

Ukrainian education in the context of war and post-war reconstruction: Global trends and national challenges

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Abstract. The relevance of this study stems from the need to rethink Ukraine's state education policy in the context of war, demographic and human resource losses, the destruction of infrastructure, and preparations for post-war reconstruction, taking into account the needs of communities, the labour market, defence and security. The aim of the article was to analyse the current state of Ukrainian education in the context of European benchmarks, constitutional guarantees of the right to education, the challenges of wartime and the tasks of post-war recovery, as well as to identify priority areas for its stabilisation and development. The study employed methods of analysis, comparison, generalisation and interpretation of regulatory documents, as well as analysis of statistical and sociological data on the state of the education network, staffing levels and the material and technical resources of educational institutions. The main findings of the study were the identification of a number of contradictions between the declared European benchmarks for education policy and the practice of its implementation in Ukraine. It was argued that the reduction in the school network, particularly in rural, small and frontline communities, may lead to a deepening of educational inequality, a weakening of the social resilience of these areas and complications for the return of the population once the war has ended. It was demonstrated that the reform of specialised secondary education requires not a mechanical consolidation of institutions, but rather the coordination of the activities of schools, vocational lyceums and colleges, taking into account the demographic situation, transport accessibility, staffing capacity and the needs of regional development. It was established that vocational and professional pre-higher education remain insufficiently integrated into the overall framework of educational reforms, despite their important role in training specialists for the economy, communities and post-war reconstruction. Particular attention was paid to the staffing crisis in education, specifically the shortage of teaching staff, the low attractiveness of teaching qualifications, and the inadequate social protection of teachers

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and lecturers. The report analysed issues relating to the material and technical support for the educational process, digitalisation, innovative teaching technologies and the need to support domestic production of teaching materials. In the field of higher education, the risks of excessive regulation, the formalisation of scientific and pedagogical activities, the lack of genuine autonomy for universities, and the absence of systematic development of research universities were outlined. The practical value of this work lies in the development of proposals for preserving the educational network and formulating a long-term strategy for the development of education in Ukraine

Keywords: specialised education; staffing of educational institutions; university autonomy; post-war reconstruction; economic development

Introduction

The current development of education worldwide is taking place against a backdrop of several systemic challenges: the consequences of Russian aggression, the pandemic, digital transformation, rising social inequality, staff shortages, migration, armed conflicts, and the need to rethink the role of education in ensuring the resilience of states and societies. At a global level, education is increasingly viewed not merely as a sphere for imparting knowledge and developing competences, but as a key instrument for social cohesion, economic development, democratic stability, human capital and national security. As emphasised by M.-D. Oltean *et al.* (2026), issues such as access to education, the quality of teaching, the training of teaching staff, the development of digital technologies, support for vulnerable population groups and the ability of education systems to function in crisis situations are of particular importance. Documents from the United Nations Educational, Scientific and Cultural Organisation (UNESCO, 2023) emphasise that the digitalisation of education opens up new opportunities for personalised learning, expanded access to educational resources and support for learners in times of instability, but at the same time may exacerbate inequalities between different social groups if technological solutions are not accompanied by adequate infrastructure, pedagogical support and well-thought-out public policy. OECD reports (2023; 2024) highlight that modern education systems are facing a decline in certain academic achievement indicators,

rising inequality, funding challenges and a shortage of teaching staff, which calls for new management models and long-term solutions. The Council Resolution on a Strategic Framework... (2021) focuses on quality, inclusivity, lifelong learning, mobility, the digital and green transitions, as well as on strengthening the teaching profession as one of the prerequisites for the successful development of education.

For Ukraine, these challenges are particularly acute due to the full-scale war, the destruction of educational infrastructure, internal and external population migration, the loss of human capital, reduced access to face-to-face learning, the spread of distance and blended learning formats, as well as the need to simultaneously ensure the ongoing functioning of the education system and lay the foundations for its post-war reconstruction (Matviichuk *et al.*, 2022). Analytical reports by the Ministry of Education and Science of Ukraine (2024) and Learning and school reforms continue... (2025) have shown that the war has had a significant impact on all levels of education in Ukraine, including general secondary, vocational, pre-higher vocational and higher education. In particular, damage to educational institutions, security risks, the displacement of pupils, students and teaching staff, as well as unequal access to quality education, are exacerbating educational losses and creating long-term risks for the development of human capital. Ukrainian studies explore various aspects of how education

functions in wartime conditions. In particular, the publications War and education: How a year... (2023) and E. Denisova-Schmidt & O. Marmilova (2026), which focus on the experiences of Ukrainian schools during the full-scale invasion, analyse organisational models of learning, the adaptation of educational institutions to security conditions, the role of distance and blended learning, and the impact of the war on pupils, teachers and local communities. Researchers into educational losses, V. Ponomarenko & O. Pysarchuk (2024), emphasised that a prolonged disruption to the stable educational process affects not only the academic outcomes of learners, but also the development of human capital, future economic productivity and the state's capacity for recovery. In O. Palchuk's (2025) work on post-war reconstruction, education was regarded as one of the key factors in Ukraine's recovery, as it is education that provides the training of specialists for the economy, the social sector, governance, science, innovation, defence and security.

Despite the considerable volume of analytical materials and academic publications, the interrelationship between European strategic guidelines, constitutional guarantees of the right to education and the current state of Ukraine's education system remains insufficiently systematically researched. This applies, in particular, to the functioning of the network of educational institutions, staffing and material and technical resources, the reform of specialised secondary education, the development of vocational and pre-higher education, university autonomy and preparations for post-war reconstruction. In view of this, a comprehensive analysis of Ukrainian education as an integrated system capable of ensuring accessibility, quality, sustainability and social justice in line with the state's strategic needs is essential. Of particular importance is the identification of balanced approaches to the modernisation and European integration of education, taking into account financial constraints, demographic changes and the need to preserve the educational network as a key factor in the viability

of local communities. The aim of this article was to provide a comprehensive analysis of the key challenges, risks and contradictions facing the development of Ukraine's education system in the context of war and post-war recovery, taking into account international and European approaches to ensuring the sustainability, accessibility and quality of education. To achieve this aim, the following research objectives were identified: to analyse international and European approaches to the development of education in the context of contemporary crises; to characterise the main challenges facing Ukrainian education as a result of the war; to examine the problems relating to staffing and the material and technical infrastructure of educational institutions; to identify priority areas for the stabilisation and development of Ukraine's education system in the context of post-war recovery.

Materials and Methods

The study was theoretical-analytical and problem-oriented in nature and aimed at a comprehensive assessment of the state of Ukrainian education in the context of war, European integration and preparations for post-war reconstruction. The methodological framework of the study comprised systemic, comparative, institutional, regulatory and strategic approaches. The application of these approaches made it possible to view education not as a collection of isolated levels, but as a holistic social system linked to the development of the state, local communities, the economy, defence, security and human capital. The research drew on Ukrainian legislative and regulatory acts, in particular the Constitution of Ukraine (1996), Law of Ukraine No. 1556-VII (2014) and Law of Ukraine No. 2680-VIII (2019). The analysis also included European strategic documents in the field of education and analytical materials from international organisations, including the OECD (2023; 2024). The sample comprised recent academic publications on the accessibility of education, digitalisation, learning loss, vocational training, university autonomy and the recovery of

the education system in times of crisis, including works by L. Matviichuk *et al.* (2022), V. Ponomarenko & O. Pysarchuk (2024) and O. Palchuk (2025).

In the first stage, the current international and European context for the development of education was analysed. To this end, the method of analysing the aforementioned documents was applied, which helped to identify the key strategic priorities of education policy: ensuring the quality of education, equal access and inclusivity, the development of lifelong learning, digital transformation, support for the teaching profession, and strengthening the role of education in the sustainable development of society. The use of this method was driven by the need to compare national educational processes with broader international trends. The second stage involved a legal and regulatory analysis aimed at comparing the foundations of education policy with the constitutional guarantees of the right to education, the principles of its accessibility, and the provisions of Ukrainian legislation governing the operation of educational institutions at various levels. The application of this method made it possible to identify contradictions between citizens' declared rights to education and certain administrative decisions capable of affecting access to complete general secondary, vocational, professional pre-higher and higher education. In the third stage, the comparative analysis method was applied, through which European educational benchmarks, selected international indicators and the realities of educational development in Ukraine were compared. This comparative approach made it possible to assess the alignment of national reforms with general trends in the development of education across Europe, as well as to identify the risks of formally adopting reform models without due consideration of the conditions of martial law, the demographic situation, regional differences, transport accessibility and the resource capacity of local communities. The fourth stage utilised the method of statistical and analytical generalisation. This was used to systematise data on the reduction

in the network of educational institutions, the functioning of upper secondary schools, staffing levels in schools, enrolment in teacher training programmes, the material and technical equipment of classrooms, and the cost of study at higher education institutions (HEIs). This method made it possible to move from examining individual facts to identifying general trends that characterised the actual state of the education system and its capacity to respond to the challenges of the war and post-war reconstruction.

In the fifth stage, a problem-analytical method was applied, which involved identifying the key contradictions in contemporary education policy. In particular, the contradictions were analysed between the need to modernise education and the risk of the educational network's collapse; European benchmarks for the accessibility and quality of education and the practice of reducing the number of institutions; the need to develop specialised education and the insufficient coordination of activities between schools, vocational lyceums and colleges; the requirements for academic and teaching staff and the actual level of resource provision for universities; and the need to establish research universities and the absence of a systematic state policy regarding their development. At the sixth stage, methods of systematisation and forecasting were applied, which made it possible to identify the priority areas for the stabilisation and development of Ukrainian education. The need was identified to preserve the education network, support schools in small, rural and frontline communities, strengthening the role of vocational and professional pre-higher education, updating the curriculum, strengthening teacher training, improving the social status of teaching and academic staff, modernising the material and technical base, developing genuine university autonomy, and formulating a long-term strategy for the development of education in Ukraine. The methodology employed ensured that the study could be replicated by re-examining a similar set of sources, using systematic, comparative, regulatory, statistical and

problem-analytical methods, and comparing the conclusions drawn with up-to-date data on the state of education in Ukraine.

Results and Discussion

The situation in which Ukraine finds itself requires appropriate action and responsible decisions from citizens and government officials. Achieving victory and rebuilding the country are impossible without qualified specialists and patriotic citizens. The Magna Charta Universitatum 1988 (n.d.) proclaims freedom of research and educational activity, and university communities must demonstrate openness to dialogue and prevent any manifestations of intolerance. Universities serve as forums for discussion and provide an environment in which an objective understanding of social processes is formed. Thus, higher education institutions must objectively assess the current state of affairs and develop mechanisms for the advancement of education and science. Ukraine has suffered significant losses as a result of Russian aggression and faces inconsistencies in the policies of its Western allies. At the same time, society recognises that university graduates play a direct role in defending the state, and expects higher education institutions to work conscientiously and ensure the appropriate quality of education. This is a necessary prerequisite for the country's reconstruction and the return of young people from abroad. The state requires educators to carry out high-quality professional work and to train qualified workers and responsible, patriotic citizens, in particular military personnel, agricultural workers, teachers, IT specialists, manual workers, doctors and scientists.

Since 21 February 2019, three articles of the Constitution of Ukraine (1996) have enshrined the state's strategic course towards membership of the EU and NATO, as confirmed by the provisions of Law of Ukraine No. 2680-VIII (2019). Consequently, the activities of state authorities must be aligned with European Union (EU) legislation. The Council Resolution on a Strategic Framework..., (2021) sets out the strategic framework for European cooperation in the field of general and vocational education up to 2030. Five EU strategic priorities have been established: improving the quality of education; ensuring equal opportunities; enhancing inclusivity and promoting the success of all participants in general and vocational education; ensuring opportunities for lifelong learning and mobility for all; strengthening the competences and motivation of teaching professionals; strengthening European higher education; supporting environmental and digital transformations in general and vocational education, as well as using education as a means to bring about such transformations (Lokshyna, 2023). Similar provisions are contained in Article 53 of the Constitution of Ukraine (1996), which sets out the fundamental rights of citizens and the state's obligations in the field of education. In view of these provisions and the objectives set by the EU, it is appropriate to conduct an objective analysis of compliance with the provisions of the Constitution. A distinctive feature of EU policy is the setting of specific targets for each level of education. To assess Ukraine's progress towards EU membership, it is advisable to analyse the average European indicators in the field of general and vocational education, as set out in Table 1.

Table 1. Average European indicators in general and vocational education

No.	Indicator	EU target
1	15-year-olds with low achievement in core competencies	By 2030, the proportion of 15-year-olds with low achievement in reading, mathematics and science should be less than 15%
2	Low levels of digital and information literacy in Year 8 pupils	By 2030, the proportion of Year 8 pupils with low levels of digital and information literacy should be less than 15%
3	Participation in early years care, education and upbringing	By 2030, at least 96% of children aged between three and the statutory school-entry age should be enrolled in early childhood care, education and development

Table 1. Continued

No.	Indicator	EU target
4	Early school leaving and discontinuation of vocational training	By 2030, fewer than 9% of pupils should leave school or vocational training early
5	Attainment of higher education	By 2030, the proportion of people aged 25 to 34 with a higher education qualification should be at least 45%
6	Work-based learning as part of vocational education and further training	By 2025, the proportion of young graduates who have benefited from work-based learning as part of vocational education and training should be at least 60%
7	Adult participation in educational programmes	By 2025, at least 47% of adults aged 25 to 64 should have participated in educational programmes within the last 12 months

Source: compiled by the author based on Law of Ukraine No. 1556-VII (2014), Resolution of the Cabinet of Ministers of Ukraine No. 812 (2025), 2025 in figures: Results summary (2025), UNICEF Ukraine (2026)

Notably, the fourth target provides that by 2030 the proportion of individuals leaving school or vocational education and training early should be reduced to no more than 9%. According to UNICEF Ukraine (2026), in 2023 the proportion of young people in Ukraine who were neither in education, employment nor vocational training stood at 22.5%, or 1.9 million people aged between 15 and 34. This figure is extremely alarming and highlights the need to implement measures aimed at reversing this negative trend. The fifth target stipulates that by 2030, the proportion of people aged 25 to 34 with a higher education qualification should be at least 45%. In Ukraine, the state-funded quota accounts for only 20-25% of the total number of graduates from general secondary education institutions (2025 in figures: Results summary, 2025). In 2025, the state quota covered around 60,000 people, whilst the total number of graduates exceeded 350,000 (Resolution of the Cabinet of Ministers of Ukraine No. 812, 2025). This situation may indicate problems with the implementation of the provisions of current legislation regarding access to education. At the same time, questions arise regarding the proper implementation of the provisions of Article 53 of the Constitution of Ukraine (1996), which guarantees citizens' right to full general secondary education, which is compulsory and free of charge, as well as the right to free higher education in state and

municipal educational institutions on a competitive basis. In accordance with the Constitution of Ukraine, vocational and technical education, like general secondary education, must be accessible and free of charge in state and municipal educational institutions. Current trends, however, do not fully comply with these principles. The analysis carried out has revealed significant problems with compliance with the provisions of the Constitution of Ukraine.

As already noted, the legislation provides for ensuring the accessibility of general secondary education by establishing a sufficient number of educational institutions and preventing discrimination against children, in particular on the basis of their place of residence. In practice, however, the opposite is occurring, notably the closure of educational institutions and the withdrawal of funding for under-enrolled schools. The government is introducing restrictions relating to the minimum number of pupils in schools; in particular, it is planned to withdraw funding from institutions with fewer than 45 pupils. There is also discussion of the possibility of withdrawing funding from lyceums that operate only a single Year 10 class (A number of schools may be closed..., 2025). Such measures require assessment in terms of compliance with the constitutional right to accessible education, particularly in rural areas. Between 2016 and 2026, the number of schools in Ukraine

fell by almost 5,000 and now stands at around 12,200. By way of comparison, there are almost 22,000 schools operating in Poland (Education of Ukraine in the conditions of war..., 2026). An analysis of data from the AIKOM platform (n.d.) showed that of Ukraine's 12,200 schools, only about half – namely 6,400 institutions – have Year 10 and Year 11 classes. Of these schools, 53% have just one class in each of these year groups, whilst only 2,382 schools, or 37%, have at least two 10th and 11th-year classes. In 1,190 schools, there are fewer than 10 pupils in the 10th year. In 199 of these schools, the number of pupils in Year 10 is fewer than five, with 95 of these schools located in rural areas. If the proposed approach requiring lyceums to operate at least two senior classes in each year group were to be implemented, the network of institutions providing complete general secondary education could be substantially reduced. A more appropriate approach would be to regard the existence of a single fully functioning Year 10 class as sufficient grounds for maintaining the institution's operation and preserving pupils' access to complete general secondary education.

Against this backdrop, the reformers' proposals to open upper secondary schools only where there are four parallel classes, to introduce entrance examinations for lyceums, and to prohibit the completion of full general secondary education in gymnasiums appear particularly controversial. Such proposals may not only indicate an insufficient understanding of the current situation, but also pose risks to the functioning of the Ukrainian school system. Even a partial relaxation of these requirements – in particular, the possibility of establishing lyceums where there are two Year 10 classes and the joint operation of gymnasiums and lyceums – does not provide a complete solution to the existing problem. The reform of upper secondary education and the introduction of specialised education in Ukraine are being carried out without due consideration of the fact that a certain degree of specialisation already exists in practice. Academic

education is primarily provided in schools, applied education in colleges, and vocational education in vocational lyceums and technical colleges. At the same time, the specialisation of upper secondary education is often viewed as a process that must be started almost from scratch. This approach appears insufficiently systematic and requires more thorough justification. It would be advisable for general secondary schools to offer the opportunity to study along three or four specialisation tracks, for example, natural sciences and mathematics, humanities, and socio-economics; and, where conditions permit, also an arts track for pupils engaged in music, visual arts and other forms of creative activity. To this end, it is necessary to coordinate the activities of schools, vocational lyceums and colleges at regional level, analyse the content of their educational programmes and the existing network of institutions, and harmonise the areas of specialisation. Such an approach requires the corresponding updating of educational programmes and a review of the duration of study at specialised lyceums and colleges.

An analysis of the situation on the ground and of media reports, in particular Primary schools and gymnasiums... (2025), indicates that one of the most pressing issues in Ukraine is ensuring citizens' right to education and preserving the network of general secondary education institutions, particularly schools with only one senior year. Teaching in classes with five pupils significantly limits the ability to ensure an adequate standard of education. At the same time, class sizes of 16-24 pupils can create acceptable conditions for organising the educational process, including specialised education. The preservation of the school network should also be considered in the context of post-war recovery, the return of the population and overcoming the demographic crisis (Otych, 2025). The closure of schools, particularly in small settlements, may hinder the recovery of local communities and reduce access to education. Thus, when reforming the education network, it is advisable to seek

the support of international partners, whilst at the same time justifying the need to take into account Ukraine's national and regional specificities. With the support of the World Bank, the EU Delegation, the United States Agency for International Development and the International Renaissance Foundation, a network of experts has been established to participate in the development and implementation of educational reforms (Strengthening Ukraine's primary and secondary..., 2024). The proposed solutions are often progressive in nature; however, in some cases, they do not sufficiently take into account the consequences of the war, the demographic situation and the specific features of the education system. The mechanical transfer of models tested in other countries, without proper adaptation to Ukrainian conditions, may reduce the effectiveness of the reforms. In this regard, the Ministry of Education and Science of Ukraine, the Verkhovna Rada of Ukraine and the Cabinet of Ministers of Ukraine must play an active role not only in the implementation but also in shaping the content of the reforms, assessing their impact and monitoring the use of budgetary, loan and grant funds, including expenditure on information support.

Representatives of educational institutions have expressed concern regarding the insufficient involvement of the public, educators, local communities, professional associations and civil society organisations in the processes of developing and implementing educational reforms (Senior high school reform in Ukraine..., 2026). During public consultations, the impression is often formed that key decisions have already been taken and that the scope for amending them is limited. At the same time, various parliamentary factions include individuals linked to organisations participating in grant and expert programmes. This raises questions regarding the transparency of decision-making in the fields of general secondary, vocational and higher education. The concepts of the New Ukrainian School (NUS) and the specialised senior school have

positive aspects, but are viewed with mixed feelings by the public. According to the results of a survey initiated by Ukraine's Education Ombudsman, 14.3% of parents support the reform, whilst a further 30% are more likely to support it than not. At the same time, 32% of respondents view it negatively, and 23% are unaware of the content of the specialised secondary school reform. Consequently, 55% of those surveyed either do not support the proposed changes or do not have sufficient information about them (Are parents of students aware..., n.d.). In a significant proportion of Ukraine's 1,460 local communities, there is also a critical attitude towards senior secondary school reform and towards certain aspects of the implementation of the NUS, particularly the reduction in the number of educational institutions.

The future of colleges and lyceums is a cause for particular concern. These issues were raised by community representatives during a meeting with the President of Ukraine (Senior high school reform in Ukraine..., 2026). An analysis of the provisions of Law of Ukraine No. 4574-IX (2025) gives cause for concern regarding possible changes to the system of governance of vocational education institutions. In particular, their reclassification from state-funded institutions to state and local non-profit organisations may in future create the conditions for the corporatisation or privatisation of certain institutions. Another shortcoming of the legislative framework is the absence of a clear definition of the role of skilled trades and of the term "worker" itself. The influence of teaching staff at vocational lyceums on management processes remains limited, whilst significant powers are concentrated in supervisory boards. The need to obtain the supervisory board's approval for certain procedures, in particular the conduct of tenders, requires further legal assessment regarding compliance with current legislation. To substantiate this position, Figure 1 presents a diagram of the possible corporatisation and privatisation of higher education institutions, colleges and vocational lyceums.

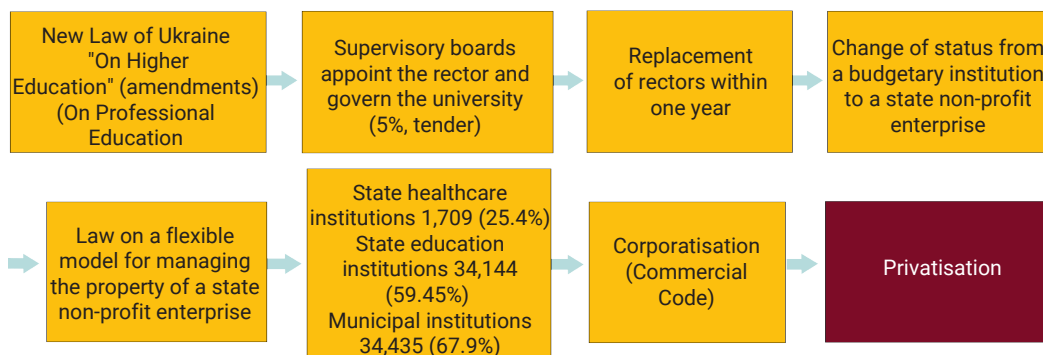


Figure 1. A possible mechanism for the corporatisation of Ukrainian universities

Source: compiled by the author based on Law of Ukraine No. 4574-IX (2025)

Continuing the analysis of how colleges operate, it is worth noting the existing contradictions. The provisions of Law of Ukraine No. 2745-VIII (2019) do not fully correspond to the actual conditions under which these institutions operate. The level of funding for colleges and the remuneration of their staff remains among the lowest among educational institutions. At the same time, colleges fulfil tasks of national importance relating to the training of mid-level specialists and future entrepreneurs, as well as the provision of specialised education. Thus, support for colleges should be regarded as a key priority of state education policy. During the implementation of the reform of specialised education, the role of vocational lyceums and colleges has not been sufficiently taken into account. Instead, there is a tendency to reduce the network of educational institutions, amidst a lack of proper coordination between different types of educational establishments. The assertion that colleges and vocational lyceums, given the current duration of study, will be able to fully ensure the simultaneous attainment of vocational and full general secondary education requires further justification. A three-year course at a college or lyceum, involving the simultaneous completion of a full general secondary education programme and vocational training, is difficult to implement. To fulfil both objectives to a high standard, the duration of study would likely need to be at least four to five years.

Returning to the implementation of the NUS project, it should be noted that as far back as 2017, at a meeting of the Board of the Ministry of Education and Science of Ukraine, it was proposed to select around one hundred educational institutions to conduct a full-scale pedagogical experiment (Order of the Ministry of Education and Science of Ukraine No. 1028 (2017)). It would be advisable to conduct such an experiment for at least four years – until pupils complete primary school – and subsequently continue it at the lower secondary level. A separate experiment should also be carried out in upper secondary school. The introduction of specialised upper secondary education should only take place after the results of all stages of the experiment have been summarised and evaluated. At the same time, short political cycles and the desire for rapid implementation of changes often limit the scope for proper testing of large-scale educational reforms. An analysis of media reports, social media posts and public statements indicates reports of a decline in the knowledge levels of some pupils studying under the NUS programmes, insufficient readiness to acquire fundamental knowledge, and a lack of developed skills in systematic independent work and learning. At the same time, a comprehensive nationwide assessment of the quality of the NUS implementation has yet to be carried out; thus, the current findings should be regarded as preliminary. In this context, reports

on adjustments to approaches to organising the educational process in Finland deserve attention, in particular the review of certain principles of “free learning” and a return to more structured teaching methods (Ketonen & Nieminen, 2024).

A systematic analysis of the state of the general secondary education network is required, as is the preservation of upper secondary institutions in rural areas, provided that the minimum conditions necessary for their operation are met. It would also be advisable to develop a separate support programme for schools with a single upper secondary class. Such measures should be considered in the context of the post-war reconstruction of the state, the preservation of small villages and towns, and ensuring territorial access to education. Preserving the network of general secondary education schools and safeguarding the right to education must become one of the priorities of state policy. It would be advisable for relevant provisions to be included in the manifestos of political parties and in strategic documents relating to education. The development of schools requires simultaneous work in three main areas: updating the curriculum, training teaching staff, and modernising the material and technical infrastructure. One promising approach could be the development of a state programme named “Yaroslav the Wise”, which would provide for improvements to the process of developing curriculum content, the involvement of specialist institutions of the National Academy of Sciences of Ukraine and the National Academy of Pedagogical Sciences of Ukraine, the study of best international practices, as well as the participation of experienced teacher-methodologists and practising teachers. In this context, Ukrainian teachers’ assessments of the decline in the quality of school education are particularly telling. One of the main problems identified is young people’s loss of interest in acquiring knowledge: 71% of the teachers surveyed cited this as the primary factor. The impact of the war, the pandemic and distance learning ranked lower on the list of causes of educational losses (Diagnosis and overcoming of educational

losses..., 2024). These factors must be taken into account when determining the content of education, as well as the forms and methods of organising the educational process.

When describing the content of teaching under the NUS programme, it is worth referring to the works of the renowned educator K. Ushynskyi, who placed considerable emphasis on the use of game-based methods in teaching. Through play, pupils can be taught to read and write; however, preparation for real life also requires systematic academic and practical work (Zahorodnia, 2023). Consequently, a balanced approach to defining the content, forms and methods of teaching is essential. The educational process must not be limited solely to playful and entertaining forms of activity. Alongside educational games, pupils must be given the opportunity to work in laboratories, undertake practical training and develop subject-specific and general competences. The content of education, as well as the forms and methods of teaching, must be modern, yet at the same time aimed at the systematic acquisition of knowledge and the development of independent working skills. In the context of the issue under investigation, it should be noted that the removal of the requirement for an average mark from the certificate of complete general secondary education from the rules for admission to higher education institutions has led pupils to focus primarily on preparing for the External Independent Assessment (EIA) and, subsequently, for the National Multi-Subject Test (NMT), in particular with the help of private tutors. This situation may undermine the comprehensive educational and formative process and reinforce the role of out-of-school preparation. The EIT was introduced primarily as a tool to ensure objective and transparent admission to higher education institutions, rather than as the sole indicator of a school’s quality. Thus, the activities of a general secondary education institution should not be reduced solely to preparing pupils for the NMT. One of the most complex issues in the reform of the Ukrainian school system remains the social protection of teachers, who,

throughout the war, have been working under conditions of constant risk, psychological strain and numerous organisational challenges.

Despite a 30% increase in teachers' salaries from 1 January 2026 and a planned further increase of 20% from 1 September 2026, the average salary in the education sector remains one of the lowest in the Ukrainian economy (Salary increase from January..., 2026). In this context, it is appropriate to analyse staffing levels in Ukraine's general secondary education sector. The relevant findings are presented in Figure 3.

It has been established that 53% of schools have vacancies (Pastovenskyi & Voznyuk, 2022; Quality of educational activities in Ukraine..., 2026) (Fig. 2). At the same time, these data do not fully reflect the scale of the staff shortage. According to the results of the OECD's Programme for International Student Assessment (2023), of approximately 400,000 teaching posts in Ukraine, around 100,000 remain vacant. At the same time, teacher training universities and colleges, which are the main institutions for training teaching staff, find themselves in a difficult situation.



Figure 2. Analysis of staffing levels in Ukrainian schools

Source: dcompiled by the author based on *Quality of educational activities in Ukraine...* (2026)

The data in Figure 2 show that the education system is adapting to the staff shortage – in particular by providing further training for staff – rather than addressing its root causes. Full compliance with staffing requirements was found in only 40% of institutions. The lack of priority funding, a stable state commission, effective mechanisms for attracting young people to the teaching profession, adequate scholarship provision, modern material and technical facilities, and housing programmes for young teachers has a negative impact on staffing stability within the education system. An analysis of the Unified State Electronic Database on Education (2025) revealed significant disparities in the allocation of state-funded places across subject specialisations within the

“Secondary Education” programme. In 2025, 2,146 applicants were recommended for admission. The highest figures were recorded for specialisation A4.03 “History and Civic Education” – 618 people, or 28.8% – and A4.01 “Ukrainian Language and Literature” – 607 people, or 28.3%. Together, these two specialisations accounted for 57.1% of the total number of applicants recommended for admission. Enrolment figures were significantly lower for specialisations A4.05 “Biology and Human Health” – 314 people, A4.07 “Geography” – 254 people, and A4.04 “Mathematics” – 210 people. The lowest figures were recorded for specialisations A4.06 “Chemistry” – 69 people and A4.08 “Physics and Astronomy” – 74 people. Consequently, the training of teachers of chemistry,

physics and astronomy accounted for only 6.7% of the total state-funded intake, and together with mathematics – 16.4%. This structure indicates a predominance of humanities specialisms and an insufficient volume of training for teaching staff in the natural sciences and mathematics. Significant differences were also identified between individual higher education institutions.

The highest figures for most of the specialisms analysed were recorded at the V. Hnatiuk Ternopil National Pedagogical University, where 64 applicants were recommended for admission to Ukrainian Language and Literature, 62 for history and civic education, 32 for biology and human health, 17 for chemistry, and 13 for physics and astronomy. At the same time, at a number of teacher-training universities, enrolment for certain natural sciences and mathematics programmes amounted to only a few applicants or was non-existent. For example, M. Dragomanov Ukrainian State University admitted five applicants to mathematics teacher education, two to physics, and seven to biology. At K. Ushynsky South Ukrainian National Pedagogical University, there were no admissions to biology or chemistry teacher education programmes, while only one applicant was recommended for admission to physics teacher education. Similar patterns were observed at pedagogical universities in Nizhyn, Hlukhiv, Kropyvnytskyi, Pereiaslav, and Poltava. The findings indicate a risk of the shortage of mathematics, physics and chemistry teachers becoming even more acute. This necessitates a review of the state-funded intake quotas and the introduction of additional mechanisms to attract applicants to teacher training programmes in the natural sciences and mathematics. Ensuring an adequate level of material and technical support for the educational process is of critical importance. Despite the partial modernisation of equipment with the assistance of international partners, a significant proportion of the equipment in higher education, pre-higher vocational and general secondary education institutions remains outdated (Fig. 3).

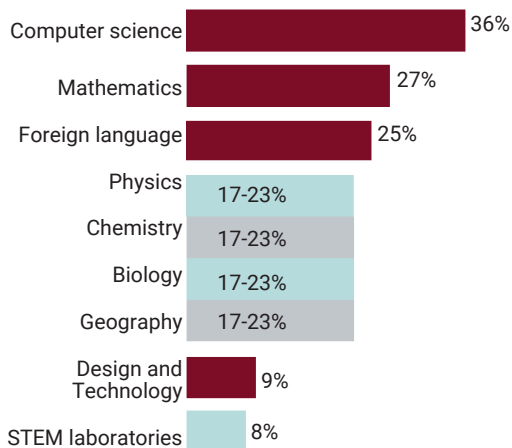


Figure 3. Equipment levels in Ukrainian school classrooms

Note: STEM – Science, Technology, Engineering and Mathematics

Source: compiled by the author based on *Quality of educational activities in Ukraine...* (2026)

The data in Figure 3 show that computer science classrooms (36%) are best equipped with modern resources, followed by mathematics (27%) and foreign language classrooms (25%), whilst the provision of resources in science classrooms stands at only 17-23%. The lowest figures were recorded for vocational education (9%) and STEM laboratories (8%), indicating an insufficient level of material and technical support for pupils' practical training. Given the current level of material and technical support, organising comprehensive subject-specific education, particularly in physics, chemistry and biology, may be significantly hampered. Innovative teaching methods, digital support for the educational process, distance learning technologies and artificial intelligence tools are being actively introduced in Ukraine. At the same time, further development in this area requires systematic state support, the formation of a professional association of manufacturers of technical teaching aids, and the introduction of well-founded tax incentives for them. The organisation of procurement of equipment for classrooms requires particular

attention. An analysis of suppliers' price quotations indicates that such equipment is costly, which necessitates additional economic justification and tighter control over the effective use of budgetary funds.

The next area of analysis concerns the development of higher education and its role in strengthening the state's defence capabilities and restoring its economic potential. Amidst war, financial constraints and ongoing reforms, higher education institutions operate under significant organisational and economic pressure. At the same time, it is precisely under such circumstances that the university's mission becomes particularly evident; this mission consists not only of adapting to change, but also of preserving intellectual continuity, academic autonomy and the ability to serve society. In this context, the view put forward by J. Woznicki (2009) is pertinent, according to which the modern university is a "conservative innovation" that combines the traditional mission of seeking truth with cutting-edge expertise, social responsibility, the cultivation of

intellectual elites and the promotion of civilisational development. Ukrainian higher education institutions have, to a large extent, confirmed this role under martial law. University communities are helping to strengthen national resilience, working to meet defence needs, supporting the social and economic spheres, developing international cooperation, and implementing scientific and applied projects. A system of cooperation with the Ministry of Education and Science of Ukraine is gradually taking shape, particularly in the field of scientific activity. At the same time, the long-standing failure to take the university community's views sufficiently into account during the preparation and implementation of reforms reduces their clarity and public support. University staff do not always receive adequate explanations of the rationale behind certain government decisions. One such decision is the introduction of an indicative tuition fee, under which tuition fees cannot be lower than the level calculated using a formula set by the Ministry of Education and Science of Ukraine (Table 2).

Table 2. Information on tuition fees (for high-demand specialisations, coefficient 1.25) based on the indicative cost of education for the 2026-2027 academic year, UAH

Name of HEI	Bachelor's degree (full-time), UAH/year	Master's degree (full-time), UAH/year
National University of Life and Environmental Sciences of Ukraine (NULES)	73,530	95,589
Taras Shevchenko National University of Kyiv	80,000-90,000 (approx.)	110,000 (approx.)
Igor Sikorsky Kyiv Polytechnic Institute	83,748	108,873
Vadym Hetman Kyiv National Economic University	63,000	79,800
Lviv Polytechnic National University	64,628	70,500
Ivan Franko National University of Lviv	69,100	76,010
Zaporizhzhia Polytechnic National University	38,601	50,182
Vinnitsia National Technical University	48,100	63,000

Source: compiled by the author based on Unified State Electronic Database on Education (2025)

The data in Table 2 show significant variation in tuition fees between higher education institutions: the highest fees are charged by T. Shevchenko National University of Kyiv and I. Sikorsky Kyiv Polytechnic Institute, whilst the lowest are charged by Zaporizhzhia Polytechnic National University. At all institutions, the cost of

master's programmes exceeds that of bachelor's programmes, reflecting the greater resource intensity of training at the second level of higher education. The situation is further destabilised by a new legal provision, initiated by the former Deputy Minister for Higher Education, regarding changes to the academic and teaching

workload and the reclassification of some lecturers as teaching staff. Setting a teaching workload of 900 hours per year for academic and teaching staff is excessive. By way of comparison, the annual workload for a full-time teaching staff member in schools and lyceums is 720 hours (Law signed supporting scientific research..., 2025). Delivering such a volume of lectures, seminars and laboratory sessions may adversely affect the quality of the educational process and limit lecturers' opportunities to engage in research activities. It would seem appropriate to review this provision and grant higher education institutions the right to determine the scope and structure of the workload independently, in accordance with the principle of university autonomy. This approach is consistent with the conclusions of J. Woznicki (2009), who identified the actual financial and managerial autonomy of institutions as one of the key factors for the full functioning of universities. At the same time, implementing the relevant changes requires additional funding, which is not currently provided for. Under these circumstances, universities are forced to carry out internal staffing and organisational reforms and to formally convert research activities into hourly figures. This exacerbates bureaucratisation and increases the volume of reporting documentation, even though the effectiveness of research work is determined not by the number of hours recorded, but by the availability of modern laboratories, funding for business trips, access to equipment, and commissions from the state, business and society.

There is also a risk that higher education institutions will cut back on curricula and educational programmes in order to meet the established requirements. This could lead to a decline in the quality of specialist training and a reduction in the competitiveness of Ukrainian higher education. In the context of this study, it is also necessary to consider the issue of universities' actual autonomy in shaping their student intake. Higher education institutions have limited scope to select applicants for bachelor's and master's programmes independently, as the admissions

procedure is largely determined by the results of the NMT, the Unified Entrance Examination, the Unified Professional Entrance Examination and the Unified State Qualification Examination. A viable approach might be one in which the state organises external independent assessment or the NMT and issues the relevant certificates to graduates, whilst the subsequent procedure for submitting documents and selecting applicants is determined by higher education institutions within the framework of established general requirements. The introduction of specialised upper secondary schools and the possible reduction of the duration of bachelor's programmes to three years require separate coordination. In the absence of proper coordination, a situation may arise in which general secondary schools are not fully prepared for the transition to a twelve-year education system, and universities are not ready to implement three-year bachelor's programmes (Lytvynchuk *et al.*, 2025). Thus, the relevant changes must be preceded by a preliminary analysis, consultations with educational institutions and the harmonisation of curriculum content across different levels of education. The projected absence of a Year 11 cohort in 2029 also requires analysis. To minimise a potential decline in enrolment at higher education institutions, a set of measures must be developed in advance, including strengthening engagement with graduates of vocational lyceums and colleges, recruiting graduates from previous years, providing additional funding for the admissions campaign, and improving the conditions for admitting foreign nationals. Implementing such measures requires systematic cooperation between the Ministry of Education and Science of Ukraine, educational institutions and representatives of the educational community.

The current war, triggered by Russian aggression, technological changes and the needs of post-war reconstruction, necessitate a transformation of the higher education system. One of the promising avenues for such a transformation is the establishment and development of research universities capable of combining

the training of specialists with fundamental and applied research. In this context, the position of V.H. Kremen (2026), President of the National Academy of Pedagogical Sciences of Ukraine, regarding the need to develop scientific potential to strengthen the state's defence capabilities and security, enhance societal resilience, ensure post-war innovative recovery, accelerate European integration and consistently implement state educational and scientific policy, is well-founded. Defining the prospects for the development of domestic higher education requires taking current international trends into account. J. Woznicki (2009) identifies the following main directions for the development of universities: strengthening their role as an environment for practically relevant learning; the digitalisation of educational, managerial and research processes; openness and reproducibility of research results; integration of sustainable development goals and green transitions; expansion of cooperation and academic mobility; diversification of academic careers; active participation of universities in shaping public policy; preservation of cultural heritage; strengthening of social engagement, popularisation of science and development of civic education. Taking these trends into account, it is advisable to identify several priority areas for the development of education in Ukraine.

First and foremost, it is necessary to formulate a long-term socio-economic strategy for the state, to identify priority sectors of the economy and the role of education and science in strengthening defence capabilities, security and post-war reconstruction. In line with these priorities, a coordinated network of general secondary, vocational and higher education institutions must be established, capable of meeting the state's needs for skilled personnel. At the same time, it is essential to prevent unjustified cuts to the education network, particularly schools in small settlements. A key priority is the democratisation of education governance, which entails transparency in decision-making and the systematic involvement of teaching staff, academic and educational professionals,

professional associations and the public in shaping education policy. It is also necessary to modernise educational and research processes, in particular the curriculum, to support young lecturers and researchers, to increase pay levels, to implement housing programmes, to develop fundamental and applied science, to establish research universities, to strengthen cooperation with the business sector and to expand dual education. A separate challenge is ensuring genuine organisational, academic and financial autonomy for higher education institutions. The possibility of changing their organisational and legal status should not automatically entail further privatisation. At the same time, it is necessary to strengthen social protection for those involved in the educational process, in particular by gradually ensuring that teaching staff are paid at a level no lower than the average wage in the economy, and that academic and teaching staff are paid at a level commensurate with the complexity and social significance of their work. It would be advisable to systematise these measures within a ten-year Strategy for the Development of Education and University Science in Ukraine. The implementation of these priorities requires close coordination between economic, social, defence and education policies.

The state must identify strategic sectors whose development requires priority support, whilst universities, colleges and vocational lyceums must ensure the training of relevant personnel and provide scientific and technological support. The scope for state funding remains limited in wartime. At the same time, the educational and academic community is actively involved in supporting the country's defence capabilities. In particular, during the years of full-scale war, the staff of the National University of Life and Environmental Sciences of Ukraine (NULES) allocated more than 75 million UAH to support the Armed Forces of Ukraine (Volunteer activity and support..., n.d.). Under such circumstances, systematic dialogue between state authorities, educators and researchers takes on particular significance. The views of the professional community must be

duly taken into account when drafting legislation, strategies and programmes for the development of education. One example of such professional engagement is the draft recommendations prepared by scholars of the National University of Life and Environmental Sciences of Ukraine (NULES) and endorsed by participants at the International scientific and practical conference “Education of Ukraine in the conditions of war and post-war reconstruction: Global trends and national challenges” (2026). The document proposes possible approaches to overcoming existing problems and formulating a long-term strategy for the development of Ukrainian education and science.

Conclusions

The study revealed that, against the backdrop of the war and preparations for post-war reconstruction, the Ukrainian education system was simultaneously affected by security threats, demographic decline, the destruction of infrastructure, the migration of school pupils and students, staff shortages, insufficient funding, and the need to align reforms with European strategic guidelines. It was established that education had a direct impact on the state's defence capability, economic recovery, the development of human capital, social cohesion within communities and the country's resilience. One of the key risks identified was the narrowing of access to education due to the reduction in the network of educational institutions, particularly in rural, small and frontline communities. A mechanical consolidation of the network without taking into account the demographic situation, transport accessibility, security conditions and the social role of schools could exacerbate educational inequality and complicate the return of the population after the war. Thus, the preservation of schools was justified as a component of educational, regional, demographic and security policy. It was established that the reform of specialised secondary education required pilot testing, scientific justification and coordination of the activities of schools, vocational lyceums, colleges and higher education

institutions. Its implementation had to take into account existing infrastructure, human resources, labour market needs, the interests of learners and the capabilities of local communities.

An analysis of vocational and technical pre-tertiary education showed that these levels were of strategic importance for post-war reconstruction, as they provided training for manual workers, technical specialists, mid-level professionals and entrepreneurs. At the same time, their development remained insufficiently integrated into the state's reconstruction policy. Staffing was identified as one of the most vulnerable components of the system. A shortage of teachers, the low appeal of teaching qualifications, poor financial incentives and difficult working conditions posed long-term risks to the quality of education. Resolving the problem required a comprehensive policy to support young professionals, increase salaries, develop housing programmes and ensure guaranteed funding for teacher training. It was found that the material and technical infrastructure of educational institutions remained uneven and inadequate. Digitalisation, artificial intelligence, and distance and blended learning could only be effective if there was equipment, internet access, trained teachers and methodological support. In the field of higher education, a need was identified for genuine academic, organisational and financial autonomy for universities. Excessive regulation and formalisation limited their ability to respond to the needs of the state, science, the economy and defence. Universities were to become centres for research, innovation and workforce development for post-war modernisation. A synthesis of the findings provided grounds for identifying the following priorities: maintaining access to education; preventing unjustified reductions in the network of educational institutions; democratising governance; strengthening human resource capacity; modernising infrastructure; developing vocational and higher education; ensuring genuine autonomy for universities; and formulating a strategy for the development of education in Ukraine. Prospects for further research

relate to the evaluation of the reform of specialised schools, the impact of the war on educational trajectories, the human resource capacity of teacher training, and models for integrating education into the post-war reconstruction system.

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Українська освіта в умовах війни та повоєнної відбудови: глобальні тенденції та національні виклики

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Анотація. Актуальність дослідження зумовлена необхідністю переосмислення державної освітньої політики України в умовах війни, демографічних і кадрових втрат, руйнування інфраструктури та підготовки до повоєнної відбудови з урахуванням потреб громад, ринку праці, оборони й безпеки. Мета статті полягала в аналізі сучасного стану української освіти в контексті європейських орієнтирів, конституційних гарантій права на освіту, викликів воєнного часу та завдань післявоєнного відновлення, а також визначення першочергових напрямів її стабілізації й розвитку. У дослідженні застосовано методи аналізу, порівняння, узагальнення, інтерпретації нормативних документів, а також аналізу статистичних і соціологічних даних щодо стану освітньої мережі, кадрового забезпечення та матеріально-технічної бази закладів освіти. Результати дослідження виявили низку суперечностей між задекларованими європейськими орієнтирами освітньої політики та практикою її реалізації в Україні. Обґрунтовано, що скорочення мережі шкіл, особливо в сільських, малих і прифронтових громадах, може призвести до поглиблення освітньої нерівності, послаблення соціальної стійкості територій і ускладнення повернення населення після завершення війни. Показано, що реформа профільної середньої освіти потребує не механічного укрупнення закладів, а координації діяльності шкіл, професійних ліцеїв і коледжів з урахуванням демографічної ситуації, транспортної доступності, кадрових можливостей і потреб регіонального розвитку. Встановлено, що професійна та фахова передвища освіта залишаються недостатньо інтегрованими в загальну логіку освітніх реформ, попри їх важливу роль у підготовці фахівців для економіки, громад і післявоєнної відбудови. Окрему увагу приділено кадровій кризі в освіті, зокрема дефіциту педагогічних працівників, низькій привабливості педагогічних спеціальностей, недостатньому соціальному захисту вчителів і викладачів. Проаналізовано проблеми матеріально-технічного забезпечення освітнього процесу, цифровізації, інноваційних технологій навчання та необхідності підтримки національного виробництва засобів навчання. У сфері вищої освіти окреслено ризики надмірної регламентації, формалізації науково-педагогічної діяльності, недостатньої реальної автономії університетів і відсутності системного розвитку дослідницьких університетів. Практична цінність роботи полягає у розробленні пропозицій щодо збереження освітньої мережі та формування довгострокової стратегії розвитку освіти України.

Ключові слова: профільне навчання; кадрове забезпечення закладів освіти; університетська автономія; повоєнне відновлення; економічний розвиток