

UDC 347.14/011

[https://doi.org/10.31652/3041-1203-2023\(1\)-14-20](https://doi.org/10.31652/3041-1203-2023(1)-14-20)

Modernization of professional activities in the field of dual education in Germany

Nadiia Opushko

Vinnitsia Mykhailo Kotsiubynskyi State Pedagogical University, Vinnitsia, Ukraine

Nadiia Opushko  <https://orcid.org/0000-0002-3013-2675>

Candidate of Pedagogical Sciences, Associate Professor, Doctoral Student; E-mail: hmarka52@gmail.com

The authors declare no conflict of interest.

© The Author(s), 2023. This is an Open Access article distributed under the terms of the [Creative Commons Attribution 4.0 International License](#) (CC BY 4.0)

Abstract

Rapid globalization processes that have been taking place recently have caused changes not only in the global economy and finance, but also in the labor market, but their impact on the education system is the most noticeable. The search for ways to solve the problem of training young professionals and their adaptation to the labor market is typical for both domestic and foreign theory and practice. Analysis of international experience in solving these problems is important for improving the national situation. The experience of Germany was chosen because of the relatively low unemployment rate in this country and the well-organized transition of young people from the educational system to professional activity. Vocational training of future specialists in Ukraine is a key aspect of the concept of lifelong learning, as well as retraining and advanced training of employees in various sectors of state production. It is aimed at training practitioners and currently ensures the continuity and consistency of the formation of solid knowledge in the younger generation, which determines general cultural, social and professional competence. Effective implementation of vocational guidance needs among young people and practical orientation of training. The article analyses the modernization processes of professional activity in the field of dual education in Germany. The author uses the deductive method and the chronological and territorial principles to formulate generalized and systematic conclusions of the study. It is established that professional activity in the field of vocational education in Germany depends not only on national and regional policies, but also on joint decisions of the European Council on Education. The main goals of modernization (sustainable development of vocational education, accessibility, mobility, digitalization) and ways of their implementation are identified and characterized.

Keywords: vocational training, dual education, modernization processes, Germany

УДК 347.14/011

[https://doi.org/10.31652/3041-1203-2023\(1\)-14-20](https://doi.org/10.31652/3041-1203-2023(1)-14-20)

Модернізація професійної діяльності в галузі дуальної освіти Німеччини

Надія Опушко

Вінницький державний педагогічний університет імені Михайла Коцюбинського, м. Вінниця, Україна

Надія Романівна Опушко  <https://orcid.org/0000-0002-3013-2675>

Кандидат педагогічних наук, доцент, докторант; E-mail: hmarka52@gmail.com

Автор заявляє про відсутність конфлікту інтересів.

© Автор(и), 2023. Ця робота публікується у відкритому доступі та розповсюджується на умовах ліцензії [Creative Commons Attribution 4.0 International](#) (CC BY 4.0) License

Анотація

Стрімкі глобалізаційні процеси, що відбуваються останнім часом викликають зміни не лише в світовій економіці і фінансах, а й на ринку праці, але найбільш помітними є їх впливи на систему освіти. Пошуки шляхів розв'язання проблеми підготовки молодих фахівців та їх адаптація на ринку праці характерні як для вітчизняної так і для зарубіжної теорії і практики. Аналіз міжнародного досвіду з вирішення означених проблем є важливим для покращення вітчизняного стану справ. Досвід Німеччини обраний з причини відносно низького рівня безробіття в цій країні, добре організованого переходу молоді з освітньої системи до професійної діяльності. Професійна підготовка майбутніх фахівців в Україні є ключовим моментом концепції навчання впродовж життя, а також перепідготовки та підвищення кваліфікації працівників різних галузей державного виробництва. Вона спрямована на підготовку фахівців-практиків і нині дозволяє забезпечити неперервність та послідовність формування у молодого покоління міцних знань, що визначають загальнокультурну, соціальну і професійну компетентність. Ефективну реалізацію профорієнтаційних потреб серед молоді і практичну спрямованість навчання. У статті проаналізовано модернізаційні процеси професійної діяльності в сфері дуальної освіти Німеччини. Авторкою, з використанням дедуктивного методу та послуговуючись хронологічним та територіальним принципами, з метою формулювання узагальнених та систематизованих висновків дослідження. Встановлено, що професійна діяльність в сфері професійної освіти Німеччини залежить не лише від національної та регіональної політики, а й від спільних рішень Європейської Ради з питань освіти. Визначено та охарактеризовано основні цілі модернізації (сталий розвиток професійної освіти, доступність, мобільність, діджиталізація) та шляхи їх реалізації.

Ключові слова: професійна підготовка, дуальна освіта, модернізаційні процеси, Німеччина

Statement of the problem. The modernization of the national education system is due to the influence of many factors, both global and local. Education is now at a crossroads where the difficulties of transition to a new era of post-industrial information culture are focused, such as uncertainty of the future, information and later digital revolutions, rapid obsolescence of some knowledge and ways of working, socio-economic and political problems, etc. These factors necessitate a transition to education that not only meets the needs of modern society, but also has a prognostic and anticipatory character.

The current development of the vocational education system in Ukraine is defined as transformational. Recent years have been characterised by the adoption of a number of strategic and programme documents containing measures to modernise the national vocational education system. However, a whole range of problems related to insufficient funding, obsolescence, and now destruction in some cities, of material and technical support, reduced funding for educational institutions, etc. have not yet been resolved. In recent years, and especially since 2022, youth migration processes have also intensified due to Russia's full-scale invasion of Ukraine and young people's choice of foreign (primarily in Poland, the Czech Republic, Germany, Slovakia, Romania, etc.) educational institutions. As a result of these and other processes, domestic enterprises do not receive sufficient quality labour resources, which further exacerbates the crisis of business - vocational education relations [7, p.6].

Therefore, we consider it expedient and timely to study foreign experience in organising the training of future specialists in order to implement the best practices in the domestic system of vocational training of young people, for the post-war economic recovery and further development of the state.

Analysis of recent research and publications. In 2020, Ukraine adopted the Vocational Education Development Strategy for 2021-2023. The document

outlines the main objectives of vocational education reform: the formation of an effective management and financing system, ensuring the quality of vocational education and strengthening cooperation with business [2].

The peculiarities of the interaction between vocational education and the labour market, their innovative ways of development, didactic principles of vocational training have been studied by well-known Ukrainian scientists: V. Andrushchenko, N. Nychkalo, V. Radkevych, V. Kremen, T. Kozak, S. Nikolayenko, S. Tkachuk, and others. These authors pay attention to organisational and methodological issues, most of which are aimed at solving current problems and resolving problematic situations in vocational training. The training of qualified specialists in the system of higher education is carried out by such domestic scholars as: O. Akimova, R. Hurevych, V. Kobysia, V. Frytsiuk, N. Hamska and others, who, in their works, emphasise the need to introduce innovative methods and technologies in the educational process of a higher education institution (HEI).

C. Tkachuk notes that any increase in the efficiency of vocational education in the future will be associated with the further development of the system towards decentralisation and demand orientation. The scientist emphasises that optimisation of the network of vocational education institutions and bringing educational programmes in line with European standards and in accordance with the needs of the market industry are now a priority [4, p.270].

V. Radkevych argues that improving the quality of vocational education and training is a prerequisite for ensuring sustainable development of society, gender equality, and human potential development in order to achieve the strategic development goals agreed at the international and national levels. That is why it is important to expand access to quality vocational education for all, to increase the capacity of educational

systems to train innovative specialists to meet the challenges of sustainable development, to use information, communication and energy-efficient technologies more effectively in these processes [3, p.9]. The development of creative cooperation in interstate cooperation, implementation of joint research projects, comparative analysis of concepts, programmes and methods, taking into account the results of completed interdisciplinary research on vocational pedagogy will contribute to the mutual enrichment of the system of vocational education and training, as expressed by the Academic Secretary of the National Academy of Pedagogical Sciences of Ukraine N. Nychkalo in her monograph [5, p. 19].

The team of authors, headed by academician R. Gurevych, state that the experience of those countries that have achieved economic success (primarily Austria, Holland, Germany, Japan, South Korea, Singapore, Switzerland, and others) is quite important for the effective development of the national system of vocational education and training. Scientists point out that well-organised vocational education can contribute to the economic recovery of a country. It is also an integral part of people's general abilities, which, in the face of significant uncertainty in the development of production systems, allow them to adapt to new professions. Vocational education performs the function of training people, taking into account their interests and abilities to perform various professional roles and tasks that arise in society [6, p.10-11].

The purpose of the article is to define and substantiate the modernisation processes in the field of vocational education in the dual form of education in Germany.

Summary of the main material. The content of this article is presented using the deductive method, i.e., our conclusions are based on a number of preconditions and factors that are true at the moment. In addition, we used the chronological and territorial principles to formulate generalised and systematic conclusions.

Since the purpose of the study is to analyse the modernisation processes in the field of vocational education based on the experience of Germany, which is a member of the European Union (EU), we consider it necessary to note that pan-European educational processes directly affect the German education system. Thus, in Lisbon in 2000, the European Council noted that the EU is on the verge of a qualitative leap caused by globalisation and the knowledge-based economy and agreed on a strategic goal by 2010: to make the Union the most competitive and dynamic knowledge-based economy capable of sustainable economic growth with more quality jobs and social cohesion.

In 2002, the Stockholm European Council created a work programme on the future goals of education and training systems. The programme focuses on three strategic goals, which are centred on new basic skills, information technology, mathematics, and science and technology:

- improving the quality and efficiency of education and training systems in the EU;
- promoting access to education and training for all;
- opening up education and training systems to the general public [10].

After that, a number of initiatives were implemented at the European level and significant results were achieved in the areas of academic mobility, lifelong learning, innovative development in vocational education and training, higher education, assessment and quality assurance of the educational process, E-learning and international cooperation.

The Copenhagen Declaration of 2002 launched a European strategy to intensify cooperation in vocational education and training, known as the Copenhagen Process. Cooperation within the Copenhagen Process has accelerated the modernisation of vocational education and training in many EU member states and candidate countries, and contributed to the achievement of Europe's strategic goals [11]. Further, a number of other documents supporting vocational education and training were developed and ratified: The Maastricht (2004), Helsinki (2006), Bordeaux (2008) and Brussels (2010) communiqués, as well as the Riga Conclusions (2015).

Another significant measure to improve vocational education and training was the development and signing of the 2020 Osnabrücker Declaration on Vocational Education and Training as a Driver for a Recovery and Equitable Transition to a Digital and Green Economy. Ministers responsible for EU vocational education and training reaffirmed the commitment to develop a new set of vocational education and training actions for the period 2021-2025 to complement and implement the vision and strategic objectives set out in the Council Recommendation on vocational education and training for sustainable competitiveness, social justice and resilience. To continue to develop the European Vocational Education and Training Area through forward-looking and innovative education and training systems in order to support digital and environmental transformation and improve employability and competitiveness, thus contributing to economic growth. Close partnership with social partners is essential to achieve the goals set out in the Osnabrück Declaration [12].

Against the backdrop of the European Council's proposal to develop vocational education and training for sustainable competitiveness, social justice and sustainability and the renewed European Agenda, the Osnabrück Declaration focuses on four main areas for the period 2021-2025:

1. Sustainability and excellence through high quality, inclusive and flexible vocational education and training.
2. Creating a new culture of lifelong learning - the importance of vocational education and training and digitisation.
3. Sustainable development - a green perspective in vocational education and training.
4. The European Vocational Education and Training Area is based on the principle of due regard for social dialogue and the need for close partnership with a range

of stakeholders, including social partners, enterprises, employers' organisations, chambers, industry associations, learner representatives, national, regional and local authorities, employment services and social economy organisations. Places of study and companies play a central role in providing modern and high-quality vocational education [12].

The analysis of the Osnabrück Declaration allowed us to identify several goals in the strategic guidelines for the modernisation of vocational education in the EU countries for the near future and indicative ways to achieve them.

Objective 1. Sustainability and excellence through high quality, inclusive and flexible vocational education and training systems that respond flexibly and appropriately to new technologies and business models, digitalisation, artificial intelligence, demographic change, climate change and the economic crisis caused by COVID-19. Innovations in vocational education are closely linked to new competences, curricula, teaching methods and forecasting tools. Therefore, it is necessary to harness the potential of digital learning and artificial intelligence to help learners develop their knowledge and competences.

Ways to implement: facilitate the exchange of innovative experiences and mutual learning on innovative policy reforms and best practices in vocational education, taking into account the challenges of sustainable development and digitalisation. Developing and strengthening centres of excellence for vocational education in terms of innovation centres and skills development environments with education, training and research, VET, higher education and research in selected areas or socio-economic challenges, including entrepreneurship and the creation of digital and innovative VET resources for all.

Supporting the development of digital infrastructure, including artificial intelligence. Strengthening workplace and enterprise learning through the implementation of the European Framework for Quality and Sustainable Learning and the use of demand-responsive support services and strategic learning initiatives. Developing national and regional systems for collecting competence data, including early identification of skills needs and tracking graduate career paths. Enabling social partners, education policy makers, stakeholders and providers to adapt and update their education services, curricula and specifications in a timely and effective manner.

Objective 2. Developing a new culture of lifelong learning - the importance of continuous vocational education and training.

Ways of implementation: Lifelong learning means enabling people to acquire a wide range of competences and move through the education and training system using the most modern technologies and learning tools in different educational institutions. Therefore, a systematic approach should be applied in continuing vocational education and training to ensure adaptation to technological change throughout the working life.

All stakeholders - national and regional authorities, social partners, education providers and learners - are responsible for further developing the new culture of lifelong learning and ensuring that lifelong learning systems are of high quality, accessible and inclusive, as well as relevant and sustainable. The new learning culture means that people benefit from career guidance, have access to high-quality and inclusive vocational education and training opportunities, and acquire key competences, and thus actively manage all stages of education, training and employment with the support of all stakeholders taking increased responsibility. Facilitating mobility for study and work in Europe, access to transparent and reliable information on qualifications, training opportunities and labour market development, promoting the interconnection of digital platforms for learning and professional development, and the award of digital degrees and certificates (Europass Digital Credentials) by educational institutions across Europe, which will contribute to transparency and recognition of qualifications in Europe through the new Europass platform.

Objective 3. Sustainable development - a green perspective in vocational education and training. Sustainable development is a cross-cutting issue that affects labour demand, education, skills, occupations and the geographical distribution of jobs and labour.

Ways to implement: Vocational education and training should strive to incorporate sustainable development competences into their regulations and practices. Furthermore, the link between digitalisation and sustainability is central to achieving this goal. The development of digital learning environments can increase access to education for sustainable development, whether in educational institutions, workplaces or at home. Promote initiatives to support cooperation and knowledge exchange between educational institutions and social partners on teaching methods, curricula, guidelines, work-based learning and quality assurance of environmental education and training, using European programmes such as ERASMUS+.

Stimulate the provision of green vocational education and training, including education and training in green technologies and innovations, energy efficiency, circular economy, environmental awareness, sustainable use of teaching and learning materials, digitalisation to reduce climate impact.

Objective 4. European Vocational Training Area and international dimension of vocational education and training. The globalisation of markets and demographic changes require modernisation and adaptation of vocational training systems and institutions at the national, regional and sectoral levels in the EU Member States.

Ways to implement: mobility in vocational education and training has increased significantly over the past two decades, with more than 1.5 million participants and teachers benefiting from mobility within the European Qualifications Framework and Erasmus+. The COVID 19

pandemic has given a new impetus to virtual and hybrid mobility in particular. In the context of demographic change, it will also facilitate cross-border mobility of skilled workers and thus better match labour market demand and supply.

Assist in the preparation of national teams and their participation in the Euroskills competition to strengthen the attractiveness and reputation of vocational education. Cooperation with international organisations, including the OECD, UNESCO, the Council of Europe, the World Bank and other regional vocational education networks around the world, with a focus on a common global agenda (joint international conferences, facilitating the exchange of best practices on regional innovations in vocational education and tools of common interest).

Promote and facilitate the mobility of learners and adult educators by developing support structures and providing information on opportunities in host countries. Ensuring that study programmes are designed in line with the European Framework for Quality and Sustainable Learning and take into account national regulations and collective agreements, including health and safety provisions.

In view of the above, it should be noted that in order to support the successful implementation of the agreed actions, the relevant European organisations should monitor the Osnabrück Declaration and report annually to the Advisory Committee on Vocational Education and Training and the EU Director-Generals for Vocational Education and Training.

As for Germany itself, in November 2015, the German Chamber of Industry and Commerce adopted the Strategic Directions and Areas of Activity for the period up to 2025. The document states that "only a strong vocational education and training system can provide the skilled professionals that the economy and society urgently need, and ensure a competitive and innovative SME sector" [9]. The content of the Strategy shows that vocational education and training is a central element of the German economy.

Vocational training in Germany is the responsibility of the German Chamber of Industry and Commerce (HIC), which is not only a driving force in the implementation of vocational education and training, but also a powerful voice of the business community in educational policy. It should be noted that vocational education and training is developing in the context of rapidly growing demand for labour in a fast-changing environment and is attractive to young people. The INC has the necessary resources for this, which allows it to help its partner companies consolidate their own brand core.

Let's analyse the main guidelines for the development of vocational education in Germany until 2025:

1. Improving the level of professional training through practice. This means that the INC will implement a number of measures to make vocational education and training attractive to high achieving secondary school graduates.

2. Involvement of additional target groups in vocational education and training, which is expected to be

done against the background of demographic development and immigration.

3. Shaping the path to the digital economy: by 2025, the impact of digitalisation on the world of work and vocational training is expected to increase significantly.

These benchmarks are to be implemented in the following areas:

1. Ensure and strengthen the quality and attractiveness of vocational education in cooperation with social partners.

2. Promote vocational education and training by engaging school leavers with high academic performance in training.

3. Identify target groups for vocational education and training - develop innovative proposals: continuously expand vocational education and training to other target groups, with a special focus on young refugees.

4. Strengthen the examination process. Ensure uniform national quality of examinations in the field of vocational education and training, develop examinations in a modern, service-oriented and reliable way.

5. Strengthening voluntariness in vocational education and training. Significantly increase the value of voluntary donations from the public, support the work of experts.

6. Strengthening of continuing professional development training, development and launch of models that intensify the marketing of continuing professional development qualifications.

7. Optimising mixed forms of vocational and academic education, testing new training models. Mixed forms ("hybrid models") are available, such as dual education.

8. Expanding the offer of consultancy and services. Chambers of Commerce and Industry will expand their services for companies, including career guidance, qualification and career counselling, assessment of foreign professional qualifications, and implementation of vocational education and training abroad.

9. Establishment of effective vocational training institutions in the regions. Strengthening vocational schools as partners in the dual system to ensure the success of dual learning in general.

10. Active formation of digital education. Expanding the range of educational services, digital formats of teaching and learning.

Vocational education and training in Germany is the engine of the German economy, and thanks to its close proximity to company practice, vocational education and training provides well-trained, qualified specialists. It offers people with a wide range of qualifications a flexible transition to working life and excellent career and development opportunities. It ensures the right mix of knowledge and action and low youth unemployment.

Germany is currently experiencing a huge influx of immigrants, especially refugees, many of whom are not qualified for the German labour market or do not speak the language well enough. The development of vocational education is also affected by the growth of urban centres, the shrinking of rural areas and digitalisation. These are challenges that need to be used in a positive way.

Currently, the dual programme of study as a mixed form of academic and vocational education ("hybrid model") is very popular among young people. This is due to the fact that it combines a higher education diploma with a practical qualification. For this reason, dual learning formats should ensure that in-company training is anchored in the overall curriculum concept and that quality standards are maintained that are comparable to those of dual vocational education.

This is particularly relevant in view of the current considerations for the expansion of hybrid educational formats. This should improve the integration between higher education and vocational education and training. There are no formulated guidelines or detailed requirements for their accreditation for practice-integrated dual educational programmes that do not simultaneously lead to a professional qualification. At the same time, it is important to fill the stages of training in companies with business and practical content, as well as to leave room for company-specific specialisations. Examinations in practically integrated dual training courses should also have high practical relevance and be based on training standards.

Conclusions. Summing up the above, we state that the main goals of the modernisation processes of the development of vocational education and training in the dual system of education in Germany are:

1. Improving the quality and efficiency of education and training systems.
2. Improving the education and training of teachers and tutors.
3. Access to information and communication technologies for all.
4. Efficient use of resources (increased investment in education and training. Costs for both human resources and private companies).
5. Open educational environment (more simplified and democratic access to education and training, simplified transition from one level of the education and training system to another).
6. Increasing the attractiveness of learning by encouraging young people to continue their education or training after completing compulsory education; motivating and enabling adults to continue learning throughout their lives. Developing ways to officially recognize non-formal learning experiences. Opportunities to make learning more attractive both within and outside of formal education and training systems.

The prospects for further research include the possibility of studying the development of the dual education system in the context of digitalisation of modern society and the possibility of a mixed format of the educational process at the theoretical and practical stages of training.

References

1. Akimova, O., Sapohov, M., & Hapchuk, Y. (2023). Suchasni tendentsii pidhotovky vchyteliv u zarubizhnykh krainakh. [Modern trends in teacher training in foreign countries]. *Visnyk nauky ta osvity*. 5. 2023. [in Ukrainian] [https://doi.org/10.52058/2786-6165-2023-5\(11\)-329-338](https://doi.org/10.52058/2786-6165-2023-5(11)-329-338)
2. Stratehii rozvytku profesiinoi (profesiino-tekhnichnoi) osvity na period do 2023 roku [Strategies for the development of professional (vocational and technical) education for the period until 2023] [in Ukrainian]. <https://mon.gov.ua/storage/app/media/kolegiya-ministerstva/2020/12/Proyekt%20Stratehiyi%20rozvytku%20proftekhsosvity%20do%202023.pdf>
3. Radkevych, V. Profesiina osvita i navchannia – dlia staloho rozvytku suspilstva. [Professional education and training - for the sustainable development of society] [in Ukrainian]. <https://core.ac.uk/download/pdf/32309574.pdf>
4. Tkachuk, S. (2017). Aktualni problemy ta perspektyvy rozvytku profesiinoi osvity v umovakh rynku pratsi. [Actual problems and prospects for the development of professional education in the conditions of the labor market]. *Visnyk Zhytomyrskoho derzhavnoho universytetu imeni Ivana Franka. Pedagogichni nauky*. Vypusk 2 (88). 266-270. [in Ukrainian].
5. Nychkalo, N.H. (2014). Rozvytok profesiinoi osvity v umovakh hlobalizatsiinykh ta intehratsiinykh protsesiv: monohrafiia. [Development of professional education in the conditions of globalization and integration processes]. K.: Vydavnytstvo NPU imeni M.P. Drahomanova, 125. [in Ukrainian].
6. Hurevych, R.S., Opushko, N.R., & Polishchuk, A.S. (2018). Profesiina osvita: tendentsii rozvytku v XXI stolitti. [Professional education: development trends in the 21st century]. *Modern Information Technologies and Innovation Methodologies of Education in Professional Training Methodology Theory Experience Problems*. 52. Vinnytsia, 5-11.
7. Storonianska, I. Z., & Vasylytsiv, T. H. (2022). Rozvytok profesiino-tekhnichnoi osvity rehionu na zasadakh publichno-pryvatnoho partnerstva: elektronne naukove vydannia [Development of vocational and technical education in the region on the basis of public-private partnership: electronic scientific publication]. Lviv, DU «Instytut rehionalnykh doslidzhen imeni M.I. Dolishnoho NAN Ukrainy». 75. (Seriia «Problemy rehionalnoho rozvytku»). [in Ukrainian].
8. Khamska, N., Matiiuk, D., & Huralnyk T. Sutnist ta innovatsiinyi pidkhid do menedzhmentu v osviti. [The essence and innovative approach to management in education]. *Editorial board*. 2022. 407. [in Ukrainian].
9. Berufliche Bildung 2025 Strategische Leitlinien und Handlungsfelder der IHK-Organisation - Beschluss der DIHK-Vollversammlung vom 26. November 2015. <https://www.dihk.de/resource/blob/11448/f8ebb75c1324c52a37e80929b4850453/vorstandsbeschluss-berufliche-bildung-2025-data.pdf>

10. Lisbon European Council 23 and 24 march 2000. https://www.europarl.europa.eu/summits/lis1_en.htm
11. Declaration of the European Ministers of Vocational Education and Training, and the European Commission, convened in Copenhagen on 29 and 30 November 2002, on enhanced European cooperation in vocational education and training. https://www.cedefop.europa.eu/files/copenahagen_declaration_en.pdf
12. Osnabrücker Erklärung zur beruflichen Bildung als Motor für den Wiederaufbau und den gerechten Übergang zu einer digitalen und ökologischen Wirtschaft. Angenommen am 30. November 2020. Corrigendum, Mai 2021. https://www.bibb.de/dokumente/pdf/ab31_corrigendum_osnabruecker_erklaerung.pdf
13. Tverdokhlib, O., Opushko, N., Viktorova, L., Topolnyk, Y., Koval, M., & Boiko, V. (2022). The Digital Competences of a Specialist: Contemporary Realities of the Information and Technological Paradigm in the Age of Globalization. *Postmodern Openings*, 13(1 Sup1), 412-446. <https://doi.org/10.18662/po/13.1Sup1/434>

Список використаних джерел

1. Акімова О., Сапогов М., Гапчук Я. Сучасні тенденції підготовки вчителів у зарубіжних країнах. *Вісник науки та освіти*. № 5. 2023. [https://doi.org/10.52058/2786-6165-2023-5\(11\)-329-338](https://doi.org/10.52058/2786-6165-2023-5(11)-329-338)
2. Стратегії розвитку професійної (професійно-технічної) освіти на період до 2023. <https://mon.gov.ua/storage/app/media/kolegiya-ministerstva/2020/12/Projekt%20Stratehiyi%20rozvytku%20proftekhsivity%20do%202023.pdf>
3. Радкевич В. Професійна освіта і навчання – для сталого розвитку суспільства. <https://core.ac.uk/download/pdf/32309574.pdf>
4. Ткачук С. Актуальні проблеми та перспективи розвитку професійної освіти в умовах ринку праці. *Вісник Житомирського державного університету імені Івана Франка. Педагогічні науки*. Випуск 2 (88). 2017. С. 266-270.
5. Ничкало Н.Г. Розвиток професійної освіти в умовах глобалізаційних та інтеграційних процесів: монографія. К.: Видавництво НПУ імені М.П. Драгоманова, 2014. 125 с.
6. Гуревич Р.С., Опушко Н.Р., Поліщук А.С. Професійна освіта: тенденції розвитку в ХХІ столітті. *Modern Information Technologies and Innovation Methodologies of Education in Professional Training Methodology Theory Experience Problems*. Вип.52. Вінниця, 2018. С. 5-11.
7. Розвиток професійно-технічної освіти регіону на засадах публічно-приватного партнерства: електронне наукове видання / наук. ред. Сторонянська І. З., Васильців Т.Г. ДУ «Інститут регіональних досліджень імені М.І. Долишнього НАН України». (Серія «Проблеми регіонального розвитку»). Львів, 2022. 75 с.
8. Хамська Н., Матіюк Д., Гуральник Т. Сутність та інноваційний підхід до менеджменту в освіті. *Editorial board*. 2022. С. 407.
9. Berufliche Bildung 2025 Strategische Leitlinien und Handlungsfelder der IHK-Organisation - Beschluss der DIHK-Vollversammlung vom 26. November 2015. URL: <https://www.dihk.de/resource/blob/11448/f8ebb75c1324c52a37e80929b4850453/vorstandsbeschluss-berufliche-bildung-2025-data.pdf>
10. Lisbon European Council 23 and 24 march 2000. URL: https://www.europarl.europa.eu/summits/lis1_en.htm
11. Declaration of the European Ministers of Vocational Education and Training, and the European Commission, convened in Copenhagen on 29 and 30 November 2002, on enhanced European cooperation in vocational education and training. https://www.cedefop.europa.eu/files/copenahagen_declaration_en.pdf
12. Osnabrücker Erklärung zur beruflichen Bildung als Motor für den Wiederaufbau und den gerechten Übergang zu einer digitalen und ökologischen Wirtschaft. Angenommen am 30. November 2020. Corrigendum, Mai 2021. URL: https://webcache.googleusercontent.com/search?q=cache:aa2GTyRaOjMJ:https://www.bibb.de/dokumente/pdf/ab31_corrigendum_osnabruecker_erklaerung.pdf&cd=6&hl=ru&ct=clnk&gl=de
13. Opushko N., Tverdokhlib O., Viktorova L., Topolnyk Y., Koval M., Boiko V. The Digital Competences of a Specialist: Contemporary Realities of the Information and Technological Paradigm in the Age of Globalization. *Postmodern Openings*, 13(1 Sup1), 2022. P. 412-446. <https://doi.org/10.18662/po/13.1Sup1/434>