COVID REALITIES IN HIGHER EDUCATION: REVIEW AND EVIDENCE FROM UKRAINE

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Abstract

The paper is devoted to the review of the COVID impact on the higher education trends currently being observed in the world. The trends examined include digitalization of the educational process, introduction of new forms and methods of teaching, new approaches to the organization of the educational process, internationalization of higher education, an increasing role of short-term courses and programs and MOOCs. The survey of Ukrainian university lecturers' opinions was used as a demonstration of the professional readiness for strengthening of the mentioned trends. The survey sample involved 200 respondents of Sumy State University and Sumy National Agrarian University (Ukraine) and is representative in terms of demonstrating the state-of-art in the Ukrainian higher education with the focus on challenges. The research conclusions were delivered under the context of the literature review and the practicing lecturers' feedback analysis. The paper highlights the importance of relevant skills for academic staff to be effectively competitive not only at the international, but also national scale. Among the main findings was that in overall the COVID-19 pandemic influence on the higher education trends may be estimated as positive in terms of qualitative and digital approaches. These include inclusiveness, increased use of additional online resources, raised demand on digital skills both of educators and students, the rocketed value of the live communication with a teacher, etc. The paper also investigates the other impacts of the lockdowns which may be classified as negative and are still under discussion.

Keywords

Higher education. COVID-2019. Pandemic. Universities. Digitalization. Short-term courses. Internationalization.

INTRODUCTION

In recent years, higher education has been experiencing a period of active change. There was a transition to a new era in the society development and, as a result changed the needs of potential consumers of educational services, which affected the value and importance of academic education. There is a need to create a new paradigm of the educational process that will meet the needs of modern social development and will utilize the digital solutions more effectively engaging larger layers of the society, e.g. elderly people or rural residents. For example, the World Bank believes that it is essential to

ensure a balanced network of educational institutions able to satisfy the society needs, to strengthen their transparency, and effective communication with stakeholders, but there is a problem in some countries, such as Ukraine. (Bondar, 2021.) Along with all mentioned, the spread of COVID-19 has created new challenges. However, not all consequences of the pandemic affect the development of education as clear as it may seem at first glance. More and more evidence come to prove that some of the impacts are positive and would have never happened or would happen with a delay if not the COVID lockdowns.

In this study, it is proposed to investigate the main trends describing recent education development through the prism of the positive and negative impacts of the pandemic. These include digitalization of the educational process, the introduction of new forms and teaching methods, new approaches to the organization of the educational process, internationalization of higher education, increasing the role of short-term courses and programs, and open mass online courses. (García-Morales et al., 2021).

In overall, it can be recognized that the impact of COVID on the use of digital tools and approaches in teaching is positive as it is confirmed empirically. For example, M. Gaebel, T. Zhang, H. Stoeber, and A. Morrisroe (2021) indicated that the number of online staff meetings increased by 95%, which automatically means certain improvement of some digital skills, also the use of new teaching methods and tools increased by 92%, and the number of users of the online library increased by 65% (Gaebel et al., 2021). Moreover, various forms of academic activities organization are used according to the type of training sessions, as stated in the report "Student Life During the COVID-19 Pandemic Lockdown: Europe-Wide Insights." (European Students' Union, 2021).

The introduction of new forms and teaching methods is actively taking place in almost all EU universities, except those that have been using them traditionally before the pandemic. The most popular forms are distance learning and blended learning. In European countries, most universities (75%) offered such approaches to studying, and in some countries - 100% of the institutions. (Gaebel et al., 2021) It should be noted that these decisions are also strictly connected to the overall quarantine regime rules in each particular country as in overall the educational services stakeholders (students and parents) mostly would prefer offline studies. At the same time, the question remains about the effectiveness of intensive use of such approaches to improve the quality of education. For example, on one hand a student receives a wider range of sources and tools to use for studies and presentation of the results, on the other hand it brings along technostress, fatigue and worsening of eyesight and overall health conditions. Empirical studies demonstrate that isolation influences emotional balance of students decreasing the motivation for studies sensibly. (European Students' Union, 2021; Zamora et al., 2020) In addition the students' wellbeing, especially of female students, has worsened in terms of their ability to pay the study costs. Some of the students simply do not have a quiet place for themselves to study.

However, 80% of respondents (the same survey) say that the digitalization of the educational process will provide new experiences and competencies for students. (Gaebel et al., 2021) That is easily understandable in the context of the latest notions at the labour markets for the well-paid positions: the white-collar positions are not comprehendible anymore without a candidate to be fluent in digital skills relevant for the profession.

In Ukraine, universities also have their digital solutions and platforms for remote work or access to learning materials. For example, Sumy State University (further – SumDU) offers students distance learning opportunity, as well as the MIX-platform to

study specific disciplines. (University Online Learning Ecosystem, 2021). There is also a solution for external users which is called Examenarium that allows collaboration with external providers of educational services, thus, allowing SumDU teachers to commercialize their knowledge and research outcomes. In addition, there is a fully electronic documents flow within the university due to the big distances between the campus parts. Sumy National Agrarian University (further - SNAU) has developed a more traditional approach – it uses a Moodle platform for these purposes.

In this context it is worth noting that the pandemic has positively impacted the development of platforms for mass open online courses. For example, Prometheus (Ukraine) published statistics stating the number of learners increase from 400,000 in 2020 to 1.5 million at the end of the year, while the number of certificates issued doubled. (Prymachenko, 2021). This last fact may also be explained by the obligatory requirement of professional qualification advancement by many professions while the face-to-face opportunities were restricted. The other interesting explanation is that some people feel the urge to use the lockdown time at home more effectively and to achieve those results that had to be previously postponed due to the need to go to work every day.

It is logical to forecast that under the influence of COVID-19 lockdowns, the potential of such forms and approaches will grow. The universities will find the solutions to diversify the experiences of their learners, including the fully remote studies and even internships. On one hand, this will help to attract a larger audience to the educational process, as well as to commercialize educational products, and on the other hand, it again raises the issue of quality assurance, socializing, assessing the quality and control of students' knowledge (e.g. 60% of respondents in Albania are concerned with this fact (Gaebel et al., 2021) and the formation of some competencies that depend on the practice in real life situations. However, there are solutions offered by some teachers or institutions which try to imitate the real-life situations at maximum to provide the necessary experiences to students: e.g. movie cuts for medical students to determine the diagnosis symptoms, home-delivered individual toolkits to expose a learner to necessary practical skills, personal projects which require real-life experiences to be then virtually combined in one group project, virtual internships and trips with follow-up home assignments related to real-life situations. With the demand from the educators and learners, of course, the range of solutions also grows (learning platforms, tools, approaches to material delivery, interactivity, augmented or virtual reality, etc) along with their quality and economic effectiveness. Nevertheless, despite the creativity of the educators and the variety of digital tools offered, there is a number of subjects that cannot be provided with satisfying set of digitally based solutions. U. Zakharova, K. Vilkova, G. Yegorov (2021) noticed that not all specialties can replace teaching in classrooms with online teaching, in particular this is crucial for many technical specialties and medicine. (Zakharova et al., 2021).

In addition, if to consider this problem in terms of the formation of competencies, at the first glance the challenge is to develop hard skills, yet there is also a not less important task of the formation of soft skills (e.g., teamwork, sociability, leadership, crisis management) which may suffer strongly as well. Similar issues S. Packmohr and H. Brink (2021) highlighted in their research. The authors emphasize that the integration of digital approaches has taken place faster at the technical level. However, the concepts and culture of teaching require qualitatively new solutions. (Packmohr and Brink, 2021).

Some researchers note that the willingness of students to perceive the increase in the degree of digitalization of education positively strongly depends on the development of infrastructure and technological, economic, cultural, and behavioural basis (Mikhaylova

et al., 2021). Thus, the speed and quality of digital approaches implementation vary considerably from country to country and even from region to region (Mikhaylova et al., 2021). Additionally, students from different countries assess the most significant risks differently. For example, A. V. Noskova, D. V. Goloukhova, A. S. Proskurina, and T. H. Nguen (2021) note that Russian students see significant risks in dehumanization, severance of social ties, and possible loss of student status. For Vietnamese students, the most significant risks are mainly related to the fear of the declining quality of education (Noskova et al., 2021), which is also an interesting fact to note under the context of cultural aspect of the problem.

COVID-19 pandemic brought up to the light the two-fold nature of the problem: on one hand there is a challenge of universities technical readiness and students' skills and abilities to study fully online, on the other – the teachers are also subjects of the process who are supposed not only to be able to demonstrate high digital skills, but also to integrate their pedagogical knowledge into the online teaching. Monteiro Angélica Reis (2021) note that there is still a need to improve the skills of teachers in the use of digital technologies in education. These data were obtained in a study of digital literacy's impact on social skills and lifelong learning in Portugal. (Monteiro and Leite, 2021) The recognition of lifelong learning as something normal, popular and beneficial has started to develop recently in Ukraine as well. Especially important are the notions of high interest namely to the qualitative education, leaving behind the formal approach just to get a certificate. Somehow learners started to value their personal time spent ineffectively on online studies.

However, the most unequivocal COVID-19 affected areas are related to internationalization, including cooperation in the field of research and academic mobility. The pandemic has seriously affected all types of (academic and professional) mobility, as well as international enrolment which brought most of earnings to some institutions (decrease of enrolment on 50% in the US (Grothus, 2020)), decrease of going to study abroad on ca 30% from China (AACSB, 2020). The most radical impact (reduction to almost zero) has been on international short-term mobility (including short study missions, research visits, and conferences). Long-term credit mobility (up to one academic year) seems to have decreased by at least one-third, and often by half, in most countries (significantly depending on the epidemiological situation in the countries of departure and destination). Virtual mobility has not become a way out of the situation in most European countries or some individuals (Grothus, 2020). For example, some of the students did not manage to use the opportunities of the Erasmus+ programme simply because they have become ineligible or have graduated. (Grothus, 2020). However, developing countries have used this opportunity to organize and conduct both short-term and long-term virtual mobility programs for teachers and students at all levels. For example, in 2021, 281 students and 91 teachers passed such programs at SumDU (Ukraine), at SNAU – 11 students and 46 teachers (Director's Annual Report SumDU, 2021; Vice Rector's Annual Report SNAU, 2021).

The general trend is negative, as the ability to cooperate and conduct research in overall has decreased, as noted in the De Gruyter Author pulse survey (2020). (Watchorn and Heckendor, 2020) 48% of researchers have produced less than they usually did. It should be also stressed that the decrease is more sensible in the countries with lower income. In addition, scientists have faced financial and psychological difficulties that have reduced productivity. This complex problem is even more intensified by the fact that 86% of respondents said that teaching and counselling students took much longer. More time for these duties leaves less time for others – like research or professional skills and

knowledge advancement. Over 70% of academics define online teaching as the main obstacle to do research. One more aspect is not very much noticed in this context: most of the teachers either have children who should study and thus disrupt their attention, or they are forced to use a single PC/laptop for the whole family needs. Especially this is disturbing for young parents who have extra troubles and challenges.

Thus, **the primary purpose of this paper** is to determine the impact of the pandemic on the digitalization of the higher system of Ukraine and to study the readiness of teachers to effectively reform approaches to the organization of the educational process, in particular in terms of:

- digitalization of the educational process,
- introduction of new forms and methods of teaching,
- new approaches to the organization of the educational process,
- internationalization of higher education,
- an increasing role of short-term courses and programs and MOOCs,
- professional readiness of teachers.

The paper highlights the importance of relevant skills for academic staff to be effectively competitive not only at the international, but also national scale. However, there are other impacts of the lockdowns which may be classified as negative and are still under discussion.

The analysis results of the COVID impact on the higher education trends currently observed in the academic world are presented below.

METHODS

In order to get the comprehensive view of the challenges, the authors designed a mixed-method research: in particular, the literature review was made using the planning, conducting, and reporting phases and covered about 50 available in English, Russian and Ukrainian publications related to the topic (journal and conference papers, research papers, projects and surveys reports, official websites). A review protocol started with the design of the research questions and the search strategy as a response to the set question. After the information analysis and synthesis, the authors made comparison of those with the results obtained during their own survey. This was later supported by the empirical data collection. The collected information was analysed via deductive and inductive approaches to build a comprehensive overview of both the current trends and perceptions of educators working under the COVID pandemic conditions.

The survey sample involved 200 respondents of Sumy State University and Sumy National Agrarian University (Ukraine) and is representative in terms of demonstrating the state-of-art in the Ukrainian higher education. It was conducted in the last months of 2020, after which a month was spent for the literature review and one more month for summing up the empirical observations of educators' experiences throughout the lockdown.

The survey was launched via a Google Form manager and consisted of 15 questions. The form was disseminated among the academic staff of two universities. The questions covered were the following:

1) Has the Covid-19 crisis led to other changes at your institution both in administrative and teaching areas?

2) How would you describe your institution's position towards digitally enhanced learning and teaching?

3) Do you agree or disagree with the following statement: The educational process became more inclusive after shifting online.

4) Is digitally enhanced learning considered in the internal quality assurance process at your institution?

5) Which administrative levels provide support to the development of digitally enhanced learning?

6) What are the top 3 enablers of digitally enhanced learning and teaching at your institution?

7) What are the top 3 barriers to digitally enhanced teaching you face?

8) Does your institution offer the following teaching\delivery modes?

9) How would you describe the professional recognition at your institution of the short courses (non-degree) where you have received certificates, micro-credentials or badges?

10) What are the main impacts of digitally enhanced learning and teaching forced during the COVID pandemic, that have been observed by you?

11) Does your institution offer MOOCs or other forms of open learning?

12) What is the main motivation for your institution in offering MOOCs and open learning?

13) What measures have been useful for improving digitally enhanced learning and teaching at your institution?

14) Do you think the internationalization processes have enhanced within your institution during the COVID pandemic?

15) Which of the following infrastructures can students or teachers access at your institution?

The answers to these questions are representative in terms of demonstrating the issues range and the state-of-art of online teaching and learning of Ukrainian universities. The analysis results were presented to the several groups of teachers including those who teach to foreign students and the obtained conclusions were confirmed by 95,4%. The survey results were enriched with the empirical experiences analysis and the literature review.

RESULTS

According to the survey (Fig.1), conducted in two Ukrainian universities among the teachers including those training foreign students, the COVID-19 has seriously influenced the administrative and teaching situations in the institutions. Thus, it motivated the administration to review the plans for updating the institution's policies on remote work (62%), for enhancing digital capacity in the future (75%) as well as to use more virtual staff meetings (92%). The teachers were also massively pushed to explore new tools for communication and collaboration and new ways of teaching to stay effective and engaging for learners, however, they admitted that they had less time for personal development, studying and professional advancement. Therefore, to stay effective in their

teaching the educators had to spend more of their personal time for professional advancement, which influenced their family and social relations, as well as health. Even though 95% of educators stress on an increased number of opportunities for studying and professional advancement, the time spent on communication online with students consumes their ability to use them.
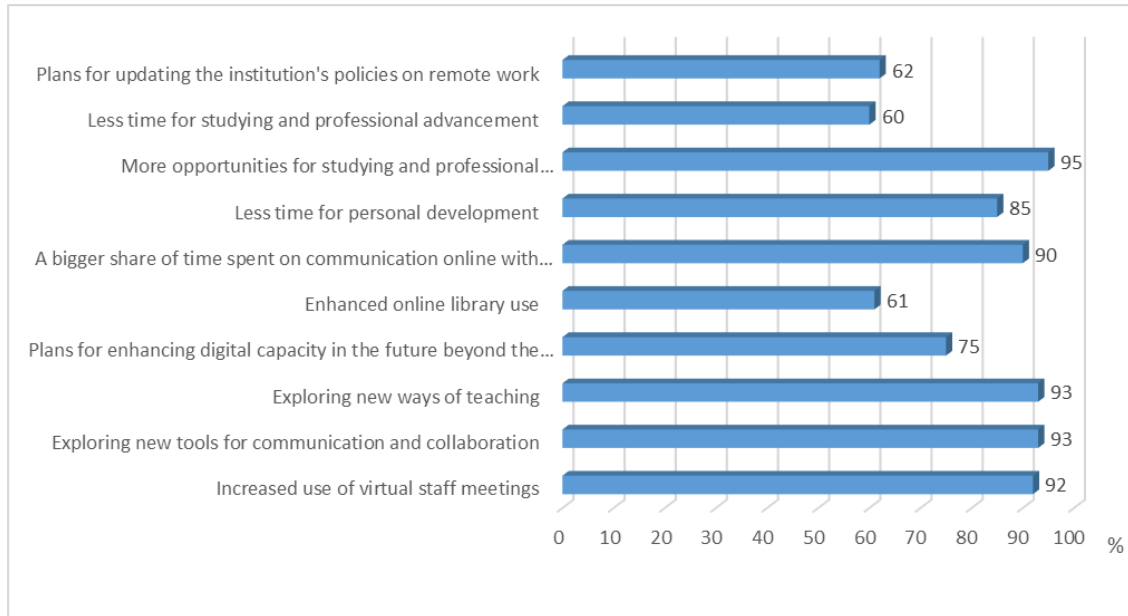

Figure 1: Main changes in studying process caused by pandemic. (Source: Own)

It is interesting to note, despite certain personal inconveniences, 40% of respondents noted that their institutions see the digitally enhanced learning and teaching fully beneficial. Faculty and departments support their development (55%) (Fig. 2). There is a perception that digitalization is a feature of progress that can not and should not be avoided and COVID restrictions somehow "helped" to embrace it even faster than before.
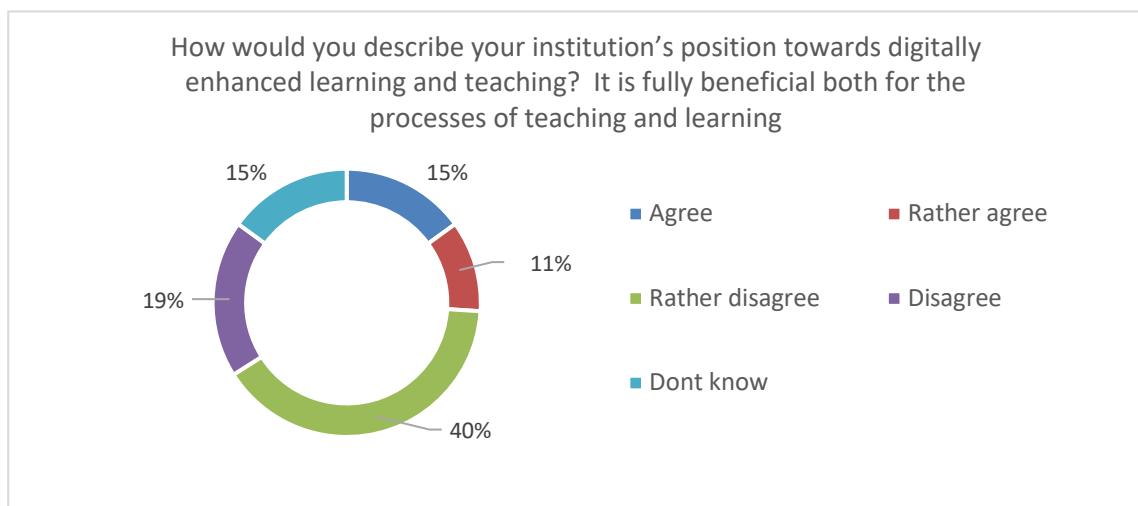

Figure 2: Institutions position and administrative support of digitally enhanced learning (Source: Own)

40% of respondents also rather disagreed that the educational process became more inclusive after shifting online. This may be explained by the level of wellbeing of the students, especially those coming from the disadvantaged families (living in one room

with the rest of the family, one device for several family members, bad Internet connection, etc) or rural areas. Still there is an advantage of availability of the educational material online 24/7 and the assignments that do not require physical presence in the class, especially for students with fewer opportunities, which are, however, very few in most Ukrainian universities.

As the quality assurance system is under the process of development in most of the Ukrainian universities, 45% of teachers responded that a special approach for digitally enhanced learning was considered in the internal quality assurance process at their universities (Fig. 3).
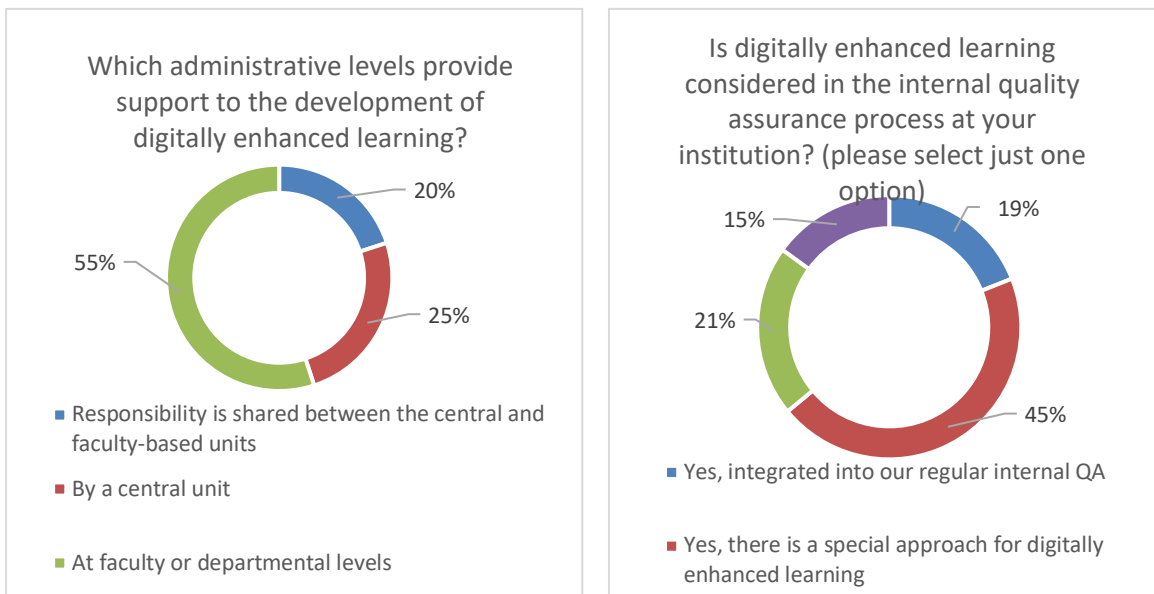
Figure 3: Digitally enhanced learning and quality assurance (Source: Own)

Both universities appeared to be well equipped for the challenges of the remote studies (Fig 4.), as they both provided wireless Internet to the students and teachers, as well as
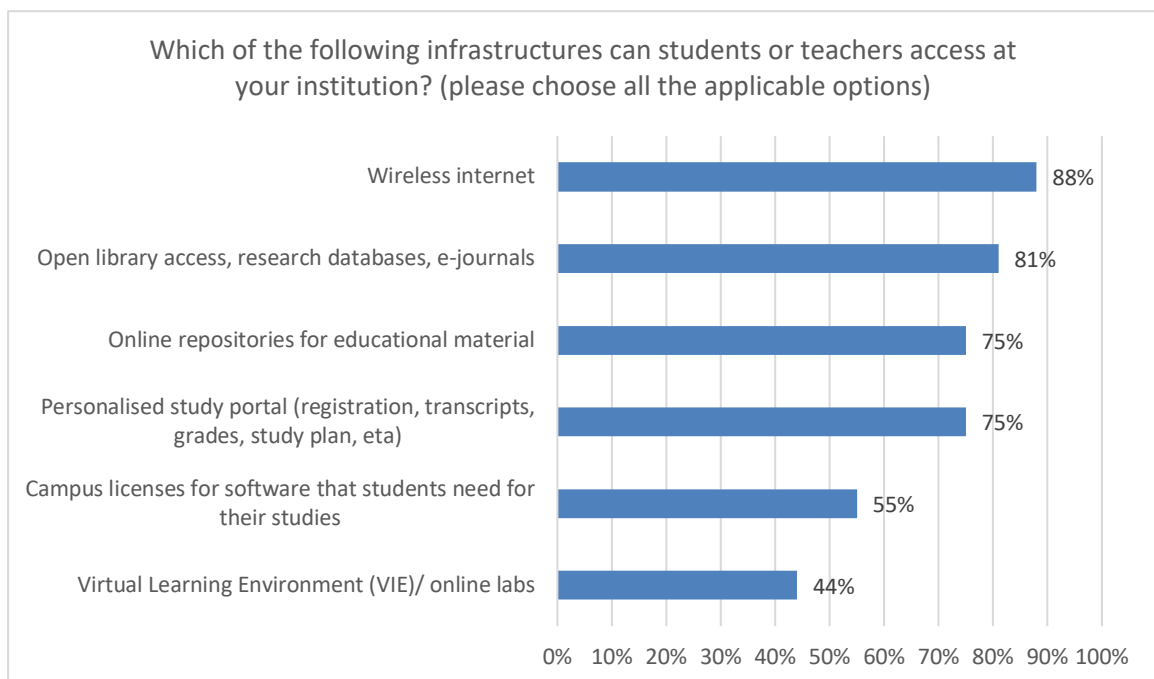
Figure 4: Digitally enhanced learning and quality assurance (Source: Own)

a personalised study portal offering the services of registration, transcripts, grades, study plan, etc. 75% of the teachers appreciated the use of online repositories for educational material and 81% - of open library access, research databases, e-journals.

It is interesting to note that the top enablers of digitally enhanced learning and teaching were defined as follows (Fig. 5):

- Proactive participation of staff and students (71%).
- Professional development and training of teachers (64%).
- Projects with other higher education institutions (57%).
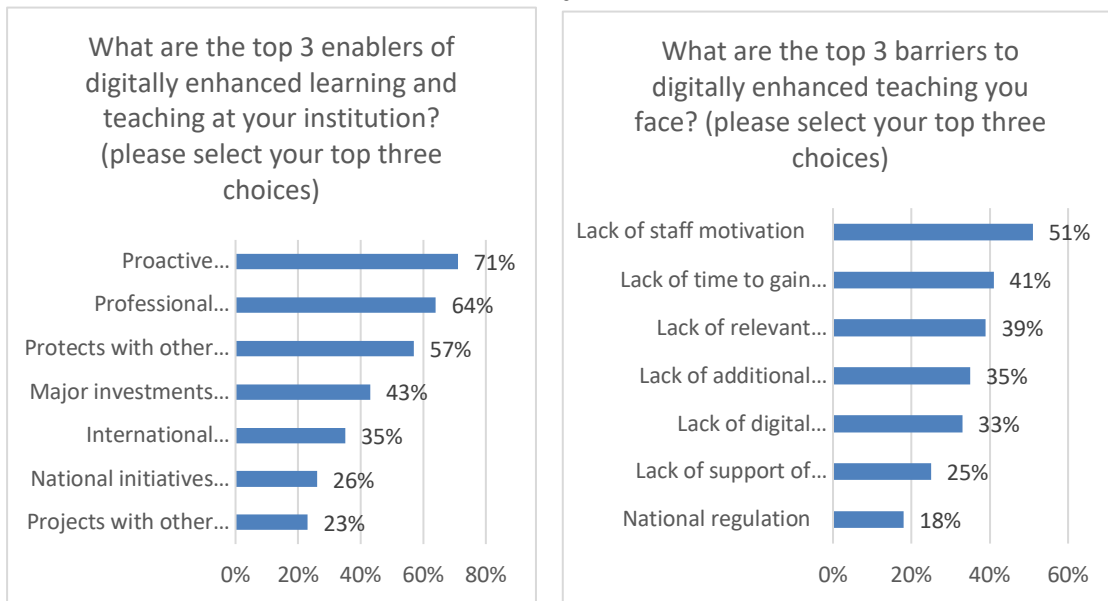

Figure 5: Main enablers and challenges of digitally enhanced learning (Source: Own)

The proactive behavior as well as the opportunities for professional development or travelling were limited during the lockdowns, however, the digital technologies allowed to keep the contacts and the project running. The face-to-face events were turned to online, which somehow even increased the number of attended events of professional interest by proactive teachers and students. This happened due to a simple fact of economizing time and money for travelling.

The 52% of respondents have also marked that they rather agree with the statement that the internationalization processes have enhanced within their institution during the COVID pandemic, mostly focusing on international cooperation opportunities development. This includes the participation in international online events that expand the chances to find a partner, making the meetings affordable and cheaper, and more common - being held online. Another 25% stressed that travelling restrictions made it challenging to cooperate with foreign partners, yet possible even though it took more efforts.

The important comment here is that both institutions representatives stated that their universities provided virtual student mobilities, MOOCs and other forms for open learning, and online professional advancement courses for teachers. On the other hand, the teachers named the following main impacts of digitally enhanced learning and teaching forced during the COVID pandemic, that observed:

1) It encourages the revision of teaching methods and innovates pedagogies (87%).
2) It dramatically raised the value of the live communication with me as a teacher for students (74%).
3) It challenges learning and teaching in foreign languages (69%).
4) It makes learning and teaching more flexible, regarding time and place (49%).

As both universities recognise the use and applicability of MOOCs and other open learning resources, the main motivation for them to offer these resources is (Fig. 6):
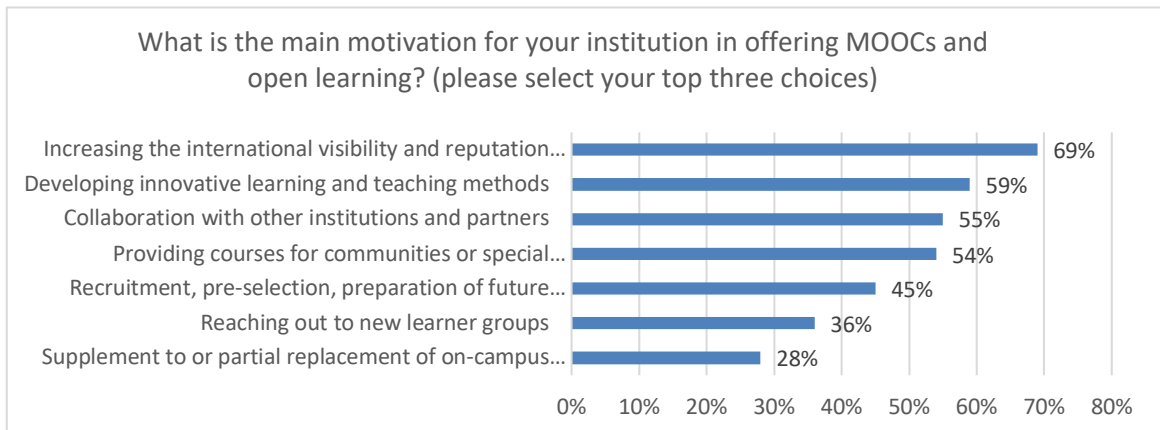

Figure 6: Motivating factors for MOOCs usage (Source: Own)

increasing the international visibility and reputation of the institution, developing innovative learning and teaching methods, collaboration with other institutions and partners, providing courses for communities or special stakeholder groups.

The respondents named the top barriers to digitally enhanced teaching as (Fig.5):
- Lack of relevant digital skills (39%).
- Lack of time to gain relevant digital skills (41%).
- Lack of staff motivation (51%).

The lack of digital skills relevant for teaching fully online is not the problem valid only for Ukrainian teachers, it started to be discussed right after the middle of the first lockdowns. This refers as well to the next two identified barriers with the rare exclusion of those universities which manage to organize the good balance between the teaching duties of the teachers and the others like research or organisational/administrative work.

As a response to the challenges the teaching staff and students face in terms of digitally enhanced learning and teaching, both universities take the following measures (Fig. 7): 56% of respondents marked digitalization of the educational process and supporting it with relevant solutions (e.g. schedule of classes, digital environment for communication with students, etc); 46% - national or international training opportunities for staff in charge of digital transformation; 58% - peer exchange within the institution by enabling staff to learn from each other.
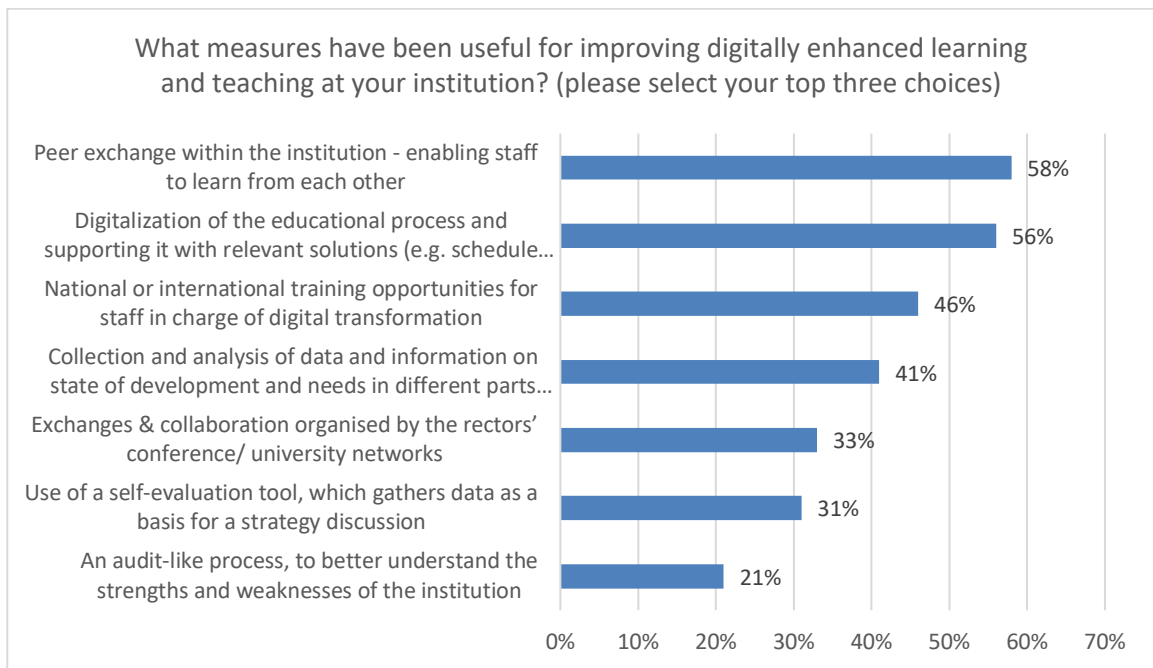
Figure 7: Measures for improving digitally enhanced learning (Source: Own)

However, in terms of professional recognition of their digital skills advancement, 78% of respondents (Fig.8) admitted that there is growing demand for the short courses (non-degree) where they can get certificates, micro-credentials or badges, as they are listed when the study program is accredited by the state agency (69%). The only specifics here is that they need to be strictly related to the research topic of interest or teaching skills (82% of responses).
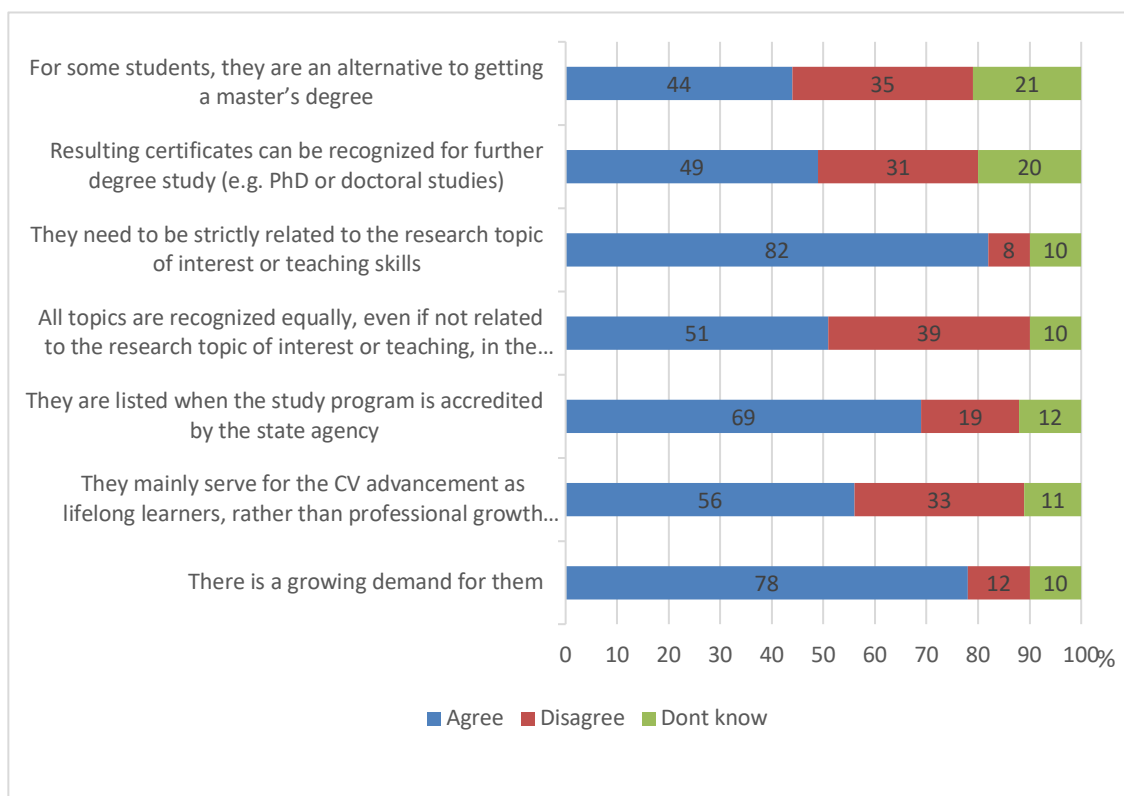

Figure 8: Recognition of studying results (Source: Own)

The presented above statements were supported as well by the literature overview provided in the paper. All the mentioned above conclusions about the state-of-art of digital teaching and learning in Ukraine reflect the overall trends present in the world, which were presented in the literature overview above. There is a little specifics about the cases of selected two Ukrainian universities.

DISCUSSION AND CONCLUSION

The article is devoted to the review of the COVID impact on the higher education trends currently being observed in the world, which are: digitalization of the educational process, introduction of new forms and methods of teaching, new approaches to the organization of the educational process, as well as internationalization of higher education and an increasing role of short-term courses and programs and MOOCs. Basing on the literature overview, empirical studies, and the survey of 200 Ukrainian university lecturers' opinions the following conclusions were made:

1) in overall the COVID-19 pandemic influence on the higher education trends may be estimated as positive in terms of qualitative and digital approaches.

2) In terms of inclusiveness: the full shift to online teaching led to a twofold effect in this regard. The students from socially disadvantaged groups appeared to be marginalized even more because of Internet speed, accessibility, laptops or PCs availability, comfortable conditions for studies, etc. The students with psychological issues and who are socially alienated got excluded even more. The students with fewer opportunities but living in families that are able to provide them with resources, were able to use the advantage of remote studies.

3) The increased use of additional online resources had also a twofold impact as on one hand it enriched and diversified the offered learning material, on the other hand it added to the technostress and technological fatigue, as well as challenges to the eyesight of the users, both teachers and students.

4) The need to use more online resources of a diverse nature led to the raised demand on digital skills both of educators and students, which has to be satisfied either by the home university or by external institutions.

5) As a consequence, the teachers in particular need additional time for self-education and further professional improvement which became a challenge under the COVID lockdowns circumstances. The need to stay fully online has rocketed the value of the live communication with a teacher. Because of personal specifics, extra digital skills needed or other reasons, the students needed more attention from the teacher, which took away the time from their personal or professional development.

To sum up, these and other impacts of the lockdowns presented in the paper, mostly may not be classified purely as negative or positive, and some are still under discussion. Each institution came to the conclusions that it needs to find the balance between these effects using its management and digital solutions available within its infrastructure and specifics. The survey is representative in terms of demonstrating the overall trends in the Ukrainian higher education as they later coincided with those presented in the research papers or other reports, as well as with the empirical studies.

The research outcomes highlight the importance of obtaining the relevant skills by academic staff to be effectively competitive not only at the international, but also national scale. As well as it stressed on the importance of the home university full administrative, managerial, and digital support of the teachers' efforts and initiatives in this regard. The research findings may be applied by the relevant university managers to improve the online education process in their institutions not only under the COVID lockdowns conditions but also for the better organization of blended or extramural studies.

It is also worth noting that comparing the survey results obtained from Ukrainian respondents, we can conclude that they slightly differ from similar surveys in other countries, e.g. the USA. Interestingly, their justification, in addition to significant differences in economic development and social preconditions may also lay in cross-cultural features of models of organizational behaviour. For example, according to Hofstede's model, Ukraine is a more collectivist and paternalistic culture. Thus, a greater degree of independence in studying can decrease the overall level of motivation to learn. In addition, in collectivist cultures, social interactions have a much more significant impact on feelings of psychological well-being. In general, a reduction of social contacts on a regular basis can lead to a deterioration in the development of emotional intelligence. In long term perspective digitalization of studying can affect the features of organization behaviour and culture peculiarities. Thus, the study of cross-cultural features regarding the effectiveness of digital technologies in education will improve approaches to the organization of educational activities and can become the basis for future research.

REFERENCES

Bondar M., 2021. The network of universities in Ukraine is inefficient and creates problems - World Bank. *Interfaks-Ukraina*. [online] Available at <https://education.24tv.ua/ru/set-vuzov-ukraine-nejeffektivna-sozdaet-problemy-ukraina-novosti_n1604471> [Accessed 13 May 2021].

García-Morales VJ, Garrido-Moreno A and Martín-Rojas R., 2021. TheTransformation of Higher EducationAfter the COVID Disruption: Emerging Challenges in an Online LearningScenario. Front. Psychol. 12:616059. [online] Available at <doi: 10.3389/fpsyg.2021.616059> [Accessed 10 May 2021].

Gaebel M., Zhang T., Stoeber H., Morrisroe A., 2021. Digitally enhanced learning and teaching in European higher education institutions. [online] Available at < https://www.slideshare.net/EurUniversityAssociation/digitally-enhanced-learning-and-teaching-in-european-higher-education-institutions-243357949?utm_source=flexmail&utm_medium=e-mail&utm_campaign=euanewsletter22021704euanewsletter22021un20210226t0842 41473z&utm_content=11%20digihe%20%20digitally%20enhanced&fbclid=IwAR2 FoCCggOLUXXTNrE6z96-5vFXWONjPPyaAIGMBadYtNAc7avUkysFqQ2w> [Accessed 4 May 2021].

Student Life During the Covid-19 Pandemic Lockdown: Europe-Wide Insights. 2021. Report. Brussels, March 2021 by European Students' Union (ESU). [online] Available at < https://www.esu-online.org/wp-content/uploads/2021/04/0010-ESU-SIderalCovid19_WEB.pdf?fbclid=IwAR2Nm0p8o8U2HHi-SJ9hWTYqnz3QQPI-hCqWKt_pARuyoNGO-bRpv2-e8Hc > [Accessed 10 May 2021].

Zamora O., Christianson S., Khvorost T., 2020. Personalised Learning Against Technological Fatigue. *DisCo2020-Online-Education-in-the-Age-of-Covid-19-15th-conference.* p.130-143. [online] Available at https://disconference.eu/wp-content/uploads/2022/02/DisCo2020-Online-Education-in-the-Age-of-Covid-19-15th-conference-reader.pdf > [Accessed 30 August 2021].

Zakharova U., Vilkova K., Egorov G., 2021. It Can't Be Taught Online: Applied Sciences Students during the Pandemic. *Voprosy obrazovaniya*, (1 (eng)), 115-137. [online] Available at <doi: 10.17323/1814-9545-2021-1-115-137> [Accessed 12 May 2021].

Noskova A., Goloukhova D., Proskurina A*.,* Nguen T., (2021). Digitalization of the Educational Environment: Risk Assessment of Distance Education by Russian and Vietnamese Students*. Higher Education in Russia*. [online] Available at <https://doi.org/10.31992/0869-3617-2021-30-1-156-167 > [Accessed 10 May 2021].

Monteiro A., Leite C.,2021. Digital Literacies in Higher Education: Skills, Uses, Opportunities and Obstacles to Digital Transformation. *RED. Revista de Educación a Distancia.* Núm. 65, Vol. 21. Artíc. 6, 08-01-2021.
[online] Available at <https://www.semanticscholar.org/paper/Digital-literacies-in-higher-education-Monteiro-Leite/b160932866c501e2d559cdef29108cb1c3dcef59#citing-papers > [Accessed 10 May 2021].

University Online Learning Ecosystem., 2021. [online] Available at < Elearning SumDU> [Accessed 10 May 2021].

Prymachenko I., 2021 Results of 2020 for Prometheus. Facebook.com/primachenkoonline. [online] Available at <https://www.facebook.com/primachenkoonline/posts/3425985510788993 >[Accessed 29 December 2020].

Watchorn D., Heckendor E., 2020. Busier than Ever and Burned Out – New Research Reveals the Realities of Publishing in a Pandemic. *Academia & Publishing*. [online] Available at <https://blog.degruyter.com/busier-than-ever-and-burned-out-new-research-reveals-the-realities-of-publishing-in-a-pandemic/?fbclid=IwAR3HuMHFfBmRyA4Dj3fYk43d3ZXSqzbk6LQKAlNH3SsjBCGNUFztzcaCIhU > [Accessed 21 December 2020].

Grothus U**.**, 2020. Internationalization and International Academic Mobility Post-Covid-19. *Academie Cooperation Association*. [online] Available at < https://aca-secretariat.be/wp-content/uploads/2021/03/FINAL-ACA-_THINK-PIECE_-COVID-19-U.-Grothus.pdf >[Accessed 14 August 2021].

Director's Annual Report, 2021 [online] Available at < https://biem.sumdu.edu.ua/wp-content/uploads/2022/01/Prezentatsiia_BiEM_Zvit_2021.pdf > [Accessed 14 December 2022].

Director's Annual Report SNAU, 2021 [online] Available at < https://snau.edu.ua/wp-content/uploads/2022/01/%D0%97%D0%B2%D1%96%D1%82_2021.pdf > [Accessed 29 December 2022].

Packmohr S., Brink H., 2021. Comparing Pi e- and Intra-C'ovid-19 Students' Perception of the digitalization of Higher Education Institutions. *7th International Conference on Higher Education Advances (HEAd'21)* Universität Politecnica de Valencia, Valencia, 2021. [online] Available at < https://www.mendeley.com/reference-

manager/reader/4a77b8d7-3922-3285-903b-a1a9ee226508/3690a21b-a5bf-edff-5ced-ed4c58f23ddf >[Accessed 10 May 2021].

Mikhaylova A., Mikhaylov A., Hvaley D., 2021. Receptiveness to Innovation During the COVID-19 Pandemic: Asymmetries in the Adoption of Digital Routines. *Regional Studies, Regional Science*. Volume 8, 2021 - Issue 1. [online] Available at < https://doi.org/10.1080/21681376.2021.1962400 > [Accessed 31 August 2021].

AACSB. 2020. [online] Available at < https://bized.aacsb.edu/articles/2020/june/covid-19-and-the-future-of-international-student-mobility [Accessed 15 December 2020].