reported consistent use, 38.9% used them occasionally, 38.0% sometimes, 10.2% rarely, and 4.1% never employed these methods. Consequently, the study sought to

understand how vocational education instructors evaluate their digital literacy for utilizing advanced learning technologies. Survey results revealed that only a small proportion—3.1%—acknowledged having low digital literacy, while 0.4% admitted to having very low proficiency (see Figure 1).

1 313 responses

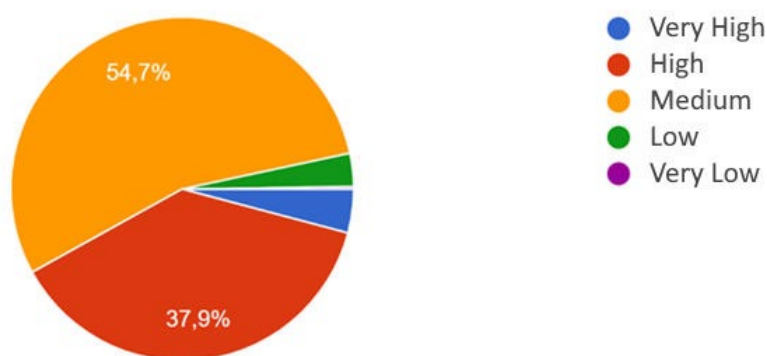


Fig. 1 Level of digital literacy of instructors for working with advanced technologies

As shown in the diagram, the average level of digital literacy among instructors is 54.7%, with 37.8% exhibiting a high level and 4.0% demonstrating a very high level. These survey results do not fully correlate with previous findings regarding the use of innovative teaching methods and overall readiness of instructors for innovative activities. It is possible that the survey should have included indicators for each level, enabling instructors to assess their innovative competency without the influence of subjective factors, which could have yielded more accurate data. When asked whether vocational education instructors have sufficient technical resources to implement innovations in the educational process, only 8.8% reported having adequate resources for daily use during lessons. Resources are partially available for 50% of instructors, occasionally insufficient for 27.7%, frequently insufficient for 10.4%, and completely lacking for 3.0%. Notably, 1.0% of instructors indicated that they rely on personal laptops for conducting lessons. These findings highlight the necessity of modernizing the material and technical

resources of vocational education institutions, particularly in light of the demands of digital transformation.

Regarding the readiness of vocational education instructors for continuous professional development, a survey question addressed how often they participate in professional communities or attend seminars and training sessions to enhance their pedagogical skills. Among 1,313 surveyed instructors, 37% stated that they participate regularly, 46.5% – several times a year, 7.6% – once a year, 8.3% – rarely, and 0.6% – never. This survey indicates that 16.5% of instructors fall into a risk group, as they show no inclination to engage in communication or improve their pedagogical expertise. Methodologists at vocational education institutions should encourage these instructors to participate in active forms of professional development. Of particular scientific interest are the survey results regarding which forms of professional development instructors consider the most effective for enhancing their innovative competency.

1 313 responses

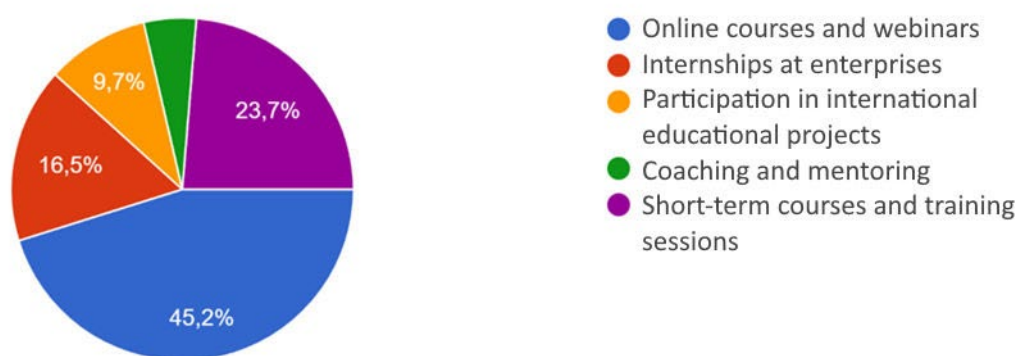


Fig. 2 Forms of professional development for instructors aimed at enhancing innovative competency

45.1% of instructors preferred online courses and webinars, 23.7% favored short-term courses, 16.5% chose workplace internships, 9.8% participated in international projects, and 4.9% opted for coaching and mentoring. The preference for online courses and webinars demonstrates that this method of professional development enables instructors to continuously improve without interrupting their professional activities. Moreover, under martial law conditions, it also protects them from various dangers associated with face-to-face professional development. Additionally, online courses enhance instructors' digital literacy as they are required to independently utilize digital educational resources for learning the material and completing a series of tests after finishing the course.

The low percentage of instructors participating in international projects also has its explanation. Primarily, it is due to the low level of foreign language proficiency, which is essential for communication with colleagues from vocational education institutions in other countries. Therefore, it is crucial for vocational education institutions to create appropriate conditions for their instructors to attend English language courses. English serves as an effective tool for communication and for studying successful practices in the field of vocational education in European Union countries, thus accelerating integration into the European educational space.

Interviews conducted with 1,643 instructors of vocational education institutions provided deeper insights into their perspectives on professional activity and the use of innovative approaches in the educational

process. Semi-structured interviews were used to gather partially structured data, combining standardized questions with the opportunity to clarify specific aspects of the instructors' professional activities. This method made it possible to uncover subjective perceptions of innovation and factors influencing the development of innovative competence. The study also identified barriers affecting the development of instructors' innovative competence, including organizational (lack of a systematic strategy for developing the innovative potential of teaching staff, insufficient integration of new approaches into the educational process, inadequate funding for professional development, lack of time for professional growth, and limited availability of suitable educational programs), psychological (anxiety about new technologies or changes in professional responsibilities, fear of losing control over the educational process, and lack of confidence in their abilities and knowledge to effectively use new teaching methods), and technological barriers (limited access to advanced technologies, which complicates their integration into the educational process, as well as insufficient knowledge and skills in using digital educational resources, often inadequately addressed in traditional professional development programs).

For example, in response to the question of whether instructors feel supported by their administration in implementing innovative approaches in the educational process, 53.7% of respondents indicated they always receive support, 33.4% reported receiving support most of the time, 8.3% noted they

rarely receive support, 3.7% stated there is almost no support, and 0.9% said they do not receive any support at all. As the semi-structured interviews allowed instructors to provide additional comments, some mentioned that they used to receive consistent support from their administration before the war, but now even basic technical resources for teaching are no longer provided.

The interviews also examined how frequently instructors of vocational education institutions face the problem of lacking digital educational resources for integrating innovative technologies and approaches into the educational process. Notably, only 12.5% of instructors reported never encountering a shortage of resources. In contrast, 63.0% stated that they occasionally or rarely face this issue. Additionally, 19.7% reported frequently encountering a lack of digital educational resources, 4.6% constantly experience shortages, and 0.2% of instructors indicated that due to the absence of institutional resources, they are forced to use their own. Some instructors noted that before the war, they rarely faced

resource shortages for implementing innovative approaches in the training of future professionals.

When asked whether they experience discomfort or anxiety due to the need to use new technologies in teaching, 33.0% of respondents said they feel no discomfort, 30.7% reported rarely feeling it, 29.2% occasionally feel discomfort, 5.2% feel it frequently, 0.9% feel it constantly, and 1.0% added that they feel discomfort and anxiety, particularly in the current wartime conditions, but emphasized that they try to learn if they are unsure about something.

Regarding access to advanced technologies and digital educational resources necessary for innovative teaching, 28.5% of instructors reported having constant access, 49.9% stated they mostly have access, 15.2% have access occasionally, 5.4% have access rarely, and 1.0% said they have no access at all. Some instructors deemed the question irrelevant and suggested reviewing the material and technical base of vocational education institutions to understand whether they have access to digital resources (see Figure 3).

1 643 responses

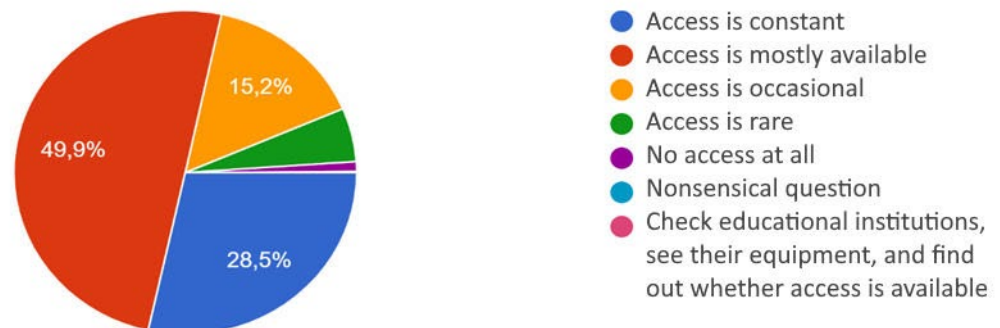


Fig. 3 Access of instructors to modern technologies and digital educational resources

From this interview, it can be concluded that instructors in vocational education institutions exhibit varying levels of access to modern technologies and digital educational resources relevant to organizing innovative teaching. These findings indicate the need for further improvement of the material and technical base of vocational education institutions and the enhancement of instructors' professional qualifications.

In response to the question, "How confident are instructors in their knowledge and skills for

effectively using innovative teaching approaches?", 18.2% of respondents indicated they are fully confident, 64.9% are mostly confident, 12.4% are occasionally confident, 3.2% are rarely confident, and 1.2% are not confident at all. Some instructors (0.1%) noted that during wartime, they experience greater uncertainty but are striving to learn in areas where they lack confidence.

In the course of the interviews, instructors were also asked, "Do they have sufficient time for professional development and mastering innovative

teaching methods?" Among the respondents, 9.9% stated they always have enough time, 51.0% said they mostly have sufficient time, 22.8% indicated they rarely have enough time, 13.1% reported they almost never have enough time, and 3.0% stated they do not have enough time at all. Only 0.2% of instructors

mentioned they occasionally find time for self-education and professional development.

During the interviews, it was also explored to what extent professional development programs assist vocational education instructors in mastering innovative methods of vocational training (Fig. 4).

1 643 responses

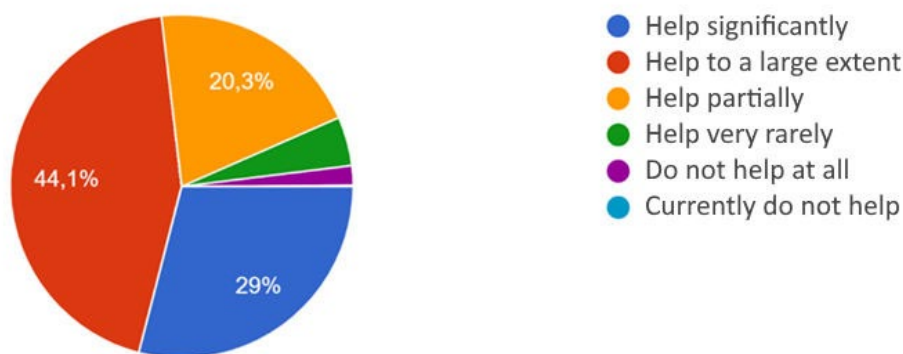


Fig. 4 Impact of professional development programs on instructors of vocational education institutions mastering innovative methods of vocational training

The results of the interviews indicate that 29.0% of respondents find professional development programs very helpful, 44.1% consider them significantly helpful, 20.3% see them as partially helpful, 4.6% report they rarely help, and 1.8% find them not helpful at all. Notably, a small portion of instructors (0.2%) emphasized that in the current conditions, professional development programs fail to provide any assistance. Consequently, it is not surprising that 45.1% of instructors prefer online courses and webinars, while 23.7% favor short-term courses and training sessions. Observation added an objective component to the study, as it allowed direct examination of how vocational education instructors utilize innovative approaches in their work. During classroom visits, the instructional process was analyzed, particularly focusing on which instructors use digital educational tools, innovative teaching methods, and forms of interaction with vocational education students. In most cases, instructors employed only isolated innovative elements rather than making them a central part of the educational process. Observations revealed that vocational education instructors predominantly rely on traditional teaching methods, with only a few actively

integrating innovations. Thus, the challenges and obstacles to developing instructors' innovative competency are multifaceted and require a systematic approach to overcome them. This approach should include institutional support to enhance the innovative potential of teaching staff, efforts to improve digital literacy levels, and addressing the psychological aspects of readiness for change.

Conclusions. The innovative competency of vocational education instructors constitutes a fundamental component of their professional activity and serves as a primary driver of change in vocational education. It facilitates the implementation of modern technologies and teaching tools that improve the efficiency of the educational process. Key components of innovative competency for vocational education instructors include professional knowledge and skills, creative thinking, research abilities, pedagogical innovation skills, communication skills, teamwork and collaboration abilities, self-development, and continuous professional improvement. The development of instructors' innovative competency is based on traditional (classical, informational-reproductive) and modern (competency-based, problem-oriented learning, constructivist, project-

based, acmeological, interactive, inclusive, digital) approaches.

Enhancing instructors' qualifications plays a crucial role in developing their innovative competency. Common contemporary forms of professional development include short-term courses and training sessions, which allow instructors to acquire new knowledge and skills within a short timeframe; online courses and webinars, which enable educators to gain new competencies regardless of location; coaching and mentoring, where experienced instructors or experts assist less experienced colleagues in mastering digital educational tools and new teaching methods; participation in professional communities, where instructors can exchange experiences, discuss current trends and issues in vocational education, and receive peer support; internships at enterprises or institutions utilizing modern technologies to familiarize instructors with real working conditions and the application of innovations in specific professional activities; and participation in academic mobility programs and international educational projects, through which instructors adopt innovative teaching practices and adapt them to national conditions.

The analysis of international experience demonstrates that many countries emphasize the need for continuous professional development of vocational education instructors, adaptation of their competencies to the conditions of a globalized labor market and digital transformation, integration of innovations into the educational process based on lifelong professional development and collaboration with businesses, and encouraging instructors' independent work with new technologies and innovations using open educational resources. Overall, international experience shows that developing instructors' innovative competency is the foundation for successfully modernizing vocational education, adapting it to contemporary demands, and meeting labor market needs. This experience serves as a valuable resource for implementing it in the professional development system for vocational education instructors in Ukraine.

For this purpose, there is a need to implement a comprehensive approach to developing innovative competency in vocational education instructors. This includes stimulating their innovative activities through institutional, technological, and regulatory measures, such as integrating cutting-edge technologies into the

preparation and professional development process to acquire digital skills necessary for modern educational environments; developing and implementing innovative training programs for instructors based on contemporary research and global trends in vocational education; and fostering close collaboration between educational institutions and businesses to provide instructors with access to the latest tools and technologies for developing their innovative competency.

The study results indicate a heterogeneous level of innovative competency development among vocational education instructors. While a significant portion of teaching staff actively uses innovative approaches, substantial barriers remain, including insufficient material and technical resources, lack of systemic development strategies, psychological obstacles, and limited funding. The lack of stable access to digital educational resources and decreased administrative support, especially under martial law conditions, further complicates the integration of new technologies into the educational process. Moreover, the high preference for online courses and webinars underscores the need for flexible and accessible forms of professional development that enable instructors to continuously improve without interrupting their professional activities. Observations confirm that most instructors still use traditional teaching methods, highlighting the need for continued efforts to transform pedagogical practices and support instructors in implementing innovative teaching methodologies.

Thus, modern vocational education must be based on innovation, with vocational education instructors possessing advanced innovative competency serving as key agents of these changes. To stimulate the development of innovative competency among vocational education instructors, the following recommendations are relevant:

– *First*, creating favorable conditions for the professional development of instructors in vocational education institutions. This involves implementing professional development programs aimed at familiarizing instructors with innovative teaching methods, technologies, and the latest approaches to organizing the educational process. An important aspect is engaging instructors in practical work with innovations, which helps develop their competencies through real educational projects. For instance, the

creation of virtual laboratories or the use of simulation programs enables instructors to gain experience in implementing technological innovations into the educational process.

– *Second*, fostering a culture of innovation implementation. It is essential for the leadership of vocational education institutions to actively encourage instructors to experiment with new teaching approaches, create opportunities for experience sharing among colleagues, and organize seminars and training sessions on modern pedagogical technologies. Activities such as sharing best practices during conferences, workshops, or webinars can be highly effective. Additionally, mentoring programs for young instructors should be supported to help them quickly adapt to using innovations.

– *Third*, providing instructors with technical support for mastering and using digital platforms for distance and blended learning, as well as creating conditions for the regular updating of these technologies in the educational process. It is important for these platforms to be user-friendly and offer opportunities for integrating various technological tools, enabling instructors to easily adapt innovative solutions into the educational process. Government organizations should also develop strategies to encourage innovative activities among vocational education instructors. One effective mechanism could be the establishment of grant programs to fund projects aimed at modernizing educational equipment, developing new methodologies, and innovative approaches to teaching, or supporting research on the impact of innovations on the quality of professional training for future specialists. Furthermore, government organizations should promote the development of standards for instructors' professional activities that account for the need to develop innovative competency, as well as encourage postgraduate education institutes to implement relevant educational programs. Collaboration between public and private institutions in vocational education should also be considered to ensure instructors have access to modern technological equipment and tools that meet current production standards.

– *Fourth*, developing long-term programs for the professional development of instructors' innovative competency. These programs should be flexible, aimed at equipping instructors with the skills to adapt curricula and programs to the individual needs of

vocational education students, and interactive, enhancing their knowledge, skills, and abilities to organize the educational process on an innovative basis. A critical condition for implementing these programs is their alignment with the current challenges and labor market needs to ensure the connection between vocational education and practice. Vocational education institutions should also prioritize providing instructors with access to modern technologies, such as artificial intelligence and virtual reality, to improve the quality of learning, its interactivity, and individualization. This can be achieved by updating material and technical resources, ensuring open access to digital resources and modern methodologies for instructors. Regular professional development courses, including online formats, can be organized to enable instructors to learn without interrupting their primary professional activities. Finally, the development of innovative competency among vocational education instructors must be supported by a culture of innovation that should be maintained across all levels of educational management. This culture involves creating an open educational environment for discussing novel approaches, fostering collaboration between instructors and administrators, and supporting innovative ideas and projects.

– *Fifth*, creating opportunities for vocational education instructors to participate in scientific research, projects, conferences, and seminars, enabling them to stay informed about the latest pedagogical innovations and actively contribute to the development of new technologies and teaching methodologies. At the governmental level, attention should be paid to the importance of programs incentivizing instructors' innovative activities. This may include benefits or financial rewards for instructors who actively implement pedagogical and industrial innovations in their activities. Government organizations should also update standards and regulatory frameworks that establish mandatory criteria for the innovative competency of vocational education instructors.

Future research perspectives in this field will focus on deepening the understanding of the impact of instructors' innovative competency on the alignment of vocational education with the requirements of digital transformation, as well as on preparing specialists for various economic sectors. The issues of continuous professional development for instructors, particularly

in the context of rapid technological evolution and emerging digital educational platforms, also require attention. These studies will help develop strategies for the sustainable development of vocational education and ensure its compliance with the challenges of Industry 4.0. Lastly, the issue of creating regulatory

and organizational conditions to motivate instructors to develop innovative competency remains relevant. This should include government support for investments in infrastructure and the creation of platforms for experience exchange among instructors.

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ІННОВАЦІЙНА КОМПЕТЕНТНІСТЬ ВИКЛАДАЧІВ ЯК ІНСТРУМЕНТ МОДЕРНІЗАЦІЇ ПРОФЕСІЙНОЇ ОСВІТИ

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Реферат:

Актуальність статті зумовлюється необхідністю розвитку інноваційної компетентності викладачів закладів професійної освіти з урахуванням динамічних змін на ринку праці, а також процесів глобалізації та цифровізації, що активно впливають на трансформацію освітньої системи. Сучасні роботодавці потребують від фахівців не лише наявності професійних знань, але й здатності адаптуватися до нових виробничих умов, критично мислити та вирішувати комплексні завдання. У зв'язку з цим професійна освіта має модернізуватися відповідно до сучасних викликів, а викладачі – бути готовими до інноваційної професійної діяльності для інтеграції новітніх технологій у освітній процес.

Метою статті є визначення та обґрунтування основних складників інноваційної компетентності викладачів закладів професійної освіти й сучасних підходів до її розвитку в контексті вимог ринку праці та технологічних змін у галузях економіки.

Методи дослідження: вивчення наукових джерел, законодавчих, нормативно-правових документів, емпіричних даних – для з'ясування ступеня розробленості проблеми дослідження; *анкетування* – для збору кількісних даних про стан розвитку інноваційної компетентності викладачів закладів професійної освіти; *напівструктуровані інтерв'ю* – для виявлення бар'єрів, що перешкоджають інтеграції новітніх технологій у освітній процес; *спостереження* – для об'єктивного оцінювання використання викладачами інноваційних підходів у своїй роботі; *узагальнення та систематизація* – для формулювання висновків, рекомендацій і перспектив подальших досліджень.

Результати: визначено основні складники інноваційної компетентності викладачів закладів професійної освіти; обґрунтовано традиційні і сучасні підходи до розвитку інноваційної компетентності; виявлено організаційні, психологічні й технологічні бар'єри, що обмежують розвиток інноваційної компетентності; обґрунтовано сучасні форми підвищення кваліфікації викладачів закладів професійної освіти; розкрито роль цифрових технологій у стимулюванні інноваційної компетентності; сформульовано рекомендації для підвищення рівня інноваційної компетентності викладачів закладів професійної освіти.

Висновки: у ході дослідження з'ясовано, що інноваційна компетентність викладачів закладів професійної освіти є ключовим чинником модернізації освітнього процесу та забезпечення його відповідності сучасним вимогам ринку праці. До основних складників інноваційної компетентності викладачів закладів професійної освіти віднесено: професійні знання та вміння, креативне мислення, дослідницькі навички, навички педагогічної інноватики, комунікативні навички, навички співпраці та командної роботи, навички адаптивності та гнучкості тощо. Розвиток інноваційної компетентності викладачів базується на положеннях традиційних (класичний, інформаційно-репродуктивний) і сучасних (компетентнісний, проблемно-орієнтованого навчання, конструктивістський, проєктний, акмеологічний, інтерактивний, інклюзивний, цифровий) підходів. До сучасних форм підвищення кваліфікації викладачів закладів професійної освіти, що розвивають інноваційну компетентність належать: короткострокові курси і тренінги; онлайн курси та вебінари; коучинг та наставництво; участь у міжнародних проєктах; саморозвиток та самоосвіта; стажування тощо.

Результати анкетування підтвердили важливість розвитку цифрових навичок і здатності викладачів закладів професійної освіти до інтеграції новітніх технологій у освітній процес. Однак, основними

перешкодами на шляху до ефективного впровадження інновацій виявилися певні об'єктивні і суб'єктивні бар'єри, зокрема, недостатня технічна підтримка та обмеженість ресурсів, страх перед змінами та низька мотивація до професійного розвитку. Це свідчить про потребу комплексного підходу до розвитку інноваційної компетентності викладачів, що охоплює цільові програми підвищення кваліфікації, їх підтримку і стимулювання інноваційної діяльності.

Ключові слова: *викладачі, інноваційна компетентність, професійна освіта, професійний розвиток, ринок праці, цифрові технології.*

Received: 12 June 2024

Accept: 22 August 2024



PUBLIC-PRIVATE PARTNERSHIP AS A TOOL FOR THE DEVELOPMENT OF VOCATIONAL EDUCATION

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Abstract

Relevance: The necessity of researching and implementing public-private partnership (hereinafter referred to as PPP) in the field of vocational (vocational-technical) education is particularly emphasized in the context of martial law in Ukraine. Contemporary challenges caused by the war determine significant changes in the labor market and intensify the need for training highly qualified specialists capable of working under conditions of post-war reconstruction. Military actions require the rapid adaptation of educational systems to new realities, which include not only the implementation of innovative technologies but also the enhancement of practical training for learners. PPP becomes a key mechanism for attracting additional resources and modernizing educational institutions, which contributes to improving the quality of vocational training, strengthening the country's economic resilience, and enhancing its competitiveness in the international arena, particularly during the post-war recovery period.

Objective: To define public-private partnership (PPP) as a modern tool for the development of vocational (vocational-technical) education and to substantiate the possibilities of its application to improve the quality of specialist training in accordance with labor market demands in wartime and post-war periods.

Methods: The research employs an analysis of scientific sources, regulatory documents, and empirical data to determine the current state of public-private partnership (PPP) as a tool for the development of vocational education. Theoretical analysis, synthesis, and generalization are used to formulate conclusions regarding the effectiveness of PPP in the vocational education system.

Results: The study focuses on public-private partnership as a mechanism that ensures effective cooperation between public institutions and the private sector in the field of vocational education. PPP facilitates the attraction of financial resources, the modernization of educational infrastructure, and the integration of innovative technologies into the educational process. The use of PPP enables the creation of joint educational projects, investment agreements, outsourcing contracts, concession and leasing agreements, which enhance the level of practical training for learners and align with the needs of the modern labor market.

Conclusions: Public-private partnership is a key tool for the development of vocational education, aimed at effectively engaging private sector resources to modernize educational institutions and improve the quality of specialist training. It fosters the integration of cutting-edge technologies into the educational process and increases graduates' competitiveness in the labor market, which is particularly critical in the context of the country's post-war recovery.

Keywords: *public-private partnership, vocational education, labor market, post-war recovery.*

Introduction. One of the primary tasks in Ukraine's post-war recovery is overcoming educational losses and disruptions in the system of vocational (vocational-technical) education (hereinafter: V(VT)E). This includes reconstructing damaged institutions, modernizing existing ones, and creating new facilities, thereby enabling various

population groups to acquire professional qualifications that align with their aspirations and labor market demands. A key tool for addressing these challenges is public-private partnership (hereinafter: PPP) a mechanism that fosters collaboration between the state and the private sector to jointly implement projects and provide

services in the field of vocational training for future specialists. This approach aims to expand access to educational programs and enhance their alignment with labor market requirements.

PPP in the field of V(VT)E has proven to be an effective instrument that facilitates the attraction of additional investments and resources for the development of vocational education. It ensures the establishment of long-term contractual relations between public and private entities, aimed at improving educational services, increasing accountability in decision-making processes of public interest, and achieving significant pedagogical, social, and economic outcomes (Radkevych, 2022). By integrating resources and professional expertise, PPP enables the design and implementation of innovative educational projects that align with modern technologies and vocational training methods.

In this context, it is crucial to emphasize that PPP serves as a tool for improving the quality of educational services in response to contemporary technological changes in the economy. Current realities necessitate the creation of new professional qualifications, standards, and educational programs that meet labor market requirements and cater to learners' needs. Special attention is given to developing practical skills essential for successful professional activities and career advancement. Consequently, PPP has become an indispensable mechanism for adapting vocational education to evolving conditions and demands.

The implementation of PPP as a development tool for V(VT)E is based on a systematic approach that accounts for interactions between various elements of the educational process and the resources contributed by both parties. The application of PPP enables a thorough assessment of the costs and benefits of cooperation, allowing for well-founded investment decisions and the efficient utilization of available resources. It also considers social aspects, such as the needs of different stakeholder groups, thus facilitating the development of educational system strategies tailored to labor market demands.

Thus, leveraging PPP in the field of V(VT)E creates opportunities for proactive responses to labor market needs and the formation of a workforce

potential essential for Ukraine's successful economic recovery in the post-war period.

Objective. The objective of this study is to characterize PPP as a modern tool for the development of vocational (vocational-technical) education and to substantiate its potential application for enhancing the quality of specialist training in accordance with labor market requirements during wartime and post-war reconstruction.

Methods. The research employs the following methods: Analysis of scientific sources, regulatory and legal documents, and empirical data to assess the current state of PPP as a tool for the development of vocational education; Theoretical analysis, synthesis, and generalization to formulate conclusions on the effectiveness of PPP in the vocational education system.

Sources. PPP as a tool for the development of vocational education is widely recognized by European scholars as an effective means of adapting educational programs to contemporary labor market needs and fostering innovation. In Europe, PPP is a prevalent instrument used to strengthen collaboration between public institutions and businesses in education, particularly in vocational (vocational-technical) education.

This study draws on the works of the following researchers: N. Reinhar H. and W. Muller who present PPP as a mechanism for ensuring the continuous renewal of professional skills and qualifications. P. Salminen and J. Laitinen who emphasize PPP as a tool for integrating business into educational processes to create more flexible and practice-oriented educational programs. A. Brown who highlights PPP as an instrument for stimulating innovation and attracting investment in vocational education. W. Jansen and W. Vermeulen who analyze PPP as a factor in improving graduate qualification levels and establishing a foundation for the sustainable development of vocational education.

Significant attention to the role of PPP in vocational education development has also been given by Ukrainian scholars and researchers, including: V. Radkevych, who explores PPP as a means of addressing not only economic but also social challenges; Ye. Tsarova, who examines the impact of PPP on the quality of future specialists'

training; O. Strilets, who investigates the influence of PPP on the preparation of skilled workers under the dual education system, among others.

Results and Discussion. There are various approaches to defining the role and significance of PPP in the development of vocational education and training.

The German approach to PPP is based on the dual education system, where students combine learning in educational institutions with practical training in enterprises. As noted by German researchers H. Reinhard and W. Muller, PPP ensures the continuous updating of professional skills and qualifications that align with labor market demands. This mechanism allows for the rapid implementation of new technologies, expands students' opportunities in real working conditions, and enhances their competitiveness. In Germany, PPP serves as a key instrument in the implementation of the dual vocational education system, which integrates theoretical instruction in educational institutions with practical training in enterprises. According to a study by the Deutsches Institut für Berufsbildung (2020), more than 60% of young people participate in dual programs, and nearly 90% of them secure permanent employment in enterprises after completing their education. This confirms the conclusion that PPP is an effective tool for training highly qualified specialists who meet the demands of the modern labor market.

Finnish researchers P. Salminen and J. Laitinen (2020) emphasize the importance of integrating business into educational processes through PPP to create more flexible and practice-oriented training programs. They highlight that partnerships encourage investment in the infrastructure of vocational education institutions, which is particularly relevant during periods of rapid economic change. In Finland, PPP is utilized as an effective instrument for establishing modern training centers and technology parks. For example, in cooperation between Nokia and Haaga-Helia University of Applied Sciences, a center was established for researching and implementing new IT technologies into the educational process. Through this partnership, students gain access to state-of-the-art equipment and contemporary knowledge, significantly enhancing their professional skills and facilitating their integration

into the labor market. This collaboration enables businesses to actively participate in the educational process, equipping students with relevant skills essential for a successful career in a rapidly evolving technological sector.

In the United Kingdom, according to A. Brown (2018), PPP is used to stimulate innovation and attract investment into the vocational education system. Collaboration between the state and the private sector not only improves the infrastructure of educational institutions but also ensures that graduates' skills align with current and future labor market requirements. With government support, the UK launched the "Apprenticeship Levy" program in 2017, which serves as an effective tool for financing apprenticeships through partnerships between businesses and state educational institutions. A. Brown (2018) notes that this program led to a 12% increase in apprenticeships within the first year of its launch, with companies investing over £3 billion in workforce training. This clearly demonstrates how public-private partnerships can serve as a mechanism for fostering the growth of vocational education by leveraging financial resources and expertise from the private sector.

In the Netherlands, public-private partnerships between the government and private companies, such as Philips, have become instrumental in creating innovation centers within educational institutions. For example, Eindhoven University of Technology actively collaborates with companies to research and implement new technologies, particularly in the field of medical devices. This partnership provides students not only with access to cutting-edge knowledge but also with opportunities to apply their learning in practice by working on real-world projects. This significantly enhances their professional competencies and contributes to the development of innovative solutions in technological industries (Jansen & Vermeulen, 2019).

European scholars unanimously emphasize that PPP is a key instrument for improving education quality, particularly in the context of vocational training. They highlight that PPP enables the state and businesses to combine efforts in addressing various challenges facing the vocational education system amid dynamic labor market changes. This partnership fosters the development of flexible and

adaptive educational programs that meet contemporary employer requirements while also considering the personal interests and abilities of learners.

The active involvement of businesses in workforce training ensures a direct link between educational institutions and labor market demands, allowing students to acquire essential practical skills and experience during their studies. For instance, in many European countries, businesses invest in modernizing educational infrastructure by providing state-of-the-art equipment, access to the latest technologies, and tools that significantly enhance the quality of the educational process. Such cooperation also expands opportunities for students to undertake internships and apprenticeships directly within enterprises, facilitating their employment upon graduation. Moreover, European researchers such as W. Jansen and W. Vermeulen (2019) argue that PPP not only yields short-term benefits by improving graduates' qualifications but also lays the foundation for the sustainable development of vocational education. Through the integration of cutting-edge technologies, PPP enables educational institutions to keep pace with technological innovations and develop programs that align not only with current but also with future labor market needs, ensuring the continuous updating and advancement of educational programs.

Another critical aspect of PPP is the social responsibility assumed by businesses in workforce training. By investing in the education of future professionals, private companies gain the opportunity to cultivate skilled workers who meet their standards and job-specific requirements. This partnership also creates additional opportunities for reducing youth unemployment, as graduates trained with business support are often immediately employed at the enterprises where they completed their internships.

Thus, PPP not only ensures the adaptation of educational programs to contemporary labor market realities but also facilitates the integration of innovative technologies into the educational process, serving as a prerequisite for the sustainable development of vocational education. This form of cooperation allows for a rapid response to economic changes by training specialists who can meet global

market demands and ensures the long-term stability of the education system.

In Ukraine, the implementation of PPP in vocational education has become particularly relevant in light of ongoing challenges posed by military actions and the urgent need to rapidly adapt the education system to current labor market conditions. European experience demonstrates that PPP can be an effective tool for modernizing vocational education, a concept that is gaining increasing support among Ukrainian educators and the business community.

Ukraine faces several challenges in vocational education, including outdated infrastructure, weak connections between educational institutions and the labor market, and limited flexibility of educational programs. PPP serves as an effective mechanism for addressing these issues, as it not only provides financial support from the private sector but also promotes innovation and active collaboration between the state, businesses, and educational institutions.

A successful example of PPP implementation in Ukraine is the establishment of innovative training and production centers supported by major companies such as Metinvest and Kernel at educational institutions in Kryvyi Rih and Zaporizhzhia. These companies invest in institutional infrastructure, providing modern equipment and supporting workforce training aligned with industry needs. For example, in Kryvyi Rih, a training and production center has been established to prepare specialists for the mining and metallurgical sector, playing a crucial role in enhancing students' vocational skills. Additionally, Radkevych (2022) underscores the significance of PPP as a tool for addressing not only economic but also social issues. Specifically, PPP contributes to reducing youth unemployment and creating new career development opportunities. By participating in workforce training, businesses can directly influence the content of educational programs, making them more practice-oriented. This not only enhances graduates' qualification levels but also ensures their readiness to work in a modern economic environment.

PPP also opens new prospects for modernizing vocational education in Ukraine by attracting foreign investors and partners.

International companies such as Siemens and Hewlett-Packard actively collaborate with Ukrainian vocational and technical educational institutions, providing them with state-of-the-art equipment and educational programs. This not only enhances the technical training of students but also helps integrate Ukraine's vocational education system into global trends.

Thus, the implementation of PPP in Ukraine has immense potential for the development of vocational education. It provides the necessary resources for the modernization of educational institutions, improves the quality of workforce training, and ensures compliance with the demands of the modern labor market. Successful examples of cooperation between the state and businesses demonstrate that PPP can become a crucial tool in Ukraine's post-war reconstruction, particularly in ensuring the sustainable development of vocational education, which is a key factor for economic stability and the country's competitiveness on the international stage.

Conclusions. PPP is a key element in the development of vocational (vocational-technical) education. Practical experience with this tool confirms its effectiveness in fostering cooperation between the state and the private sector, thereby enhancing education quality, developing

infrastructure, and integrating innovative technologies into the learning process. Various forms of PPP such as contracts for educational service provision, outsourcing, investment projects, and leasing create a transparent and stable environment for attracting private investment in the development of V(VT)E. PPP also plays a significant role in regulating licensing and accreditation issues for educational programs, introducing legal mechanisms that promote effective collaboration and the allocation of additional resources. Through continuous monitoring and evaluation of project outcomes, PPP allows timely adjustments to the strategic activities of vocational education institutions, enabling them to adapt to evolving labor market conditions and demands.

Therefore, the use of PPP as a tool for the development of vocational education not only facilitates investment in modernizing educational infrastructure but also helps meet business needs for qualified personnel and ensures the relevance of educational programs. In the long term, business investment in V(VT)E should become an integral part of the country's economic and social development strategy, particularly in the post-war period when reconstruction and infrastructure modernization are crucial factors for economic growth and stability.

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ДЕРЖАВНО-ПРИВАТНЕ ПАРТНЕРСТВО ЯК ІНСТРУМЕНТ РОЗВИТКУ ПРОФЕСІЙНОЇ ОСВІТИ

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Реферат:

Актуальність: необхідність дослідження та впровадження державно-приватного партнерства (далі – ДПП) у сфері професійної (професійно-технічної) освіти особливо актуалізується в умовах воєнного стану в Україні. Сучасні виклики, зумовлені війною, детермінують значні зміни на ринку праці та посилюють потребу в підготовці висококваліфікованих фахівців, здатних працювати в умовах післявоєнної відбудови. Військові дії вимагають швидкої адаптації освітніх систем до нових реалій, що включають не лише впровадження інноваційних технологій, але й підвищення практичної підготовки здобувачів освіти. ДПП стає ключовим механізмом для залучення додаткових ресурсів та модернізації освітніх закладів, що сприяє підвищенню якості професійної підготовки, зміцненню економічної стійкості країни та її конкурентоспроможності на міжнародній арені, особливо в період відновлення після війни.

Мета: визначення державно-приватного партнерства (ДПП) як сучасного інструменту розвитку професійної (професійно-технічної) освіти та обґрунтування можливостей його застосування для підвищення якості підготовки фахівців відповідно до вимог ринку праці у воєнний і повоєнний час.

Методи: аналізу наукових джерел, нормативно-правових документів та емпіричних даних – для визначення стану державно-приватного партнерства (ДПП) як інструменту розвитку професійної освіти; теоретичного аналізу, синтезу та узагальнення – для формування висновків щодо ефективності ДПП в системі професійної освіти.

Результати: у дослідженні основна увага приділяється державно-приватному партнерству як інструменту, що забезпечує ефективну співпрацю між державними установами та приватним сектором у сфері професійної освіти. ДПП сприяє залученню фінансових ресурсів, модернізації освітньої інфраструктури та впровадженню інноваційних технологій у навчальний процес. Використання ДПП дає змогу створювати спільні освітні проекти, інвестиційні угоди, угоди про аутсорсинг, концесійні та лізингові договори, що підвищують рівень практичної підготовки здобувачів освіти і відповідають потребам сучасного ринку праці.

Висновки: державно-приватне партнерство є ключовим інструментом розвитку професійної освіти, спрямованим на ефективне залучення ресурсів приватного сектора для модернізації навчальних закладів та підвищення якості підготовки фахівців. Це сприяє впровадженню новітніх технологій у навчальний процес та підвищенню конкурентоспроможності випускників на ринку праці, що є особливо важливим в умовах післявоєнного відновлення країни.

Ключові слова: державно-приватне партнерство, професійна освіта, ринок праці, повоєнне відновлення.

Received: 02 September 2024

Accept: 12 December 2024



EXPERIMENTAL VERIFICATION OF THE EFFECTIVENESS OF PEDAGOGICAL CONDITIONS FOR THE DEVELOPMENT OF ENTREPRENEURIAL COMPETENCE OF FUTURE ARTIST-PERFORMERS IN SPECIALIZED COLLEGES

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Abstract

Relevance. The relevance of the article stems from the need to align the training of future performing artists with the demands of modern enterprises in the artistic sector, as well as the lack of experimentally validated methodologies for developing entrepreneurial competence in specialized colleges with an artistic focus.

Objective: To experimentally verify the effectiveness of identified pedagogical conditions and the developed methodology for fostering entrepreneurial competence in future performing artists within specialized colleges.

Methods: Observation, questionnaires, testing, surveys, and monitoring of entrepreneurial competence development levels were employed to experimentally validate the results of implementing pedagogical conditions for enhancing entrepreneurial competence in future performing artists. Quantitative and qualitative analyses were used to interpret the outcomes of the experimental research, while methods of systematization and generalization were applied to formulate conclusions derived from the pedagogical study.

Results: The effectiveness of the developed methodology was evaluated; statistical data collected during the ascertaining and formative stages of the experiment were presented to confirm its effectiveness and to determine the dynamics of entrepreneurial competence development in future performing artists.

Conclusions: The establishment of specific pedagogical conditions in educational institutions and the application of the developed methodology proved effective, as evidenced by an increase in the number of future performing artists with high and medium levels of entrepreneurial competence development. Specifically, according to the value-motivational criterion, the increase was 23.5% and 0.5%, respectively; according to the personal-reflective criterion – 7.5% and 4.0%; and according to the cognitive-activity criterion – 4.4% and 22.6%.

Keywords: *entrepreneurial competence, pedagogical experiment, pedagogical conditions, methodology for developing entrepreneurial competence in future performing artists in specialized colleges with an artistic focus.*

Introduction. Proper preparation of young people for entrepreneurial activities within educational institutions is an effective means of addressing many pressing socio-economic challenges (Aleksieieva & Yershova, 2020, p. 45). In the context of war and post-war recovery, mastering the fundamentals of entrepreneurship becomes as crucial for performing artists as technical proficiency and creative vision.

Future performing artists are no longer limited to creating artistic works; they are also actively engaged in management, marketing, financial planning, and audience communication, particularly through the use of digital technologies. Education plays a pivotal role in developing entrepreneurial abilities, as innate predispositions, without proper cultivation, do not ensure the effective realization of future specialists in

entrepreneurship (Polishchuk & Kavtysh, 2022, p. 21). The educational process must be structured to foster entrepreneurial competence in specialists by enhancing their motivation (Yershova, 2017). The development of entrepreneurial skills and abilities in future performing artists can occur either through the spontaneous influence of external circumstances or through targeted educational efforts, provided that specific, well-substantiated pedagogical conditions are met.

Sources. In designing the diagnostic toolkit for the pedagogical experiment, existing methodologies aligned with predefined criteria and indicators were selected. To assess the development of the value-motivational criterion, the "Motivation for Professional Activity" methodology by K. Zamfir, modified by A. Rean, was employed (Kokun et al., 2021, p. 156). T. Ehlers' "Motivation for Success" methodology was used to evaluate the presence of success-oriented motivation, measuring the strength of the drive to achieve goals and succeed (Kokun et al., 2021, pp. 146-148). To determine the level of development of the personal-reflective criterion, the following tools were applied: O. P. Serheienkova's "Self-Assessment of Abilities for Self-Education and Personal Development" questionnaire, which provides insights into the self-education and self-development capacities of future performing artists (Yehorova et al., 2014, pp. 111-114); and O. Shmelyov's study on risk propensity, which is significant for psychological forecasting of decision-making processes under uncertainty, including in entrepreneurial activities (Lemak & Petryshche, 2011, pp. 206-209).

Objective of the Article. The study aims to experimentally verify the effectiveness of the identified key pedagogical conditions and the developed methodology for fostering entrepreneurial competence in future performing artists within vocational colleges.

Methods. The following methods were utilized: observation, surveys, testing, interviews, and monitoring of entrepreneurial competence development levels—to experimentally validate the outcomes of implementing pedagogical conditions for enhancing entrepreneurial competence in future performing artists; quantitative and qualitative analysis—to interpret the results of the experimental research; and systematization and generalization—to formulate conclusions based on the pedagogical study.

Results and Discussion. The development of entrepreneurial skills and abilities in future performing artists can be achieved either through the spontaneous influence of various factors or through purposeful

efforts, provided that specific, substantiated pedagogical conditions are fulfilled: 1) aligning the content of educational and professional programs with the needs of modern artistic enterprises; 2) employing innovative technologies to develop entrepreneurial competence in future performing artists using digital learning tools; 3) designing an elective educational component titled "Preparation of Performing Artists for Entrepreneurial Activities"; 4) utilizing case studies to enhance the communicative skills of performing artists in their future professional activities (Shesterikova, 2023). Based on the analysis of scientific sources and substantiated pedagogical conditions, a phased methodology for developing entrepreneurial competence in future performing artists within vocational colleges was devised. This methodology, intended for future specialists in the artistic field, comprises three stages: motivational, practical, and analytical.

At the **motivational stage**, the following activities are conducted for future performing artists: discussions and debates during educational events and class hours about the importance of entrepreneurship; reading business-related books followed by discussions of the students' experiences during educational events; and using online educational platforms to independently enhance awareness of entrepreneurship and business. The **practical stage** involves a differentiated selection of technologies, methods, and tools that meet the conditions for developing entrepreneurial competence in future performing artists: the use of digital learning tools; creating personal portfolios using digital means; simulating professional communication scenarios; and developing business plans and entrepreneurial strategies. Attention is also given to the psychological foundations of business management, including assessing the creative potential and life goals of future performing artists, studying personality traits, determining temperament types, and evaluating their capacity for reflection, stress management, and resilience to setbacks. Proposals have been made to amend the descriptions of educational and professional programs for the specialty 023 "Fine Arts, Decorative Arts, Restoration" for obtaining the educational and professional degree of "Professional Junior Bachelor" with the qualification of "Performing Artist," incorporating lectures and practical classes with tasks, case methods, and business games to ensure the skills and abilities necessary for successful entry into the labor market or starting a business in the creative industries. Methodological support has been designed for the elective educational component "Preparation of

Performing Artists for Entrepreneurial Activities," which will be implemented in vocational pre-higher education institutions as part of the elective component of the educational and professional program for the specialty 023 "Fine Arts, Decorative Arts, Restoration" for obtaining the "Professional Junior Bachelor" degree with the qualification of "Performing Artist." The primary focus of the **analytical stage** is the evaluation and analysis of the results of the developed methodology for fostering entrepreneurial competence in future performing artists within vocational colleges, based on the levels of practical skills formation, personal qualities, and capacities for creative exploration and business environment analysis.

To verify the effectiveness of the identified key pedagogical conditions and the developed methodology for enhancing entrepreneurial competence in future performing artists within vocational colleges, a pedagogical experiment is necessary. The experimental research program involves assessing the levels of entrepreneurial competence development in future performing artists within vocational colleges and consists of four interconnected stages (exploratory, diagnostic, formative, and summative). A diagnostic toolkit was developed, incorporating a range of traditional and original methodologies aligned with the established criteria and indicators (Table 1).

Table 1

Program of Experimental Research to Verify the Effectiveness of Pedagogical Conditions for Developing Entrepreneurial Competence in Future Performing Artists within Vocational Colleges

Stage Name	Content of Experimental Work	Scientific Research Methods
Exploratory (2021-2022)	- processing of sources on the research topic, which contain information about experimental testing of innovations in the development of entrepreneurial competence of future performing artists (scientific, educational, production-practical and reference sources); - identification of contradictions that need to be resolved in the process of experimental work; - substantiation of the scientific principles of organizing experimental work; - development of an experimental program; - analysis of the current level of development of entrepreneurial competence among future performing artists	- analytical review of scientific literature, - system analysis, - synthesis, - generalization, - comparison, - classification, - testing, - terminological analysis.
Stating (2022-2023)	- studying the state of development of entrepreneurial competence of future performing artists in professional colleges; - definition and justification of pedagogical conditions for the development of entrepreneurial competence of future performing artists; - implementation of pedagogical modeling of the development of entrepreneurial competence of future performing artists; - determining criteria and indicators for assessing the levels of development of entrepreneurial competence of future performing artists;	- system analysis, - synthesis, - expert assessment, - ranking, - modeling.

Formative (2023-2024)	• testing the developed methodology for developing entrepreneurial competence for experimental verification of the effectiveness of pedagogical conditions; • testing methodological recommendations for college teaching staff regarding the development of entrepreneurial competence of future performing artists; • diagnostics of the levels of development of entrepreneurial competence of future performing artists.	• questionnaire, • testing, • pedagogical observation, • comparison.
Generalizing (2024-2025)	• quantitative and qualitative analysis of experimental results and interpretation of the results of experimental work • prospects for further implementation of pedagogical conditions for the development of entrepreneurial competence of future performing artists	• systematization, • generalization, • graphical and tabular representation of results.

After identifying and characterizing the criteria, indicators, and levels of development of entrepreneurial competence in future artist-performers, a diagnostic assessment was conducted among 383 students and 46 pedagogical staff across 12 educational institutions based on the established criteria (value-motivational, personal-reflective, cognitive-activity).

The diagnosis of the levels of development of entrepreneurial competence in future artist-performers at vocational colleges during the

ascertaining stage of the experiment, based on the specified criteria and indicators, indicates that the most developed criterion is the personal-reflective one, followed by the slightly less developed value-motivational criterion, while the least developed criterion is the cognitive-activity one. Across all criteria, the predominant level of development of entrepreneurial competence in future artist-performers is the medium level. The results of the development of entrepreneurial competence in future artist-performers are presented in Figure 1.

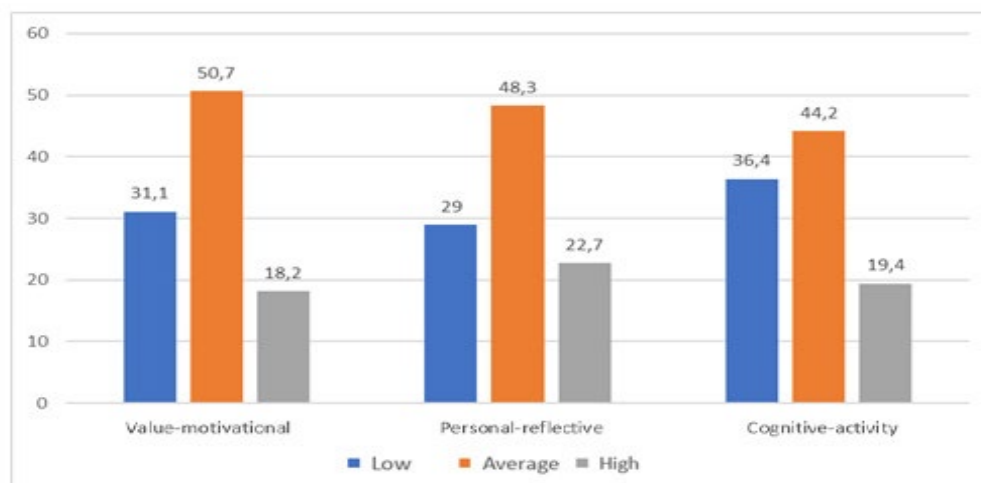


Fig 1. Diagram of the Levels of Development of Entrepreneurial Competence of Future Performing Artists at the Ascertaining Stage of the Experiment

Based on the results of diagnosing the levels of development of entrepreneurial competence of

future performing artists at the ascertaining stage of the experiment, it can be concluded that there is a

need for the phased implementation of the developed methodology and the verification of its effectiveness. The formative stage involved preparing for entrepreneurial activities within the process of professional training of future performing artists in specialized colleges. To confirm the effectiveness of the developed methodology and to determine the dynamics of the development of entrepreneurial competence of future performing artists, a sequential formative experiment was conducted. This approach was chosen because forming control and experimental groups within each institution of specialized pre-higher education proved challenging. A sequential experiment involves testing a hypothesis by comparing the effectiveness of the pedagogical process after introducing a new factor with its effectiveness before the introduction within the same group (Shyian & Vatseba, 2008). It was necessary to test the research hypothesis, which posits that the development of entrepreneurial competence of future performing artists in specialized colleges will be more effective if specific, substantiated pedagogical conditions are implemented. These conditions include aligning the content of educational curricula with the needs of modern enterprises in the artistic field; employing innovative technologies to foster entrepreneurial competence in future performing artists using digital learning tools; preparing methodological recommendations for educational process stakeholders on developing entrepreneurial competence; and ensuring the development of communication skills of performing artists for their future professional activities.

The experimental research work at the formative stage was conducted at the following institutions: Erdeli College of Arts of the Transcarpathian Academy of Arts, the Separate Structural Unit Kyiv Industrial Specialized College of the Kyiv National University of Construction and Architecture, Oleksandriia Specialized College of Culture and Arts, Vyzhnytsia Specialized College of Arts and Design named after Vasyl Shkribliak, Kaniv Specialized College of Culture and Arts of Uman State Pedagogical University named after Pavlo Tychyna, Specialized College of Culture and Arts (Kalush), and Odesa Artistic Specialized College named after M. B. Grekov. The total number of respondents at this stage of the experiment included 226 students and 32 pedagogical staff, confirming the representativeness of the sample (Shesterikova, 2023).

At the formative stage of the experiment, the methodology we developed for fostering entrepreneurial competence in future performing artists in specialized colleges was tested. This methodology was designed based on levels of practical skills formation, personal qualities, and abilities for creative exploration and business environment analysis. Tailored for future specialists in the artistic field, the methodology comprises three stages: motivational, practical, and analytical. The motivational stage includes activities for future performing artists such as discussions and debates during educational events and class hours about the importance of entrepreneurship; reading business-related books and discussing students' experiences during educational activities; and using online educational platforms for self-directed learning about entrepreneurship and business. The practical stage involves a differentiated selection of technologies, methods, and tools to meet the conditions for developing entrepreneurial competence in future performing artists. This includes the use of digital learning tools, the creation of personal portfolios using digital means, modeling professional communication scenarios, and developing business plans and entrepreneurial strategies. Attention is also given to the psychological foundations of business management, including identifying creative potential and life goals of future performing artists, studying personality traits, determining temperament types, and assessing their capacity for reflection, stress management, and coping with setbacks. Proposals were made to amend the descriptions of educational and professional programs for the specialty 023 "Fine Arts, Decorative Arts, Restoration" for obtaining the educational and professional degree of "Junior Specialist" with the qualification "Performing Artist." These amendments include adding lecture and practical sessions with tasks, case studies, and business games to ensure the skills and competencies necessary for successfully entering the labor market or starting a business in the creative industries. Methodological support was designed for the elective educational component "Preparation of Performing Artists for Entrepreneurial Activity," which will be applied in specialized pre-higher education institutions as part of the elective component of the educational and professional program for the specialty 023 "Fine Arts, Decorative Arts, Restoration" for the "Junior Specialist" degree with the qualification "Performing Artist." Additionally, based on the results of the ascertaining

experiment, methodological recommendations were developed for fostering entrepreneurial competence in future performing artists in specialized colleges.

The primary focus of the analytical stage is the evaluation and analysis of the results of the developed methodology for fostering entrepreneurial competence in future performing artists in specialized colleges. This evaluation is based on the levels of formation of practical skills, personal qualities, and abilities for creative exploration and business environment analysis.

The results obtained after conducting the formative experiment, using the same diagnostic tools as those applied during the ascertaining experiment, demonstrated changes. The data from diagnosing the levels of development of entrepreneurial competence of future performing artists based on the value-motivational criterion before and after the formative experiment are visualized in Figure 2.

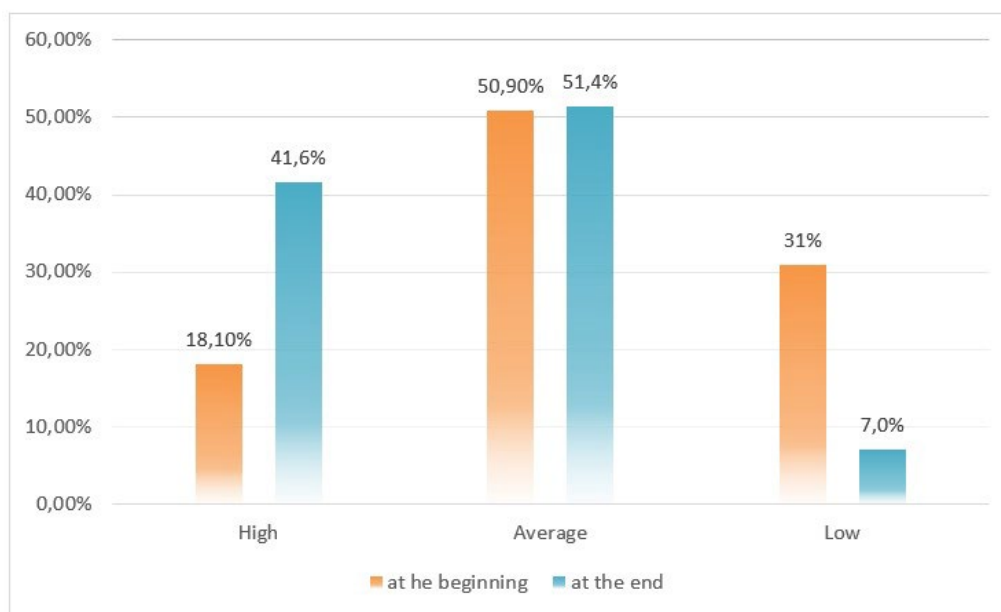


Fig 2. Diagram of the Levels of Development of Entrepreneurial Competence of Future Performing Artists Based on the Value-Motivational Criterion at the Beginning and End of the Formative Experiment

The analysis of the dynamics of entrepreneurial competence development indicates a decrease in the number of future performing artists with a low level of competence by 24.0%, an increase in the average level by 0.5%, and a rise in the high level of development by 23.5% according to the value-motivational criterion. Based on the obtained results, future performing artists have developed an awareness of a sustained need for self-realization, as well as an

understanding that their creativity can serve not only as a means of self-expression but also as a tool for achieving commercial success in the field of creative industries.

The dynamics of the development of entrepreneurial competence of future performing artists according to the personality-reflective criterion before and after the formative experiment is presented in Figure 3.

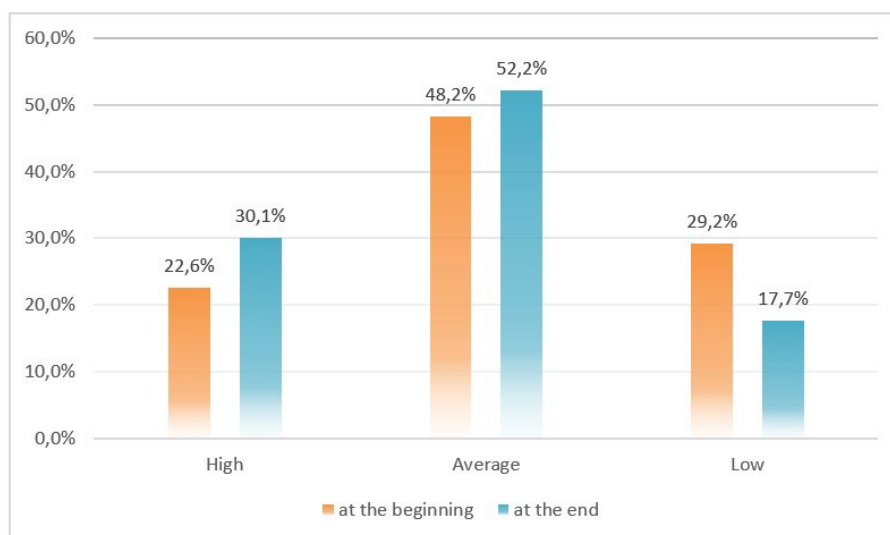


Fig 3. Diagram of the Levels of Development of Entrepreneurial Competence of Future Performing Artists Based on the Personality-Reflective Criterion at the Beginning and End of the Formative Experiment

The analysis of the data on the dynamics of the development of entrepreneurial competence indicates positive changes according to the personality-reflective criterion. Specifically, there was a decrease of 11.5% in the number of future performing artists with a low level of competence, accompanied by an increase of 4.0% in the average level and a 7.5% rise in the high level of development based on this criterion. The personality-reflective criterion is exceptionally significant, as reflection enables future artists to evaluate their achievements, identify mistakes, and draw conclusions for further improvement and the

generation of new ideas. Furthermore, this criterion encompasses a creative aspect, which implies a well-developed ability of future performing artists to creatively seek promising business ideas within the sphere of creative industries, critically perceive situations, and implement and promote their own creative concepts.

Separately, an analysis of the dynamics of the development of entrepreneurial competence of future performing artists based on the cognitive-activity criterion, conducted before and after the formative experiment, is presented for educators and students in Figures 4 and 5.

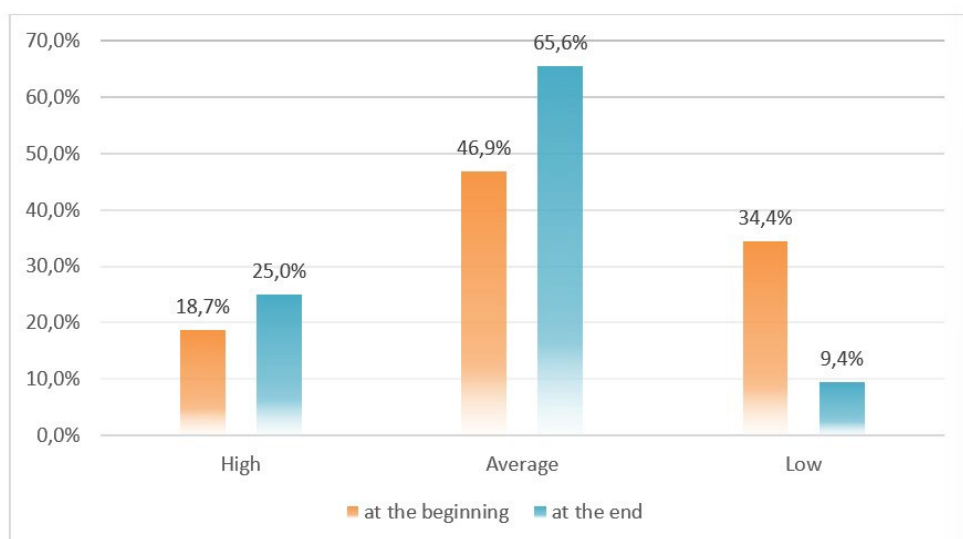


Fig. 4. Diagram of the levels of entrepreneurial competence development of future performing artists based on the cognitive-activity criterion at the beginning and end of the formative experiment (survey of educators)

According to the results of a survey conducted among educators from specialized pre-higher education institutions, based on the cognitive-activity criterion, positive changes were

identified: a decrease in the proportion of the low level by 25.0%, and an increase in the medium level by 18.7% and the high level by 6.3% of the specified criterion.

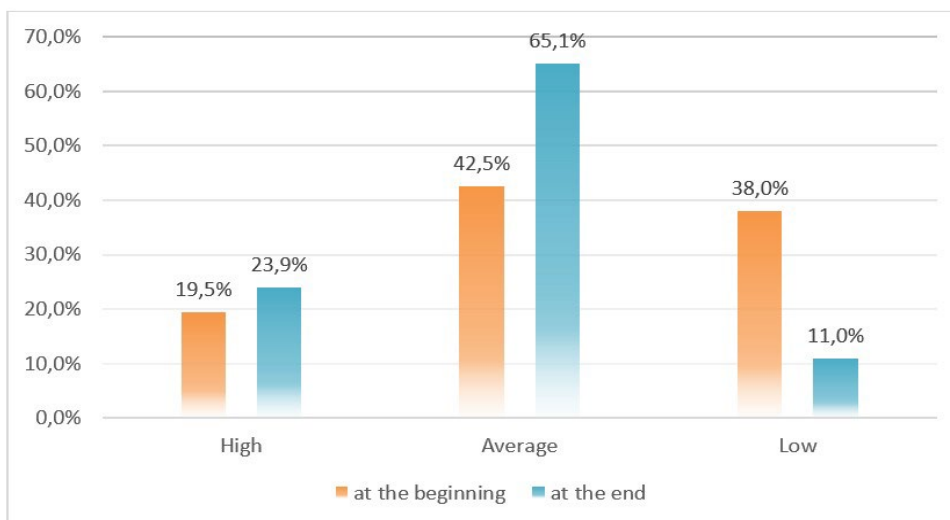


Fig. 5. Diagram of the Levels of Development of Entrepreneurial Competence of Future Performing Artists Based on the Cognitive-Activity Criterion at the Beginning and End of the Formative Experiment (Students' Self-Assessment)

The analysis of self-assessment data from future performing artists regarding the development of the cognitive-activity criterion indicates a reduction in the number of future performing artists with a low level by 27.0%, an increase in the average level by 22.6%, and an increase in the high level of development by 4.4% according to this criterion. The selected set of technologies (information and communication technology, situational modeling, portfolio), methods (research, business games, project-based method, case method), and tools (tests, educational and methodological support,

cases, digital learning resources) proved to be effective and contributed to a positive trend in the development of entrepreneurial competence among future performing artists based on the cognitive-activity criterion.

A consolidated summary table of results enables a comparison of the quantitative changes in the levels of entrepreneurial competence development of future performing artists at the beginning and end of the formative experiment (Table 2).

Table 2

Consolidated Results of the Development of Entrepreneurial Competence of Future Performing Artists at the Beginning and End of the Formative Experiment

Levels	Study groups				Difference, %
	At the beginning of the experiment	At the beginning of the experiment	At the end of the experiment	At the end of the experiment	
	persons	%	persons	%	
Value -motivational criterion					
High	41	18.1	94	41.60	+23.5
Average	115	50.9	116	51.40	+0.5
Low	70	31.0	16	7.00	-24.0
Total	226	100	226	100.00	

Personal-reflective criterion					
High	51	22.6	68	30.10	+7.5
Average	109	48.2	118	52.20	+4.0
Low	66	29.2	40	17.70	-11.5
Total	226	100	226	100.00	
Cognitive -activity criterion (survey of teachers)					
High	6	18.7	8	25.00	+6.3
Average	15	46.9	21	65.60	+18.7
Low	11	34.4	3	9.40	-25.0
Total	32	100	32	100.00	
Cognitive -activity criterion (student self-assessment)					
High	44	19.5	54	23.90	+4.4
Average	96	42.5	147	65.10	+22.6
Low	86	38.0	25	11.00	-27.0
Total	226	100	226	100.00	

After conducting a qualitative analysis of the obtained results based on Pearson's statistical criterion, it was determined that the difference in development levels before and after the formative experiment is statistically significant ($\chi^2_{crit} 5.991 < \chi^2_{emp} 29.812$), and thus reliable. Consequently, the results obtained following the formative stage of the experiment confirm the effectiveness of the identified pedagogical conditions and the efficacy of the developed methodology for fostering entrepreneurial competence in future performing artists at specialized colleges.

Conclusions. The evaluation of the effectiveness of the developed methodology has proven the success of the identified pedagogical conditions, which is reflected in the positive dynamics of the development of entrepreneurial competence among future performing artists. A comparative analysis of the results of implementing the methodology for developing entrepreneurial competence in future performing artists, based on the value-motivational criterion before and after the formative experiment, indicates that the number of

future performing artists with a low level decreased by 24.0%, the proportion with a medium level increased by 0.5%, and the share with a high level of development rose by 23.5%. Regarding the personal-reflective criterion, positive changes were also observed, specifically a reduction in the number of future performing artists with a low level by 11.5%, an increase in the medium level by 4.0%, and a rise in the high level of development by 7.5% according to this criterion. In terms of the cognitive-activity criterion, a decrease in the number of future performing artists with a low level by 27.0% was recorded among students, alongside an increase in the medium level by 22.6% and the high level of development by 4.4% based on this criterion.

Prospects for further research. Future scientific inquiries are envisioned to focus on the development of a pedagogical system for fostering entrepreneurial competence in future performing artists, as well as the creation of effective methodologies and technologies for enhancing entrepreneurial competence among future performing artists in specialized colleges.

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ЕКСПЕРИМЕНТАЛЬНА ПЕРЕВІРКА РЕЗУЛЬТАТИВНОСТІ ПЕДАГОГІЧНИХ УМОВ РОЗВИТКУ ПІДПРИЄМНИЦЬКОЇ КОМПЕТЕНТНОСТІ МАЙБУТНІХ ХУДОЖНИКІВ-ВИКОНАВЦІВ У ФАХОВИХ КОЛЕДЖАХ

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Реферат:

Актуальність статті зумовлена необхідністю забезпечення відповідності підготовки майбутніх художників-виконавців потребам сучасних підприємств художнього профілю та відсутністю експериментально перевірених методик розвитку підприємницької компетентності у фахових коледжах мистецького спрямування.

Мета: експериментально перевірити ефективність визначених педагогічних умов та розробленої методики розвитку підприємницької компетентності майбутніх художників-виконавців у фахових коледжах.

Методи: спостереження, анкетування, тестування, опитування, моніторинг рівнів розвитку підприємницької компетентності – для експериментальної перевірки результатів проведеної роботи з упровадження педагогічних умов розвитку підприємницької компетентності майбутніх художників-виконавців; кількісний та якісний аналіз – для інтерпретації результатів дослідно-експериментальної роботи; методи систематизації та узагальнення – для формулювання висновків, отриманих в результаті проведення педагогічного дослідження.

Результати: здійснено перевірку ефективності розробленої методики; представлено статистичні дані, зібрані на констатувальному та формуальному етапах експерименту для підтвердження її результативності та визначення динаміки розвитку підприємницької компетентності майбутніх художників-виконавців.

Висновки: створення в закладах освіти визначених педагогічних умов та застосування розробленої методики довели свою результативність, засвідчивши зростання кількості майбутніх художників-виконавців з високим і середнім рівнями розвитку підприємницької компетентності: за ціннісно-мотиваційним критерієм – на 23,5% і 0,5% відповідно; за особистісно-рефлексивним – на 7,5% та 4,0%; за когнітивно-діяльним – на 4,4% та 22,6%.

Ключові слова: підприємницька компетентність, педагогічний експеримент, педагогічні умови, методика розвитку підприємницької компетентності майбутніх художників-виконавців у фахових коледжах мистецького спрямування.

Received: 16 September 2024
Accept: 12 December 2024



TRENDS IN UPDATING THE CONTENT OF TRAINING FUTURE TEACHERS OF UKRAINIAN LANGUAGE AND LITERATURE IN HIGHER PEDAGOGICAL EDUCATION INSTITUTIONS

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Abstract

Relevance: Amid the military aggression of the Russian Federation against Ukraine, the teacher plays a crucial sociocultural role as a transmitter of national cultural traditions, professional knowledge, and the values of language, literature, folklore, and history in educational practice. Through their personal and professional example, teachers shape students into Ukrainian-speaking individuals endowed with civic consciousness, a high level of national identity, and Ukrainian self-awareness. In this context, philology teachers must maximize the resources of the "living" word through innovative forms, methods, and tools to influence the spiritual, ethical, and aesthetic development of students. This necessitates updating the content of training future teachers of Ukrainian language and literature in higher pedagogical education institutions in accordance with contemporary demands.

Objective: To outline trends in updating the content of professional training for future teachers of Ukrainian language and literature in higher pedagogical education institutions within the context of educational reform changes.

Methods: Content analysis – examining the content of educational programs and syllabi for training future teachers of Ukrainian language and literature in higher pedagogical education institutions; study of innovative experiences – investigating qualitative educational practices for implementing innovations in the training content of future teachers, considering reform changes in the educational sphere; systematization – identifying trends in updating the training content.

Results: The sociocultural mission of the Ukrainian language and literature teacher is generalized as a transmitter of innovative changes in the linguistic and literary field within basic secondary and specialized schools, based on the Concept of the New Ukrainian School, the State Standard of Basic Secondary Education, and the State Standard of Specialized Secondary Education.

Conclusions: It is established that, in the context of modern educational reforms, the issue of updating the training content for contemporary Ukrainian language and literature teachers becomes critical. Such teachers must possess a high level of professional competencies, be oriented toward research activities, serve as bearers of societal linguistic culture, and define the vectors of axiological and cultural development for both individuals and the state as a whole. Several trends are identified in the professional training content: structuring discipline content based on interdisciplinarity; implementing a competency-based approach; aligning training content with the implementation of changes in the linguistic and literary field in basic secondary and specialized schools, which involves enriching content modules and topics within core pedagogical and methodological disciplines with material reflecting the specifics of teaching Ukrainian language and literature under new state standards. The experience of training future teachers under educational and professional programs (014 Secondary Education: Ukrainian Language and Literature) at bachelor's and master's levels, considering modern educational changes, is presented.

Keywords: *Ukrainian language and literature teacher, professional training, state standard of specialized secondary education, competencies, New Ukrainian School, educational content.*

Introduction. 1 In contemporary conditions, higher pedagogical education in Ukraine bears a significant mission: preserving young people's identificational affiliation with their nation and state, fostering conscious adherence to state laws and moral norms rooted in the Ukrainian people's mentality, preparing a new generation of teachers, instilling in them devotion to their nation, intolerance of moral and physical violence against individuals, and the capacity for self-development and self-realization across various activities. In the context of implementing the Standards and Recommendations for Quality Assurance in the European Higher Education Area (2015), and affirming traditions and innovations in pedagogical education, the issue of enhancing the quality of training future pedagogical specialists in higher education institutions across all educational levels becomes increasingly relevant. Currently, Ukrainian education is undergoing transformative changes in teacher training, driven by the European integration trajectory of higher education in general and pedagogical education in particular, as well as the state's need to provide educational institutions with highly qualified, professionally competent teachers capable of enacting qualitative changes at national, regional, and local levels.

The teacher of Ukrainian language and literature fulfills a distinct sociocultural mission. Through their professional life and exemplary respect for language, culture, history, and art, they shape the values of modern students, who possess a wide range of opportunities and talents yet are influenced by "clip" culture and the excessive digitalization of daily activities—cognitive, recreational, extracurricular, and beyond. Therefore, philology teachers must fully leverage the resources of the "living" word through innovative forms, methods, and tools to impact students' spiritual, ethical, and aesthetic development. As bearers of linguistic experience and transmitters of linguistic traditions, cultural realities, and literary values, philology teachers underscore the urgency of improving the content of their professional training on a competency-based foundation, alongside transformative reforms driven by qualitative shifts in

general secondary and specialized education. These competencies are pivotal for teachers to implement innovations outlined in the Concept of the New Ukrainian School and state standards across primary, basic secondary, and specialized school levels.

Objective: To identify and characterize trends in updating the content of training future teachers of Ukrainian language and literature in higher pedagogical education institutions.

Methods: Analysis of scientific and practical sources – to study the experience of training future teachers under educational and professional programs (014 Secondary Education: Ukrainian Language and Literature) at bachelor's and master's levels; analysis of scientific literature and regulatory documents governing updates to training content – to identify and substantiate the trends outlined in the objective; interpretative method – to generalize the role of Ukrainian language and literature teachers amid war and postwar national recovery.

Sources: Contemporary Ukrainian scholars (N. Mukan, M. Havrylyuk (2024), O. Semenoh, N. Berezhnyi (2024)) have dedicated research to the training of future Ukrainian language and literature teachers. Numerous studies present modern vectors for reforming philological teacher training in higher pedagogical education institutions (R. Dubrovskiy, I. Kominiarska (2022), L. Lukianova, M. Vovk, S. Solomakha, Yu. Hryshchenko (2023), N. Podlevska, A. Dotsenko, O. Stadnichenko (2024), among others). Our own research offers scientific reflections on improving the professional training of future Ukrainian language and literature teachers (M. Vovk (2024a; 2024b)). However, the issue of structuring the content of professional training for these teachers, considering innovations in basic secondary and upper secondary schools and reform changes in the linguistic and literary field within specialized education, requires further generalization.

Results and Discussion. The legislative and normative regulation of training future teachers, particularly Ukrainian language and literature teachers, in Ukraine is shaped by the implementation of key national and European Union documents

(e.g., Ukraine's Laws "On Education," "On Higher Education," "On Ensuring the Functioning of Ukrainian as the State Language," the Concept of Pedagogical Education Development in Ukraine, Standards and Recommendations for Quality Assurance in the European Higher Education Area, Common European Framework of Reference for Languages, the Professional Standard "Teacher of General Secondary Education Institution" (2024), the Professional Standard for the Group of Professions "Higher Education Institution Lecturers" (2021), and provisions on teachers' professional development and certification). Since 2019, higher education standards for philological-pedagogical specialties have been enacted (Higher Education Standard, 2019). These documents establish a competency-based paradigm for teacher training, including Ukrainian language and literature teachers, integrating traditions and innovations. The standards unify key competencies for philology teachers, such as "understanding the structure of philological science and its theoretical foundations; the ability to analyze dialectal and social language variations and describe sociolinguistic situations; the ability to use the studied language(s) freely, flexibly, and effectively in oral and written forms across various genre-stylistic variations; the ability to collect, analyze, systematize, and interpret linguistic, literary, and folkloric data, as well as interpret and translate texts (depending on specialization); the ability to proficiently use specialized terminology to address professional tasks; and the ability to conduct linguistic, literary, and specialized philological analyses of texts across styles and genres" (Standards of Higher Education, Ministry of Education and Science of Ukraine). These standards define the vectors for forming and developing professional competencies, necessitating appropriate structuring of training content.

A key trend in structuring professional training content is its alignment with implementing changes in the linguistic and literary field in basic secondary and specialized schools. Ukrainian language and literature teachers serve as transmitters of innovative changes in secondary education institutions, aligning with the reform vectors of basic secondary and specialized education based on the Concept of the New Ukrainian School (2018), the State Standard of Basic Secondary Education

(2020), and the State Standard of Specialized Secondary Education (2024).

In their professional activities and teaching practices, Ukrainian language and literature teachers adhere to current curricula approved by the Ministry of Education and Science of Ukraine (Curricula for Grades 5-9..., 2023). Since the 2022-2023 academic year, reform changes have been implemented in basic secondary schools to ratify the New Ukrainian School Concept starting from Grade 5. Accordingly, teachers must be prepared to introduce these changes into school practice using developed model curricula for linguistic and literary disciplines (Model Curricula for Grades 5-9 of the New Ukrainian School..., 2022).

Currently, upper secondary education is undergoing reform in line with transformative changes based on the New Ukrainian School Concept and the development of the State Standard of Basic Secondary Education. Since 2018, higher pedagogical education institutions have faced the challenge of integrating linguistic and literary field changes per the New Ukrainian School into the educational and professional programs for training future Ukrainian language and literature teachers. This issue has gained further relevance due to the need to prepare future teachers for implementing specialized education in upper grades and the enactment of the State Standard of Specialized Education (2024).

Certain content aspects of specialized-level programs are available for future Ukrainian language and literature teachers to master within pedagogical and methodological disciplines under educational and professional programs at the bachelor's level (e.g., Mykhailo Drahomanov Ukrainian State University, Sumy State Pedagogical University named after A.S. Makarenko, Uman State Pedagogical University named after Pavlo Tychna, among others). Accordingly, studying core disciplines such as "Methods of Teaching Ukrainian Language," "Methods of Teaching Ukrainian Literature," and elective educational components aims to develop subject-methodological and innovative competencies, as well as lifelong learning skills, in future teachers. At Poltava National Pedagogical University named after V.H. Korolenko, future teachers explore the content of model curricula and textbooks for

Ukrainian language studies in basic secondary schools during teaching internships and specialty-specific practical training; at Vasyl Stefanyk Precarpathian National University, this occurs during teaching internships, and so forth. At Uman State Pedagogical University named after Pavlo Tychyna, courses such as "Psychology of Specialized Schools," "Pedagogy of Specialized Schools," "Methods of Teaching Ukrainian Language (Specialized Level)," and "Methods of Teaching Ukrainian Literature (Specialized Level)" are offered (Lukianova, Vovk, Solomakha, & Hryshchenko, 2023).

The trend of interdisciplinarity in training content for future Ukrainian language and literature teachers is a distinctive feature of structuring psychological and pedagogical disciplines. This is evident in the study of cross-cutting themes in the theory and practice of teaching methodologies and technologies relevant to the pedagogical specialty, as well as psychological issues related to material perception by diverse student categories. This ensures the systematic formation of professional competencies by integrating theoretical knowledge and innovations in educational practice across various psycho-pedagogical disciplines. According to S. Sysoieva (2014), an interdisciplinary approach to structuring educational content does not limit knowledge but creates conditions for establishing connections between different sciences, providing necessary and sufficient knowledge for studying a research object while focusing on its subject within a holistic phenomenon. This approach resolves contradictions in the subject-based learning system between fragmented knowledge acquisition and the need for its synthesis and comprehensive practical application in activities and life (p. 6). Modern researchers emphasize that interdisciplinarity is inherent to pedagogical activity, as it fosters the formation of competencies that transcend classical educational paradigms. Interdisciplinarity is актуалізується across several educational segments: educational-methodological, scientific-cognitive, organizational-academic, and cultural-worldview (Slukhenska, Biryuk, & Nazymok, 2024). In training future Ukrainian language and literature teachers, psycho-pedagogical disciplines are studied on an interdisciplinary basis, including courses such as information and digital technologies

in pedagogy, pedagogical innovation, pedagogical anthropology, and educational management.

The trend of structuring training content for future Ukrainian language and literature teachers on competency-based principles has gained official recognition in educational practice with the adoption of higher education standards for bachelor's and master's levels in philology teacher training (since 2019). However, over the past two decades, scholarly discourse has devoted significant attention to the theoretical and practical aspects of forming a spectrum of critical competencies for philology teachers. Studies substantiate the theory and practice of developing integrative competencies, reflecting an understanding of the multifaceted nature of professional skills, qualities, and knowledge required of philological specialists. These include linguistic, literary, ethnocultural, folkloristic, research, and linguo-cultural competencies, among others. The findings of scholars and practicing educators have laid the groundwork for identifying the most essential general and professional competencies and defining subject-specific outcomes to be developed through educational and professional programs within specific regional higher pedagogical education institutions. Based on an analysis of educational programs for training future Ukrainian language and literature teachers across 12 higher pedagogical education institutions in various regions (as of 2024), the trend of structuring training content on competency-based principles is reflected in the following features: a focus on forming professional competencies and implementing provisions of documents regulating teacher training quality at state-administrative and local levels; a broad range of teaching methodology disciplines; interdependence between psycho-pedagogical and practical training components; a predominance of psycho-pedagogical disciplines over methodological ones; the development of elective educational components considering future specialization and individual educational trajectories; structuring content based on studying inclusive education issues, psychological support, anti-bullying measures, and more; and a focus on developing teaching skills in synthesis with research, innovation, and leadership competencies.

Conclusions. In the context of modern reform shifts in higher pedagogical education, the

issue of updating the training content for contemporary Ukrainian language and literature teachers becomes pressing. Such teachers must possess a high level of professional competencies, be research-oriented, serve as bearers of societal linguistic culture, and define axiological and cultural development vectors for individuals and the state as a whole. This necessitates shifting priorities in the training content for philological educators, affirming principles of cultural relevance, innovation, and interdisciplinarity in education, implementing strategies for individual educational trajectories in their professional development, and ensuring motivation for lifelong professional and personal growth within formal, non-formal, and informal education settings.

Currently, the professional training content for future Ukrainian language and literature teachers exhibits trends such as structuring discipline content based on interdisciplinarity and implementing a competency-based approach. A significant trend is aligning training content with implementing changes in the linguistic and literary field in basic

secondary and specialized schools, which involves enriching content modules and topics within core pedagogical and methodological disciplines with material on teaching Ukrainian language and literature under new state standards.

Challenges in training future Ukrainian language and literature teachers include the need to update training content considering changes in basic secondary and specialized schools; incorporating technologies, forms, and methods of teaching philological disciplines per basic secondary and specialized school standards; expanding the range of elective disciplines addressing the implementation of model curricula in the linguistic and literary field, utilizing relevant educational-methodological support, and conducting calendar-thematic planning.

Prospects for further research include developing educational-methodological support for teaching methodological and pedagogical disciplines based on changes in the linguistic and literary field in basic secondary and specialized schools.

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ТЕНДЕНЦІЇ ОНОВЛЕННЯ ЗМІСТУ ПІДГОТОВКИ МАЙБУТНІХ УЧИТЕЛІВ УКРАЇНСЬКОЇ МОВИ І ЛІТЕРАТУРИ У ЗАКЛАДАХ ВИЩОЇ ПЕДАГОГІЧНОЇ ОСВІТИ

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Реферат:

Актуальність: в умовах військової агресії російської федерації проти України особливу соціокультурну роль виконує вчитель, який є ретранслятором традицій національної культури, професійних знань, цінностей мови, літератури, фольклору, історії в освітній практиці, власним життєвим і професійним прикладом формує учня як україномовну особистість, наділену громадянською позицією, високим рівнем національної ідентичності й української самосвідомості; з огляду на це учитель-філолог повинен використовувати максимально ресурси «живого» слова через посередництво інноваційних форм, методів, засобів, щоб впливати на духовний, етико-естетичний розвиток учнів; для цього необхідно забезпечити оновлення змісту підготовки майбутніх учителів української мови і літератури у закладах вищої педагогічної освіти відповідно до вимог часу.

Мета: окреслення тенденцій оновлення змісту професійної підготовки майбутніх учителів української мови і літератури у закладах вищої педагогічної освіти у контексті реформаційних змін у сфері освіти.

Методи: *контент-аналіз* – вивчення змісту освітніх програм, силабусів дисциплін підготовки майбутніх учителів української мови і літератури у закладах вищої педагогічної освіти; *вивчення інноваційного досвіду* – дослідження якісних освітніх практик імплементації інновацій у зміст підготовки майбутніх учителів української мови і літератури з урахуванням реформаційних змін в освітній сфері; *систематизація* – виокремлення тенденцій оновлення змісту підготовки майбутніх учителів української мови і літератури.

Результати: узагальнено соціокультурну місію вчителя української мови і літератури, який виступає ретранслятором інноваційних змін, що здійснюються у мовно-літературній галузі у базовій середній і профільній школі на основі Концепції Нової української школи, Державного стандарту базової середньої освіти, Державного стандарту профільної середньої школи.

Висновки: з'ясовано, що в контексті сучасних реформаційних зрушень у сфері вищої педагогічної освіти актуалізується проблема оновлення змісту підготовки сучасного вчителя української мови і літератури, який повинен мати високий рівень фахових компетентностей, бути спрямованим на дослідницьку діяльність, виконувати роль носія мовної культури суспільства, визначати вектори аксіокультурного розвитку громадянина зокрема і держави загалом; виокремлено у змісті професійної підготовки майбутніх учителів української мови і літератури низку тенденцій (структурування змісту дисциплін на основі міждисциплінарності; реалізації компетентнісного підходу; структурування змісту професійної підготовки є спрямованість на імплементацію змін у мовно-літературній галузі у базовій середній і профільній школі, що передбачає збагачення змістових модулів, тем у межах основних дисциплін педагогічного, методичного спрямування змістовим контентом щодо особливостей викладання української мови і літератури за новими державними стандартами); представлено досвід підготовки майбутніх учителів української мови і літератури за освітньо-професійними програмами (014 Середня освіта. Українська мова і література) на бакалаврському й магістерському освітніх рівнях з урахуванням сучасних змін в освіті.

Ключові слова: *учитель української мови і літератури, професійна підготовка, державний стандарт профільної середньої школи, компетентності, Нова українська школа, зміст освіти.*

Received: 29 August 2024

Accept: 12 December 2024



EMOTIONAL BURNOUT OF SECONDARY SCHOOL TEACHERS: INTERPRETATION OF A SCREENING STUDY IN THE CONTEXT OF INCLUSIVE EDUCATION

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Abstract

Relevance. The preparation of secondary school teachers for educating students with disabilities requires the development of inclusive competence, which encompasses, among other skills and strategies, proficiency in health-preserving technologies. However, the elevated demands placed on teachers in inclusive classrooms – stemming from the increasing diversity of students' special educational needs, the need to consistently allocate additional time and effort, and the emotional engagement in complex life situations – result in teacher overload, reduced effectiveness, chronic stress, and professional burnout. Understanding and interpreting teachers' current psycho-emotional state is a prerequisite for revising the structure of their professional training and providing subsequent psychological support at the community level.

Objective: To select and test a screening scale for assessing professional burnout among teachers of inclusive classrooms, as well as to identify and interpret the most prominent burnout symptoms.

Methods: A survey was conducted with 65 secondary school teachers from Zhytomyr and Zhytomyr Oblast working in inclusive settings. Data were collected via an online form (Google Forms) containing a screening scale for diagnosing professional burnout. The results were processed by calculating the sum of responses indicating specific burnout symptoms. Data analysis was performed based on three main subscales: emotional exhaustion, depersonalization, and reduction of personal accomplishment.

Results: The findings revealed that a significant proportion of teachers involved in inclusive education exhibit symptoms of professional burnout. The most pronounced symptoms include emotional exhaustion (feelings of fatigue and depletion by the end of the workday) and depersonalization (a desire for isolation). Additionally, a considerable number of respondents reported feeling “at the limit of their capacities,” which may be linked to the additional workload associated with supporting students with special educational needs (SEN). Nevertheless, teachers demonstrated relatively high scores on subscales reflecting their communication skills and self-efficacy beliefs.

Conclusions: The study results confirm the prevalence of professional burnout among secondary school teachers working in inclusive education settings. Consequently, it is advisable to incorporate a psycho-emotional self-regulation component into the content of their professional training. Furthermore, at the community level, there is a need to organize preventive and corrective measures aimed at reducing stress levels associated with teaching students with SEN and mitigating teacher burnout.

Keywords: *teacher's professional burnout, inclusive education, students with special educational needs, screening scale, self-regulation.*

Introduction. The study of the psycho-emotional state of secondary school teachers in Ukraine is driven by a number of critical factors that

directly impact the quality of the educational process, the well-being of educators, and the future of society. Ukrainian teachers operate within a

context of ongoing educational reforms, increased workloads, and often inadequate social support. The ongoing war serves as an additional stressor, affecting the psychological well-being of both students and educators, thereby requiring teachers to provide extra emotional support and adapt the educational process to challenging circumstances. In turn, a teacher's emotional state significantly influences the classroom atmosphere, students' motivation to learn, their psychological comfort, and academic performance. Teachers experiencing depression, anxiety, burnout, or other mental health disorders may exhibit reduced effectiveness in the educational process, increased propensity for conflicts with students and colleagues, and a negative impact on the overall psychological microclimate within schools. Furthermore, prolonged psycho-emotional distress contributes to professional burnout, resulting in decreased productivity, motivation, and job satisfaction.

The implementation of inclusive education places additional demands on teachers, necessitating emotional resilience, empathy, and the ability to tailor the educational process to the special needs of each child with disabilities. Insufficient training and ineffective ongoing support for educators in this domain may lead to psycho-emotional overload, burnout, and potential attrition from the profession.

Given the aforementioned considerations, it appears pertinent to investigate the mental health status of practicing teachers within the context of inclusive education, enhance their psychoeducation with respect to emotional self-regulation, establish systemic support for their mental well-being at the community level, and revise and supplement the training content for future teachers preparing for inclusive education.

Research Sources. This study is grounded in prior research on the structure of teachers' inclusive competence, including works by I. I. Demchenko (2016), O. I. Bezliudnyi and I. I. Demchenko (2019), O. M. Kasyanenko (2018), O. V. Martyniuk (2019), M. Chaikovsky (2012), N. S. Shcherba (2021), among others. These authors have explored and classified the methodological foundations for preparing practicing and prospective educators to work with children and youth with special educational needs (SEN). However, the issue of

supporting teachers' mental health and self-regulation of their psycho-emotional state as an integral component of professional performance remains unaddressed in these studies. To investigate and implement the psychological dimension of this research, screening scales for burnout were utilized, including those developed by V. V. Boiko; K. Maslach and S. Jackson, adapted by N. E. Vodopianova; M. Oliynyk; W. B. Schaufeli, H. De Witte, and S. Desart (2019); and O. Rukavishnikova. Additional materials from A. V. Konyakhina, I. L. Havryk, N. V. Grytsenko, D. M. Gutenko, N. M. Koropchenko, O. M. Obravyt, V. S. Poliakova, L. G. Sukhomlyn, Yu. S. Usyk, and O. I. Chornyi (2016) were also employed. A review of the scientific literature revealed no studies in which authors recommended specific scales for examining the psycho-emotional state of teachers working in inclusive education settings.

Research Objective. The purpose of this article is to select and test a screening scale for assessing professional burnout among teachers in inclusive classrooms, as well as to identify and interpret survey results within the context of their professional training and pedagogical activities.

Research Methods. Given that emotional burnout is not classified as a distinct disorder in the DSM-5, this study examined a range of screening scales in correlation with the International Classification of Diseases (ICD-11). The following methodologies were employed:

1. *V. V. Boiko's Emotional Burnout Diagnostic Method (1994)* – This scale comprises 84 questions and a methodology for calculating results. It enables the analysis of the severity of three burnout components (tension, resistance, and exhaustion) across 12 symptoms of the syndrome, including experiencing psychotraumatic circumstances, self-dissatisfaction, feeling “trapped,” anxiety and depression, inadequate selective emotional responses, emotional-moral disorientation, expansion of emotional economization, reduction of professional duties, emotional deficit, emotional detachment, personal detachment (depersonalization), and psychosomatic and psychovegetative disorders (Strelets, 2023).

2. *Diagnosis of Professional Burnout among Teachers (K. Maslach and S. Jackson, adapted by N.*

E. Vodopianova, 1977) – This screening scale is designed to identify signs of emotional burnout, such as emotional exhaustion (loss of energy, feelings of depletion), depersonalization (increased psychological distancing from work, negative and pessimistic thoughts about work), and reduction of personal accomplishments (decreased professional efficacy). Maslach's conceptualization of burnout has been incorporated into the 11th revision of the ICD-11, where it is classified as an occupational phenomenon (Oliinyk, 2021). Originally developed for screening professionals working with people (e.g., teachers, healthcare workers), the scale was later adapted for other professions. The version adapted by N. E. Vodopianova, tailored for teachers, consists of 22 questions.

3. *Burnout Assessment Tool (BAT, 2019)* – Developed by W. B. Schaufeli, H. De Witte, and S. Desart, this questionnaire comprises two parts: questions identifying core symptoms (exhaustion, detachment, cognitive impairment, emotional impairment – 23 questions) and secondary symptoms (psychological complaints and psychosomatic complaints – 10 questions).

4. *O. Rukavishnikova's Mental Burnout Assessment Method (2003)* – This methodology examines professional burnout through indicators such as psycho-emotional exhaustion, personal detachment, and professional motivation across three levels: interpersonal, personal, and motivational. It includes 72 questions and is considered relatively straightforward in processing results (Konyakhina et al., 2016, p. 16).

5. *J. Gibson's Self-Potential Burnout Assessment Method* – This tool measures burnout components through 18 questions corresponding to depersonalization, personal satisfaction, and emotional exhaustion. It allows respondents to determine their burnout level as low, medium, or high (Konyakhina et al., 2016, p. 16).

6. *J. Greenberg's Burnout Syndrome Research Method* – This methodology includes 20 yes/no questions and establishes burnout levels as low (0–7 points), medium (8–14 points), or high (15–20 points) (Konyakhina et al., 2016, p. 16).

Data from these screening scales are systematized in Table 1. As noted, the analysis considers alignment with the ICD-11, given that burnout is not included in the DSM-5.

Table 1

Characteristics of Screening Scales for Identifying Emotional Burnout

No	Scale Name	Alignment with ICD-11	Number of Questions	Features of Use
1	V. V. Boiko's Emotional Burnout Diagnostic Method	No information identified	84	Enables the assessment of the severity of 12 symptoms of the burnout syndrome.
2	Diagnosis of Professional Burnout (K. Maslach and S. Jackson, adapted by N. E. Vodopianova)	Aligned with ICD-11	22	Used to identify signs of emotional burnout in teachers, including emotional exhaustion, depersonalization, and reduction of personal accomplishments.
3	Burnout Assessment Tool (BAT)	Aligned with ICD-11	23 core and 10 additional questions	Employed to detect both core and secondary symptoms of burnout.
4	O. Rukavishnikova's Mental Burnout Assessment Method	Aligned with ICD-11	72	Facilitates the identification of indicators such as psycho-emotional exhaustion, personal detachment, and professional motivation.
5	J. Gibson's Self-Potential Burnout Assessment Method	Aligned with ICD-11	18	Applied to detect signs of emotional burnout, including emotional exhaustion, depersonalization, and personal satisfaction.
6	J. Greenberg's Burnout Syndrome Research Method	No information identified	20	Utilized to determine the level of burnout (low, medium, or high).

An analysis of the data presented in Table 1 reveals that Scale 5 is the shortest, while Scale 1 is the longest in terms of the number of questions. Scale 2 has been specifically adapted to identify signs of professional burnout among teachers. Furthermore, the author of this scale, K. Maslach, developed a conceptual framework for the structure of burnout that served as the foundation for its inclusion in the ICD-11. Based on these considerations, this study employed the "Diagnosis of Professional Burnout" scale (K. Maslach and S. Jackson, adapted by N. E. Vodopianova).

Results and Discussion. To investigate the presence and characteristics of professional burnout, a screening study was conducted involving 65 respondents participating in professional development courses for secondary school teachers in Zhytomyr and Zhytomyr Oblast. The study took place at Ivan Franko Zhytomyr State University (2024) and focused on teachers working in inclusive classrooms. A Google Form was created for this purpose, with each statement accompanied by six response options: "never," "very rarely," "rarely," "sometimes," "often," and "very often." For the calculation of screening results, only the sum of the two highest response categories ("often" and "very often") was considered, as these indicated the presence of specific burnout symptoms among respondents.

As illustrated in Figure 1, the most pronounced symptoms of professional burnout among teachers were observed in responses to questions 2, 3, 5, 16, and 20, specifically:

- *Question 2:* "By the end of the workday, I feel like a squeezed lemon" (84.4%);

- *Question 16:* "I want to isolate myself and rest from everything and everyone" (72.3%);
- *Question 3:* "I feel tired when I wake up in the morning and have to go to work" (69.3%);
- *Question 20:* "I feel like I'm at the limit of my capabilities" (63.1%);
- *Question 5:* "I communicate with my students/colleagues without unnecessary emotions" (63%).

These findings suggest that the majority of teachers exhibit symptoms of emotional exhaustion (Questions 2 and 3), depersonalization (Questions 16 and 5), and a reduction in personal accomplishments (Question 20). Conversely, the lowest indicators of burnout were observed in responses to questions 7, 12, 17, 18, and 19, specifically:

- *Question 7:* "I can find the right solution in conflict situations" (3.1%);
- *Question 18:* "I easily communicate with people regardless of their social status or character" (6.1%);
- *Question 17:* "I can easily create an atmosphere of friendliness and optimism during communication" (11.3%);
- *Question 19:* "I accomplish a lot during the day" (12.6%);
- *Question 12:* "I have many plans and believe in their realization" (15%).

These results indicate a relatively low prevalence of burnout symptoms related to interpersonal competence, optimism, and perceived productivity among the respondents.

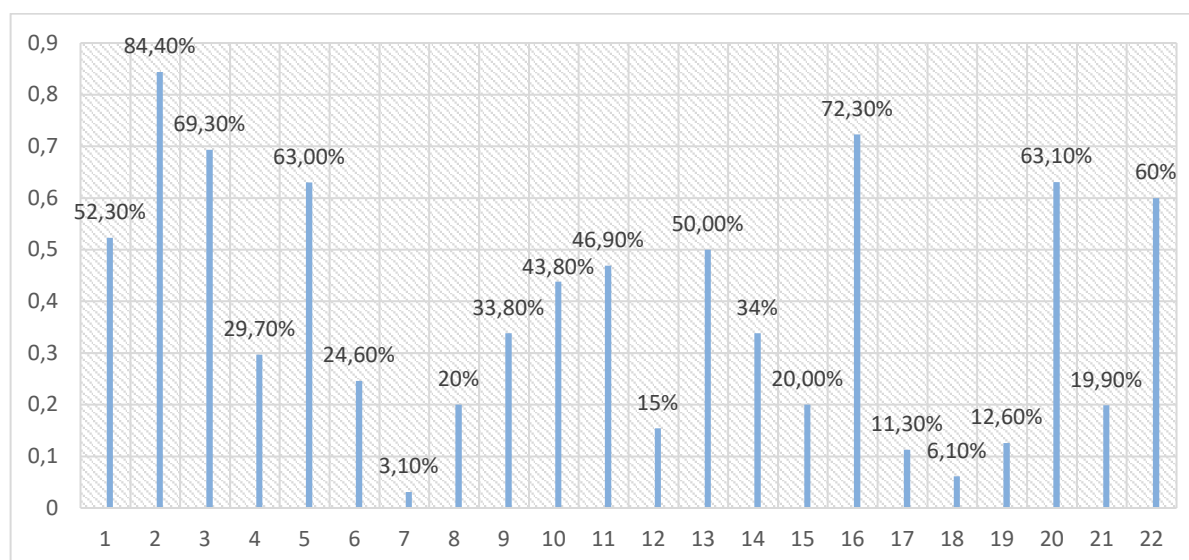


Fig. 1. Results of the Survey of Secondary School Teachers Using the Professional Burnout Diagnostic Scale (K. Maslach and S. Jackson, adapted by N. E. Vodopianova)

The conducted study indicates the presence of varying degrees of professional burnout among teachers of inclusive classrooms. According to Yu. D. Boychuk, O. S. Borodina, K. I. Vasylieva, and N. P. Khrebtova (2013), the inclusive competence of a future teacher represents an integrative personal construct that enables the performance of professional functions within the framework of inclusive education. This involves addressing the diverse educational needs of students with limited health capacities, facilitating their integration into the general educational environment, creating conditions for their development and self-development, and promoting full socialization through the direct mastery of health-preserving technologies. However, the screening results suggest that teachers either do not apply this knowledge for emotional self-regulation or lack sufficient knowledge in this area.

Conclusions. Traditionally, secondary school teachers are regarded as providers of educational services and educators. However, the development of emotional self-regulation skills is not considered an essential component of their professional training (I. I. Demchenko, 2016; O. I. Bezliudnyi & I. I. Demchenko, 2019; O. M.

Kasyanenko, 2018; O. V. Martyniuk, 2019; M. Chaikovsky, 2012; N. S. Shcherba, 2021). The psychological study conducted confirms that teachers – particularly those involved in inclusive education – require enhanced psychoeducation regarding effective emotion management strategies and concrete support at the community level. Such support could include art therapy sessions, systematic psychological seminars or webinars, the establishment of psychological support or mutual aid groups, and collaboration with relevant programs and services. These measures would enable teachers to restore their capacity to work and stabilize their psycho-emotional state. These initiatives should become as integral to professional pedagogical practice as professional development courses, aligning with the requirements of the current Professional Standard for fostering teachers' health-preserving competence.

In light of the above, a promising direction for further research appears to be the development of specific components for training programs for future educators and support systems for practicing teachers of inclusive classrooms. These components should aim to optimize emotional self-regulation and enhance psychological resilience.

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ЕМОЦІЙНЕ ВИГОРАННЯ ВЧИТЕЛІВ ЗЗСО: ІНТЕРПРЕТАЦІЯ СКРИНІНГОВОГО ДОСЛІДЖЕННЯ В КОНТЕКСТІ ІНКЛЮЗИВНОЇ ОСВІТИ

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Реферат:

Актуальність: Підготовка вчителів ЗЗСО до навчання учнів з інвалідністю передбачає формування в них інклюзивної компетентності, яка включає серед інших умінь і стратегій володіння здоров'язбережувальними технологіями. Водночас, високі вимоги до вчителя інклюзивного класу (зростання різноманітності особливих освітніх потреб учнів, необхідність регулярно приділяти додатковий час і зусилля, емоційно залучатись у складні життєві ситуації) призводять до їх перенавантаження, зниження ефективності, хронічного стресу та професійного вигорання. Розуміння та інтерпретація наявного психоемоційного стану педагогів є передумовою перегляду структури їх професійної підготовки та подальшої психологічної підтримки на рівні громад.

Мета: обрати та апробувати скринінгову шкалу професійного вигорання вчителів інклюзивних класів, визначити та інтерпретувати найбільш виражені симптоми вигорання.

Методи: опитування 65 вчителів ЗЗСО м. Житомира та Житомирської області, які працюють в умовах інклюзії, за допомогою онлайн-форми (Google Forms), що містила скринінгову шкалу діагностики професійного вигорання. Результати оброблялися шляхом підрахунку суми відповідей, що вказували на наявність специфічних симптомів вигорання. Аналіз даних здійснювався з урахуванням трьох основних шкал: емоційне виснаження, деперсоналізація та редукція особистих досягнень.

Результати: Виявлено, що значна частина вчителів, залучених до інклюзивного навчання, відчуває симптоми професійного вигорання. Найбільш вираженими є симптоми емоційного виснаження (відчуття втоми, виснаження наприкінці робочого дня) та деперсоналізації (бажання усамітнитись). Також значна частина респондентів відчуває себе «на межі можливостей», що може бути пов'язано з додатковим навантаженням, пов'язаним з роботою з учнями з особливими освітніми потребами (ООП). Водночас, вчителі демонструють відносно високі показники за шкалами, що відображають їхні комунікативні вміння та віру у власні сили.

Висновки: Результати дослідження підтверджують наявність проблеми професійного вигорання у вчителів ЗЗСО, які працюють в умовах інклюзивної освіти. Тому до змісту їх професійної підготовки доцільно включити компонент психоемоційної саморегуляції. Також на рівні громад необхідна організація заходів профілактики та корекції емоційного вигорання вчителів, спрямованих на зниження рівня стресу, пов'язаного з роботою з учнями з ООП.

Ключові слова: професійне вигорання вчителів, інклюзивна освіта, учні з особливими освітніми потребами, скринінгова шкала, саморегуляція.

Received: 03 September 2024

Accept: 12 December 2024



PECULIARITIES OF APPLYING LITERARY RESEARCH METHODS IN THE CONTEXT OF INQUIRY-BASED LEARNING IN SCIENTIFIC LYCEUMS

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Abstract

Relevance. The necessity of identifying the peculiarities of applying literary research methods within the framework of scientific research activities of secondary education students in scientific lyceums is driven by processes aimed at reforming the educational sector as a whole and implementing specialized education in senior grades. This is directly linked to the adoption of inquiry-based learning approaches.

Objective. The aim is to characterize the peculiarities of applying literary research methods in the context of inquiry-based learning in scientific lyceums.

Methods. The study employed the following methods: theoretical analysis of scientific sources—to assess the state of research on the chosen issue and to work with texts of students' research projects completed and defended within the system of the Junior Academy of Sciences; observation of inquiry-based learning in a scientific lyceum—to collect data on students' research activities; and generalization and systematization—to formulate conclusions and recommendations regarding the development of skills in applying literary research methods among senior students.

Results. The study characterized both general and specialized literary research methods in the context of secondary education students' research projects within inquiry-based learning in scientific lyceums. It described the peculiarities of using several general scientific methods (analysis and synthesis, induction and deduction, abstraction, generalization, observation) and analyzed the application of specific literary research methods (biographical, hermeneutic, mythological criticism, comparative, cultural-historical, psychoanalytic, etc.). Additionally, the historical development of these methods and the works of researchers who studied them were outlined.

Conclusions. The study demonstrated that the selection of general scientific and specialized methods of scholarly inquiry by senior students for completing educational projects and research papers on Ukrainian literature within the framework of inquiry-based learning is determined by the chosen topic, formulated objectives, and tasks. It identified the methods that predominated in students' research activities (observation, analysis and synthesis, systemic approach; comparative, psychological, psychoanalytic, cultural-historical, etc.). The findings indicate that the effectiveness of research execution, as well as the objectivity and reliability of the obtained results, depend on the optimal selection of research methods by secondary education students. Furthermore, it was shown that fostering skills in applying general scientific and literary research methods among senior students of scientific lyceums requires purposeful and systematic efforts from literature teachers.

Keywords: *scientific research activity, scientific lyceum, inquiry-based learning, literary research, research methods.*

Introduction. In the context of ongoing reform processes within the educational sector,

various forums, symposia, and scientific-practical conferences actively discuss issues related to the

implementation of specialized education in the senior grades of secondary education institutions, as well as the preparation of lyceums for the pilot phase of these reforms. Within the framework of these trends, the concept of research-oriented learning in lyceums has gained particular significance. This approach is directly linked to the execution of educational projects and the preparation of scientific research papers, including those within the system of the Junior Academy of Sciences. At the same time, it must be acknowledged that students—and occasionally even teachers guiding these studies—encounter difficulties in defining the scientific framework of their research and selecting appropriate scientific inquiry methods that would ensure effective research activity.

This issue acquires particular relevance in the field of language and literature studies, where contemporary philology is characterized by epistemological pluralism. This pluralism allows researchers to choose their methodological foundation and methods of scientific cognition. Such a development stems from the dismantling of the "iron curtain" between Ukrainian and Western literary scholarship in the 1990s, which facilitated scholars' acquaintance with a range of philosophical and literary concepts formulated and applied in Western academia. Consequently, the renewal of the methodological base and the mastery of new scientific cognition methods have not only invigorated linguistic and literary studies, enabling researchers to approach classical literary works from fresh perspectives, but have also given rise to challenges associated with selecting optimal research methods. These methods are crucial for ensuring the effective execution of educational projects and research papers by students within the context of research-oriented learning. In this regard, L. Bazyl notes that there is a current demand for language and literature teachers who encourage students to develop their own positions by interpreting literary and artistic imagery, engaging in research activities, and seeking the true meanings of each artistic phenomenon through the application of elements of modern literary scholarship (Bazyl, 2016). This is particularly pertinent for teachers working in scientific lyceums, who are tasked with involving secondary education students in research activities, thereby purposefully fostering their skills

in selecting and effectively applying scientific research methods to optimally address formulated tasks.

Sources. The organization of research activities for students within the domain of language and literature, as well as the specifics of its methodological support, have been systematically explored in the works of N. Bondarenko (Bondarenko, 2021), D. Matsko (Matsko, 2016), and N. Saprykina (Saprykina, 2010). The interrelationship between the literary competence of Ukrainian language and literature teachers and their ability to organize students' research activities has been substantiated by L. Bazyl (Bazyl, 2016). The formation of research competence in senior students as a personal need for scientific exploration of the world, the ability to conduct research, creatively apply acquired knowledge, and independently master new modes of activity in various spheres of human life has been the subject of investigation by H. Serdiuk (Serdiuk, 2022). Collectively, a review of these and other scholarly works provides grounds to conclude that a substantial body of theoretical material has been amassed regarding the organization and support of research activities for secondary education students. However, the outlined approaches require further specification, considering the particularities of literary studies and the challenges that have become prominent at the current stage.

The purpose of this article is to characterize the specifics of applying literary research methods within the context of research-oriented learning in scientific lyceums.

Methods. The study employed a combination of empirical and theoretical methods of scientific cognition. Specifically, the methods of analysis and synthesis were utilized to process scientific literature relevant to the chosen topic. Additionally, the method of analysis was applied during the examination of research papers by Angelina Serhiivna Popeliukh, completed and defended within the Junior Academy of Sciences in the section "Ukrainian Literature." One of these works, titled "Features of Female Portrayal in O. Zabuzhko's Novel *The Museum of Abandoned Secrets*," earned the author a second-degree diploma at the national stage of the competition-defense in the 2023–24 academic year. Another work,

"Chronotope as a Means of Constructing a New Reality in M. Kidruk's Novel *The Colony*," received a first-degree diploma at the regional stage in the 2024–25 academic year. To collect data on students' research activities, the method of observation was also employed during research-oriented learning at the Chernihiv Regional Scientific Lyceum, a communal institution under the Chernihiv Regional Council. The methods of generalization and systematization were used to formulate conclusions and recommendations for developing senior students' skills in applying literary research methods. All scientific inquiry methods were applied based on the principles of complementarity and alignment with the study's objectives, ensuring the objectivity and reliability of the obtained results.

Results and Discussion. The analysis of scholarly literature and observations of the educational process in a scientific lyceum have provided grounds for concluding that senior students, while undertaking educational projects and research papers on Ukrainian literature within the framework of inquiry-based learning, should integrate specialized research methods with so-called general scientific methods. The latter are traditionally categorized into empirical methods (e.g., observation, measurement, visual-graphic techniques), which are applied at the initial stage of research for collecting and organizing material, and theoretical methods (e.g., induction, deduction, systemic approach), which are employed for processing the aforementioned material. However, it should be noted that there is currently no universally accepted classification of research methods. Certain methods—such as formalization, abstraction, modeling, analysis and synthesis, systematization, and generalization—are regarded by scholars as applicable at both empirical and theoretical levels, depending on the purpose of their use (Sysoieva & Krystopchuk, 2009, p. 19).

This study aims to characterize some of the general scientific and literary research methods, as well as the specifics of their application in the process of literary scientific inquiry. Such inquiries may be conducted by students of a scientific lyceum as part of research projects under the Junior Academy of Sciences or during the execution of educational projects within the context of inquiry-based learning.

Before proceeding to an analysis of contemporary scientific research methods, it is worth noting that in Soviet literary studies, sociological analysis of literary works was widespread. Proponents of this approach argued that the artistic world merely reflects the real world, thus foregrounding social issues in literature. In some instances, this led to an unjustified expansion of the scope of sociological analysis and the emergence of so-called vulgar sociology. This approach was applied not only to the study of themes, issues, conflicts, and characters in a literary work but also to its style, including the rhythm and melody of poetic texts (Kovbasenko, 2002, p. 3).

However, since the 1990s, literary studies have increasingly embraced methods such as archetypal criticism, structuralism and post-structuralism, hermeneutics, psychoanalysis, mythopoetics, as well as biographical, cultural-historical, psychological, comparative, and gender criticism approaches. These methods are considered specialized scientific (literary) methods, having emerged from specific philosophical or interdisciplinary frameworks and been adapted for the analysis of literary material (Kozlyk, 2004). Accordingly, students of scientific lyceums engaged in inquiry-based learning must select specialized literary methods based on the goals and objectives of their research, as well as the genre-stylistic, plot-compositional, and thematic characteristics of the literary work under study.

It should be acknowledged that the application of these methods presupposes the accumulation of empirical material. To this end, the method of observing the text of a literary work proves expedient, involving sequential, careful, and repeated readings of the text with the recording of predetermined aspects. For instance, in a research project dedicated to female portrayal in the works of O. Zabuzhko, researcher A.S. Popeliukh examined verbal means (e.g., evaluations of heroines by narrators, other characters, self-assessment, and the heroine's speech) and nonverbal means (e.g., intonation, voice timbre, laughter, facial expressions, body movements, scent) of female characterization. Consequently, the researcher first had to observe these elements in the literary text and document them for further processing. The comprehensiveness and rigor of the lyceum

student's research depended directly on this collected empirical material.

It is evident that the scope of a research project undertaken by senior students does not allow for the presentation of all factual material gathered through observation. Therefore, the researcher employed sampling, selecting a certain number of elements from the general population to illustrate specific research propositions. The unit of such sampling consisted of fragments of literary works (quotations), including phrases, sentences, sentence fragments, several sentences, or a paragraph. Generally, it must be noted that literary studies typically employ a random sampling procedure, meaning this method largely relies on the researcher's preferences, which naturally affects the objectivity of the study. In other words, the student-researcher independently decided which material to use in compiling the research paper, guided by principles of appropriateness. To ensure the reliability of the results and the robustness of the conclusions, the sampled materials should ideally represent works of various genre models and different periods of an author's creative output. Additionally, they should reflect diverse aspects of the phenomenon's functioning within the literary work.

Measurement, as an empirical method, also plays a role in literary studies, as certain classifications of character portraits in literary works are based on word counts in descriptions. For example, O. Kalyniuk distinguishes short (2–9 word usages), medium (10–29 word usages), semi-long (30–59 word usages), long (60–89 word usages), and extra-long (90–200 word usages) portraits based on the length of portrait fragments (Kalyniuk, 1999, p. 11). Accordingly, A.S. Popeliukh employed the measurement method when analyzing the portrait characteristics of heroines in the novel *The Museum of Abandoned Secrets*.

The appropriateness of applying a systemic approach in literary studies stems from the perception of a literary work as a systematically organized whole, comprising two primary components—content and form—which encompass a range of elements in various interrelations (Marko, 2013). It is worth emphasizing that the systemic approach to studying a research object gained prominence only in the second half of the 20th

century, when scholars began to approach the analysis of an object not in isolation but holistically, viewing it as a complex entity. This entails examining not only the structure and properties of the object but also the connections between its parts, subsystems, their functions, and their interactions with the surrounding world.

It should be noted that the application of the systemic approach in research involves adhering to several requirements, including: a) identifying the dependence of each element on its place and function within the system, recognizing that the properties of the whole cannot be reduced to the sum of its parts; b) analyzing how the system's behavior is determined by both the characteristics of its individual elements and the properties of its structure; c) investigating the mechanism of interaction between the system and its environment; d) studying the hierarchical nature inherent in the system; e) ensuring a comprehensive, multifaceted description of the system; and f) considering the system as a dynamic, evolving whole (Udalov, Zubovych, Polezhaieva, 2005).

In the context of scientific lyceum students employing the systemic approach in literary studies within inquiry-based learning, it must be emphasized that one of the fundamental principles of literary analysis is the unity of content and form. This principle obliges the researcher, when analyzing content (themes, issues, ideas of the work), to consider elements of its form (genre determinants, plot and compositional features, specifics of the imagery system, rhythm, and melody) (Kozlyk, 2004). It is widely held that the content of a literary work cannot be examined in isolation from its form, as this would reduce the analysis to a mere retelling of the plot or reflections on the reading. Similarly, studying form in isolation from content would devolve into mere theorizing.

Analyzing the peculiarities of the chronotopic organization in Max Kidruk's novel *The Colony*, Popelyukh A.S. examines artistic time and space through contextual, intertextual, and meaning-generating perspectives, as well as their interconnections with all components of content and form. Consequently, this approach enables not only the consideration of the literary work as a system but also the chronotope itself, thereby providing a

foundation for studying its individual components and the relationships between them.

In our view, the methods of analysis and synthesis are particularly significant for students' educational projects and research papers, acquiring a specific character within the framework of literary studies. Given their dialectical unity, we shall characterize them collectively: as is well known, the method of analysis involves dividing an object into its constituent parts to study them independently and to determine the specifics of their interactions; synthesis, in turn, entails the real or conceptual integration of various aspects, features, or parts of a subject into a unified whole—not an eclectic combination, but a purposeful arrangement aimed at elucidating the essence of a phenomenon or generating new meanings (Sysoieva, Krystopchuk, 2009, p. 37).

Within the context of research-oriented learning, students can apply these methods when undertaking educational projects and research papers, particularly in the process of developing the theoretical section. This is because, through working with dictionaries, literary encyclopedias, monographs, and specialized publications, a researcher must analyze scholars' perspectives on the essence of the problem under investigation. This enables the synthesis of identified propositions and their composition into a coherent text with appropriate logical connections between its individual fragments. These methods can also be employed to characterize the features of the reception of a particular figure's creative work by contemporary literary scholars. Furthermore, the methods of analysis and synthesis can be applied in the practical section of a research paper, allowing students to analyze collected material and process it effectively.

Additionally, in the process of executing educational projects and research papers on Ukrainian literature, senior high school students should also turn to the general scientific methods of induction and deduction. As is known, induction is a logical research technique associated with generalizing the results of observation and experimentation, involving a movement of thought from the particular to the general (Sysoieva, Krystopchuk, 2009, p. 41). For instance, through observing the texts of literary works and analyzing

samples of heroines' portraits by O. Zabuzhko, Popelyukh A.S. concluded that a literary portrait reflects the author's worldview or artistic concept. However, it should be noted that, as previously mentioned, such observations may yield diverse and sometimes contradictory material, rendering inductive generalizations problematic (probabilistic) in nature. This complicates the scientific inquiry process for senior students and necessitates oversight and correction by the teacher within the framework of research-oriented learning.

Deduction, as a method of scientific inquiry, involves a cognitive transition from the general to the particular, deriving the particular from the general, as well as the process of logical inference—that is, moving from certain premises to their conclusions according to specific logical rules (Udalov, Zubovych, Polezhaieva, 2005, p. 34). The essence of deduction lies in employing general scientific propositions to investigate specific phenomena. For example, in the aforementioned student research devoted to literary portraiture in O. Zabuzhko's novel, it was established that a portrait in a literary text serves as a tool of psychologism, depicting not only external features but also the inner state of the heroine. This assertion is then substantiated with examples from the writer's literary works, whereby analyzing portrait descriptions of heroines reveals their connection to the characters' emotions, experiences, and traits.

Senior high school students undertaking educational projects and research papers should understand that, in the process of scientific inquiry, induction and deduction are inextricably linked, though one may predominate at a particular stage of the research. For instance, induction is predominant when generalizing empirical material and formulating a working hypothesis. Conversely, deduction enables the logical organization of experimental data and the construction of a theory grounded in the logic of their interrelations (Sysoieva, Krystopchuk, 2009, p. 44).

Among the specialized methods of literary research that students should employ in the context of research-oriented learning at a scientific lyceum, the biographical method is notably popular. Its theorists (e.g., C. Sainte-Beuve, H. Brandes, and in Ukrainian literary studies, O. Ohonovsky, M. Petrov, I. Franko, V. Smilianska, T. Hundorova) rely

on the premise that a literary work is the product of a writer's creative activity. Consequently, the moral and spiritual image of the artist, along with the events and impressions of their life, are embodied in the literary work, with the writer's persona serving as a focal point reflecting the era, country, and so forth. Proponents of this method emphasize that understanding the artistic and ideological content of a writer's works is impossible without knowledge of their individual history (Kovbasenko, 2002, p. 9). For example, by comparing the author's worldview concept—formulated based on an analysis of O. Zabuzhko's journalistic and literary works—it was hypothesized that the protagonist of the novel *The Museum of Abandoned Secrets*, Daryna Hoshchynska, represents an artistic projection of the author herself.

The origins of the psychological method in literary studies date back to the 1870s–1880s. In Western Europe, the principles of this method are most prominently represented in the works of S. Girardin, E. Hennequin (France), W. Wundt, W. Wetz (Germany), and others. In Ukrainian literary studies, its founder was O. Potebnia, followed by D. Ovsianyko-Kulykovsky, A. Hornfeld, B. Lezin, O. Biletsky, and others. The psychological school in Ukrainian literary studies ceased to exist in the 1920s under ideological pressure from the Soviet regime.

Within the framework of students' research activities in Ukrainian literature under research-oriented learning, it is worth noting that applying the psychological method to the study of portraiture in O. Zabuzhko's aforementioned novel facilitates, on the one hand, the revelation of patterns in the author's postmodernist thinking and, on the other, an analysis of the conceptual structure of characters and the specifics of their thought processes. This method involves the use of psychological tools (concepts, techniques) to analyze the author's artistic and worldview stance, their representation in literary works, the identification of psychologism techniques in character modeling, and the development of a literary work's conflict. In our opinion, employing the psychological method in literary analysis expands the boundaries of cognition during scientific inquiry and allows for the formulation of alternative perspectives on the issue under study.

Separately, it is worth mentioning the use of the psychoanalytic method in the context of students' educational projects and research papers on Ukrainian literature. As a scientific discipline, psychoanalysis (founded by S. Freud) emerged in the late 19th and early 20th centuries in clinical practice. Freud was the first to emphasize its linguistic level, focusing on its micro-images and linking them to psychic phenomena and processes. A significant breakthrough for literary scholars was the opportunity to deeply interpret the symbolism of dreams and their meanings in the context of characters' aspirations and intentions. Moreover, by exploring manifestations of individual and collective unconsciousness, as well as the external expression of unconscious mental experiences, psychoanalysis enables insight into the author's creative workshop and offers a fresh perspective on their characters—delving into their inner world through external manifestations. This method proved highly productive in a student-researcher's analysis of literary portraiture in O. Zabuzhko's works, as the interplay between various spatiotemporal planes in the novel is facilitated by oneiric fragments, i.e., the dreams and visions of the protagonists, Daryna and Andriyan.

The comparative-contrastive (comparative) method emerged within the framework of the comparative-historical school of the second half of the 19th century (Kozlyk, 2004). Its development was significantly influenced by the works of the German philologist T. Benfey, as well as Ukrainian scholars M. Drahomanov, M. Dashkevych, and I. Franko. During the Soviet period, the comparative method faced criticism, while the theory of "interconnections and interactions of literatures" and the concept of comparative-typological analysis of the historical-literary process gained prominence. Currently, the comparative-contrastive method is one of the most widely applied approaches in literary studies. It involves identifying genetic, genetic-contact relationships, and typological convergences (analogies) across national, regional, and global literatures (Marko, 2013). Consequently, researchers focus on the forms of external and internal contacts, influences, interliterary reception, and the mediating role of artistic translations. Additionally, comparativism has acquired an interdisciplinary character, encompassing the

comparison of specific artistic phenomena or works across various art forms. This method became one of the foundational approaches in the study of the poetics of portrayal in Oksana Zabuzhko's novel *The Museum of Abandoned Secrets*. During the development of the theoretical section, Popeliukh A.S. compared literary scholars' perspectives on the functioning of the portrait across different cultural-historical epochs—from the monumental style of the Old Rus' period to postmodernism—a process that was also reflected in a scientific publication co-authored with her academic supervisor (Lilik, Popeliukh, 2023).

The cultural-historical method was proposed in the second half of the 19th century by the French philosopher, historian, and literary scholar H.-A. Taine, who is regarded as the founder of this scholarly school. Representatives of this school from various countries include F. Brunetière and G. Lanson (France), G. Brandes (Denmark), W. Scherer (Germany), and F. De Sanctis (Italy). The incorporation of ideas from the cultural-historical school enabled Popeliukh A.S. to analyze O. Zabuzhko's oeuvre within the context of the literary process of the late 20th and early 21st centuries, identifying the impact of a combination of historical and artistic factors on the formation of the creative generation of the "eightiers." The application of the cultural-historical method facilitated the analysis of specific features of the writer's work, such as irony, intertextuality, and existentialism.

Proponents of the mythological/mythopoetic method assert that all literary works either represent myths in their purest form or contain a significant number of mythical elements. This approach in literary studies is primarily associated with the works of J. Frazer and C. G. Jung (notably his theory of archetypes). At the contemporary stage, the mythopoetic method is employed in literary analysis to elucidate the peculiarities of an author's use of traditional mythological plots and images through their interpretation and transformation; the specifics of creating an authorial myth, where the organization of the artistic text adheres to the laws of mythopoetic poetics; and the comprehension of the features of mythological stylization, where the author merely formally imitates the style of myth (with the myth serving a decorative function) (Marko, 2013). In the context of studying female

characters in O. Zabuzhko's works, the student researcher utilized the mythopoetic method to identify intertextual connections and the specifics of the author's reception of well-known plots, motifs, and images—particularly in the episode concerning "secrets." This enabled her to explore new meanings generated by the author through the reception of familiar narratives within the postmodern context, as well as transformations of female characters associated with the layering of diverse meanings—specifically authorial and symbolically mythological.

Within the framework of research-oriented education in academic lyceums, it is worthwhile to introduce students to the hermeneutic method of literary studies (its theoretical foundations were laid in the works of M. Heidegger and H.-G. Gadamer). This method is based on understanding a literary work as a structure imbued with meaning—that is, as a semantic unity endowed with a generative function of meaning-making. This approach also considers the intentionality of the author's consciousness and the receptive nature of the reading process itself (Kozlyk, 2004). Accordingly, the hermeneutic method of studying literary phenomena and epochs relies on accounting for the complex interplay among the author, the work, and the reader. In her study of O. Zabuzhko's oeuvre, the student researcher employed the hermeneutic method to substantiate various interpretive options for artistic works and to uncover their hidden meanings, taking into account diverse factors.

The application of these methods enabled Popeliukh A.S. to successfully complete and defend not only research papers in literature but also a series of educational projects within the framework of research-oriented education at the academic lyceum.

It should be emphasized that for secondary education students to effectively utilize scientific cognition methods, the supervisor must undertake systematic and consistent efforts, which can be conditionally divided into the following stages:

- Familiarization with the history of each method's emergence, its key representatives, their views and contributions, and the specifics of applying a particular method in the study of a literary work;

- Discussion of the appropriateness of using each method in the context of the chosen research topic, formulated goals, and objectives;
- Selection of methods that ensure the effective resolution of the defined research tasks within a specific study;
- Direct application of scientific cognition methods in the process of research work;
- Summarization of findings, identification, and addressing of gaps in the research through the application of previously unused methods.

Conclusions. This study has outlined general scientific and specialized (literary) methods of scientific cognition that senior students of academic lyceums can employ while working on educational projects and research papers in Ukrainian literature within the context of research-oriented education. It has been established that the selection and application of these methods are determined by the chosen research topic, formulated goals, and objectives. The specifics of applying each general scientific and specialized method were

illustrated through the example of research papers in Ukrainian literature prepared and defended by Popeliukh A.S. during her studies at the academic lyceum. It is noted that some of these methods were dominant (e.g., observation, analysis and synthesis, systemic approach; comparative-contrastive, psychological, psychoanalytic, cultural-historical, etc.), while others played a supplementary role. It is underscored that the optimal selection of research methods by secondary education students determines the effectiveness of their execution, as well as the objectivity and reliability of the obtained results. This, therefore, requires particular attention from the Ukrainian literature teacher (academic supervisor), who must purposefully foster research competence in senior students.

Prospects for further research lie in substantiating the procedure for determining other components of the scientific apparatus of student literary studies, including the object, subject, goals, and objectives.

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ОСОБЛИВОСТІ ЗАСТОСУВАННЯ МЕТОДІВ ЛІТЕРАТУРОЗНАВЧИХ ДОСЛІДЖЕНЬ У КОНТЕКСТІ ДОСЛІДНО-ОРІЄНТОВАНОГО НАВЧАННЯ В НАУКОВИХ ЛІЦЕЯХ

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Реферат:

Актуальність. необхідність визначення особливостей застосування методів літературознавчого дослідження в межах науково-дослідницької роботи здобувачів середньої освіти в наукових ліцеях зумовлена процесами, спрямованими на реформування освітньої галузі загалом і впровадження профільного навчання в старших класах, що безпосередньо пов'язане з дослідно-орієнтованим навчанням.

Мета: схарактеризувати особливості застосування методів літературознавчих досліджень у контексті дослідно-орієнтованого навчання в наукових ліцеях.

Методи: теоретичного аналізу наукових джерел – для з'ясування стану дослідженості обраної проблеми, для роботи з текстами учнівських науково-дослідницьких робіт, виконаних і захищених у системі Малої академії наук; метод спостереження за дослідно-орієнтованим навчанням у науковому ліцеї – для збору даних щодо учнівської науково-дослідницької роботи; узагальнення й систематизації – для формулювання висновків і рекомендацій щодо формування в учнів старших класів навичок застосування методів літературознавчого дослідження.

Результати: схарактеризовано загальні й спеціальні методи літературознавчих досліджень у контексті виконання здобувачами середньої освіти науково-дослідницьких робіт у межах дослідно-орієнтованого навчання в наукових ліцеях; описано особливості використання низки загальнонаукових методів (аналізу й синтезу, індукції й дедукції, абстрагування, узагальнення, спостереження); проаналізовано особливості використання деяких спеціальних методів літературознавчого дослідження (біографічного, герменевтичного, міфологічної критики, порівняльно-зіставного, культурно-історичного, психоаналітичного тощо); охарактеризовано історію формування представлених методів та праці дослідників, які їх вивчали.

Висновки: доведено, що особливості відбору старшокласниками загальнонаукових і спеціальних методів наукового пізнання для виконання навчальних проєктів і науково-дослідницьких робіт із української літератури в контексті дослідно-орієнтованого навчання зумовлюються обраною темою, сформульованою метою і завданнями; охарактеризовано ті методи, що домінували в дослідницькій діяльності учнів (спостереження, аналіз і синтез, системний підхід; порівняльно-зіставний, психологічний, психоаналітичний, культурно-історичний тощо); з'ясовано, що від оптимального підбору здобувачем середньої освіти методів дослідження залежить ефективність його виконання, а також об'єктивність і вірогідність отриманих результатів; показано, що формування в учнів старших класів наукових ліцеїв навичок застосування загальнонаукових і літературознавчих методів дослідження потребує від учителя-словесника цілеспрямованої й системної роботи.

Ключові слова: науково-дослідницька діяльність, науковий ліцей, дослідно-орієнтоване навчання, літературознавче дослідження, методи дослідження.

Received: 16 September 2024

Accept: 12 December 2024



DIGITALIZATION OF YOUTH TRAINING FOR ENTREPRENEURIAL ACTIVITIES IN THE CREATIVE INDUSTRIES

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Abstract

The relevance of this study stems from the significant and growing role of digital technologies in the economy, particularly within the creative industries, where the digitalization of all aspects of life has become a prerequisite for competitiveness.

Aim: To analyze the impact of digitalizing education on the development of entrepreneurial skills among young people.

Methods: Theoretical analysis of scientific, industry-practical, reference, and educational literature to explore the influence of digitalized education on preparing youth for entrepreneurial activities in the creative industries; synthesis of theoretical information and empirical data to identify positive international practices in using digital educational technologies to prepare youth for career development; and a survey of young people to assess their readiness to apply digital technologies in starting and managing their own businesses.

Results: Based on the theoretical analysis of research sources, it was established that integrating digital technologies into youth training significantly enhances their entrepreneurial competence and preparedness for entrepreneurial activities. The majority of surveyed students expressed a positive attitude toward digital innovations in education and confirmed the need for further development of digital skills through practical sessions, webinars, and workshops. Through the analysis of theoretical insights and the synthesis of empirical data, key factors were identified that improve conditions for developing entrepreneurial competence in future professionals. These include active involvement of the state and businesses in creating opportunities for digitalizing education, expanding youth access to digital resources, continuously updating educational programs to reflect the latest digital trends, incorporating modern technologies (such as VR/AR and artificial intelligence) into the educational process, and strengthening the practical component of training through business simulators and startup incubators.

Conclusions: The digitalization of youth training for entrepreneurial activities in the creative industries is a critical factor in shaping competitive professionals capable of creating innovative products that meet the demands of the digital era.

Keywords: digitalization of education, creative industries, entrepreneurial competence, digital educational technologies, arts education, design education.

Introduction. In the context of digitalization and globalization of the economy, young entrepreneurs face the need to master cutting-edge technologies and knowledge to create and promote competitive products. The creative industries sector (design, film, music, marketing, IT, fashion, gaming industry) is particularly sensitive to digital

transformations. Digitalization enables young people not only to develop innovative products but also to effectively promote them on global markets. In Ukraine, the digitalization of education closely interacts with the commercial sector, which actively employs modern technologies to develop business

models that function efficiently under contemporary conditions (Koleshnia, 2021, p. 80).

The relevance of this study stems from the necessity to adapt the training system for young professionals to modern realities, where digital technologies serve as a key tool for creating and promoting creative products. Today, the creative industries represent one of the most dynamic and promising sectors of the economy, contributing not only to economic development but also to the cultural enrichment of society.

The digitalization of education opens new opportunities for young people by providing access to global markets, simplifying communication, production, and distribution processes for creative products. Preparing youth for entrepreneurship in this field should encompass the acquisition of digital skills such as social media management, digital marketing, proficiency in modern visualization and animation tools, and the ability to work with online platforms and digital collaboration tools. Furthermore, fostering analytical thinking skills among young people is crucial for effectively handling big data, enabling them to swiftly adapt business strategies to changing market conditions. Educational digital platforms, virtual simulators, and business simulation tools play a significant role in training young entrepreneurs, allowing them to practically test various business models and gain essential experience without risk. However, the successful realization of these objectives is contingent upon support from the state and the business sector, particularly through the establishment of digital incubators and accelerators, which facilitate the transformation of innovative ideas into tangible startups and commercially viable projects. To enhance the participation of small and medium-sized enterprises in exports and boost their competitiveness, it is vital to equip specialists with up-to-date knowledge and skills shaped within the modern educational system. Additionally, supporting the development of business incubators and encouraging innovative activity are essential steps (Kholodnytska, 2018, p. 156).

Sources. Researchers of creative industries development (O. Tkachenko, I. Turskyi, M. Fedyk, A. Kholodnytska, N. Chechetova, T. Chechetova-Terashvili, et al.) emphasize the importance of cultivating entrepreneurial and digital competencies

in future specialists for the successful realization of their professional careers. Studies by Ya. Koleshnia and V. Kokhan, dedicated to the challenges of developing digital educational platforms as tools for effective business models, are of particular interest for achieving the objectives outlined in this article. Theoretical and methodological aspects of preparing youth for entrepreneurial activities have been explored in the works of L. Bazyl, V. Baidulin, L. Bondarieva, M. Vachevskyi, I. Grytsenok, D. Zakatnov, M. Liashenko, V. Maikovska, H. Matukova, and others. Nevertheless, the issue of leveraging digital educational technologies to enhance the quality of youth training for activities in the creative industries remains highly relevant.

Objective of the article: To analyze the impact of education digitalization on the formation of entrepreneurial skills among youth.

Methods: Theoretical analysis of scientific, industry-practical, reference, and educational literature—to examine the influence of education digitalization on preparing youth for entrepreneurial activities in the creative industries; synthesis of theoretical information and empirical data—to identify positive international experiences in utilizing digital educational technologies for youth career development; surveys of young people—to assess their readiness to apply digital technologies in starting and managing their own businesses.

Results and Discussion. Creative industries are characterized by high innovativeness, a need for rapid adaptation, and flexibility in business models. They also constitute one of the leading directions and driving forces of the modern innovation economy, encompassing, in particular, the fields of culture and arts. Creativity in this context is associated not only with innovation but also with creative activity. This explains the widespread adoption of the term "creative industries" (Chechetova & Chechetova-Terashvili, 2019). This sector actively utilizes digital technologies to create new products, promote them, conduct marketing, and communicate with clients. Multimedia technologies, which enable the integration of text, sound, images, video, and animation to produce vivid, appealing, and competitive products, hold particular significance in this context. The concept of digitalization implies the integration of information and communication technologies into

all spheres of life, including the education system. The use of digital tools significantly expands the boundaries of traditional learning, making education accessible, interactive, and personalized. Multimedia technologies in design allow for the conscious and harmonious integration of various types of information. Thanks to computer-based tools, it becomes possible to present information in diverse forms widely applied in the educational process across institutions of various levels, including graphic images (scanned photographs, drawings, maps, slides), audio (voice recordings, sound effects, music), video materials with effects, interactive elements, 3D modeling, animations, and animated modeling (Kolesnyk et al., 2024, p. 646). The use of multimedia tools helps young people acquire practical skills in creating high-quality content, fosters the development of creative potential, and enhances interaction within the learning process.

Given this context, preparing young people for entrepreneurial activities in the creative industries becomes of paramount importance. According to a study conducted by Rating Lab in collaboration with the sociological group "Rating" (2023), 73% of surveyed Ukrainian youth aspire to own their own businesses, while only 19% prefer salaried employment (Youth Attitudes Toward Entrepreneurship: Ukraine and the EU, 2023). At the same time, the research indicates that only one-third of those who wish to start their own ventures have taken concrete steps toward realizing this goal. The primary motivations for launching a business include personal satisfaction from implementing an idea (65%) and improving financial status and independence (55%). Among the reasons why young people opt for salaried work are stable income (64%), insufficient finances and resources to start a business, lack of confidence in their abilities (42%), the need for a fixed work schedule (38%), and a lack of additional knowledge and skills to initiate their own ventures (36%) (Work.ua, 2023; Youth Attitudes Toward Entrepreneurship: Ukraine and the EU, 2023). Notably, 87% of vocational education students express interest in pursuing an entrepreneurial career. However, they acknowledge that entrepreneurship training is often limited to theoretical knowledge and business plan development, lacking sufficient practical

preparation (Youth Entrepreneurship: Education, 2023). According to a scientific study by the State Institute of Family and Youth Policy, in 2021, the average level of positive attitudes toward entrepreneurship among Ukrainian youth was 63%, slightly below the European average of approximately 75% (Siryi, 2021, p. 19). It is worth noting that by 2023, according to the "Rating" group's study on youth attitudes toward entrepreneurship in Ukraine and EU countries, these figures had shifted significantly. Specifically, 73% of Ukrainian youth favored self-employment and entrepreneurship, while only 19% expressed a desire to be salaried employees. In contrast, in EU countries, 56% of surveyed youth preferred salaried work to avoid risks, with only 39% showing readiness for self-employment (Youth Attitudes Toward Entrepreneurship: Ukraine and the EU, 2023).

Thus, these findings highlight, on the one hand, a strong interest among Ukrainian youth in entrepreneurship and, on the other, the need to enhance the quality and practical orientation of educational programs to better prepare young people for self-employment, particularly in the creative industries, which are highly sensitive to advancements in digital technologies. The digitalization of entrepreneurship training for students entails creating conditions for young people to acquire skills in using digital platforms (e.g., Coursera, Prometheus, Udemy), applying modern tools to develop creative competencies (e.g., Adobe Creative Cloud, Canva), and managing business processes (e.g., Google Workspace, CRM systems). It is essential to integrate multimedia technologies, business simulators, and interactive training sessions that enable young entrepreneurs to practically apply their knowledge in simulated environments, aligning the educational process with real market demands. The use of innovative tools such as virtual reality (VR) and augmented reality (AR) provides opportunities to refine ideas, test products, and develop models without financial risks. Additionally, fostering digital incubators and startup accelerators is critical, as they create a supportive ecosystem for funding and implementing young people's creative entrepreneurial initiatives.

Educational programs aimed at preparing youth for entrepreneurial activities must integrate

digital technologies from the earliest stages of learning. This can be achieved by introducing online courses, virtual simulators, webinars, and masterclasses led by successful entrepreneurs and digital technology experts. A key direction in the digitalization of education is the development of online platforms and digital tools that enable young people to acquire the necessary knowledge and skills. The use of virtual simulators, business simulation tools, and AR/VR technologies allows young entrepreneurs to gain practical experience and test their business ideas in safe settings without financial or reputational risks. Social media platforms (e.g., Instagram, TikTok, YouTube) serve as vital tools for marketing and branding, while freelance platforms (e.g., Fiverr, Upwork) enable youth to seamlessly enter the labor market and monetize their skills. Digital platforms facilitate the growth of a virtual labor market and the emergence of a distinct form of remote employment—e-freelancing (Kokhan, 2021, p. 31).

It is also necessary to establish digital incubators and accelerators that will facilitate the transformation of young people's creative ideas into concrete business projects. This will enable them not only to acquire theoretical knowledge but also to develop practical skills in managing businesses within a digital environment. A crucial aspect in this context is the collaboration between educational institutions and real-world businesses, which allows students to gain experience in addressing practical challenges and adapting their projects to current market demands (Tkachuk, 2015). As a result, young people will gain a better understanding of startup management processes, familiarize themselves with modern business models, and learn effective digital marketing strategies. Additionally, the creation of such digital platforms will foster the active development of professional networks, facilitate connections with potential investors and mentors, and assist young individuals in finding their first clients and partners for future entrepreneurial endeavors.

The primary obstacles to the digitalization of youth preparation for starting and running their own businesses include the low level of digital literacy among many learners, limited access to technology across different regions of the country, educational programs insufficiently adapted to the digital

economy, and inadequate funding for education. Addressing these challenges requires comprehensive measures involving government bodies, private businesses, and civil society organizations (Turskyi, 2016). Another significant barrier hindering the successful integration of digital technologies into the educational process is the low level of digital skills not only among young people but also among educators. This issue largely stems from insufficient attention to digital technologies in existing educational standards and curricula, as well as imperfect mechanisms for enhancing the qualifications of teaching staff. Consequently, many learners lack even basic skills in working with digital platforms and modern information and communication tools, creating substantial difficulties when entering the labor market in rapidly digitalizing creative industries.

Limited access to technology across various regions of the country further exacerbates the situation. While youth in large cities have the opportunity to utilize modern tools and services, significant digital divides persist in rural areas and small towns. The lack of stable high-speed internet and modern computer equipment severely restricts young people's ability to acquire quality knowledge, develop entrepreneurial skills, and actively participate in the digital economy.

Another critical issue is the insufficient adaptability of educational programs to the digital conditions of the contemporary art market. Most curricula and programs fail to account for the needs of modern business and the rapid evolution of digital technologies that support it, making it impossible for young people to quickly adapt to new challenges in the digital labor market. Overcoming this problem requires systematic updates to educational programs, active involvement of business representatives, digital technology experts, and experienced entrepreneurs in their development, who can impart relevant knowledge and skills to the youth.

Insufficient funding also significantly hampers the pace of digitalization in preparing youth for entrepreneurship. Modern digital technologies, multimedia tools, and software necessary for effectively training young people demand substantial financial investments. Currently, these costs primarily fall on educational institutions or

private investors, whose resources are often quite limited. Therefore, active state involvement in establishing specialized funds and programs to finance the digitalization of education is essential.

To successfully overcome these obstacles, the development of public-private partnerships is vital, enabling the pooling of efforts and resources between the state and businesses. Additionally, the role of civil society organizations must be enhanced, as they can initiate educational projects, promote digital skills, and conduct outreach work among young people. Only a comprehensive approach involving all stakeholders will enable the effective implementation of an education digitalization strategy, positively impacting youth preparation for entrepreneurship and the country's overall development.

A promising direction for improving youth preparation for professional careers through self-employment in creative industries is the use of artificial intelligence (AI) for personalized learning. This approach allows educational materials to be tailored to the individual characteristics, abilities, and needs of each student. By leveraging machine learning algorithms, educational platforms can analyze students' performance, learning pace, interests, and preferences, offering personalized learning pathways and tasks. This enhances motivation, improves knowledge retention, and fosters the development of practical skills. Equally important is the systematic integration of entrepreneurial education into formal curricula, starting from the early stages. Incorporating courses on entrepreneurship fundamentals, digital marketing, business project management, creative thinking, and innovation will equip students with the skills necessary to launch their own businesses and thrive in the digital economy.

Conclusions. The study confirms that the digitalization of the educational process is a prerequisite for effectively preparing youth for

entrepreneurial activities in creative industries. This opens new opportunities for unlocking young people's entrepreneurial potential by providing access to knowledge, technologies, and resources critical in the context of the digital transformation of the national economy. Digital platforms, multimedia tools, augmented reality elements, analytical software, and other technologies significantly enhance the effectiveness of the educational process and contribute to the formation of practical skills essential for successfully managing businesses in a creative environment. Based on the analysis of theoretical frameworks and the synthesis of empirical data, key factors have been identified that improve the conditions for developing entrepreneurial competence among future professionals: active involvement of the state and businesses in creating conditions for education digitalization; expanded access to digital resources for youth; continuous updates to educational programs reflecting the latest digital trends; integration of modern technologies (VR/AR, AI) into the educational process; and a stronger emphasis on practical training through business simulators and startup incubators. Support for initiatives by civil society organizations working in digital education and entrepreneurship, as well as the development of partnerships between educational institutions and representatives of creative industries, is also crucial.

Thus, the digitalization of youth preparation for entrepreneurial activities in creative industries is a strategic direction for educational development, fostering the emergence of competitive, innovation-driven professionals. Such individuals are capable not only of effectively implementing business ideas but also of generating new meanings, products, and services that meet the challenges of the digital era and contribute to the sustainable development of the country's economy.

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DOI: <https://doi.org/10.32835/2707-3092.2024.29.181-188>

ЦИФРОВІЗАЦІЯ ПІДГОТОВКИ МОЛОДІ ДО ПІДПРИЄМНИЦЬКОЇ ДІЯЛЬНОСТІ У СФЕРІ КРЕАТИВНИХ ІНДУСТРІЙ

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Реферат:

Актуальність дослідження визначається значним зростанням ролі цифрових технологій в економіці, особливо у сфері креативних індустрій, де цифровізація усіх сфер життя стає необхідною умовою конкурентоспроможності.

Мета: аналіз впливу цифровізації освіти на формування підприємницьких навичок молоді.

Методи: теоретичний аналіз наукової, виробничо-практичної, довідкової і навчальної літератури – для вивчення впливу цифровізації освіти на підготовку молоді до підприємницької діяльності у сфері креативних індустрій; узагальнення отриманої теоретичної інформації та емпіричних даних – для виділення позитивного міжнародного досвіду щодо використання цифрових освітніх технологій у підготовці молоді до розвитку кар'єри; опитування молоді – для визначення рівня їх готовності до застосування цифрових технологій у процесі відкриття і ведення власної справи.

Результати: на основі здійсненого теоретичного аналізу джерел дослідження з'ясовано, що інтеграція цифрових технологій у процес підготовки молоді суттєво покращує рівень її підприємницької компетентності та готовності до підприємницької діяльності; більшість опитаних здобувачів освіти висловили позитивне ставлення до цифрових інновацій в освітньому процесі та підтвердили необхідність подальшого розвитку цифрових навичок через практичні заняття, вебінари та майстер-класи; на основі аналізу теоретичних та узагальнення отриманих емпіричних даних визначено фактори, що впливають на покращення умов розвитку підприємницької компетентності майбутніх фахівців (активне залучення держави та бізнесу до створення умов

для цифровізації освіти; розширення доступу до цифрових ресурсів для молоді; постійне оновлення освітніх програм з урахуванням новітніх цифрових трендів; впровадження сучасних технологій (VR/AR, штучний інтелект) в освітній процес; посилення практичного компоненту навчання з використанням бізнес-симуляторів та інкубаторів стартапів).

Висновки: цифровізація підготовки молоді до підприємницької діяльності у сфері креативних індустрій є необхідною умовою формування конкурентоспроможних фахівців, здатних створювати інноваційні продукти відповідно до сучасних вимог цифрової епохи.

Ключові слова: *цифровізація освіти, креативні індустрії, підприємницька компетентність, цифрові освітні технології, мистецька освіта, дизайн-освіта.*

Received: 02 September 2024

Accept: 12 December 2024



DIGITAL PLATFORM AS A MEANS OF VOCATIONAL TRAINING AND COMMUNICATION FOR FUTURE SKILLED WORKERS IN THE MECHANICAL ENGINEERING INDUSTRY

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Abstract

The relevance of this research is driven by new demands on the vocational education system, particularly in the mechanical engineering sector, amid the digital transformation of the economy and the emergence of Industry 4.0. Given the rapid pace of technological advancement, there is an urgent need to integrate digital educational platforms into the training of skilled workers. Digital platforms can provide access to modern educational resources, personalized learning pathways, and simulations of production processes. This enables vocational training to better align with the needs of a high-tech labor market, making it more flexible, interactive, and effective.

Objective: To develop and justify methodological principles for creating a digital educational platform for the vocational training of future skilled workers in the mechanical engineering industry, taking into account current trends in digitalization, industry-specific features, and learners' educational needs.

Methods: Theoretical analysis of scientific sources on digital platforms, vocational education, and Industry 4.0 technologies; modeling of the functional structure of the educational platform with consideration of its goal-oriented, content-based, methodological, and communicative components; comparative analysis of existing digital platforms based on criteria such as functionality, user interaction, and adaptability to educational needs; expert evaluation of pedagogical and technical solutions for the platform; design and testing of a website that includes interactive learning modules on CAD, CNC, and robotics, as well as analytical tools for progress monitoring.

Results: The study summarizes the classification of digital platforms by functionality and user interaction; formulates methodological principles for the development of educational platforms in the mechanical engineering sector (personalization, accessibility, interactivity, compliance with industry standards); develops a prototype of a digital platform for training future specialists, including adaptive learning, video content, simulations, analytics dashboards, and integration with LMS and social networks; substantiates the feasibility of incorporating digital technologies such as AI, AR/VR, IoT, and blockchain into the platform structure; justifies the need to enhance teachers' digital competence for the effective implementation of platform-based learning.

Conclusions: As a result of the conducted study, it was demonstrated that the digital platform is a key tool for modernizing the vocational education system in the context of digital transformation, particularly for the machine-building industry. It enables the integration of individualized learning with the real demands of the labor market, creating a flexible educational environment that fosters the development of professional competencies in future skilled workers of the machine-building sector. The developed methodological model of the platform, which includes target, content, methodological, and communicative components, ensures the integration of the educational process with modern production technologies and labor market requirements. The implementation of the digital platform concept requires an interdisciplinary approach, technical support, and regulatory legal framework; however, it holds significant potential for the modernization of vocational education. The effectiveness of the digital platform depends on its ability to integrate modern technologies, support educators, provide feedback, and meet professional training standards.

Keywords: digital platform, vocational training, communication, skilled workers, engineering industry

Introduction. The digital transformation of society and the economy necessitates the modernization of vocational education. In the mechanical engineering sector—one of the key industries for implementing innovative solutions—there is an urgent need to integrate digital tools into the training system for future professionals. One such tool is a digital platform—a comprehensive information and educational environment that integrates content, methodology, and communication channels into a single ecosystem.

Sources. In today's digitized society, the issue of implementing digital technologies into vocational education has become especially relevant. The use of information and communication technologies (ICT) in the training of future skilled workers is studied in the context of developing digital competence, modernizing the educational process, using e-learning platforms, virtual laboratories, simulators, and distance learning formats in the research works of V. A. Kruchek, O. B. Koshuk, S. H. Kravets, N. V. Kolisnyk, L. A. Maiboroda, I. I. Holub, N. Yu. Samoylenko, and H. V. Odnoroh.

Theoretical and methodological principles of digitalization in vocational (technical) education, as well as practical aspects of implementing digital tools in the training of skilled workers, are explored in the works of O. Brechko, I. I. Almasii, M. A. Ryaguzova, T. H. Dibrova, and T. V. Pyatnychuk, among others. These studies emphasize the need to improve the digital literacy of educators, enhance the digital learning environment, and adapt educational programs to the challenges of digital transformation, including the development of blended and distance learning. Researchers such as M. A. Pryhodi, A. M. Hurzhii, Yu. Danka, V. O. Radkevych, Yu. H. Nosenko, R. M. Shevchuk, T. O. Halich, and N. M. Chernyavets analyze the integration of digital technologies in vocational training based on labor market needs, sector-specific education, and international experience. This scientific foundation confirms the importance of digital transformation as a key factor in improving the quality of vocational training for future skilled workers.

Purpose of the Article. The purpose of the article is to develop and justify methodological

principles for creating a digital educational platform for training future skilled workers in the mechanical engineering industry, taking into account current trends in digitalization, industry-specific characteristics, and the educational needs of learners.

Methods. This study employs several research methods, including:

- Theoretical analysis of scholarly sources on digital platforms, vocational education, and Industry 4.0 technologies;
- Modeling the functional structure of the educational platform with attention to its target, content, methodological, and communicative components;
- Comparative analysis of existing digital platforms based on functionality, user interaction, and adaptability to educational needs;
- Expert evaluation of pedagogical and technical solutions for the platform;
- Design and pilot testing of a website with interactive learning modules on CAD, CNC, robotics, and analytical tools for monitoring learner progress.

Results and Discussion. A digital platform in the context of vocational education is viewed as an integrated information-educational environment that combines learning resources, digital services, and communication channels. Its structure includes the following components:

1. Target component – focused on ensuring the competitiveness of future workers;
2. Content component – includes training modules, video content, infographics, simulations, and digital laboratories;
3. Methodological component – adapts content to the learner's level, shaping individual learning trajectories;
4. Communicative component – includes forums, chats, feedback systems, and integration with social networks (Gurzhii, Radkevych, & Pryhodi, 2023).

According to O. Brechko's approach, digital platforms are classified based on functionality and user interaction. Educational platforms like Coursera, Udemy, and Khan Academy are primarily self-learning oriented. However, in the context of mechanical engineering training, platforms must be

adapted to industrial conditions, including integration with simulators, CNC systems, and virtual labs (Brechko, 2020).

Table 1

CLASSIFICATION OF DIGITAL PLATFORMS BY FUNCTIONALITY AND USER INTERACTION

№	Type of Platform	Functionality and Focus	User Interaction	Example of Platform
1	Marketplaces	Connect buyers and sellers, facilitate exchange operations	Buying and selling	Amazon, Alibaba, eBay
2	Sharing platforms (peer-to-peer)	Renting or using platform resources (cars, apartments, tools)	Service provision, resource and service exchange	Uber, Airbnb, Upwork, Zipcar Couchsurfing TaskRabbit
3	Network platforms and messengers	Professional communication, software development, or data exchange	Personal or business interaction, community building, collaboration	Facebook, LinkedIn, Instagram, GitHub, Reddit, Telegram
4	Cloud platforms	Provide access to computing resources, infrastructure, and services via the Internet	Through private access	Amazon Web Services (AWS), Microsoft Azure, Google Cloud Platform
5	Financial and payment platforms	Enable financial transactions, money transfers, and financial management	Via digital wallets or online banking	PayPal, Stripe, Squar, Trustee
6	Entertainment and media platforms	Provide access to entertainment content, multimedia materials, streaming services, etc.	Through subscription services	Netflix, Spotify, YouTube
7	Crowdfunding and crowdsourcing platforms	Allow raising funds for projects, ideas, or products through contributions from the public	Project posting and joint funding	Kickstarter, Indiegogo, GoFundMe
8.	Educational and learning platforms	Provide access to learning materials, courses, training, and other educational resources	Self-learning	Coursera, Udemy, Khan Academy, GoIT
9.	Medical platforms	Assist with medical consultations, diagnostics, treatment, and other medical services online	Interactive medical services	Teladoc Health, Zocdoc, Babylon Health, Amwell
10.	Blockchain-based platforms	Develop infrastructure for smart contracts, decentralized applications, and secure, fast digital asset exchanges	Specialized interfaces or apps, creation of smart contracts	Etheteum, Solana, Hyperledger, Poligon. Repple, BNB

The primary role of digital platforms today is to facilitate convenience, accessibility, and speed of service delivery, especially in education. Hence, their ongoing development and enhancement through the implementation of new technologies and functions is natural. For example, artificial intelligence is used to enhance user experience and personalize recommendations through tools like voice assistants (Google Assistant, Siri) or ChatGPT.

Some platforms incorporate augmented reality (AR) and virtual reality (VR) to provide immersive user experiences, such as virtual clothing try-ons or AR museum tours. Financial and commercial platforms apply blockchain to secure transactions and build decentralized data management systems. The functionality of digital platforms increasingly relies on the integration of IoT solutions, enabling connectivity between devices and sensors through smart technologies, like mobile apps for home automation (Brechko, 2020).

According to Ukrainian scholar M. Pryhodi, digital platforms play a critical role in improving, automating, and personalizing the assessment of vocational education quality. These platforms offer tools such as Learning Management Systems (LMS), AI-based analytics, and virtual simulations to support evaluation processes. They enable real-time monitoring by collecting, analyzing, and visualizing learner data, allowing educators to adjust teaching strategies accordingly. Dashboards integrated into platforms like Moodle, Blackboard, and Coursera provide insights into learner engagement, course completion, and performance trends (Pryhodi, 2023).

Key Methodological Principles. Key methodological principles for developing digital platforms for training skilled workers in mechanical engineering include:

- Relevance of learning activities that are subject-specific, creative, and learner-centered;
- Goal-setting based on qualification standards and sector-specific digitalization needs, considering users' technical and personal characteristics;
- Development of original dynamic content with an intuitive interface and unified design, optionally excluding specific functional modules like calendars or forums;
- Application of digital technologies based on systemic, informational, and technological approaches, as well as didactic principles of scientific validity and clarity. This includes principles of informatization, open education, multimedia, and personal data protection;
- Orientation towards learners' cognitive activity, ensuring purposeful learning outcomes both in product form and in personal development for lifelong learning;
- Selection of digital technology implementation methods depending on educational goals related to training future mechanical engineering workers (Kruchek et al., 2020).

Teachers' digital competencies are vital for effectively integrating Industry 4.0 innovations, blended learning, intelligent production systems, and digital platforms into the learning process. This approach supports student-centered learning tailored to individual needs and prepares learners for the evolving demands of the profession, especially in mechanical engineering.

Modern mechanical engineering increasingly employs advanced digital technologies like automation, robotics, and 3D printing. Skilled workers must possess relevant knowledge and

abilities to work with these technologies. There is a growing demand for professionals who can adapt quickly to new labor market requirements. Digital platforms offer fast access to up-to-date learning materials and interactive simulators (Korchenyuk, 2024).

The industry is constantly evolving, and the use of digital platforms allows educational programs to adapt to modern technological standards. Such platforms strengthen the connection between learning and industrial processes through industrial simulators and virtual labs.

Mechanical engineering heavily depends on advanced technologies such as CAD (Computer-Aided Design), CNC (Computer Numerical Control), robotics, and automation. These technologies are integral to modern production processes and require skilled workers proficient in digital tools (Svistunov, 2020).

As the sector undergoes digital transformation, the role of educators becomes more complex. They must not only understand and teach the technical aspects of Industry 4.0 technologies but also guide students in applying these technologies in real-life settings. Staying ahead in this dynamic field requires continuous professional development and a commitment to lifelong learning.

Industry 4.0 technologies like IoT enable machine-to-machine communication, optimizing processes and reducing downtime. AI facilitates predictive maintenance, improving efficiency by servicing machines before failures occur. Robotics is revolutionizing manufacturing by automating repetitive tasks, increasing precision, and improving worker safety.

Digital competence is increasingly essential in all production sectors, including mechanical engineering. Educators proficient in digital technologies can continuously update their knowledge, access a wide array of resources, and collaborate with other educators and industry professionals. This promotes lifelong learning and provides a foundation for professional development. In mechanical engineering, where technologies evolve rapidly, staying current is a key requirement for educators to ensure the high-quality preparation of future skilled workers (Section 3. Digitalization and Ecologization of Vocational Education for Accelerating Post-War Recovery of Ukraine, 2024).

The platform is developed based on principles of openness, adaptability, accessibility, and compliance with industry requirements. It

integrates didactic concepts, information approaches, gamification, and analytics to monitor the learning process (Pryhodii, 2024).

Digital communication tools are a foundational component of the platform's interactive educational environment. According to communication types, they include:

Digital communication tools used during the platform development constitute a fundamental component of the interactive educational environment. According to the types of communication, the following are distinguished:

- Horizontal communication — peer-to-peer interaction (between students, between teachers), which promotes collaboration, experience exchange, and team-based learning;
- Vertical communication — hierarchical interaction (teacher–student, administration–

teacher), which supports pedagogical and managerial processes;

- External communication — interaction with external stakeholders (employers, industrial partners, professional associations), which enhances the practical orientation of education and ensures compliance with labor market demands (Formanova, 2020; Nosenko, Nosenko, & Shevchuk, 2023; Cherniavets & Almashii, 2019).

Within the scope of the study, the staff of the Department of Digital Educational Resources at the Institute of Vocational Education of the NAPS of Ukraine developed a website for training future workers in the mechanical engineering industry (see Fig. 1). The platform has the following features: an adaptive learning system; modules for automated design (CAD), robotics, CNC; a progress monitoring dashboard for learners; and the capability to integrate with e-Learning analytics.



Figure 1. An example of a website for training future workers in the machine-building industry, developed by the Institute of Vocational Education of the National Academy of Sciences of Ukraine

In addition, the methodological principles for developing a digital platform for the professional training of qualified workers in the mechanical engineering industry should include:

- the actualization of subject-specific, creative in nature, and personality-oriented in

content educational and professional activities of learners;

- the purpose of developing the digital platform, which is determined considering the content of qualification characteristics and the specifics of the digitalization of education for future qualified workers in the mechanical

engineering industry, as well as the personal needs and technical-technological capabilities of access to and use of digital technologies by learners and vocational education instructors;

- all sections and pages are designed in a uniform style (template), with exceptions allowed only for certain functional blocks (for example: calendar/schedule, forum, etc.);

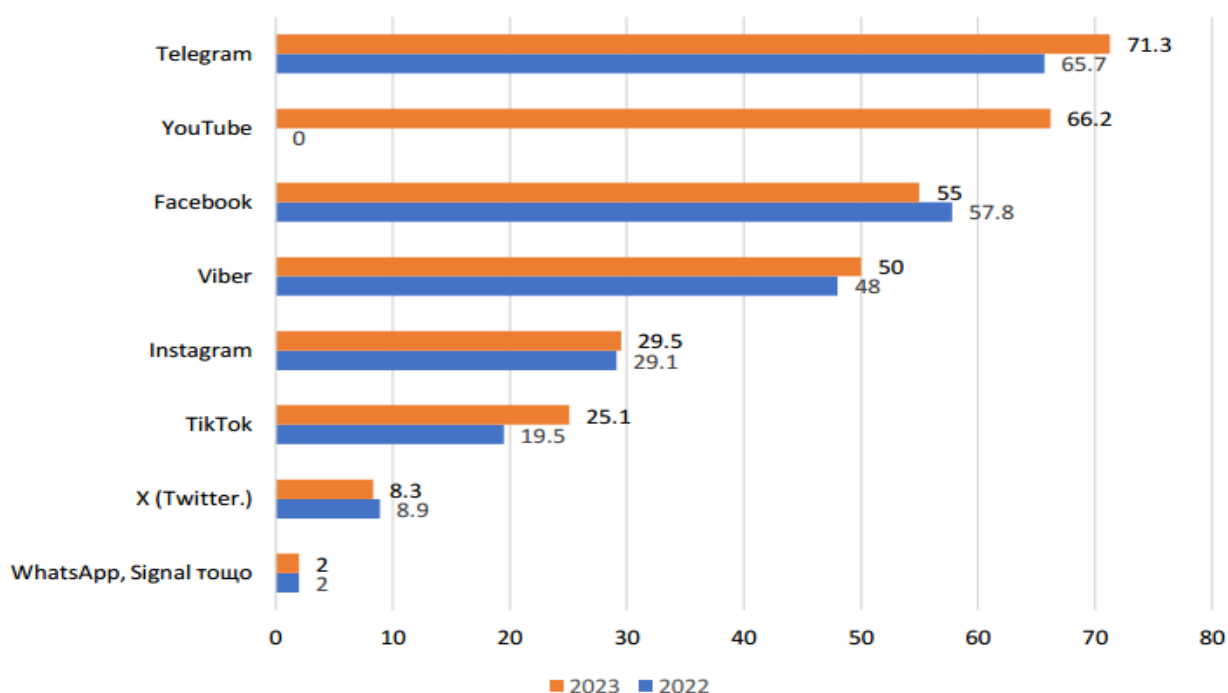


Fig. 2. The dynamics of using social media as the main source of news in Ukraine during the war in 2022-2023, %.

- Interactivity of the platform should employ interactive teaching methods such as video lectures, tests, simulations, virtual laboratories, forums, and chat;

- the selection and application of digital technologies within the online platform are based on a combination of methodological approaches (systemic, informational, technological), didactic principles (scientific basis, visual clarity), and specific principles (informatization of education, open education, multimedia, personal data protection);

- the platform should be accessible 24/7 from any device with internet connection and be usable by learners with varying levels of digital literacy;

- consideration of the specific features of educational and cognitive activities of vocational education learners (Pryhodiĭ, 2024).

The future educational platform includes links to the Institute's and department's pages on popular social networks: Facebook, Instagram, Twitter, YouTube, Viber, and Telegram. It is worth noting that among all the mentioned

networks, YouTube is considered the most effective for communication and learning. This popular video platform offers several advantages:

- integration with Google services simplifies the setup and management of the Institute of Vocational Education's channel;

- access settings for educational videos allow restricting the audience to targeted users — future mechanical engineering workers;

- support for high-quality video playback on various devices makes the content highly accessible;

- the ability to embed videos into Moodle-based educational courses (Danko, 2012).

To ensure high-quality video content, it is recommended to follow certain upload formats and standards that guarantee optimal YouTube encoding and playback (Halich, 2010; Pryhodiĭ, 2022). However, according to research by OPORA (Fig. 2), after Russia's full-scale invasion of Ukraine, Ukrainians gave the highest preference to Telegram — 71.3% of respondents in 2023, which is related to convenient access to news and other

information via this social network (OPORA, 2023).

As noted by Ukrainian scientist Yu. Nosenko, according to her student survey, Telegram leads among similar services used in the educational process. Among the important functions of this messenger, the possibility to create chatbots is worth highlighting, as it is a promising tool to support education based on artificial intelligence (Nosenko, Nosenko & Shevchuk, 2023).

Also, Instagram is gaining increasing popularity in vocational education for training future qualified workers. Initially, it had limited functionality and was designed only for photo sharing without text or video. Over time, Instagram's functionality improved, and new user features appeared. Updates considered the growing number of social network subscribers, which increased exponentially. By December 2010, Instagram had 1 million registered users; by September 2017, the service had 800 million users, with 500 million daily visitors; and by June 2018, Instagram's audience reached 1 billion users. Thus, Instagram transformed from a purely entertainment and user platform into a powerful business and information platform, which can be used for educational purposes.

Considering the advantages of Instagram – such as a large user base, predominantly young active users and students, the amount of time spent on the platform, and ease of use for both content creators and viewers — we believe this social network will become a popular means of communication among participants in vocational education, who are mostly under 20 years old and regularly use this platform (TechCrunch, 2018).

In conclusion, one of the key aspects of creating a digital platform is ensuring the security of users' personal data, regulated by relevant normative acts and standards. The development process includes implementing modern information protection mechanisms, which cover:

- user authentication with multifactor verification;
- data encryption during storage and transmission;
- regular security audits and system updates in response to detected threats (Pryhodiĭ, 2022; Ryahuzova & Dibrova, 2012).

Supporting platform accessibility for people with disabilities is also essential, meeting inclusive

education requirements and ensuring equal learning opportunities for all users (Kruchek et al., 2020).

The digital platform is equipped with analytics tools that allow educators and administrators to obtain detailed information about learners' progress, identify problem areas, and promptly adjust educational materials. Key functions include:

- tracking users' activity time;
- analyzing test results and task completion;
- generating individual performance reports (Pryhodiĭ, 2023, 2024).

Thanks to these data, the learning process is personalized, and its effectiveness increases.

Conclusions. The conducted study proved that the digital platform is a key tool for modernizing the vocational education system amid digital transformation, particularly in the mechanical engineering sector. It enables the combination of individualized learning with real labor market demands, creating a flexible educational environment that fosters the development of professional competencies of future qualified mechanical engineering workers. This implies for the industry: close integration of education and production; continuous updating of content according to technological changes; development of pedagogical digital competencies; and orientation towards learners' independence, flexibility, and mobility.

Implementing the digital platform concept requires an interdisciplinary approach, technical support, and regulatory frameworks, but it has significant potential for vocational education modernization. The effectiveness of the digital platform depends on its ability to integrate modern technologies, support educators, provide feedback, and comply with professional training standards.

It should be noted that the digital platform promotes personalized learning, simulations, and digital laboratories, provides access to interactive content, supports the development of professional competencies, digital literacy, and learner autonomy. Effective use of digital tools such as artificial intelligence, AR/VR, Internet of Things, LMS, and analytics services allows creating an adaptive, flexible, and competitive educational environment.

Successful implementation of such platforms requires an interdisciplinary approach, technical support, digital competence of educators, and regulatory backing.

Thus, the proposed model can serve as a basis for further development of digital solutions in vocational training and for integrating innovative

technologies into the education process of future qualified mechanical engineering workers

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DOI: <https://doi.org/10.32835/2707-3092.2024.29.189-199>

ЦИФРОВА ПЛАТФОРМА ЯК ЗАСІБ ПРОФЕСІЙНОЇ ПІДГОТОВКИ ТА КОМУНІКАЦІЇ МАЙБУТНІХ КВАЛІФІКОВАНИХ РОБІТНИКІВ МАШИНОБУДІВНОЇ ГАЛУЗІ

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Реферат:

Актуальність дослідження зумовлена новими вимогами до системи професійної освіти, особливо в галузі машинобудування, в умовах цифрової трансформації економіки, зокрема індустрії 4.0. З огляду на динамічні зміни технологій, постає нагальна потреба в інтеграції цифрових освітніх платформ у процес підготовки кваліфікованих робітників. Цифрові платформи здатні забезпечити доступ до сучасних освітніх ресурсів, персоналізованих навчальних траєкторій і симуляцій виробничих процесів. Це дає змогу адаптувати професійну підготовку до потреб високотехнологічного ринку праці, зробити її більш гнучкою, інтерактивною та ефективною.

Мета: розробка та обґрунтування методичних засад створення цифрової освітньої платформи для професійної підготовки майбутніх кваліфікованих робітників машинобудівної галузі, яка враховує сучасні тенденції цифровізації, особливості галузі та освітні потреби здобувачів.

Методи: теоретичний аналіз наукових джерел з тематики цифрових платформ, професійної освіти та технологій Індустрії 4.0; моделювання функціональної структури освітньої платформи з урахуванням її цільового, змістового, методичного та комунікативного компонентів; порівняльний аналіз існуючих цифрових платформ за критеріями функціональності, взаємодії з користувачами та адаптованості до освітніх потреб; експертне оцінювання педагогічних і технічних рішень щодо платформи; проектування та апробація веб-сайту, який включає інтерактивні навчальні модулі з САПР, ЧПК, робототехніки, а також аналітичні інструменти моніторингу прогресу.

Результати: В результаті дослідження: узагальнено класифікацію цифрових платформ за функціональністю та взаємодією з користувачами; сформульовано методичні принципи розробки освітніх платформ у машинобудівній галузі (персоналізація, доступність, інтерактивність, відповідність галузевим стандартам); створено прототип цифрової платформи для підготовки майбутніх фахівців, що включає адаптивне навчання, відеоконтент, симуляції, аналітичні панелі, а також можливість інтеграції з LMS та соціальними мережами; доведено доцільність використання цифрових технологій, таких як AI (штучний інтелект), AR/VR, IoT (інтернет речей), блокчейн у структурі освітніх платформ; обґрунтовано необхідність підвищення цифрової компетентності педагогів для ефективної реалізації навчального процесу на базі платформи.

Висновки. У результаті проведеного дослідження було доведено, що цифрова платформа є ключовим інструментом модернізації системи професійної освіти в умовах цифрової трансформації, зокрема для машинобудівної галузі. Вона дозволяє поєднати індивідуалізоване навчання з реальними запитами ринку праці, створює гнучке освітнє середовище, що сприяє формуванню фахових компетентностей майбутніх кваліфікованих робітників машинобудівної галузі. Розроблена методична модель платформи, яка включає

цільовий, змістовий, методичний та комунікативний компоненти, забезпечує інтеграцію навчального процесу з сучасними виробничими технологіями та вимогами ринку праці. Реалізація концепту цифрової платформи потребує міждисциплінарного підходу, технічної підтримки та нормативно-правового регулювання, однак має значний потенціал для модернізації професійної освіти. Ефективність цифрової платформи залежить від її здатності інтегрувати сучасні технології, підтримувати педагогів, забезпечувати зворотний зв'язок і відповідати стандартам професійної підготовки.

Ключові слова: *цифрова платформа, професійна підготовка, комунікація, кваліфіковані робітники, машинобудівна галузь.*

Received: 15 September 2024

Accept: 12 December 2024

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