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*Vocational Education: The Current Problems
and Post-War Prospects*

Szkolnictwo zawodowe: obecne problemy i powojenne perspektywy

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ABSTRACT

The article deals with the urgent issues of the vocational education development which are caused by the martial law in Ukraine. They touch the migration processes of students and teachers at vocational education institutions, financing and educational process organization.

The data of the contingent dynamics of the students and teachers at vocational education institutions have been analyzed. It proves the number reduction of the students by 3.5 to compare with the pre-war indexes. We fix the stable tendency for lowering the quantity of the teaching staff. Among the reasons for the described situation within the teachers, one may identify the lack of the desire for professional retraining and a low level of professional mobility. Based on the analytical data, the map of the ruined/destroyed vocational education institutions has been formed.

The analytical review provides the conditions to overcome the actual development issues of vocational education including systemic state support, recovery of the vocational education system and organization of an effective network of educational establishments, its re-orientation to the economic needs of war time, provision of the education content and quality which coincide with the current demands and the needs of labor market, formation of safe conditions for studying and learning, arrangement of psychological support of all educational process participants, stimulation and encouragement to realize non-linear paths of professional development of the teachers considering the present realities, involving higher informal and informative education.

Keywords: vocational education; teaching staff; students contingent; financing; strategic directions of development

PROBLEM STATEMENT

New wartime conditions that are caused by a Russian full-scale military aggression against Ukraine on February 24, 2022, set strict requirements for education, including vocational education as well. The President of Ukraine V. Zelenskyi stated, “The invaders qualified the culture, education and humanity as their enemies. Thus, they apply many missiles and bombs for that. Aiming at being competitive in the present world, Ukraine should determine education and sciences as its strategic spheres” (Shkarlet et al., 2022, p. 9).

The invaders consider Ukrainian teachers to be their enemies, because they are the educators who form our freedom-loving society, world view vision of our citizens, provide firm and deep knowledge for the present defenders of Ukraine who master military equipment in record time (Shkarlet et al., 2022).

Today vocational education of Ukraine meets new challenges of war time. The present time states many problems to be solved by vocational education. Here we mean the problems of migration processes of students (participants) and teachers of vocational education institutions, the problems of material provision and educational process organization.

The aim of the article is the study of the current and urgent problems of vocational education under the wartime conditions and determination of the directions for the branch development at post war time.

THE ANALYSIS OF STUDENTS AND TEACHING STAFF CONTINGENT

The invasion of Russian military forces in 2014, especially its full-scale attack on Ukraine on February 24, 2022, caused a list of social and economic problems, human, material and psychological casualties, colossal destruction, became the reason for urgent challenges for education.

Considering the subjects of the article, we emphasize the change of the number of students of general secondary education establishments and vocational institutions. We state the interest in the contingent of these educational establishments as rather obvious. Firstly, they are potential applicants to our specialties. Secondly, it is a perspective for vocational education applicants as well. Moreover, the number of students (participants) of vocational education institutions directly influence the demand for vocational education.

According to the data of Ministry of Education and Science and Institute of Educational Analytics, to compare with the pre-war period, the indexes of every types of education have greatly decreased (*Osvita v nezalezhnii...*, 2021; *Osnovni tsyfry...*, 2022) (Figure 1). In 2022/23 academic year, in accordance with the statistic, general secondary education establishments, especially in the second stage of secondary education (*Osnovni tsyfry...*, 2023), provided the reduced

number of students to 224,694 persons that is 3.5 times less than took place before the war of 2013/2014 academic year. First and foremost, the data are reasoned by the annexation of the Autonomous Republic of Crimea and the occupation of Luhansk and Donetsk regions.

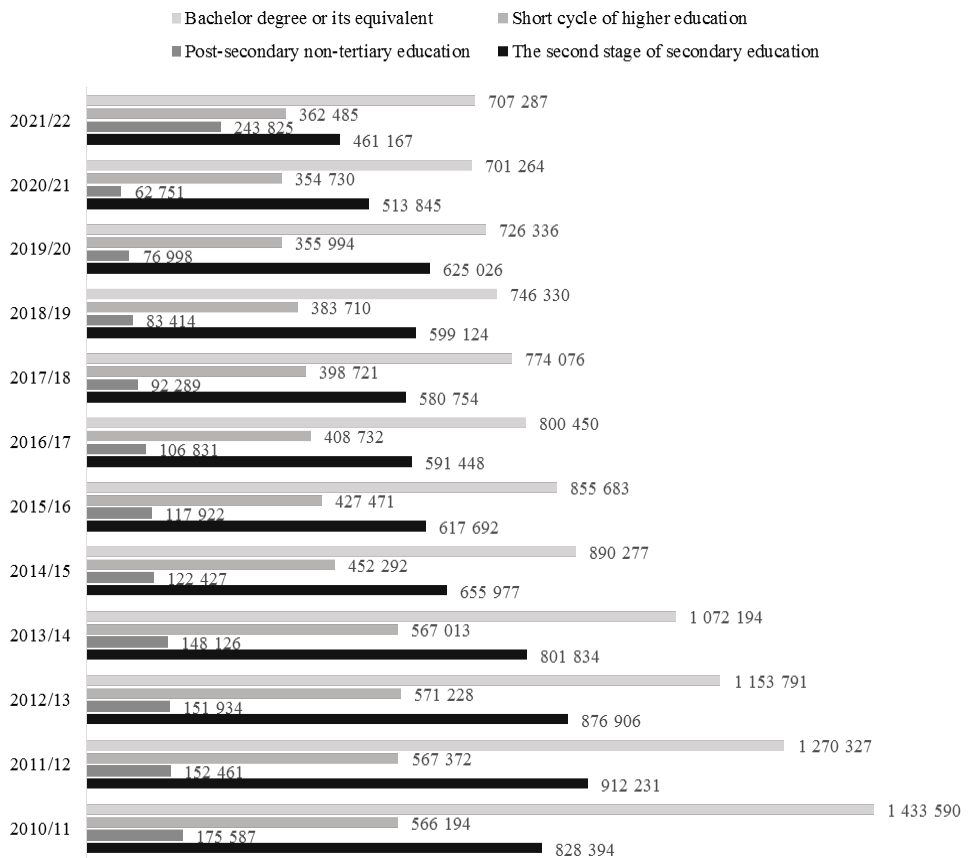


Figure 1. Contingent of education institutions of Ukraine

Source: Author’s own elaboration on the basis of *Osvita v nezalezhnii...*, 2021 and *Osnovni tsyfry...*, 2022.

Within the institution of vocational education, we state a steady decline of the contingent during the studied period. It is reasoned by the reduced prestige of labor professions and the mismatch between the level of students (participants) vocational education training and the needs of the labor market. From the 2010/2011 academic year to the 2020/2021 academic year there appeared the education applicants decrease by 2.7 times. According to the data of Institute of educational analytics, (*Osnovni tsyfry...*, 2022), 2021/22 academic year stated an immense increase of students contingent (almost 244,000 persons). We reason it by the implementation of the projects of state and private partners, development

and realization of the communicative strategy of vocational education and the formation of a new context of education (*Osvita v nezalezhnii...*, 2021).

In the short cycle of the higher education section of a bachelor's degree we fix a constant reduction of applicants number, excluding the last 2021/2022 academic year. The short cycle of vocational education is characterized by the contingent lowering almost by 204,000 persons, and the index of the number of bachelor programs applicants reduced twice. However, at the beginning of the military aggression of the Russian federation and compared with the pre-war times the indexes greatly decreased. Thus, starting with the 2017/2018 academic year we observe the sign of stability. The situation was caused by toughening the conditions for admission to the institutions of higher education, increasing competition from foreign and native institutions of higher education.

According to the data of the Institute of educational analytics (Liesnikova, 2022), as of January 1, 2022, the number of vocational education applicants was 243,825 persons (excluding the Autonomous Republic of Crimea and the occupied Luhansk and Donetsk regions). As at the end of 2021/2022 academic year (June 25, 2022) the number of applicants of the vocational education institutions on the territory controlled by Ukraine, included 194,697 persons. The number of applicants who studied remotely at the vocational education institutions on the territory controlled by Ukraine but stayed abroad, was 18,499 persons. The figures are given excluding the Autonomous Republic of Crimea and the occupied Luhansk, Donetsk and Kherson regions. Moreover, 173 vocational education applicants left Ukraine and were enrolled in the educational institutions of other countries. Compared to the data at the beginning of the year proves that as a result of a full-scale invasion of the Russian federation military forces into Ukraine on February 24, 2022, vocational education institutions have lost 30,629 their applicants.

The indexes for 2022/2023 academic year (*Osnovni tsyfry...*, 2023) show 225,546 vocational education applicants. The given figures prove the number of reeducations of vocational education applicants by 18,000 persons compared to the indicators of the previous year. It may directly influence the number of required teaching staff of the corresponding educational institutions and the labor market.

The shortage of the vocational education teaching staff has always been remarkable. It is reasoned by a number of factors: a low attraction of the vacancies as a result of low wages; outflow of the personnel to the other types of economics, regions and/or countries while maintaining the professional profile; decline in the prestige of the teaching profession in general.

The analysis of the analytical data (*Osvita v nezalezhnii...*, 2021; Liesnikova, 2022) assures a stable reduction in the teaching staff number of vocational education institutions for the last ten years (Figure 2). The information for the 2021/2022 academic year is stated as on July 1, the other data as on January 1.

Over the studied time period the index of teaching staff number has reduced twice. For eight months of a full-scale invasion of the Russian federation military forces, vocational education has lost more teaching staff (7,995 persons) than for the whole time of the military operations 2014–2021 (7,572 persons).

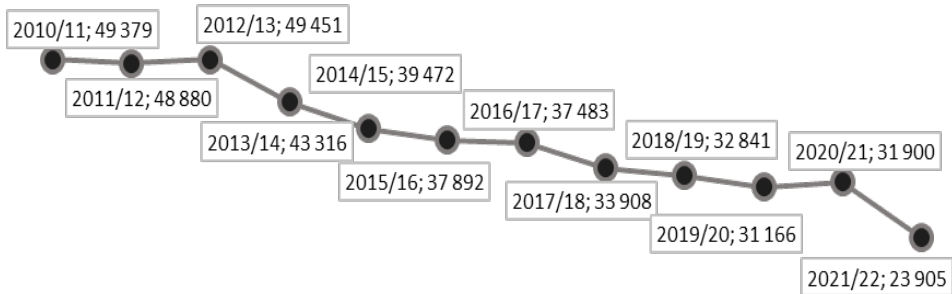


Figure 2. The number of teaching staff of vocational education institutions

Source: Author’s own elaboration on the basis of Liesnikova, 2022 and *Osvita v nezalezhnii...*, 2021.

23,905 people of the teaching staff of vocational education institutions who worked as on July 1, 2022 included: 1,258 persons (5.3%) of internally displaced people; 904 persons (3.8%) of those who was abroad; 472 persons (2%) of those who was on unpaid leave; 654 persons (2.7%) of those who served in the Armed Forces of Ukraine and the Territorial Defense Forces of the Armed Forces of Ukraine; 372 persons (1.6%) who had resigned (Shkarlet et al., 2022).

Simultaneously, in accordance with the State Employment Service (*Kilkist vakansii...*, 2022), demand and supply of teaching staff for the last five years state mostly negative indicators (Figure 3). The sign “-” on the picture means the shortage of vacancies and the sign “+” states the shortage of personnel. The outcomes of the military invasion of the Russian federation armed forces (the infrastructure lowering, forced migration and other factors) undoubtedly influenced a great number of the unemployed among the teaching staff of vocational education institutions. Meanwhile, the Institute of educational analytics declares (*Osvita v nezalezhnii...*, 2021, p. 252) that the graduates of higher education institutions (they mostly form the teaching staff of vocational education institutions) do not follow professional retraining, training and/or professional development and persistently wait for the vacancy according to their specialty. This situation gives a clear description of a very low professional mobility of the graduates of higher education institutions.

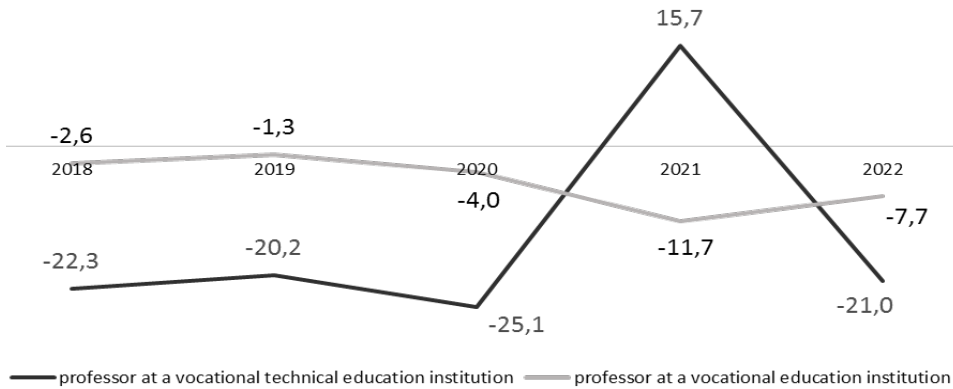


Figure 3. Annual averages of the shortage of personnel and vacancies at vocational education institutions

Source: Author's own elaboration on the basis of *Kilkist vakansii...*, 2022.

Thus, the analysis outcomes prove the stable tendencies of many indexes reducing both students (participants) and teaching staff at vocational education institutions.

According to the data of the State Employment Service, as on November 1, 2022 the professions with the largest amount of vacancies (Top-10) include (they are only the professions which directly or indirectly touch education and vocational education that are stated) include: among the professionals and specialists – a teacher (at general secondary education and pre-school establishments), master of industrial training; among the technical servants – a computer dialing operator; among the workers of trade and service spheres – a cook, social worker, hairdresser (hairdresser and fashion designer), teacher assistant; among the qualified employees working with instruments – seamstress, electrician, locksmith-repairer, electric and gas welder, baker, electrician for the repair of electrical equipment, joiner, house-painter; among the workers for serving the equipment – a turner, milling-machine operator, operator of software-controlled machines (*Popyt ta propozytsiia...*, 2022). The above is evidence of the existence of a great demand for the professions which are directly or indirectly connected with vocational education.

SPECIFIED PROBLEMS OF VOCATIONAL EDUCATION

According to the Interactive map of destroyed and ruined educational institutions (Figure 4), as on February 12, 2023 in Ukraine there are 32 completely ruined and 225 destroyed institutions of vocational and professional pre-higher education (based on the nine-year education).

At war time and especially after a full-scale invasion of the Russian federation military forces, education in general and vocational education in particular carried

immense costs. It showed a substantial influence on both its subject and its infrastructure and the functioning mechanism.

About 3,500 educational establishments afford shelters for internally displaced people and are used as centers for collecting and sharing humanitarian aid, making food for internally displaced people (*Otsiniuvannia potreb...*, 2022). At the same time in dormitories of vocational education institutions (as on August 1, 2022) students of these institutions take only 57% of the housing resource. The other rooms in the dormitories are occupied by the people who live under a contract, as well as internally displaced people (26% and 17% accordingly) (Shkarlet et al., 2022).



Figure 4. Number of ruined/destroyed institutions of vocational and professional pre-higher education (as of April 30, 2023)

Source: Author’s own elaboration on the basis of *Interaktyvna mapa zruinovanykh i poskodzhennykh zakladiv osvity* [Interactive map of the ruined and destroyed educational establishments]. (2023). Retrieved April 30, 2023, from: <https://saveschools.in.ua> [in Ukrainian].

DEVELOPMENT PROSPECTS OF VOCATIONAL EDUCATION

Definitely, the article can’t deal with all problems which have become urgent challenges for vocational education, but even the described problems set actual questions before education and demand radical changes in its development strategy. To solve the current problems of vocational education, the regulatory framework for the period of martial law has been adopted “Ruining and destroying the network of vocational education institutions”; to overcome the challenge:

Partial discrepancy of the vocational education content and quality level with the demands and needs of the labor market. Inadequate adaptation of educational programs and duration of the training to the requests of employers considering the needs of the economics/infrastructure when it is renovated. An immense loss of the cooperation of vocational education institutions with business reasoned by suspension and termination of its functioning. The lack of modern instruments for learning outcomes evaluating while work qualifications areas are signed or confirmed. (Shkarlet et al., 2022, p. 154)

In order to overcome the described challenges at after-war time a list of the following tasks is necessary to be sol

1. To solve the problems which are aimed at the country renovation and deal with the students (participants) contingent formation and the personnel requirements, we offer the following:
 - reorientation to the priority training/retraining/professional development of the specialists at the institutions of vocational pre-university and higher education on these promising professions (*Propozytsii shchodo zmin...*, 2022): andragog; instructor of working adaptation; consuler of a professional development center; technologist of the production and processing of the animal husbandry; technician-technologist of the production of dairy products, fats and their substitutes, polysaccharides, sugary substances, meat products, flour products, confectionery and food concentrates; technician-technologist of food technology; technician-technologist of grain processing; programmer of information protective systems, administrator of systems and networks; analyst of information protective systems and vulnerability assessment; analyst of ICT systems security; specialist of information protective systems testing; specialist of information specialist of information protective sphere, etc.;
 - reorientation to the priority training/retraining/professional development of the specialists at vocational education institutions on these promising directions (*Propozytsii shchodo zmin...*, 2022): restructure of coal sector and other sub-sectors of mining industry; agriculture and forestry, production and processing of agricultural products, etc.; after-war “environment rehabilitation”; power-saving sector, energy efficiency and the development of renewable energy; construction, reconstruction and rebuilding of the real estate properties ruined by the war; restoration of the territories and inhabitants from the military aggression consequences; service sector (social segment); industry, especially mechanical engineering, production of dual-use products, rolled metal and metal constructions for the building sector; reformation of military, law enforcement and other spheres of national, civil, cyber and other security segments (*Propozytsii shchodo zmin...*, 2022): save: 014 Secondary education (on specific specializations), balance sheet ratio (the ratio of the average number of vacancies to the average number of unemployed) – 0.62; 015 Vocational education (on specializations), balance sheet ratio – 0.64;

- 121 Software engineering, balance sheet ratio – 0.78; 122 Computer sciences, balance sheet ratio – 4.43; 123 Computer engineering, balance sheet ratio – 2.42; 126 Information systems and technologies, balance sheet ratio – 1.09; increase: 181 Food technologies, balance sheet ratio – 1.30; 204 Technology of the production and processing of the animal husbandry, balance sheet ratio – 1.51; increase substantially: 125 Cybersecurity, balance sheet ratio – 3.06;
- formation of government order for the personnel training for the institutions of higher and vocational pre-university education exceptionally on professional qualifications (*Propozytsii shchodo zmin...*, 2022).
2. To improve financing and reorganizing educational process in vocational education institutions, the following operations are suggested: approval of the regional development plans of vocational education system; organization of the project management courses for the managers of vocational education institutions; reconstruction and restoration of the destroyed (ruined) vocational education institutions; reconstruction of the dormitories of vocational education institutions; organization of professional development centers; organization/modernization of educational and practical centers on the basis of the current vocational education institutions; development and approval of state educational standards of the specific professions; approval of manuals on the educational programs development; training arrangement of the developers of educational standards and educational programs; organization/adaptation of academic courses/materials for distant learning and their posting on the educational platform “Vocational Education Online”; development of short-term programs and training of adults, including internally displaced people; startup of the Register of professional qualifications; training arrangement of professional assessors of learning outcomes; participation of vocational education institutions in the program Erasmus+; monitoring organization of vocational education quality; arrangement of professional development of the teaching staff of vocational education institutions on the new/modernized professional development programs; formation of qualification centers on the basis of vocational education institutions (Shkarlet et al., 2022).

Moreover, the Ministry of Education and Science of Ukraine promotes a list of changes in the personnel training in war and post war periods, especially (*Propozytsii shchodo zmin...*, 2022):

- simplification of the educational programs, procedures, standards, instruments and other mechanisms of training, re-training and professional development of the citizens who obtain educational and professional qualifications; it is implemented with shorten the training terms by 2–5 times by recognizing the previous working experience and education (informal and informative), training in more topical qualifications;

- approval of temporary cancellation of regulatory norms on licensing and accreditation of the corresponding educational programs, suspension for a certain period of the institutions which work concerns controlling (especially, National Agency for Higher Education Quality Assurance.), etc.

CONCLUSIONS

The analysis provided in the article demonstrates the following conclusion: the serious challenges, vocational education meets today, are possible to be overcome if there exist a systemic state policy, recovery of vocational education system and organization of the effective network of educational institutions, its re-orientation on the economic demands of war time, provision of the education content and quality which correspond with the current requirements and needs of the labor market, arrangement of safe conditions for studying and teaching, implementation of psychological support of all educational process participants, stimulation and encouragement to realize non-linear paths for the teaching staff professional development considering the current realities, involving higher, informal and informative education.

The issues of mental health supporting and psycho social work, as well as providing inclusion for the students (participants) at vocational education institutions which are relevant to the war and forced displacement, are actual and extremely urgent today. These thematic components make the direction of our further studies.

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ABSTRAKT

W artykule przedstawione są bieżące problemy rozwoju kształcenia zawodowego i technicznego, spowodowane obecnym stanem wojennym w Ukrainie. Do tych zagadnień należą: problemy związane z procesami migracyjnymi uczniów i pedagogów placówek kształcenia zawodowego i technicznego, wsparcie materialne oraz organizacja procesu kształcenia.

W artykule została przedstawiona analiza danych analitycznych, dotyczących dynamiki kontyngentu uczniów i nauczycieli placówek kształcenia zawodowego i technicznego. Analiza ujawniła 3,5-krotne zmniejszenie liczby uczniów w stosunku do danych przedwojennych. Zaobserwowana została stabilna tendencja spadkowa w zakresie liczby pracowników dydaktycznych. Wśród przyczyn opisywanej sytuacji wśród kadry nauczycielskiej wymienia się brak chęci do przekwalifikowania zawodowego oraz niski poziom mobilności zawodowej. Na podstawie danych analitycznych skonstruowano mapę zniszczonych/uszkodzonych placówek kształcenia zawodowego i technicznego.

W oparciu o wyniki analizy autor artykułu przedstawił warunki pokonywania obecnych problemów rozwoju edukacji zawodowej, w szczególności: wsparcie systemowe państwa; odbudowa systemu kształcenia zawodowego i stworzenie efektywnej sieci placówek edukacyjnych; ukierunkowanie systemu na potrzeby gospodarki wojennej; zapewnienie treści i jakości kształcenia odpowiadających współczesnym wymaganiom i potrzebom rynku pracy; stworzenie bezpiecznych warunków dla procesu studiowania i nauczania; zapewnienie wsparcia psychologicznego wszystkim uczestnikom procesu edukacyjnego.

Słowa kluczowe: kształcenie zawodowe i techniczne; kontyngent uczniów; wsparcie materialne; strategiczne kierunki rozwoju; kadra pedagogiczna