

Comparison of Educational Development Trends in Ukraine and the World

Anatolii MAKSYMENKO*¹

Olena OTYCH²

Valerii POLISHCHUK³

Yurii SKYBA⁴

Nataliia SAVCHENKO⁵

Tetiana OKUSHKO⁶

¹ Doctor of Science in Pedagogy, Full Professor, Vice-Rector for Scientific and Pedagogical Work and Infrastructure Development, Kyiv National Linguistic University, ORCID ID:

<https://orcid.org/0000-0002-6892-4766>,

maksimap@ukr.net

² Doctor of Science in Pedagogy, Full Professor, Chief Researcher of the Department of Interaction of Higher Education and Labor Market of the Institute of Higher Education, National Academy of Educational Science of Ukraine, ORCID ID:

<https://orcid.org/0000-0003-2686-2832>, ndi-

direktor@ukr.net

³ Doctor of Science in Psychology, Full Professor of the Institute for Social and Political Psychology, National Academy of Educational Sciences of Ukraine, ORCID ID: <https://orcid.org/0000-0002-1283-1640>, valeryipolishchuk@gmail.com

⁴ DSc in Pedagogy, Associate Professor, Deputy Director for Research, Institute of Higher Education, National Academy of Educational Sciences of Ukraine, ORCID ID:

<https://orcid.org/0000-0003-2238-8272>,

y.skyba@ihed.org.ua

⁵ Doctor of Pedagogical Sciences, Professor of the Department of Pedagogy and Special Education, Department of Pedagogy and Special Education, Faculty of Pedagogy, Psychology and Arts, Volodymyr Vynnychenko Central Ukrainian State University, ORCID ID: <https://orcid.org/0000-0003-0420-3289>, nataliy040570@gmail.com

⁶ PhD in Pedagogy, Senior Researcher, Head of Laboratory of Moral, Civil and Intercultural Education of the Institute of Problems of Education, National Academy of Education Science of Ukraine, ORCID ID: <https://orcid.org/0000-0002-6087-3896>, o_t_k@ukr.net

Abstract: *The article examines the trends in the development of the educational system in recent years in Ukraine and the world in the context of neuropedagogy. Particular attention is paid to the factors that have influenced the strengthening of the role of education in the world, in particular, the strengthening of the state's interest in financing education. The article updates the inextricable connection between the country's economy and the level and quality of education. The author points out the advantages of education support systems in some advanced countries of the world, which can be used as a model experience for domestic educational reform, in particular due to the use of neuropedagogy. The most important trends in the development of education in the world educational space are analyzed. The author notes that the quarter-century experience of the 21st century civilization determines a number of trends according to which it should develop in the future. Among them, for example, the transition of most nations and cultures to market relations is leading in the economy; in politics - to democracy; in social communication - to tolerance; in the general organization of life activities - to an open society and models of sustainable human development, etc. Because education (and science), which prepares a person for independent life, shapes his view on the future development of civilization.*

Keywords: *Education reform, human-intensive sphere of life, demographics of educational institutions, scientific knowledge, investment in education, trends in the development of education in the 21st century.*

How to cite: Maksymenko, A., Otych, O., Polishchuk, V., Skyba, Y., Savchenko, N., & Okushko, T. (2024). Comparison of educational development trends in Ukraine and the world in the context of neuropedagogy. *BRAIN. Broad Research in Artificial Intelligence and Neuroscience*, 15(1), 149-165. <https://doi.org/10.18662/brain/15.1/542>

Introduction

In its development, Ukraine is striving to join a new type of social relations spreading in the world. Its characteristic features are the increasing role of information technology and knowledge in the economy, the innovativeness of production, changing people's living conditions and value orientations. All this requires changes and modernization of the existing Ukrainian educational system to meet the new challenges, which retained many outdated features from Soviet times. The issues of their reform have been repeatedly raised by both scientists and politicians.

Despite this, since about 2016 decisive actions of the Ministry of Education and Science of Ukraine (MES) began, designed for the medium term, which does not allow to fully assess the results achieved in different directions. But the analysis of the current state of state regulation in education and its changes compared to previous years is important, as it allows to form the main directions of further research.

The issue of studying and comparing the main trends in the development of education in Ukraine and the world is devoted to many scientific works of domestic and foreign scientists. Andrushchenko (2019) defines the global trends of human development; Horak (2017) forms statistics of educational institutions; Shestakovska & Golyavko (2016) determine the peculiarities of state regulation of education in the context of the development of modern society. Churchill et al. (2017) analyze the achievements of various peoples of the world. Melnyk et al. (2019) study the features of the development of inclusive education as an opportunity to access a quality educational process.

The purpose of the article is to investigate the development of educational trends in Ukraine; to determine the key features of global trends in educational development; to make a comparative global trends in the development of education of the 21st century in Ukraine and in the world.

The created empirical and theoretical foundations actualize the development of promising areas of neuropsychological research. They include the concept of lateral characteristics of a person (left-handedness, right-handedness), according to which the partial dominance of certain areas of the brain determines Scientists distinguish between left-hemisphere, right-hemisphere and equal-hemisphere types of functional asymmetry of the cerebral hemispheres. The right hemisphere performs the function of controlling emotions, visual information.

The research methods are aimed at studying the development trends of education in Ukraine and in the world.

Entire articles will be realized through the methods used: critical analysis, synthesis of scientific and methodological sources, method of system analysis, descriptive and predictive method, induction and deduction, traductive method.

Neuropedagogical aspect of the development of educational trends

Interhemispheric asymmetry of the brain, or the multi-purpose participation of two hemispheres (left or right) in the implementation of mental functions, has partial, not global expression. Depending on the system, the nature of functional asymmetry can be differentiated. Forms of interhemispheric asymmetry have different degrees of severity. Neuropsychologists distinguish motor, sensory and mental asymmetry, which are divided into types. Considering the variety of types of asymmetry, one should talk about strong or weak asymmetry.

Diagnostic methods aimed at identifying the neuropsychological characteristics of students by the teacher. Other scientists have proposed theoretically grounded, experimentally tested models of learning based on the lateral asymmetry of the cerebral hemispheres. Ignoring the specificity of the manifestation of the lateral features of the brain in students leads to negative consequences both in the didactic context and in the context of health.

The next direction of the development of non-pedagogy, taking into account the neuropsychological and psychophysiological features of development, the specifics of women's and men's activities in education. Modern researchers insist on the low effectiveness of non-gender pedagogy when using identical forms, methods, methods and content of education. Among heterosexual students with separate education, there is an increase in academic performance. The need to implement gender education in the XXI century. should become an alternative to genderless informational education. The latter suppresses natural emotional expressions and, as a result, values, meanings, demands, motives, emotions and behavior appropriate to gender.

Another direction of neurodidactics is taking into account students' temperament in knowledge (psychodynamic features). Taking into account by the teacher the main properties of temperament - activity (energy, mobility), mobility (speed and speed of motor reactions), emotionality (vulnerability, sensitivity, anxiety, impulsiveness) - increases the effectiveness of the educational process, helps to overcome communicative conflicts and creates a situation of success. The maximum time to answer a question does not exceed 6-7 seconds. However, a phlegmatic person needs more time - up to 10 seconds. Rigidity and an increased level of anxiety in a melancholic

provoke confusion and "cognitive stupor." The teacher should support emotional melancholics with their characteristic external orientation of control, because they fall into depression at the slightest negative manifestations of those present.

Sensory-perceptual organization of experience (modality of internal experience) is a promising vector for the development of neurodidactics. Sensory-perceptual organization of a person is the central channel of his perception of information. Psychologists distinguish three types of modality: auditory (from Latin audio — hearing), visual (from Latin visualis — visual) and kinesthetic (from Greek kinematos — movement).

The sound modality involves the inner experience of the inner world. This is determined by auditory memory, which relates to the memorization, retention, and retrieval.

The visual modality concentrates all the experience of the inner world determined by vision. This type provides visual memory, which is responsible for storing, preserving and reproducing.

The kinesthetic modality concentrates the drive and inner experience of the inner world. This state of mind is a symbiosis of motor, indivisible, necessary.

Scientists think higher mental functions are not given to a person ready-made. They overcome a long heterochronic and asynchronous path of development, which determines the individual characteristics of learning. The requirements of the teacher should correspond to the level of brain development of the students. Later learning reveals learning problems as higher mental functions slow down. This explains the need to use special forms, methods, techniques and technologies aimed at preserving the development of the cognitive sphere of adults.

This situation correlates with the next direction of neuropsychology, the coordination of the neurotransmitter characteristics of the teacher and students. The teacher's presentation of educational material must be correlated with the stylistic features of students' perception and assimilation of educational information. The mismatch of individual personality profiles of teaching and learning provokes cognitive dissonance. In cooperation between students and teachers, the specific characteristics of both play an important role. Specifically, left-hemisphere individuals are more likely to perceive rational influences, while right-hemisphere individuals are more likely to perceive emotional and inspirational influences because they are more conformist.

The relationship between the subjects of the educational process should be based on a person-oriented approach, based on trust in human

nature and faith in the ability of constructive, responsible and free self-development, which is provided by a biological system unique to everyone. One of them is "supportive learning", which is based on preparing students to solve everyday problems. Such training is mainly aimed at the implementation of a social way of life and human activity. Another tendency is prediction in the process of cognition.

The defined directions of neurodidactic research and directions of neurodidactic training determine the "tomorrow" of domestic neuropedagogy.

Trends in the development of education in Ukraine

In accordance with the current reform of the education system by 2023, systemic changes are expected in four main areas:

- the reform of the general education school "New Ukrainian School" (NUS);
- modernization of vocational training;
- ensuring the quality of higher education;
- creation of a new system of management and financing of science.

Fundamental changes have been made in the legislative framework, in particular in the Law of Ukraine "On Education" and related laws, many methodological and informational materials on the directions of the reform and basic concepts, etc. have been developed at the level of the MES. As a result of this reform, it is planned to introduce new educational standards, improve the material and technical base of educational institutions and science, introduce a transparent and sufficient system of financing the educational and scientific sphere, and raise the prestige of scientific and educational work.

Having analyzed in detail the main theoretical provisions in the field of education, let us analyze the current state and trends in the development of education in Ukraine (Parashchenko, 2020).

Although the network of pre-school educational institutions is not a direct object of the existing educational reform, the government wants to solve the problem of overload in educational institutions by creating additional places. The number of vocational educational institutions in Ukraine gradually decreased during the analyzed period: the figure for 2018 is 8.6% lower than in 2000, the number of places in them remains at about the same level and has been growing steadily since 2014.

The break in 2014 is explained by the exclusion of temporarily occupied territories of Crimea, Sevastopol and temporarily occupied territories of Donetsk and Luhansk regions from statistical data. As of 2021, the number of preschool educational institutions amounted to 15.6 thousand

units (58% coverage), with 1.214 thousand places (3.7% more than in the previous year). Since 2018, the number of general education institutions has decreased by about 30%.

The decrease is primarily due to units, which, unfortunately, exist in rural areas and are understaffed and uncompetitive. At the same time, the number of educational seats in the Assessment of Environmental Impact (AEI) decreased by almost 40%. In addition, as part of the decentralization reform, special schools, branches and educational districts are being formed to improve the quality of education in rural areas. Due to the novelty of their introduction, there is not yet enough statistical information. Thus, according to the Department of Education and Culture, as of 2020, there were approximately 144 support schools, and in 2022 there will be 552 support schools and 1,023 branches, of which in the United Territorial Communities (UTC).

The next level of education, which is also being reformed and is an important component of the training of working professions in the country, are the institutions of Vocational Education and Training (VET).

Analysis allows us to note that the number of VET institutions has been gradually decreasing, and as of 2022, it stood at 835 units. The reasons for this decline are many socioeconomic factors. First of all, there is a decrease in production ties with industrial enterprises due to the problems of reducing their activities in connection with the economic and political crisis in the country (Honchar et al., 2021).

This situation is explained by negative trends in the demographic and especially migration status of the population (due to easier opportunities for the movement of labor abroad, mainly to EU countries), especially young people, the decline in the prestige of working professions, etc. Within the framework of education reform it is planned to further reduce the number of vocational education institutions with small staff (with a contingent of less than 300 people wishing to get education), expected by merging with stronger institutions.

Looking at the ratio of graduates to employed graduates of Ukraine's vocational education program, we can note that, on average, more than 80% of graduates find employment (Postryhach, 2009). The integration of neurobiology with pedagogy led to the growth of neuropedagogical knowledge, the formation of neuropedagogy, and the formation of neuropedagogy. A new scientific direction within the framework of neurobiology, located at the junction of pedagogy and psychology, has been identified.

Thus, in the labor market, graduates of vocational education are predominantly employed and, to a lesser extent, unemployed. Despite such a high employment rate, jobs remain vacant, experts say, and vocational schools themselves remain unpopular institutions among first-year students and other applicants for education. One of the further steps of the ongoing reform of Ukraine's education system should be aimed at solving this situation.

The next important element of the education system, also directly related to the labor market, is higher education (Filippova, 2013).

Overall, the proportion of graduates with a job recommendation is gradually decreasing. The number of graduates is also decreasing, due to demographic and migration movements of the population. Practice shows that it is quite difficult for graduates of higher education institutions to get a job in their specialty, which is due to the lack of practical experience and a rather small percentage of skills required by the employer.

Global trends in educational development

Education is one of the components of "human capital". Today it has been proven that the driving force behind economic growth is not physical capital, but human capital, not machines, but people. The concept of national wealth, in addition to the material elements of capital, includes financial assets, as well as material knowledge and human performance.

The accumulated scientific knowledge (it is materialized in new technologies), investments in human health and mind are considered in macroeconomic statistics as components of state wealth, having an intangible form. The most important event in the history of the development of modern education was the industrial revolution. The development of industry cannot do without a large-scale development of the education system and the training of skilled professionals capable of performing complex activities and creating new technologies, such as engineers and electricians. Developed countries quickly realized that the main way to gain an advantage in competing with each other on the world stage was to increase the level of education and workforce. Thus, many countries began to improve their educational systems. From an economic point of view, education (and indeed it is being introduced in developed countries, as well as in China and India) has long been an important area of government responsibility. The decisive activity of the state, where the field of education is defined equally with the infrastructure of the market economy: "The two areas in which state participation is necessary to ensure

the conditions for economic development are investment. in infrastructure and basic education (Bhandari & Bhattarai, 2017).

Developed and developing countries are paying more and more attention to education. In France, Germany and Britain, for example, spending on education ranged from 5.2% to 5.5% of GDP. And all the countries that borrowed from the World Bank spent on education 7-10% of the total lending (most of all in China). Moreover, in international practice it is already considered certain that a fair "threshold" condition for ensuring high efficiency of education is to bring the share of education in GDP to not less than 5% (Didham & Ofei-Manu, 2015).

What should a state-of-the-art higher education be like? The main criterion is competitiveness. It is this criterion that should guide education and ensure that state standards are aimed at the formation of a competitive individual. First of all, the main consequences of the acceleration of scientific and technological progress were the growing importance of methodological knowledge and analytical skills.

According to today's requirements, the learning process today should be increasingly based on the ability to find knowledge, develop it, and use it to solve problems. Learning to turn information into new knowledge, to turn new knowledge into concrete programs - all this has long been more important than memorizing concrete information.

The ability to find and retrieve information, i.e. analytical skills, formulating questions in a clear form, formulating verified hypotheses, creating and evaluating data in a certain order, and solving problems are at the top of the list of requirements for a graduate of a higher education institution, a future worker. Post-industrial society needs less disciplined doers than creators (Eling & Luhn, 2010).

The following development trends are observed in the world:

1. The lengthening of the duration of general education.
2. The need for continuing education (lifelong learning).
3. Individualization of learning.
4. Increased importance of methodological knowledge and analytical skills.

These trends are vividly illustrated by the examples of countries-leaders of world development. The USA is a recognized leader in world development. Today, the development of higher education in the United States is one of the most important socio-economic goals of the state. In spite of a decrease in government spending, investments in science and technology, education, and re-training of the workforce have continued. The social infrastructure of a modern market economy has been established, and

there are many diverse colleges in the country. One of the characteristics of higher education in the United States is the large number of institutions offering general education.

In addition, in such institutions students are offered a specific specialty close to the technical profile (i.e. students have the opportunity to get a specialty of their choice in any direction). There are also institutions which offer a higher engineering education. The urgent tasks of education in the U.S. are to maximize access to education for members of various social groups who are deprived of such an opportunity in the first place.

And also to provide them with a quality higher education. School education consists primarily of a comprehensive strengthening of education in mathematics and technical subjects. The next country is Japan. School education in this country takes 12 years and another 4 years for higher education (Sheremet et al., 2019).

Very strict adherence to the rules of assimilation of all academic disciplines. Only in this case you can get an education document. It is impossible to choose an easier course of study in one subject and focus on another (necessary from the student's point of view) subject. But studying hard for university admission, learning more than the required rich and challenging curriculum, is only welcome.

Inequality of access to education is one of the most harmful inequalities that can exist in the world today, both for individuals and for society as a whole. Missing the opportunity for a young person to receive a modern education dooms them to remain underdeveloped and inferior to today's knowledge economy.

It is no coincidence that the issue of the quality of education and, very importantly, its accessibility to all segments of the population, is given much attention in developed countries (especially in the United States), especially in China and India. Therefore, it is important to study the possibility of using the experience of developed and developing countries to ensure equal access to education, especially for those from low-income families receiving higher education. This fact is one of the trends in the development of education - individualization.

Comparative global trends in the development of education of the 21st century in Ukraine and the world

Applied to education, this means that in the diversity of educational systems of countries and peoples, implemented in the global world space, traces somewhat universal, which forms the modern paradigm of human development. I will dwell on this in more detail (Churchill et al., 2017).

Education is a certain system of employment in human life. In the traditional Marxist understanding, it was referred to the so-called superstructure over the basis - the economic system of society with its productive forces and the system of production relations. In this case, the basis was treated as a primary value, while the superstructure was perceived as a secondary value dependent on and conditioned by the basis (Benos & Zotou, 2014).

The role of education in the development of society and the individual was presented as elementary enlightenment, which could be implemented in a certain way under strict ideological control. Ideologized education was abandoned by independent Ukraine, but the definition of places and roles in education from the position of "basic-superstructure" realities still exists today. The imagination of most production managers, politicians, and officials is dominated by a focus on making production work first, creating jobs, providing necessary wages, and pensions. At present, education and science are not the top priorities (Abery et al., 2017).

Successful countries have always seen the priority of development in education, science, culture and upbringing, in creating conditions for human development as a subject of all life processes. This development in different historical periods did not concern all, but only the materially wealthy strata of the population. Children of rich or free citizens of slave-holding, feudal and partially capitalist societies had the right to education. This created existing inequalities, intensified the gap between the elite and the people, formed a system of omnipotence of some and powerlessness of others. Soviet civilization's attempt (by means of the cultural revolution) to create a typical enlightenment for all was defeated, since the Western world had prioritized this cause (Balcerzak & Pietrzak, 2016).

The main trends of education in the successful countries of the world: the priority development of education in the strategy of the newest state; provision of quality education; human-centeredness, development of education as an open democratic system, equal access to quality education; informatization of education; informatization of education; modernization of content and learning technologies; innovative development of education as a response to the challenges of innovative progress; organic connection of science and education, education and culture; complementarity of diverse knowledge in the system of current education; formation of scientific education; inclusive education; orientation of current education (dual education) to its practicality, etc.

Success is usually achieved in those countries where education has been prioritized in public life and is provided at the level of established

world norms or somewhat higher. The part of GDP spent on education in most countries is from 3 to 5.9%. There is a certain inequality in financing of the branch, because the total spending on education, taking into account the per capita, is 2515.7 USD in the USA, 1721.8 USD in Germany, 2021.1 USD in France and 1283.8 USD in Japan (Dannenberg & Grapentin, 2016). The provision of students with computer equipment and Internet access is sharply different. In the U.S. these figures are respectively 80.6 and 74.2 percent, in Germany - 65.6 and 82.5, while in Ukraine - 4.5 and 44.6 units. Among the 800 Ukrainian universities only 2 are included in the top 500 (ARWU 2012), while in the U.S. their number is 150, in Germany - 37, in Japan - 21 universities.

Article 61 of the Law of Ukraine "On Education" determines the necessary amount of budget allocations for education in the amount of not less than 10% of gross domestic product (GDP). However, during the years of independence Ukraine has never been able to reach this level of education funding. One must also take into account the non-state sources of financing for the sector. In developed countries, they are a significant addition to the total cost of education. According to the Organization for Economic Cooperation and Development (OECD), "In countries such as the United States of America, Japan, Australia and Israel, private funding accounts for more than half of all sources of higher education funding. And in South Korea and Chile they are as high as 75%. As a consequence, these countries have high prices for higher education. According to OECD data, the average tuition for a student in Europe was \$1,100, and in the U.S. it was \$5,500. So far in Ukraine state funding of education prevails. The second important trend in the world level of education is its (educational) functioning and development as a democratic system.

One of the most effective factors in overcoming inequality in education is its total informatization, which is the next trend in the development of education in the XXI century. Informatization of education is a response to the challenges of the information society. Informatization of education is an important step on the way to modernization. Despite certain risks and contradictions associated with the informatization of the industry, it is impossible to abandon it in about the same way as it is impossible to stop the information revolution and return society to its natural (animal) state (Shimanovska-Dianych & Boyko, 2018).

In the field of applied neurobiology, it is stated that the time in which we live is an era of scientific revolution in the field of brain sciences, united under the general name of neuroscience (neuroscience) (Finland, France, USA, Great Britain and others). In the USA, since 2013, the

Presidential Brain Map program has been implemented, the priority of which is equal to space exploration. Representatives of neurobiology, sociology, medicine, psychology and pedagogy participated in the project.

Informatization of education creates opportunities for the development of lifelong learning, taking into account the principle of "education through life", which monitors the educational environment, creates a unified information system and database in the field of higher and postgraduate education, facilitates the intensification and substantial filling of international cooperation and integration of Ukrainian universities in the world academic community, the deployment of full and effective intellectual communications. Informatization of education called to life such forms of educational activities as distance education and online education, allowing to overcome many of the obstacles described above.

As the analysts note, "the right of access to educational resources of the Internet is becoming common in the modern world and the developed states spend tens of billions of dollars to provide access to Internet education for their citizens and in some countries (for example in Japan) they use special state programs in this sphere. Also, distance education using electronic technologies makes a revolution in the educational activities of the XXI century, and created in certain countries e-learning institutions are effective and several times more effective than traditional educational institutions. Distance education can not fully replace full-time education, but to use the opportunities offered by modern information and networking technologies - this is an urgent need of the day (Matyuk, 2014).

The modern world is renewing at a dizzying pace, so education and science should go ahead of this process, ahead of it. The specified guidance is the next trend of the 21st century education development: meeting the challenges of innovative progress modern education (both in content and in basic technology) should become innovative.

Usually innovation in education is considered as a process of creation and distribution in educational practice of new ideas, implementation of new teaching tools, pedagogical and managerial technologies, as a result of which the indicators (levels) of effectiveness of structural components of education increase, the system goes to a qualitatively higher state above.

In the last decade in the world education has established such a direction as inclusion - it is a complex process of providing equal access to quality education of children with special educational needs through the organization of their training in general educational institutions on the basis of a personal statement". focused teaching methods taking into account the

individual characteristics of pedagogical cognitive activity of such children (the Concept of development of inclusive education). MES Order of 01.10.2010 (912) (Honchar et al., 2021). The goal of inclusive education is to improve learning environments in which teachers and students are open to diversity, in which students' needs are assured and their abilities and chances of success are enhanced.

Inclusive education means that all students can learn in the schools where they live, in general education classrooms where they are supported, if necessary, both in the learning process and in the redesign of the school, teaching, programs and activities so that all students without exception learn and spend time together. Inclusive education is based on the principles of human rights and equality. It involves removing barriers in the education system and support system; designed for all children and adults, especially those excluded from general education. All students have individual abilities and peculiarities, and therefore they want to feel understood and valued. Inclusion creates the necessary opportunities for this: Students have opportunities and can learn in different ways and at different times.

The considered trends are the main guidelines for the development of education in accordance with the challenges of time, a kind of cluster of practical experience accumulated and tested in different countries around the world. Orientation to trends introduces the national educational system to the European and world context and protects education from "khutorism". At the same time, such an orientation needs to be implemented carefully and weighted.

Education in any country is a national product that develops with (and on the basis of) deep national traditions, lifestyle, national character, etc. A reasonable combination of tradition and innovation ensures the development of a person as a citizen of his own state and an individual capable of living in the European and global space.

Conclusions

The importance of the article lies in the fact that the development of trends in the development of education in Ukraine is investigated and the analysis of the current state and trends in the development of education in Ukraine is carried out. It is determined that one of the main results of state regulation of education is the number of educational institutions of different levels, which functioned in a particular period of time. Although the network of pre-school educational institutions is not a direct object of the existing educational reform, the government wants to solve the problem of overcrowding of such educational institutions by creating additional places.

The next level of education, which is also being reformed and is an important component of the training of workers in the country, is Vocational Education and Training (VET) institutions. The next important element of the education system, also directly related to the labor market, is higher education. The number of universities of levels I-II of accreditation has decreased, and the number of universities of levels III-IV of accreditation has also decreased.

Key signs of global trends in educational development are also identified, as developed countries quickly realized that the main way to gain an advantage in competition with each other on the world stage is to improve the level of education of the population, which is why many countries have begun to improve the education system. From an economic point of view, education has long been an important area of government responsibility. The article confirms that the following development trends are observed in the world: the lengthening of the duration of general education; the need for continuous education (lifelong learning); individualization of learning; the increasing importance of methodological knowledge and analytical skills. These trends are vividly illustrated by the examples of countries-leaders of world development. The USA is a recognized leader in world development. Today in the USA the development of higher education is one of the most important social and economic tasks of the state.

The article presents an analytical overview of the development of neuropedagogy. A retrospective of the development of this field of pedagogical knowledge is shown. An analysis of the theoretical base is provided. Prospective areas of research in neurodidactics are defined (the concept of lateral personality characteristics, neuropsychological, neurophysiological specificity of students in the cognitive process, sexual thinking, temperament).

The article makes a comparative global trends in the development of education of the 21st century in Ukraine and the world and defines that the main trends in education of the successful countries of the world: the priority development of education in the strategy of the newest state; provision of quality education; human-centeredness, development of education as an open democratic system, equal access to quality education; informatization of education; modernization of content and learning technologies; innovative development of education as a response to the challenges of innovative progress; organic connection of science and education, education and culture; complementarity of diverse knowledge (science, education and religion) in modern education system; formation of

scientific education; inclusive education; practical orientation of education (e.g., the development of science, education, and religion); practical orientation of education (dual education), etc.

Acknowledgement

The Author 1 investigated the development of educational trends in Ukraine;

The Author 2 identified the key attributes of global trends in education development;

The Authors 3,4 compared global trends in the development of education of the 21st century in Ukraine and the world

The Author 5 and 6 outlined the prospects of education development in Ukraine.

References

- Abery, B., Tichá, R., & Kincade, L. (2017). Moving toward an inclusive education system: Lessons from the U.S. and their potential application in the Czech Republic and other Central and Eastern European countries. *Social Education*, 5, p. 48–62. 10.7441/soced.2017.05.01.03.
<https://ici.umn.edu/products/4AOENaWSSdSG84nQgXaedA>
- Andrushchenko, V. (2019). Hlobal'ni trendy rozvytku osvity XXI stolittya [Global development trends of the XXI century]
<http://enpuir.npu.edu.ua/handle/123456789/37474>
- Balcerzak, A. P., Pietrzak, M. B. (2016). Quality of institutions for knowledge based economy within new institutional economics framework. Multiple criteria decision analysis for European countries in the years 2000– 2013. *Economics and Sociology*, 9(4), p. 66-81.
<https://pdfs.semanticscholar.org/67de/168409d5316acdb114feecba09f02e5f9e65.pdf>
- Benos, N., & Zotou, S. (2014). Education and economic growth: A meta regression analysis. *World Development*, 64. p. 669-689.
https://econpapers.repec.org/article/eeewdevel/v_3a64_3ay_3a2014_3ai_3ac_3ap_3a669-689.htm
- Bhandari, M. P., & Bhattarai, K. (2017). Institutional architecture for Sustainable Development (SD): A case study from Bangladesh, India, Nepal, and Pakistan. *Socio Economic Challenges*, 1(3). p. 6-21. DOI: 10.21272sec.1.1(3).6-21.
<https://pdfs.semanticscholar.org/db63/76d6009a953939e8439e040d98d79e26a02d.pdf>

- Churchill, S. A., Ugur, M., & Yew, S. L. (2017). Government education expenditures and economic growth: a meta-analysis. *The B.E. Journal of Macroeconomics. De Gruyter*, 17(2). p. 1-17.
<https://research.monash.edu/en/publications/government-education-expenditures-and-economic-growth-a-meta-anal-2>
- Dannenbergh, S., & Grapentin, T. (2016). Education for sustainable development – learning for transformation. The example of Germany. *Journal of Futures Studies*, 20(3). p. 7-20. <https://jfsdigital.org/2016-2/vol-20-no-3-march-2016/a-r-t-i-c-l-e-2/education-for-sustainable-development-learning-for-transformation-the-example-of-germany/>
- Didham, R. J., & Ofei-Manu, P. (2015). *The role of education in the sustainable development agenda: Empowering a learning society for sustainability through quality education. Achieving the sustainable development goals: From agenda to action.* Hayama, Institute for Global Environmental Strategies. 207 p.
https://www.iges.or.jp/en/publication_documents/pub/bookchapter/en/_4931/05_Ch5_Achieving_the_SDGs_.pdf
- Eling, M., & Luhnen, M. (2010). Frontier efficiency methodologies to measure performance in the insurance industry: Overview, systematization, and recent developments. *The Geneva Papers on Risk and Insurance-Issues and Practice*, 35, 217-265.
- Filippova, V. (2013). Spetsyfika derzhavnoho rehulyuvannya v haluzi osvity Ukrainy. Teoretychni ta prykladni pytannya derzhavotvorennia [Specifics of state regulation of education in Ukraine]. Theoretical and applied questions of state creation. Issue 12.
http://nbuv.gov.ua/UJRN/tppd_2013_12_12
- General Declaration of Human Rights: International Document of 10.12.1948.http://zakon.rada.gov.ua/laws/show/995_015
- Honchar, L., Derkachova, O., Shakhrai, V., Saienko, V., Hladoshchuk, O., & Voropayeva, T. (2021). Formation of psychological readiness of the teacher to implement information and communication technologies in professional activities. *International Journal of Education and Information Technologies*, 15(38), 364-371. DOI: 10.46300/9109.2021.15.38 (Web of Science)
- Horak, V. V. (2018). Osvitnya reforma Ukrainy: suchasnyy stan ta perspektyvy vprovadzhennia [The educational reform of Ukraine: current state and prospects of implementation]. *Analytical Bulletin in Education and Science. Issue VIII*. pp. 2-15. <http://lib.iitta.gov.ua/712161/1/>
- Matyuk, T. V. (2014). *Vzayemozpyazok osvity i sotsial'no-ekonomichnogo rozvytku suspil'stva* [The interrelation of education and socio-economic development of society]: Ph.D. thesis in economics Dnipropetrovsk 19 p.
<http://ir.nmu.org.ua/handle/123456789/107387?show=full>

- Melnyk, N., Bidiuk, N., Kalenskyi, A., Maksymchuk, B., Bakhmat, N., Matviienko, O., Matviichuk, T., Solovyov, V., Golub, N., & Maksymchuk, I. (2019). Modely y orhanyzatsiyone osobyne profesynalne obuke vaspytacha u pojedynym zeml'ama Evropske Unije y u Ukrayiny [Models and organizational characteristics of preschool teachers' professional training in some EU countries and Ukraine]. *Zbornik Instituta za pedagogska istrazivanja*, 51(1), 46–93. <https://doi.org/10.2298/ZIPI1901046M>
- Parashchenko, L. (2020). *Derzhavne upravlinnya rozvytkom zahal'noyi seredn'oyi osvity v Ukrayini: metodolohiyi, stratehiyi, mekhanizmy* [State management of the development of general secondary education in Ukraine]: methodologies, strategies, mechanisms: monograph. Kiev : Master of Books, 536 p. https://lib.iitta.gov.ua/705473/1/PosIbnik_Ekonom_mekha_L.Paraschenko_2014.pdf
- Postr'yach, N. O. (2009). *Yevropeys'ka profesynna osvita : retrospektyvnyy analiz ta s'ohodennya* [European professional education: a retrospective analysis and the present]. Collection of scientific works of the National Academy of the State Border Guard Service of Ukraine named after B. Khmel'nitsky. Khmel'nitsky № 48/2, P. II. pp. 99-102. <https://lib.iitta.gov.ua/726222/1/%D0%92%D0%B5%D1%80%D1%81%D1%82%D0%BA%D0%B0.pdf>
- Sheremet, M., Leniv, Z., Loboda, V., & Maksymchuk, B. (2019). The development level of smart information criterion for specialists' readiness for inclusion implementation in education. *Information Technologies and Learning Tools*, 72, 273-285. <https://journal.iitta.gov.ua/index.php/itlt/article/view/2561>
- Shestakovska, T. L., & Kholyavko, N. I. (2016). Derzhavne rehulyuvannya systemy osvity v umovakh rynkovoyi ekonomiky [State regulation of the education system in a market economy]. *Scientific Bulletin of Kherson State University*, 16(3) pp. 32-35. http://www.ej.kherson.ua/journal/economic_16/3/9.pdf
- Shymanovska-Dianych, L. M., & Boyko, H.S. (2018). Osoblyvosti funktsionuvannya ta rozvytku vyshchoho navchal'noho zakladu v umovakh stanovlennya ekonomiky znan' u konteksti rozvytku intelektual'noho kapitalu suspil'stva [Peculiarities of functioning and development of the university in the conditions of formation of knowledge economy in the context of development of intellectual capital of the society]. *Scientific Bulletin of Poltava University of Economics and Trade*, 3(88). pp. 126-132. <http://www.journal.puet.edu.ua/index.php/nven/article/viewFile/1506/1319>
- University of St. Gallen. Working Papers on Risk Management and Insurance. № 56. 48 p. https://www.unil-ulm.de/fileadmin/website_uni_ulm/mawi.inst.140/Articles/Eling/Eling_Luennen_JBF_2009.pdf