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ONLINE LEARNING AT HIGHER EDUCATION INSTITUTIONS IN UKRAINE: ACHIEVEMENTS, CHALLENGES, AND HORIZONS

Abstract. Online learning has shown considerable growth over the last decade, as the Internet and education were combined to serve millions of people to gain new skills. This paper outlines benchmarking studies of the current online learning trends. We have demonstrated the weak points in organizing and conducting online classes, identified the shortcomings of excessive digitalization of education, and suggested several problem-solving alternatives. We strongly believe that the appropriate arrangement of distance learning is impossible without getting feedback from all participants of the learning process. Our study represents the benefits and challenges of distance learning noticed by students. The given study is the initial stage of the multi-level research. To receive a qualitative and valid result, we developed a questionnaire with cross-sectional questions, which allowed analysing each question from multiple perspectives, namely we were interested in students' opinion on the following issues: transition to entirely distance learning; the role of a teacher in distance learning; the influence of distance learning format on the education quality (perception, understanding, learning, and mastering the material); difficulties and challenges. After examining the data obtained, we have managed to single out the following aspects: the most advisable forms of ICT use in the learning organization; balance between learning workload and communication between teacher and student; co-ordination within the institution to avoid students' overload, which leads to demotivation and physical fatigue. The findings of this study indicate weak aspects in the organization and use of ICT in education. Based on these findings, we offered strategies for successful distance and blended learning. Besides, our findings can be taken into account when organizing blended learning.

Keywords: open learning; distant learning; open learning and research environment; cloud computing.

1. INTRODUCTION

The COVID-19 pandemic has deeply affected the education sector both in Ukraine and globally. Educational units have gained unique experience in arranging distance learning in this challenging situation. During the quarantine period, university staff have replenished their arsenal of teaching tools for distance learning, trying to find the best options for solving specific educational problems. The pandemic outbreak forced Ukrainian educators to master new tools, methods, and approaches to learning, modify and customize them to specific learning tasks.

Globally, the issues related to the organization of distance learning in force majeure have come to the fore. UNESCO is currently launching a number of projects to support the Global Education Coalition (https://en.unesco.org/covid19/educationresponse/globalcoalition), which

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would provide continuing and high-quality distance education despite challenges and force majeure.

The problem statement. It is worth noting that alternative learning forms were developed and introduced in the educational process long before the COVID-19 crisis. Thanks to that, educators have a certain set of ready-to-use online tools.

At the same time, we should admit that despite the existence of a wide array of methods, resources, and technologies of distance learning, the effect of their introduction was not tested on a massive *scale*. The current situation made it possible to collect experimental data that would shed light on the effectiveness, feasibility, and prospects of using these technologies on a large scale, for different groups of students. In our opinion, it will help to identify potential limitations and weaknesses, as well as find ways of their improvement.

In the light of recent events, we conducted a study aimed at receiving Ukrainian students' feedback on distance learning, which will assist in developing a set of recommendations for improving the distance learning organization, including the enhancement of online platforms and tools.

In order to summarize, analyze, and evaluate the results, it was necessary to carry out benchmarking studies of the achieved level of ICT in open learning, assess the most promising ways of introducing new technologies, and then compare the given results with the data on mass implementation. Taken together, these findings highlight a significant role of various factors (psychological, ergonomic, security, etc.) that affect the ICT implementation, as well as allow taking into account students' feedback to discover the most appropriate ways to improve the current situation and take full advantage of the implementation and use of existing and emerging breakthroughs in ICT.

The analysis of the recent research and publications. There is a considerable amount of literature on distance learning that focuses on developing platforms for distance education, ways to launch and enhance online learning, information security issues, and the negative effects of technology on students' physical and mental health.

O. Kuzminska, M. Mazorchuk, N. Morze, V. Pavlenko, A. Prokhorov [1], K. Slovak, S. Semerikov [2], Yu. Nosenko, A.Suhih [3] and others draw attention to diverse psychological and pedagogical aspects of the formation of a personalized educational and scientific environment. The psychological factors of internet addiction among adolescents have been widely investigated by S.E. Caplan 2001 [4]; M.D. Griffiths, 2000 [5]; N.A Shapira,1998 [6]; K.S. Young 2004 [7]; Ehorov O.Yu., & N.A.Kuznetsova & E.A. Petrova, 2005[8]; Lytvynenko O.V. [9] etc. The academic integrity issues in distant learning have been considered in [10].

Many studies have been published on the positive aspects of the use of open and distant learning technologies. Some scholars evaluated the effectiveness of ICT applications and the use of cloud computing in the learning process. In particular, R. Lakshminarayanan, 2013 [11], S. Svetsky & O. Moravcik, 2016 [12], I. Larsen-Ledet, Henrik Korsgaard, 2019 [13], O. Glazunova, 2017 [14], M.Popel, 2018 [15], and others studied problems, trends, and promising ways of introducing these emerging technologies into the educational process.

In recent years there has been growing interest in issues of digital readiness and its effects on higher education students' socio-emotional perceptions in the context of distant learning [16], as well as the issues of data security in the online environment [17]. Theoretical and methodological principles of modeling and designing information and educational environment of open learning have been gaining much attention among Ukrainian researchers (V. Yu. Bykov, M. I. Zhaldak, A. F. Manako, L. F. Panchenko, S. O. Semerikov, O. V. Spivakovskyi, and others.). For instance, V. Yu. Bykov [18] reported on designed models of organizational systems of open learning, models of an entire information educational space; methodological systems of electronic distance learning; models of the education management

system at its various organizational levels; modern teacher training at institutions of higher pedagogical education, etc. These works provided methodological background for further investigation of modelling and implementation of the cloud-based learning and research environments as the current stage of development of the open education systems. V.Bykov and M.Shyshkina considered the notion of the university cloud-based open learning and research environment and its applications [19], M.Marienko (M.Popel) discussed the use of the CoCalc cloud service for teachers training [15], different aspects of cloud computing application for educational systems design were described by O.Glazunova, O.Kuzminska [14], [20], M.Semerikov, K.Slovak, Tryus Yu. [2] and others. The issues of augmented and virtual reality in the context of open learning were considered for example by Tkachuk V., Yechkalo Y., Taraduda A., Steblivets I. and others [21].

Within the cloud-based setting the research and educational environment gains such innovative features as openness and flexibility of its structure and functions that are intrinsic for the cloud-based approach [22]. The cloud-based environment gives much more opportunities, facilities and instruments to meet most diverse learning and research needs of its participants. Still, the more recent evidence [3] reveals the issues of ergonomics in introducing ICT into the learning process. Also the issues of the cybersecurity and media literacy become crucial at the current stage of open learning systems development and this trend of research comes to the fore [23], [24], [25], [26].

Emerging technologies are gradually becoming an integral part of the education system. N. Sansone, D. Cesareni [27] emphasize the need to consider learning analytics to estimate the efficiency of its use.

As stated by researchers, nowadays teachers and students in Ukraine have enough skills for organizing e-learning using various current communication tools [28]. Though these skills may differ, the given fact should be taken into consideration while developing a new approach to blended learning methodology (methodology of co-education) [29], [30], [**Error! Reference source not found.**]. The investigation of the innovative methods of design and application of the virtual learning and research environments becomes crucial within the urgent need of their massive introduction.

In 2018, the Institute of Information Technologies and Learning Tools became a partner of the V4 + Academic Research Consortium Integrating Databases, Robotics, and Language Technologies. The V4+ACARDC project resulted in building a complex system of IT support that includes the technological network infra-structure and the didactics methodology on how to create educational packages and correspondent learning materials and multi-lingual support. A cloud-based platform was exploited for sustainable information support of the project life cycle according to the jointly determined aims and information technological integration of the project management. The platform proved to be suitable to meet these needs and to perform smoothly and intuitively [19].

The abovementioned project helped to work out a set of recommendations for the adaptive cloud-based systems used to support the open learning processes. They emphasize the urgent necessity:

- to introduce cloud services of open science, in particular, services of European research infrastructures, into the facilities and services that form adaptive cloud-oriented systems in a pedagogical university; scientific and educational networks; cloud data collection, submission, and processing services, as well as the services of the European Open Science Cloud;
- to use adaptive content management tools based on a public cloud, for example, WPadV4 tool;
- to implement the methodology for supporting the adaptive knowledge-based processes of creation and use of e-learning resources and other kinds of services;

- to include the components of the educational institution's corporate and public clouds (databases and data collections, adaptive content management systems, cloud-based office software applications, specialized software training tools, language processing tools, educational robots, and others) as well as services of publicly available information systems (scientific-educational information networks and infrastructures, cloud-based educational and scientific services) into teacher training;
- via a shared interface to provide access to environmental assets and reliable open source software; to increase temporal and spatial mobility;
- to form a unified learning environment, whose content is developed during the learning process.

At the same time, it is worth mentioning that the development and improvement of alternative forms of work should be based on feedback from all participants of the learning process. A recent review of the literature has found few examples of studies in Ukraine devoted to specific features of distance learning from students' viewpoint.

In general, research on methods and technologies of open learning was initially aimed at a higher level of adaptability of these systems, personalization, and individualization of learning, improving the use of ICT in the learning process, in particular through the introduction of cloud technologies. The latter provide a higher level of scalability, flexibility, and capacity of ICT infrastructure to support educational systems. There are opportunities for much higher flexibility in terms of scalability and computer capacities of ICT infrastructure of educational systems and also functional consistency of its educational content. As the above literature review demonstrated, the introduction of advanced methods, technologies, and resources of open learning, in particular, based on cloud-based platforms and services, is quite widely studied from both technological and pedagogical perspectives.

However, due to the unprecedented health crisis, the mass introduction of distance learning technologies brings to the fore the issues of feedback analysis and benchmarking studies, since currently there is a great opportunity to assess the development of pedagogical systems and technologies in this field.

Hence, students' opinion seems extremely important in terms of identifying the psychological and pedagogical aspects of the given issue and thus requires careful consideration. The data obtained will be a useful aid for further research, technological and pedagogical improvement of the learning process.

The unresolved aspects of the problem. We assume that the development and use of services and technologies of online education have a positive impact on its quality and accessibility to promising ICT. At the same time, the wide-spread use of online learning technology draws our attention to the challenges that can be called the dark side of the digital revolution. These challenges are associated with both negative health and emotional consequences caused by the constant exposure to the monitor and the loss of live communication skills, as well as the quality of education, in the context of academic integrity, compliance with which is more difficult to control online. Thus, to obtain more valid results, we had to develop a number of research questions, which address the weaknesses in an online learning organization and their dependence on external (situation, circumstances) and internal (personal) factors.

The purpose of the article is to undertake the benchmarking studies of the current online learning trends to find out their strengths and weaknesses, for further use of the received data to improve the organization of open and distant learning in the higher education institutions in Ukraine. Besides, it is intended to consider the existing methods of open learning practices for further development of the guidelines for improving open learning within the pedagogical system of higher education in Ukraine.

2. THE RESEARCH METHODS

The study is based on the methods of theoretical analysis, generalization, and systematization of scientific facts about the pedagogical processes and phenomena, as well as the results of the survey. The study was carried out within the planned research undertaken in the Institute of Information Technologies and Learning Tools of NAES of Ukraine and G. S. Kostyuk Institute of Psychology of the NAES of Ukraine.

To interview students, we developed a questionnaire, whose questions were targeted at pointing out subjective and objective factors that affect learning. They were deliberately formulated to be examined from multiple perspectives and get a quality and valid result that will improve approaches to online learning and make technical tools for distance or blended learning more user-friendly according to the HCI approach (human-computer interactions).

3. THE RESEARCH RESULTS

Thus, we conducted a study aimed at receiving feedback on distance learning from students of Ukrainian universities, which will assist in developing recommendations for improving the organization of distance learning, including the enhancement of online platforms and tools.

At the same time, the widespread use of online learning technology indicates the importance of the challenges that can be called the dark side of digitization. These challenges are connected with both negative health and emotional consequences caused by the constant exposure to the monitor and the loss of live communication skills, respectively, as well as the quality of education, whose compliance with academic integrity is more difficult to control online [10]. Thus, to obtain more valid results, we had to develop a number of research questions, which address the weaknesses in online learning organization from students' perspectives.

Furthermore, to receive a qualitative and valid result, we designed a questionnaire with cross-sectional questions, which allowed examining each question from multiple perspectives.

We were interested in the students' opinion on the following issues:

I. Transition to entirely distance learning;

II. The role of a teacher in distance learning;

III. The influence of distance learning format on the education quality (perception, understanding, learning, and mastering the material).

IV. Difficulties and challenges.

Analysis and correlation of the aforementioned issues made it possible to find out weaknesses and strengths of learning from the student's viewpoint. It will be a cornerstone for planning and arranging online courses during the probable quarantine in the future.

The initial sample consisted of 223 students from the Kyiv-Mohyla Academy, Borys Hrinchenko Kyiv University, Kherson State University, and National University of Life and Environmental Sciences of Ukraine. The main online learning platforms used by the survey participants were Google Classroom, Microsoft Teams, Moodle, and Zoom.

The first survey block was intended to determine the students' attitude to distance learning and their readiness for self-study.

I. As for the prospects of future learning format, 23.5% of the respondents had a strong desire to transfer to a full distance learning, while 11.8% would like to return to in-person connections in offline class, 64.7% considered blended (41.2%) or flipped learning (23.5%) to be the most effective way of learning in the future (Fig. 1).

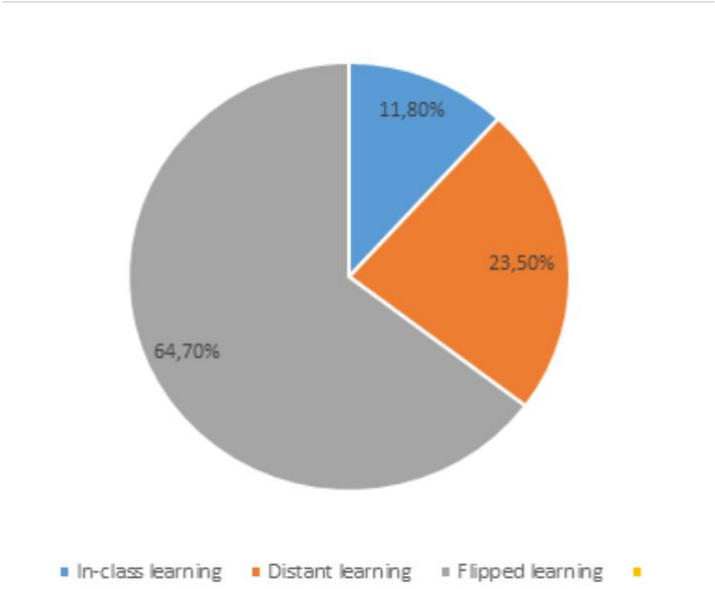

Figure1. The most effective learning format from students' viewpoint

It should be noted that based on previous experience, i.e. the 2020 spring-summer quarantine, 23.5% of students understand distance learning as online collaboration with a teacher, as evidenced by the following data. The most effective distance learning format during quarantine was (a) distance learning with teachers' consultations (47.2% of responses), (b) self-study based on online lectures (37.1%), (c) the combination of the abovementioned formats (2 %). 13.7% of students preferred working individually.

II. As for the educator's role in distance learning, we correlated the answers to various questions, which allowed us to get a valid average result.

1) Summarizing preliminary data on students' readiness for distance learning, we can say that 86.3% of the respondents consider distance learning to be effective only under the teacher's mentorship.

2) The next survey block was aimed at both singling out students' attitude to distance learning (1), and determining how difficult it was to learn without the direct assistance of a teacher (indirect questions). We divided the questions according to the type of learning materials: theoretical and practical, and found out how difficult it was for students to work in the new conditions.

When speaking about carrying out practical work, 39.2% of the students admitted that in the future they would prefer to work in pairs with a teacher. 41.2% reported that they could perform practical tasks individually, but following the teacher's instructions. Approximately a fifth of the participants (19.6%) commented that they could perform practical tasks using theoretical material. Thus, 80.4% of the students would rather work under the teacher's guidance.

As for mastering theoretical material, 37.3% of the respondents said that in the future they would like to work in pairs with a teacher, 45.1% noted that they can master the theoretical material on their own, but with the support of the teacher, 17.6% admitted that they could work individually. That is, 82.4% of the students would rather collaborate with a teacher.

3) The third survey block helped to find out the role and importance of teacher's consultations.

On average, the growth of the value of the group and individual consultations was mentioned by 62.8% of the students. The value of teacher consultations remained the same for 34.3%. Notably, 2.9% did not follow the teacher's instructions during distance learning. (*To

calculate the average for the second question, we will use the indicator (62.8%), which clearly shows the increase in the value of consultations for students).

Thus, the analysis and correlation of data (I, II) manifested that on average 78% of the respondents admitted the leading role of the teacher as a manager and mentor that organizes an effective learning process. Hence, for most students, quality and effective learning necessarily involve the direct assistance of the teacher.

The data obtained indicate that learning will be effective if it happens in both online and offline interaction with the teacher. At the same time, as the students commented, online classes will work best if there is additional time for consultations, where students can ask questions about a range of difficult matters.

III. The third survey block was targeted at examining how distance learning can affect the quality of the learning process (perception, understanding, and mastering the material) and academic integrity.

This block expressed our concern about the quality of education. A number of institutions also raised the issue of academic dishonesty and provided certain recommendations on how to avoid it.

At the same time, we strongly believe that it is equally important to find out the students' attitude to academic integrity and to investigate their behavior in conditions when there is a great temptation to take advantage of the situation. In the future, such data, combined with the recommendations and educators' opinions, must become one of the aspects that should be taken into account when organizing the education system.

When responding to the question: "Does distance learning provide additional opportunities for academic dishonesty (copying answers, fitting answers, cheating, etc.)?", 47.1% and 45.1% of the respondents gave positive and negative answers, respectively. 6% believe that it depends on the student, and 1.8% refused to answer this question.

The answers to the cross-sectional question "Do you think students will take the opportunity to be academically dishonest for good grades?" were as follows: 37.3% of the students answered that in most cases they would copy the answer from the textbook, 52.9% said that that a minority of students will violate the academic integrity rules, 6% noted that it much depends on the student, 3.8% did not give any answer.

Thus, on average, 42.2% of the students believed that distance learning predominantly creates the conditions for academic dishonesty that students will certainly enjoy in the future. At the same time, 45.1% considered it unacceptable to engage in plagiarism or other types of academic dishonesty. In this context, it is worth noting that 2% of the respondents reported in personal comments that a well-thought-out system of control excludes every possibility to copy the answer or cheat during an exam.

Therefore, we can conclude that the academic integrity principle can be followed in most cases with a properly organized control system based on special platforms, such as Moodle, the use of anti-plagiarism, and time-limit when performing tests.

IV. Besides, we have identified the most common difficulties and challenges that students faced during distance learning.

32.6% of the students reported that the main problem was the technical one (lack of reliable, high-speed Internet, difficulties in registering on the educational platform, etc.). 9.6% said that teachers gave a lot of assignments that must be done in a short time. 7.6 % commented on an inconvenient schedule of classes. 11.5% of those interviewed complained about vague instructions and complex material. 11.5% admitted a low level of individual self-discipline. Only 26.9% stated that they had no difficulties in performing assignments remotely.

Besides, students mentioned a series of psychological problems. Respondents mostly complained about the lack of communication and socialization (58.8%), and work in front of a computer all day (61%). The answers included the following: "When I do not communicate

with other people for a long time, I become less motivated to learn", "Staying at home 24/7 has a negative effect on my thinking, behavior, and emotions", "Stress and social isolation", "Lack of social interaction. I spend half of the day attending online classes, the other half – doing homework on my own"," 24/7 at home, without seeing people, without having rest", etc.

Also, very few participants (2%) indicated the increased scope of the individual work as a factor that much contributed to social isolation, for example, "A lot of material for self-study, incredibly little time, loss of self-confidence, loss of desire to live, lack of communication with other people, lack of walking outside, derealization, loss of motivation, lack of sleep".

4. CONCLUSIONS AND DISCUSSION

To sum up, our study was aimed at scrutinizing the issues of distance learning from students' perspectives. The evidence from this study implies that learners' feedback is an essential aspect of a general idea of the strengths and weaknesses of the forced educational experiment in the 2019-2020 academic year caused by the COVID-19 pandemic outbreak. Alongside the educators' and educational policy-makers' opinions, national and global trends, the aspects mentioned in the study should be taken into account to develop and improve the higher education system in Ukraine. In our view, the findings of our study could be also used when organizing blended learning.

Summarizing and correlating the indicators, we can identify the following aspects that will be very useful for organizing distance learning:

- In a time of crisis, under the conditions of distance learning, neither the theoretical nor practical material can be fully mastered without the teacher's mentorship.
- Based on the main difficulties faced by students, the teacher as a leader of the educational process should pay attention to a balanced workload, taking into account the mean time spent on homework.
- The results have further strengthened our confidence in the urgent necessity of coordination within an institution while planning the students' workload in order to avoid taking several tests or seminars on the same day. Students' overload leads to demotivation, physical fatigue, failure to cope with the scope of different tasks and reduces the quality of learning. For the above reasons, we want to draw teachers' attention to the amount of homework students receive.
- We also would like to pay attention to the dark side of total digitalization, which is associated with certain social and psychological consequences that negatively affect students. Lack of in-person communication and socialization are among the reasons that lead to demotivation in learning and desocialization.
- The most striking result to emerge from the survey is that students need additional consultations. In this situation, the teacher will face the challenging task of organizing the learning process: on the one hand, the teacher cannot be in touch 24/7, on the other hand, they must monitor their students' work. We recommend creating an online bank of questions that the teacher can answer at the beginning of each online lesson.
- There is a need to form a unified learning environment, whose content is developed in the learning process;
- Some problems may be solved by the introduction of the cross-cutting learning of ICT in education, development of the corresponding learning courses, the introduction of these courses into the curriculum of teacher training universities, implementation of ICT subject-oriented learning.

– Last but not least, as reported by students, blended learning is the most effective learning method. We believe that under favorable conditions, this format can be considered as an alternative to the traditional classroom system. Our previous study demonstrated one of the obvious advantages of blended learning on the example of a media and cyber literacy course. It was found that blended learning gives an opportunity to provide students with more theoretical material and pay more attention to developing their practical skills [26].

The given study is the first step of a general research aimed at getting feedback from students of various courses, comparing and contrasting the results obtained. It will identify pros and cons from both students' and teachers' viewpoints. The present findings have important implications for the most advisable choice of the methods of organizing distance learning in higher educational institutions and providing recommendations for its improvement.

Results so far have been very encouraging. In addition to taking into account the psychological, ergonomic, and security issues of the introduction of distance technologies on a large scale, it is important to pay particular attention to aspects related to the introduction of best practices in open learning and science, adaptive cloud-based platforms as the most promising models of distance learning platforms, new pedagogical technologies that emerge in cloud-based environments, as well as the issues of cross-cutting ICT learning at different levels of the current education system.

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ОНЛАЙН НАВЧАННЯ В ЗАКЛАДАХ ВИЩОЇ ОСВІТИ УКРАЇНИ: ДОСЯГНЕННЯ, ВИКЛИКИ ТА ГОРИЗОНТИ

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Анотація. У статті представлено результати дослідження і оцінювання сучасного стану в онлайн освіті і перспектив на майбутнє. Охарактеризовано слабкі сторони в організації та проведенні онлайн освіти, виявлено недоліки надмірної цифровізації навчання та запропоновано шляхи розв'язання виявлених проблем. Наголошується, що для визначення кращих шляхів організації дистанційних форм освіти необхідно розглянути зворотний зв’язок з усіма учасниками навчального процесу. Проаналізовано зворотний зв’язок із студентами для з’ясування труднощів та переваг дистанційного навчання. Дана робота є одним з етапів багатоступеневого дослідження. Для отримання якісного та валідного результату було розроблено опитувальник з перехресними питаннями, що дало можливість розглянути кожне питання з різних кутів зору, а саме виявити думку студентів з наступних питань: повний перехід на дистанційне навчання; роль викладача у процесі дистанційного навчання; вплив дистанційної форми на якість навчального процесу (сприймання, розуміння та засвоєння матеріалу); труднощі та виклики. Після аналізу отриманих даних були виокремлені наступні аспекти: визначення найбільш доцільних форм використання ІКТ при організації навчання, збалансованість навантаження та комунікації між викладачем та студентом; скоординованість роботи в межах закладу для уникнення перенавантаження студентів, яке призводить до демотивації, фізичної неспроможності впоратись з обсягом заданого матеріалу. Дане дослідження дозволило виявити слабкі аспекти в організації та використанні ІКТ в освіті. На підставі результатів роботи нами запропоновано рекомендації з поліпшення організації дистанційного та змішаного навчання. Також дані цієї наукової розвідки мають бути враховані при організації змішаного навчання.

Ключові слова: відкрите навчання; дистанційне навчання; відкрите освітньо-наукове середовище; хмарні технології.

ОНЛАЙН ОБУЧЕНИЕ В ВЫСШИХ УЧЕБНЫХ ЗАВЕДЕНИЯХ УКРАИНЫ: ДОСТИЖЕНИЯ, ВЫЗОВЫ И ГОРИЗОНТЫ

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Аннотация. В статье представлены результаты исследования и оценки современного состояния в онлайн образовании и перспективы на будущее. Охарактеризованы слабые стороны в организации и проведении онлайн обучения, выявлены недостатки чрезмерной цифровизации обучения и предложены пути решения выявленных проблем. Отмечается, что для определения лучших путей организации дистанционных форм образования необходимо рассмотреть обратную связь со всеми участниками учебного процесса. Проанализированы данные обратной связи со студентами относительно трудностей и преимуществ дистанционного обучения. Данная работа является одним из этапов многоступенчатого исследования. Для получения качественного и валидного результата был разработан опросник с перекрестными вопросами, что позволило рассмотреть каждый вопрос с разных точек зрения, а именно выявить мнение студентов по следующим вопросам: полный переход на дистанционное обучение; роль преподавателя в процессе дистанционного обучения; влияние дистанционной формы на качество учебного процесса (восприятия, понимания и усвоения материала) трудности и вызовы. После анализа полученных данных были выделены следующие аспекты: определение наиболее целесообразных форм использования ИКТ при организации обучения, сбалансированность нагрузки и коммуникации между преподавателем и студентом; скоординированность работы в пределах заведения во избежание перегрузки студентов, которая приводит к демотивации, физической несостоятельности справиться с объемом заданного материала. Данное исследование позволило выявить слабые стороны в организации и использовании ИКТ в образовании. На основании результатов работы нами предложены рекомендации по улучшению организации дистанционного и смешанного обучения. Также данные этого исследования целесообразно учитывать при организации смешанного обучения.

Ключевые слова: открытое обучение; дистанционное обучение; открытая образовательно-научная среда; облачные технологии.

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