

Problems of education digitization in Ukraine

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Abstract — The paper analyzes the prospects for the development of the national education system of Ukraine, taking into account the potential of digitization. It is substantiated that the provision of a socioeconomic recovery is possible only if both society as a whole and individual non-profit sectors are considered in the context of the development of the digital economy. In order to conduct a comprehensive assessment of the digitization potential of the educational system of Ukraine, the disadvantages and advantages of digitization of educational institutions have been analyzed. It is proved that in the modern space based on network connections, the advantages of education digitization become apparent only if the goals and efforts of leading stakeholders are coordinated. The processes of globalization, which largely determine the life of the modern person and society of the 21st century, have been determined by the factors of this modern educational interaction. The concept of globalization of education is considered through the prism of studies of global educational policy and the definition of strategic directions for reforming the educational system of Ukraine. Digital transformation refers to the process of digitization, which simplifies access to information. Scientists interpret this concept as ways of bringing any kind of information into digital form using digital technologies.

Keywords — education, digitization, education digitization, the Internet, the new Ukrainian school, globalization, technologies.

I. INTRODUCTION

Digital transformation is an inevitable process taking place all over the world. High-tech achievements are being introduced into our life non-stop; the educator needs to learn constantly and in parallel with the main activity. In turn, information technology is an integral part of the modern world; they largely determine the further economic and social development of mankind. In these conditions of revolutionary changes, the training system also requires. Based on this, we can say that the relevance of this issue takes place in the modern educational environment, because now high-quality teaching of educational subjects cannot be carried out without using the means and capabilities that computer technologies and the Internet provide. At the present stage of development of the Ukrainian economy, the applied aspect of digitization is becoming particularly relevant, and, consequently, the analysis of recent studies and publications on the indicated topics. The aspects of the formation and development of digitization are

highlighted in the works of V. Isaacson, B. Larralde, A. Toffler, P. Hagen, T. Scholz, K. Kononova, N.M. Kraus. However, the dynamic changes in the digital economy determine the constant social transformations and change the vision of digitization. The purpose of the paper is to substantiate the modern vision of the applied aspects of the manifestation of the digitization of society, to define a set of digitization tools in the educational system of Ukraine.

The world is digital today. In order to have the necessary competencies of the 21st century, children should receive them at school. As noted by Liliya Hrynevych, the former Minister of Education and Science of Ukraine, a new Ukrainian school is impossible without this element. Unfortunately, rural education has much less opportunities than urban education (in the direction of connecting to the fast Internet and working with digital resources). In order to ensure equal access to education, the Ministry of Education and Science of Ukraine has acquired the National Electronic Platform (both the necessary hardware and the program), which hosts the content. An entire ecosystem will be created there: electronic textbooks (not just digitalized, but interactive, with virtual 3D materials), scans of textbooks for download, various materials: interactive laboratories, virtual museums, forums for teachers to communicate, education management systems. Such content will be able to interest a modern student, but if he/she has access to it. And in a third of Ukrainian schools, there is still no full Internet access today. By the end of 2019, 100% of schools should have access to the Internet [1].

II. MAIN PART

In May 2018, in Paris, the European Ministers have formed the values of the European Higher Education Area, highlighting 10 principles for improving the process of teaching and learning:

1. Higher education institutions contribute to the development of the student as an active and responsible citizen, capable of critical thinking, solving problems, ready for lifelong learning.
2. Learning and teaching is student-centric.
3. Loyalty to learning and teaching is an integral part of the mission and strategy of the university.

4. The university management is actively involved and contributes to the promotion (progress, development) of learning and teaching.

5. Learning and teaching is a collegial process that involves collaboration within the university and between the university and society.

6. Learning, teaching, and research are interconnected and enrich each other.

7. Teaching is the core of academic practice and it is valued as a scientific and professional activity.

8. The university community actively studies and appreciates the diversity of approaches to learning and teaching, respects the diversity of students, stakeholders, and educational subjects (subject matters).

9. Significant resources and appropriate structures are needed to support and ensure the improvement of learning and teaching.

10. Improving learning and teaching is the engine of institutional quality and the shared responsibility of university staff and students.

After analyzing the principles and results of the Bologna process, we can identify 5 interesting trends in learning and teaching:

1. Internationalization of education: mobility of students and staff; international cooperation; international research collaboration; teaching in English; international staff.

2. Digitalization of education. Computer classes; Wi-Fi; online library; online courses; student portal; social media for communication; personalized training portal; depositories; e-portfolio; online exams and tests; MOOCs; tablet computing; games, gamification; learning analytics; 3D printing and wearable technologies.

3. Changing the teaching concept: balance between teaching and research; attraction of external stakeholders; requirements for teaching staff.

4. Improving the learning environment. Development of libraries and training resource centers; scientific and computer laboratories; adaptation of classrooms for a variety of teaching approaches; areas for interactive engagement and teamwork.

5. Development and implementation of institutional policies and strategies [2].

In general, the digitization of education today is the main trend in the development of educational systems in almost all countries of the world and covers all levels—from primary education to masters and doctors of sciences. Ukraine is also in a general trend: electronic textbooks are being created, interactive whiteboards will appear, electronic document management is being introduced, etc. However, the essence, process, and training conditions are practically unchanged. That is, we have a situation where a traditional school introduces the use of digital tools in its practice, but the essence of the school itself does not fundamentally change. In EU countries, the situation is slightly better, due to a significantly higher level of digitization. For example, in

Sweden, since the 5th grade, the State provides all pupils with laptops, all academic subjects (courses) are digitized and they are electronically. However, the school's tradition (class schedule, grading system, transfer to next year, etc.) remains unchanged. In the same way, but with fewer laptops and other gadgets, there is a digitization of education in other European countries. In Ukraine, of course, this process is still far behind the world's best educational practices. But, more importantly, we see a number of circumstances that indicate a narrow approach to understanding the prospects and possibilities of digitization of education not only in Ukraine, but almost everywhere. Moreover, one should take into account such significant problems of primary and secondary schools that the traditional system of many countries of the world, including Ukraine, does not solve today: containing and averaging the intellectual development of the most gifted children, a powerful bureaucratic wall that prevents them from "jumping" through classes, to complete education much earlier, and enter universities at the age of 12-14 years, which, for example, is possible in the USA and China. And this directly affects the competitiveness of the young man in intellect-intensive labor markets.

In addition, there is a big social problem when the most talented children, who are often considered to be "odd men out", are humiliated in their classes by peers of the usual intellectual level (the problem of bullying). Modern digital capabilities are much more multifaceted and larger. The level of modern information technology makes it easy to solve all these problems as a whole and simultaneously [3].

The essential characteristics of digital technology are:

- mobility, availability, and free,
- storage and use of information regardless of location,
- no need to update and install software, as technology has become cloudy [4].

Thus, one of the challenges of a digitized society is the teacher's willingness to digitally transform the learning process, designing an individual educational trajectory, and organizing the modern process of pedagogy partnership between students, teachers, and parents.

III. RESULT AND DISCUSSION

An analysis of the electronic information resources of recruitment agencies (Adecco, Advance, AGA Recruitment, Aurora, VSK Consulting, White Sales) allowed us to identify certain trends in the selection of qualified specialists by companies that actualize the need to develop personal flexibility, adaptability, communication, reflectivity, identified by scientists as soft skills and skills in applying the capabilities of digital technology. A solution here is possible only if promising advanced digital technologies are introduced into the education system, in particular, to organize modern educational interaction. So, in the system of national education, the need for a flexible response to the needs of highly qualified personnel is stipulated, which provides for updating communication methods and means.

Digitization is becoming the main trend of our time and is radically changing the substantive characteristics of the

processes of all spheres of public life. Today, it is no longer possible for an educational institution to stay away from digital transformation. The latest technology has become an integral part of our everyday life.

Primary school is the foundation on the quality of which the further education of the child depends. For a long time, a primary school in the education system was a “school of experience”, that is, it was considered to be as a stage of education, where the pupil should master the basic skills. Today, it should be the first experience of the child in the educational system—a place to test his/her educational strengths. At this stage, it is important to develop independence, maintain cognitive activity, and create conditions for the harmonious entry of the child into the educational world, to support his/her health and emotional well-being. It is these qualities of students that are developed in the school using digital technologies in the educational process. Their use opens access to non-traditional sources of information, increases the efficiency of independent work, provides completely new opportunities for creativity, and allows implementing fundamentally new forms and methods of training. This allows you to influence the emotional sphere of the student, contributing to an increase in cognitive activity, an increase in interest in the subject, the activation of educational activities.

The effectiveness of the implementation of the development of a modern personality provides for updating the methods of interaction using the capabilities of digital technologies. It should be understood that digital transformation is not a fashionable temporary phenomenon. This is a global trend, the maximum benefit from which will be given to educational institutions that will fully become leaders in the field of transforming the educational process through the use of digital trends, including in the process of educational partnerships. Thus, we consider the main task of training to be a transition to a qualitatively new level of building interpersonal interaction between participants in the educational process, in particular, using the capabilities of digital technologies. These tasks are realized in the joint activity of the teacher and pupils, which implies mutual understanding, common interests and aspirations for the purpose of personal development.

Note that due to their employment, most parents do not have the opportunity to be active participants in the process, participate in management and influence the work of an educational institution. Therefore, we need mechanisms that will allow carrying out operational interaction with them, to ensure equality of partnership between the educational institution and the family. Harnessing the power of digital technology for networking with parents is vital. This will allow for the efficient exchange of information, consultations on various issues, and be equal partners. In order to establish contact with parents, to make interaction constructive, to provide real help, active forms of interaction in which parents can observe the child and track his/her achievements are necessary.

It is well known that we expect a complete digitization of education. Training will go through apps and platforms, and

artificial intelligence and virtual reality will open up new opportunities for education and develop key competencies. In Ukraine, Prometheus, EdEra, Preply are already developing this area. Such startups make a direct contribution to the future, because high-quality education gives an impetus to all other sectors.

The main vectors of the digital education development are:

Speed—learning keeps up to date, because the usual accumulation of knowledge has long lost its relevance.

Enthusiasm and motivation are fundamental principles in education, where teachers become coordinators, guiding students online and offline.

The availability of materials in real time, which simplifies the process of obtaining new knowledge.

Interdisciplinary content erases the rigid boundaries between production, business, and other areas; therefore it requires the integration of knowledge from various spheres of life.

It should be noted that the development of technology leads to the introduction of new teaching tools and makes the learning process more effective. However, the thoughtless use of these tools leads to the opposite effect, when real knowledge is replaced by illusory, and learning turns into simple entertainment. A new ideology is being formed based on the “Gamification” of education, where traditional teachers are replaced by “game educators”, “coordinators of online platforms and educational paths”. Even with skepticism about such innovations, most specialists in the field of education understand that changes are inevitable and they see two main directions of its development:

- 1) education should be close to the problems of real life;
- 2) the training system should take into account and make rational use of new technological opportunities [5].

In the context of this, we draw attention to digitization in education as a fundamental factor in economic growth in modern conditions. The development of Digital Agenda for Europe is expected in the following areas:

- digital society (skills and vacancies, healthcare and social protection; utilities; cybersecurity and privacy, etc.);
- research and innovation (digital infrastructure, new technologies; robotics, etc.);
- access and communications (broadband access to telecommunications; open Internet, etc.);
- digital education (European startup, cloud technology; the future of the Internet, etc.) [6; 7].

The digitization in education is promoted by the introduction of 4G communication, through which digital technologies are spread. In Ukraine, the progress of digitization is successfully taking place in the areas of electronic training (e-learning), IT (information technology), TCS (telecommunication services), etc. [8; 9].

According to the WEF-2017 “Global Information Technology Report”, the WEF Networked Readiness Index

(NRI) characterizes Ukraine as a country in which NRI can assess the driving factors and consequences of achieving a certain degree of network readiness and mobilizing digital technologies, taking into account the roles of all actors in this process, identify strengths and weaknesses that should be addressed when developing national strategies for improving network preparedness. Since Ukraine is a country with a vast territory and a large population, therefore, the operation of significant databases is very useful for the development of the economy and education [10].

The main problem of implementing the state policy of Ukraine in the field of stimulating the development of digital technologies (digitization) is fragmentation, lack of consistency, coherence, completeness, coordination between the adoption of legal acts and the subsequent development of mechanisms for their implementation and underfunding of education in the budget [11]. The set of legislative and regulatory documents in the field of digital technology has many uncertainties and contradictions, namely:

- the multiplicity of regulatory norms and institutions, administrative and tax pressure on actors;
- the ability of the State to effectively manage its responsibilities remains low.

IV. CONCLUSIONS

The present requires a transition to a higher level of use of digital technologies in education, improvement of public administration of this process. In order to solve these and other problems, given the current state and development potential of the digital sector of Ukraine, coordination of the main strategic goals, mechanisms, and regulatory support for the development of the information society in Ukraine in the near future is required. Significantly increased requirements for the level of training of specialists who should have a store of theoretical knowledge, practical skills, who should be able to navigate in a difficult situation, be ready to make innovative decisions. In this regard, the school in Ukraine is being substantially reformed today. This requires the introduction of developed forms and training methods that contribute to the formation of the personality of a future specialist.

The introduction of information and communication technologies in the education system is not a tribute to fashion, but a necessity, since most children get to know the computer much earlier than the school can offer them. A new generation

of children who live in an informational, dynamic, emotionally stressful environment comes to educational institutions. Information technology is becoming a powerful multifunctional learning tool. Their use teaches the pupil to live in an information environment, contributes to the attraction to the information culture. Computerization should concern only that part of the educational process where it is really necessary. Thus, the digital transformation (digitization) of education is not just a new trend of the time, but a necessity and a search for a new meaning of knowledge.

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