

# The Potential of Higher Education Digitalization in Central and Eastern Europe

Anastasiia Simakhova<sup>1</sup> <sup>a</sup> and Artem Artyukhov<sup>2</sup> <sup>b</sup>

<sup>1</sup>National Aviation University, 1 Liubomyra Huzara Ave., Kyiv, 03058, Ukraine

<sup>2</sup>Sumy State University, 2 Rymkogo-Korsakova Str., Sumy, 40007, Ukraine

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**Abstract:** Digital has penetrated into all spheres of life. Since 2020, due to the pandemic, all countries around the world have started using online learning. The digitalization of higher education during the war in Ukraine is especially important, because avoided the collapse of the educational system. The aim of the article is to highlight the potential of higher education digitization in Eastern and Central Europe. To achieve the goal of the article, the following tasks were set: to study the theoretical basis of the digitization of education, to analyze the trends and problems of the higher education digitalization in Central and Eastern Europe, to develop recommendations for improving the higher education digitization. The article analyzed the ranks of the Network Readiness Index, Digital Skills Gap Index (DSGI), and IMD World Digital Competitiveness Ranking in terms of technological readiness of universities and digital skills of academic teachers and students. The article offers a case study of the Ukrainian university for the implementation of an e-learning environment and new instruments of e-learning during the war in Ukraine. The authors grouped countries of Central and Eastern Europe according to their potential for higher education digitalization. For these groups of countries, the authors identified specific criteria. SWOT analysis of the higher education digitalization was conducted for the countries of Central and Eastern Europe.

## 1 INTRODUCTION


Digital transformation involves the transformation of all areas of public life under the influence of advanced innovative information and communication technologies (ICT), including in the education system, which is the foundation of an innovative economy and shapes its human potential. This determines the relevance of accelerating the digital transformation of education in the countries of Central and Eastern Europe. The digital transformation of education is necessary to ensure that the educational process meets the needs of the labor market, increases the level of participation in these processes of educational institutions of all levels and other organizations of the educational system, as well as scientists, managers and specialists of government agencies, representatives of the private sector of business.


The huge potential of digitalization for higher education is that online platforms, online courses, on-

line universities can be used in the face of global challenges. First of all, these are pandemics, when social contacts need to be reduced, and war, when there are many refugees, the territorial connection of students with their university is lost. Especially in the current war between Ukraine and Russia, the issue of effective use of the potential of digitalization of higher education is relevant, given the large number of Ukrainian refugees (including students) in neighboring Eastern and Central Europe.

The *aim* of the article is to highlight the potential of higher education digitization in Eastern and Central Europe. The object of the research is the digitization of higher education. The subject of the research is the potential of higher education digitization in Eastern and Central Europe.

The *scientific novelty* of the research is the grouping of the countries of Central and Eastern Europe according to their potential of higher education digitalization. The practical significance of the study is that the results of the article can be used during the war in Ukraine, when hundreds of thousands of entrants and students leave the country for Central and

<sup>a</sup>  <https://orcid.org/0000-0001-7553-4531>

<sup>b</sup>  <https://orcid.org/0000-0003-1112-6891>

Eastern Europe.

The *research methods* used in the article include literature analysis (a review of research to date in the field of higher education digitalization) and taxonomic methods used to determine the development and potential of higher education digitalization in the countries of Central and Eastern Europe, according to the ranks of the Network Readiness Index, Digital Skills Gap Index, and IMD World Digital Competitiveness Ranking in terms of technological readiness of universities, academic teachers and students for online education, as well as the method of SWOT analysis (according to the higher education digitalization in Central and Eastern Europe).

## 2 LITERATURE REVIEW

The VOSViewer and SciVal tools were used to conduct a brief bibliometric analysis on the request “digitalization of education”. The array of publications for analysis was obtained from the Scopus database (<https://www.scopus.com/>).

Bibliometric analysis using the VOSViewer tool (base for analysis – 1408 articles for the period 2010-2020) (figure 1) made it possible to identify the main keywords that are most often found in scientific papers in connection with the direction of digitalization in education. The cluster “education” is of great interest for analysis, which links the terms “e-learning”, “virtual reality”, “augmented reality”, “decision making”, “sustainable development”, “economics” and, in fact, demonstrates the model of university development in this direction. The relevance of considering this cluster is confirmed by a number of domestic works that are devoted to, in particular, digitalization of education in general (Yarovenko et al., 2021), state regulation and management of the quality of education (Vorontsova et al., 2020; Pavlenko et al., 2020), ensuring the quality of education in subject areas (Onopriienko et al., 2021; Lyeonov and Liuta, 2016), quality of education and sustainable development goals (Artyukhov et al., 2021).

It should be noted that in the world the topic of digitalization of education is gaining momentum, as can be seen from the data in figure 2 (SciVal bibliometric analysis tool). However, the number of publications in comparison with other industries is insignificant, which confirms the relevance of studying various aspects of this direction.

Continuing the analysis, it is also necessary to address the topics that are most often associated with the request for digitalization of education (figure 3, SciVal bibliometric analysis tool). The combination of

keywords shown in the figure that add up to topics (the figure shows top-1% of topics by prominence, 2510 articles for the period 2011-2020 were used for analysis) leads the reader to the main promising (“break-through”) directions of the development of the digitalization model of education. These areas can be taken as general ones when creating a digitalization strategy for the educational process at the university.

Thus, the data of bibliometric analysis provide a basis for finding optimal solutions for the digitalization of education in the region, which is studied in this work.

With regard to scientific papers on the digitalization of education, it is worth paying attention to the research of such authors. The problem of using digital technologies in education was studied by Henderson et al. (Henderson et al., 2017), Turuk (Turuk, 2021), Pettersson (Pettersson, 2021), Kafyulilo et al. (Kafyulilo et al., 2016), Sahu (Sahu, 2020), Artino (Artino, 2010), Alqurashi (Alqurashi, 2019). The authors examined the prospects for the digitalization of education, as well as the attitude of students towards distance and online learning. This issue has become especially important since beginning of COVID-19 pandemic.

The digitalization of education in Central and Eastern Europe was dealt with by Chitez et al. (Chitez et al., 2020), Rogobete and Chitez (Rogobete and Chitez, 2019), Simakhova et al. (Simakhova et al., 2022), Frances and Fleck (Frances and Fleck, 2020), Zinovieva et al. (Zinovieva et al., 2021). These scientists have studied the strategies, models, phases and problems of digitalization of education in Central and Eastern Europe.

Despite the mentioned studies, the issue of comparing, grouping and highlighting the potential of higher education digitalization in Central and Eastern Europe has not been resolved. This led to the relevance of this article.

## 3 CASES OF HIGHER EDUCATION DIGITALIZATION IN CENTRAL AND EASTERN EUROPE

The total quarantine and the abrupt conversion of educational institutions to distance learning in March 2020 revealed some of the problems with the digitalization of education in the countries of Central and Eastern Europe.

Since the beginning of the quarantine in March 2020, higher education institutions in Ukraine were

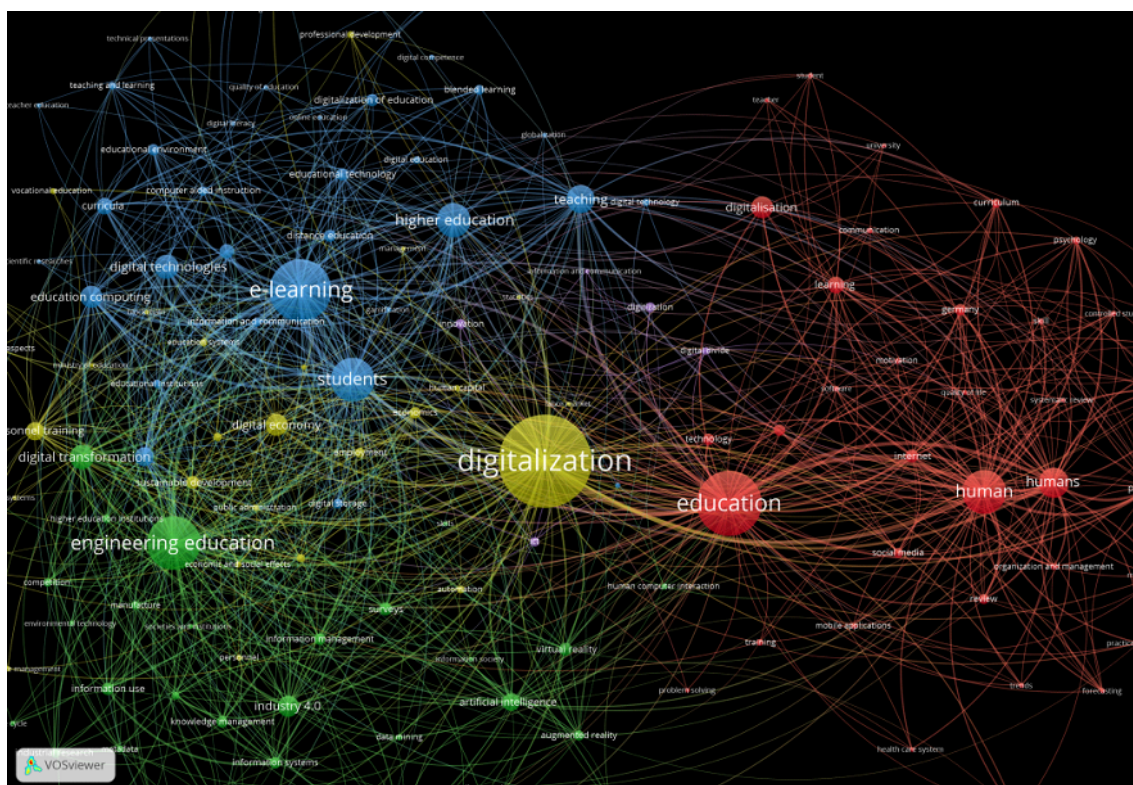


Figure 1: Results of bibliometric analysis using VOSViewer tool.

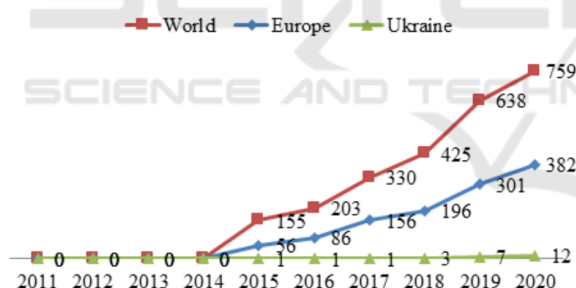


Figure 2: Number of publications in the field of digitalization of education.

not fully prepared for online education, they used only certain elements of online education. And online teaching methods needed development and clear regulation. During the interviews in May-June 2020, most HEIs noted that their institutions used certain elements of online education before the quarantine and relied heavily on the Moodle system. In addition, the development of online education had a specific date and was a response to the demands of time or circumstance. Thus, some online courses were introduced for students of the displaced HEI's (HEI's who were resettled from Donetsk and Luhansk region (Stukalo and Simakhova, 2020)).

Nevertheless, online training courses on digital platforms, online courses, were established in the first

month. In addition, the session, certification and even passing the state exams in the summer of 2020 were held online.

It is worth noting that Ukrainian universities have positive experience with online accreditation.

For two years now, the countries of Central and Eastern Europe have had the experience of distance learning at universities on various online platforms.

The European Commission has approved a Digital Education Action Plan (2021-2027). It focuses on two important areas (EU, 2020):

- promoting the development of an effective digital education system (infrastructure, communications, technical means, development of teaching and teaching competencies, high-quality educational content);
- improving digital skills (basic digital skills from an early age, combating misinformation, ensuring equal access for women and girls to digital learning, etc.).

Distance education, new requirements for the educational process have become a challenge for the educational system. The pandemic has affected the habitual lifestyles of students, their families and teachers, caused economic and social consequences, ex-

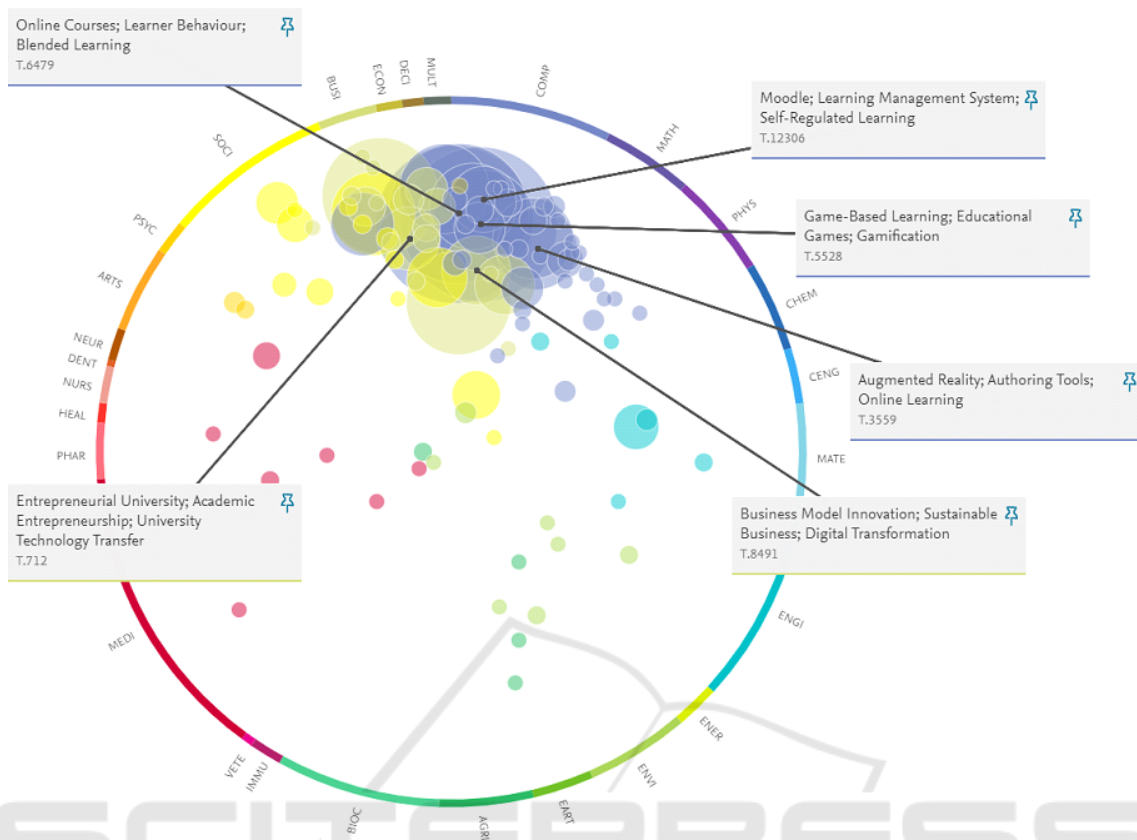


Figure 3: Top-1% of topics by prominence on digitalization of education.

acerbated a number of socio-economic problems, including (MON, 2020):

- Equitable access to education (disparity in families' provision of distance education resources and unequal access to quality Internet);
- Provision of educational services for children with special educational needs (children with certain pathologies are not able to receive educational services at a distance);
- other socio-economic problems caused by the pandemic.

In Ukraine at the beginning of 2020, 86% of Ukrainian teachers did not have significant experience in using online education tools, so universities provided teaching to teach skills in using these tools, creating or transferring courses online and organizing learning in general – by issuing instructions, creating YouTube channels, Telegram, Facebook groups, instructions for creating syllabus courses for online learning, etc. (Nazarenko and Polishuk, 2021). But an important problem was the increase in the workload of teachers, including additional time to master the skills of using digital technologies in education, cre-

ating or transferring their courses to distance education systems, their regular updating, supplementation and communication with students. It was noted that the time spent on communication with students has increased, as explaining the task in writing (or adding a description to the online course) is longer than in the classroom, as well as possible additional individual questions from students, and correspondence with them also increases working hours of teachers. In addition, the reason for irregular working hours was the need to develop classes in a new format and search for additional materials (Nazarenko and Polishuk, 2021).

In Ukraine about half of Ukrainians are negative about the introduction of distance education in connection with the pandemic, 32% of citizens supported this step. Categorically negative assessments are most in the Southern (29%) and Eastern (28%) regions (Razumkov Center, 2020).

The most significant problems faced by Ukrainians in connection with the transition to distance learning are the decline in children's achievement (26%), lack of attention of teachers to children's learning needs (22%) and technical problems: poor quality of the Internet (21%) or lack of devices for online learning (19%). About 20-30% of citizens in small towns

(up to 100 thousand inhabitants) report a lack of technical means (Razumkov Center, 2020).

Thus, the survey showed problems in the technical equipment of participants in the educational process.

The Ministry of Education and Science of Ukraine in May 2021 prepared a draft Concept of Digital Transformation of Education and Science for the period until 2026 (MON, 2021), which is a strategic document with a state vision for the development of these industries and solving the problems of their development.

Digitalization of higher education in Poland is more developed than in other Eastern European countries. Kozminski University, Lodz University of Technology, Warsaw School of Economics and the Jagiellonian University are universities with different educational profiles combining exemplary use of digital tools in scientific, administrative and research activities. All four universities were the first in Poland to be awarded in the Most Innovative Universities Program and to receive the title of “Microsoft Cloud University” (BRIEF, 2021).

Despite the fact that Poland has more experience in distance education than Ukraine and Belarus, some important problems appeared in 2020 and 2021:

- insufficient supply of computers to participants of the educational process (97% of households have at least one computer, but many of them have difficulties because computers have to be shared by siblings, etc.) (Delmanowicz, 2021);
- reduced bandwidth of connection and limited amount of monthly data transfer;
- lack of digital skills among teachers (85% of teachers reported that they had very little experience in using the tools needed for distance education, and only 5% of them described their skills in this area as “very good”. Only 8% of students believe that teachers are very well prepared for online learning, and 62% of them consider distance learning ineffective) (Delmanowicz, 2021).

Thus, the problems of digitization of education in Poland are similar to Ukrainian problems.

#### **4 PROBLEMS OF DIGITALIZATION OF HIGHER EDUCATION IN CENTRAL AND EASTERN EUROPE**

The main problems of digitization of education in Central and Eastern Europe:

- inadequate preparation of teachers for distance education (use of methods of cyber-pedagogy, work on online platforms, underdeveloped digital skills);
- management problems (insufficiently developed digital competences among representatives of the management of educational institutions);
- lack of technical equipment in educational institutions (virtual classrooms, electronic laboratories, etc.);
- lack of quality Internet connection among individual participants in the educational process in connection with their place of residence;
- insufficient provision of individual computers for all participants in the educational process;
- lack of methodological support for distance learning courses (workshops, lectures, etc.);
- increase the time load on teachers due to increased online communications and development of online materials for students.

As the above analysis has shown, the countries of Central and Eastern Europe have similar problems in providing digitalization of higher education. Let us analyze the ranks of the Network Readiness Index (NRI), Digital Skills Gap Index (DSGI), and IMD World Digital Competitiveness Ranking in terms of technological readiness of universities and digital skills of teachers and students (table 1, 2, 3).

According to the NRI rating of the studied countries, Switzerland, Germany and Austria have the highest positions – 5, 9 and 18, respectively. Also in terms of technological support, Switzerland has a higher position, and Germany – 7th. Thus, the Central European high-income countries of the group have a greater potential for digitalization of higher education than the countries of Eastern Europe.

According to table 2, for DSGI Switzerland, Germany and Austria also have the highest positions. Romania, Moldova and Ukraine have the lowest scores of DSGI.

IMD World Digital Competitiveness Ranking represents 64 countries. Among the studied countries, Moldova and Serbia are not represented in this report. As for other Central and Eastern European countries, Switzerland, Austria and Germany have the highest rank. Croatia and Ukraine have the lowest rankings according to this global indicator. The same situation there is for the level of country preparedness to exploit digital transformation.

Thus, the analysis of global indicators showed different readiness and potential for the introduction of remote and digital technologies in higher education in Central and Eastern Europe.

Table 1: Network Readiness Index ranks in 2020.

Countries	NRI rank	NRI score	Technology (Pillar) Rank	Technology Sub-pillars			Income group
				Access	Content	Future Technology	
Ukraine	64	49.93	62	79	46	53	Lower-middle-income
Poland	33	61.80	36	32	34	60	High-income
Bulgaria	46	55.03	43	50	33	78	Upper-middle-income
Czech Republic	28	66.33	26	33	20	32	High-income
Hungary	39	60.05	31	21	32	44	High-income
Moldova	71	47.09	74	56	66	126	Lower-middle-income
Romania	49	51.14	46	18	48	82	High-income
Slovakia	35	60.78	34	38	37	37	High-income
Austria	18	73.92	16	35	15	17	High-income
Croatia	43	55.94	52	49	38	118	High-income
Serbia	52	52.96	53	51	42	103	Upper-middle-income
Slovenia	27	66.58	29	24	26	35	High-income
Germany	9	77.48	7	27	10	3	High-income
Switzerland	5	80.41	1	4	1	7	High-income.

Table 2: Digital Skills Gap Index (DSGI) in 2021.

Countries	Score	Rank
Ukraine	4.8	69
Poland	5.6	42
Bulgaria	5.0	60
Czech Republic	5.5	44
Hungary	5.2	50
Moldova	4.7	73
Romania	4.7	74
Slovakia	5.1	52
Austria	6.5	21
Croatia	4.8	66
Serbia	4.8	64
Slovenia	5.7	40
Germany	7.1	14
Switzerland	7.2	11

Table 3: IMD World Digital Competitiveness Ranking in 2021.

Countries	Rank	Future Readiness Rank (Level of country preparedness to exploit digital transformation)
Ukraine	54	58
Poland	41	39
Bulgaria	52	55
Czech Republic	33	37
Hungary	45	61
Romania	50	49
Slovakia	47	46
Austria	16	16
Croatia	55	60
Slovenia	35	40
Germany	18	18
Switzerland	6	3

## 5 POTENTIAL OF HIGHER EDUCATION DIGITALIZATION IN CENTRAL AND EASTERN EUROPE

The above analysis allowed the authors to group the countries of Central and Eastern Europe according to their potential for the higher education digitalization. Authors have highlighted specific criteria (table 4).

Thus, authors proposed 3 groups of Central and Eastern European countries according to their potential for higher education digitalization of with their indicator. Also, it is necessary to mention that this potential correlates with countries' income group.

High potential for the higher education digitalization have the countries of Central Europe – Austria, Germany, Slovenia and Switzerland. So, the universities of these countries will be more attractive for foreign students in modern conditions of globalization.

Lower-middle potential for higher education digitalization has Ukraine and Moldova. This is an alarming signal given today's war in Ukraine. Firstly, Ukraine currently has a large outflow of young people due to the war. At the end of March 2022, more than 3.8 million people left Ukraine due to the war, mostly young people. Secondly, according to the study, Ukrainian universities and society as a whole have less potential for digitalization of higher educa-

Table 4: Grouping Central and Eastern European countries according to their potential of the higher education digitalization.

Group	Countries	Indicators	Income group
High potential for the higher education digitalization	Switzerland, Germany, Austria, Slovenia	NRI rank $\leq 27$ , DSGI rank $\leq 40$ ,	High-income
Middle potential for higher education digitalization	Romania, Bulgaria, Poland, Slovakia, Hungary, Croatia, Serbia, Czech Republic	$28 \leq$ NRI rank $\leq 60$ , $41 \leq$ DSGI rank $\leq 67$	High-income, Upper-middle-income
Lower-middle potential for higher education digitalization	Ukraine, Moldova	NRI rank $> 60$ , DSGI rank $> 68$	Lower-middle-income, Upper-middle-income

tion than other countries in Central and Eastern Europe. Thus, it is possible to predict the outflow of Ukrainian entrants and students to the countries of the group of high potential for the higher education digitalization and middle potential for higher education digitalization.

In our opinion, the practical recommendations for higher education digitalization is public-private partnerships with the participation of manufacturers and suppliers of advanced information and communication technologies that have prospects of application in the educational process in higher education institutions of countries.

In the future, the higher education digitalization will ensure the development of digital competences for all participants in the educational process, the formation of ecological and digital awareness among students (Stukalo and Simakhova, 2019), the adaptation of educational programs to changing socio-economic conditions and the scientific and technological revolution, and the development of a digital economy.

To summarize the results of the study, a SWOT analysis of the potential of the higher education digitalization for the countries of Central and Eastern Europe was carried out (table 5). SWOT analysis is a model for forming an information base and developing on its basis the most effective option for managing socio-economic processes (including the higher education digitalization). It is assumed that SWOT analysis is used to assess the situation under conditions of uncertainty and to regulate individual parameters. In this case, the regulation of parameters is understood as the correction of the values of control parameters for the implementation of the optimal development scenario at a certain segment of the planning period.

## 6 E-LEARNING ENVIRONMENT: UKRAINIAN UNIVERSITY'S CASE

As an example, let us present the case of Sumy State University (Ukraine) on the creation of an e-learning platform based on its own unique developments. The e-learning environment is shown in figure 4.

The e-learning ecosystem includes various tools for the implementation of distance, e-learning and blended learning, platforms for creating educational materials, a platform for massive open online courses, a repository of educational materials. The developer of educational materials works autonomously, without involving technical services in the software implementation of the project in the process of creating a package of tasks. In the process of creation, only the developer communicates with consultants of various levels. After agreeing on the content, the materials are reviewed and posted in open or closed (directly for course students within the university) access; programmers implement only non-trivial tasks within the framework of educational courses (interactive elements, virtual and augmented reality, etc.) (figure 5).

As part of the implementation of various models of electronic learning, they are constantly being improved on the basis of feedback from developers of educational materials, reviewers, programmers, and listeners. As an example, the questionnaire of a survey of developers of educational materials of the "Mix" platform (blended learning) in 2021 is given.

The advantages of the "Mix" platform:

- all teachers and students are in a single learning space;

Table 5: SWOT analysis of the higher education digitalization for the countries of Central and Eastern Europe.

<b>Strengths</b>	<b>Weakness</b>
- high digital skills of academic teachers (DSGI Score 4.8); - state support; - relevant regulatory framework; - high level of country preparedness to exploit digital transformation.	- negative attitude of population to distance education (30%); - lack of methodological support for distance courses; - increase the time load on teachers
<b>Opportunities</b>	<b>Threats</b>
- development of the digital economy and distance education; - the future of technology; - opportunities for education during pandemics and war; - creation of the Digital European University with Artificial Intelligence	- different level of provision of families with means for online learning (21% of families have poor quality of the Intern; 19 % – lack of devices for online learning); - low level for readiness for future technologies in Eastern Europe (Score: 60-126)

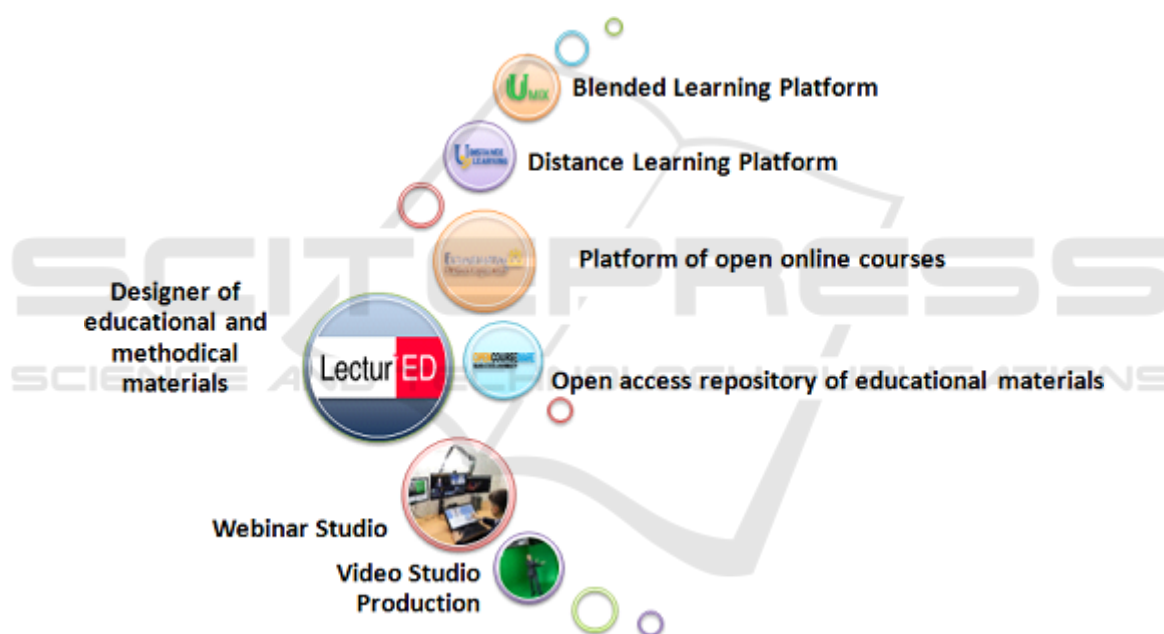


Figure 4: E-learning environment: Sumy State University case (Ukraine).

- the ability to control the educational process in real time;
  - the platform is synchronized with the unified information system of the university;
  - systematic support from the university;
  - the opportunity for teachers to work collectively both in the creation of materials and in virtual classrooms;
  - unified tools simplifies the use of the platform for all users;
  - automatic connection, control, archiving;
  - the ability to manage user registration, define roles, manage content;
  - creation of virtual classes, adjustment of the necessary parameters.
- Disadvantages of the “Mix” platform:
- instability of work;
  - inconvenient interface for working with mobile devices;
  - insufficient functionality to provide the necessary activities;
  - difficulty in settings;



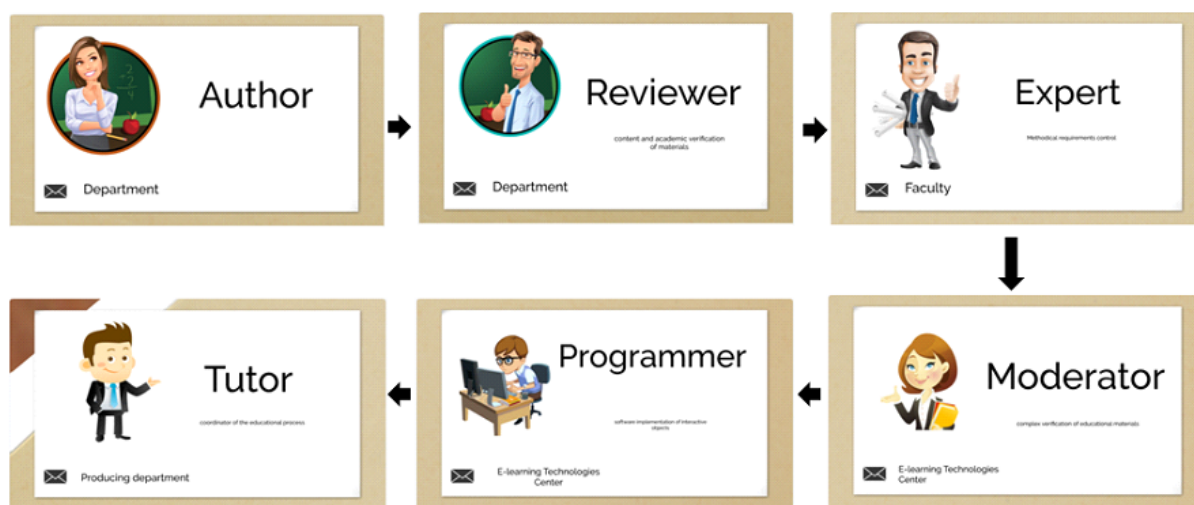


Figure 5: Algorithm for creating educational materials.

- inconvenient interface for working with a personal computer;
- insufficient level of technical support for users;
- excessive openness and transparency for control by the university.

Measures to improve the “Mix” platform:

- integration with services for webinars (Meet, Zoom, Microsoft Teams, etc.);
- integration with plagiarism testing services;
- mobile version with chat;
- integration with additional services of ACS “University”.

The proposed e-learning system has proven to be an effective tool for remote work during a pandemic. The use of this system in synchronous-asynchronous training during the war for the independence of Ukraine, which began on February 24, 2022 with the invasion of the Russian Federation, became even more relevant. Due to the destruction of individual universities or the impossibility of studying in the occupied territories, students resort to internal mobility, which is possible under the conditions of creating a proper educational environment for e-learning. Currently, the National Agency for Higher Education Quality Assurance has compiled a list of about 50 universities (the list continues to expand), which is ready to ensure internal academic mobility of students with subsequent transfer of credits to home university (students who have the opportunity to continue online learning) more than 20 Ukrainian universities that continue the educational process, showed that at least 50% of the contingent are ready to join

synchronous learning. Another 20-25% are ready to study asynchronously in the e-learning environment.

For the above reasons, the e-learning system can be upgraded by introducing the following educational components:

1. Creating a model of student learning, which is the simultaneous use of “Rotation” (study time is divided between individual e-learning and on-line meetings with tutors, “flipped classroom”) and “Flex” (most of the curriculum is mastered in e-learning with group or individual consultations) models. The basis of the combined model are active teaching methods (problem lecture and lecture-visualization, group work on creative tasks, etc. – face-to-face learning) and e-learning technologies (distance learning, work with simulators, author’s open electronic resources, electronic resources of the world’s leading universities). also in order to identify his propensity for a particular activity pi after graduating from university.
2. Lecture “puzzle”

The model proposed above has sometimes proved inflexible in terms of the ability to master 10 skills that employers need in the last 2–3 years. The model only partially satisfied the conditions for acquiring skills and is now obsolete in terms of developing e-learning opportunities. In addition, the monotony of the types of work led to a significant reduction in student productivity.

“Puzzle”: each lecture is formed from blocks F2F, MOOC, VR and AR+.

Element 1: in block F2F there is a possibility to move from one type of lecture to another, for example, “problem” – “knowingly wrong answer” – “dis-

discussion” (complex multilevel problem solving, critical thinking, forming one’s own opinion and decision making).

Element 2: in the F2F block there is an opportunity to move from lecture to practical classes using the practice of active learning, MOOC, VR and AR+ (creativity in the broadest sense)

Element 3: the F2F block uses the practice of interactive learning, “substitution” of teacher-student communication for student communication with each other (emotional intelligence, customer orientation, negotiation skills).

### 3. “Project – incentive – motivation”

In today’s educational environment, some teachers are “info-gypsies” – translators of their courses, which have no practical significance.

Mentoring is one of the most promising tools for professional development of students. However, it is a misconception to use pseudo-mentoring for a group of people (within traditional practical classes), which is ineffective due to the individuality of each learner. Implementing mentoring in classroom conditions is quite difficult. Individual work with the student is limited to discussing the individual task with the teacher – the head of educational or qualification work and does not transfer consideration of the issue of motivation, support. Mentoring as an element of “guardianship” of the learner is a tool for learning competencies, which does not motivate the student (there is only an incentive – the need to defend the task to obtain a certain number of points) and among other things implements the function of advice.

The institute of mentoring has become widespread in foreign universities, but in fact it can be called an institute of mentoring. Mentoring “as is”, by analogy with domestic universities, has problems with implementation due to the inability to work with students individually in the classroom. Extracurricular work as an element of the training course due to the lack of a mechanism for its evaluation does not contribute to the teacher’s role as a mentor. Thus, solving the problem of mentoring in online learning will provide an opportunity for students to acquire new skills and awareness of the phenomenon of motivation at the level of mental processes. The selection of mentoring and mentoring as separate teaching methods allows us to trace the evolution of the teacher on the path of “info-gypsy – mentor – mentor” with the change of functions at each stage.

## 7 CONCLUSIONS

Thus, the countries of Central and Western Europe can be divided into three groups according to global indicators of their potential for digitalization of higher education. The most attractive for students are the countries of the first group with high potential for digitalization, namely Austria, Germany, Switzerland, and Slovenia.

The pandemic COVID-19 has led to the active digitalization of higher education. Despite the fact that in the beginning of 2020 there were many problems with online learning, for two years now the higher education system has been operating effectively at a distance. It is the digitalization of higher education that will overcome the negative consequences of the migration of entrants and students from Ukraine through the war to Central and Eastern Europe. In view of this, it would be promising to create a European platform for teaching Ukrainian students, where, along with English, the languages of Central or Eastern Europe, it would be possible to study subjects in Ukrainian.

The case study of the implementation of digitalization tools in Ukrainian universities showed that the digitalization of higher education ensured the continuity of the process of persuasion during the pandemic and war in Ukraine.

The recommendations for improving the digitalization of education are:

- public-private partnerships with the participation of manufacturers and suppliers of advanced information and communication technologies that have prospects of application in the educational process in higher education institutions;
- teachers training in e-tools of online learning;
- mentoring use for professional development of students.

So, the higher education digitalization allows minimizing the negative social consequences of global challenges such as pandemics and wars. The perspectives of further higher education digitalization of Central and Eastern Europe is the creation of a Digital European University with artificial intelligence based on a partnership between the state and business.

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