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# DISTANCE EDUCATION AS AN ALTERNATIVE FORM OF LEARNING IN A PANDEMIC CONDITION

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***Abstract.*** *The aim of the research is to analyze the relationship between the success and frequency of the distance learning server Moodle using in the study of medical students, as well as to assess the features and identify major problems in training during COVID-19 pandemic. The results of 200 medical students total success have been analyzed. Students' education achievement was assessed as a factor in determining the training success in the context of relationship with the number of Moodle distance learning server visits. Two subgroups have been analyzed (100 people in each) depending on the departments: clinical discipline (propaedeutics of internal medicine) and theoretical (biochemistry). Statistical analysis of students' activity in Moodle system revealed high correlation between the frequency of the platform visits and students' educational success at the Department of Propaedeutics of Internal Medicine. A similar pattern is observed in the analysis of the correlation between the use of Moodle and learning outcomes in theoretical disciplines by the example of Bioorganic and biological chemistry and clinical biochemistry department. Thus, in order to prevent the spread of acute respiratory disease COVID-19, an distance education elements should be implemented; the using of the Moodle platform helps to increase medical student's educational success.*

***Keywords:*** *COVID-19 pandemic, distance education, higher medical school, Moodle.*

## Introduction

The world education system requires constant modernization to comply with scientific and technological progress in the context of innovative economy formation. The urgency and challenges of the problem are growing up in the current global pandemic of the coronavirus SARS-COV-2, shifting the emphasis


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to distance education with increasing percentage of independent work of the applicants.

The main provisions of the Law of Ukraine "On Education" are aimed at this, according to which high-quality education remains a priority, which is an expression of social justice. World experience shows that progress is achieved where advanced technologies of the educational process are valued (Zakon Ukrainy «Pro osvitu», 2017).

The issue of innovative education - education that not simply develops but develops in today's conditions has become the most important among the teaching community (Saukh, 2011). The new paradigm of education requires a revision of teaching philosophy, the moving from lecturing to the encouragement and control of independent students' study and research. That is, now a person is not taught, but a person learns, and in the learning process the key principle is "to create" instead of principle "to repeat". Distance education in this aspect gives impetus to the realization of their professional and creative potential. Note that the main principles of innovative changes in education include the following: pluralism, variability, alternative and continuing education; personal oriented learning; close interaction between the teacher and the learner (cooperative pedagogy); unity of education and upbringing; search for unconventional methods and forms of teaching (increase teachers' freedom of creation), development and implementation of distance-active training in educational process and wide application of innovative pedagogical technologies based on fundamental epistemological and hermeneutic aspects of pedagogics and didactics (Bykov, 2005).

The aim of the research is to analyze the relationship between the success and frequency of the distance learning server Moodle using in the study of medical students, as well as to assess the features and identify major problems during training in the COVID-19 pandemic.

The set of general scientific methods is used in the work: theoretical analysis, synthesis; comparison; generalization. The study involved scientific papers, relevant regulations and a number of decisions and resolutions of the policy makers of that period.

## Literature review

Based on the content of the "National Doctrine of Education Development of Ukraine in the XXI century", the importance of the national education system development should be concluded, considering the achievements of European and world community, where education democratization and the introduction of new forms, methods and techniques are priorities. Unfortunately, today the current education system in Ukraine does not meet the requirements of the Ukrainian statehood, which is reflected in the inconsistency of education with the needs of the individuals, social needs, and world achievements of mankind. Therefore, the

priority of the Ukrainian educational system today is to improve the education quality. Analyzing the above mentioned we can confidently state that one of the ways to improve education is the introduction of distance learning, which is especially important in the context of COVID-19 pandemic. It is through the introduction of distance learning we can prevent the spread of this dangerous disease among teachers and students (Terenda, 2020).

Of course, distance education is a new type of learning that was began to be implemented in the last third of the 20th century. It was facilitated by introduction of the latest technologies into educational process (computerization and Internet technologies). In the current context Internet technology is a widely available resource that allows to increase your capacity to transfer, receive and process information quickly in all scientific directions including medical sciences (Volosovets et al., 2020). However, despite the high autonomy of educational establishments which is regulated by the Law "On Education" in Ukraine and abroad there is a number of problems inherent in the development of distance education.

A number of leading domestic scientists pay attention to the problem of development and introduction of distance learning in the educational process, namely T. Marusei & T. Bilyk (2018), O. Horbatiuk (2020), N. Klokar, N. Benderets, & A. Borbit, (2011), L. Kartashova, N. Bakhmat, & N. Plish (2018) O. Spirin, O. Bazeliuk, L.Petrenko, A. Kalenskyi, & L. Maiboroda (2018), and many others. A number of legislative acts adopted in Ukraine are also aimed at this: the Law of Ukraine “On upper secondary education”, “Regulations on the institutional form of upper secondary education” (April 23, 2019), “Regulations on Distance Learning”, Resolution of the Cabinet of Ministers of Ukraine "On the establishment and implementation of enhanced anti-epidemic measures in the territory with a significant spread of acute respiratory disease COVID-19 caused by coronavirus SARS-COV-2 (July 22, 2020).

Today, in modern Ukrainian realities, considering the threat of coronavirus SARS-COV-2, the implementation of distance education is more relevant than ever, which is aimed at realizing the rights to appropriate qualification of every citizen. It should be noted that a number of scientific works of leading Ukrainian and foreign scientists are directed to the successful solution of the problem. The interpretation of distance education of scientists T. Marusei and T. Bilyk is promising. The scientists claim that distance education involves a high-tech approach to the process of knowledge transfer and creates a system of mass lifelong learning, global information exchange. Expanding on their idea the scientists note that by the introduction of the system there is the most adequate and flexible response to the society needs in the context of highly qualified professionals training. The scientists draw our attention to the fact that the distance education system increases the efficiency and quality of learning through additional opportunities to get reality cognition, self-knowledge, the personal

development; management and monitoring of the educational process (control, correction of educational results, computer pedagogical testing and psychodiagnostics, transfer of scientific and methodological experience, intellectual recreational activities) (Marusei & Bilyk, 2018).

Director of Ukrainian Institute of Information Technologies in Education of the National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute" characterizing the essence of distance education, notes that it is a well-organized and controlled self-education with the use of computer technology and communication networks.

Also, the viewpoint scientist S. Fedorchenko concerning the distance education merits attention. He notes that education is a high-tech product of the scientific and technological revolution, which widely uses the idea of marketing approach to service students, which explains its active distribution around the world (Fedorchenko, 2019).

Considering the essence of distance learning, scientist Y. Golovanova draws attention to the fact that many people equate it with distance learning. Thus, the scientist quite rightly notes that these are different forms of education. Their main difference is that in the process of distance education implementation almost constant effective interactivity is used. Distance education should be considered as another and completely new form of learning. Distance learning has the same structure as full-time one. Both forms of education are created under the corresponding objectives and contents of teaching. But the presentation and interaction of students with teachers is different from traditional form. Didactic basis, which consists of the principles of scientific, systematic approach and individualization of learning, and implements a system of educational and professional competencies, is the same as in the face-to-face form of education. A distinctive feature is its implementation, which depends on the specifics of this form of learning, the capabilities of the information environment, technical potential and similar factors that are associated with the Internet environment and its services (Golovanova, 2015).

It is very important that the distance education is based on modular principle, as it is noted by O. Horbatiuk. It should also be mentioned that the problem of distance learning widespread implementation in higher education establishments of Ukraine is given a lot of attention by the Ukrainian public highest-level governing bodies, which is explained by the current circumstances. Thus, according to section 10 of the Act "On Complete General Secondary Education" adopted by the Verkhovna Rada of Ukraine, the form of educational process is determined by the pedagogical council of the educational establishments within the time provided by the curriculum, considering the characteristics of the region (Horbatiuk, 2020).

The Regulation defines that the organization of education in the institutional form is carried out in accordance with the curriculum of the educational establishment. Distance education can be implemented by using distance learning

forms as a separate form of education or using distance learning technologies to provide learning in different forms of education or their combination. Teaching time in the case of distance learning is defined by the educational establishment.

The procedure for organizing the distance learning educational process is determined by the Regulation on Distance Learning, approved by the order of the Ministry of Education and Science, April 25, 2013, № 466 (as amended). Today, the procedure for organizing and approving distance learning is determined by the Regulation on Distance Learning of General Secondary Education, approved by the order of the Ministry of Education and Science of Ukraine, September 09, 2020, №1115. Some issues of the distance learning organization have been registered in the Ministry of Justice of Ukraine, September 8, 2020, № 941/35224.

When implementing distance learning, a very important point is the choice of distance education type (Fig.1).

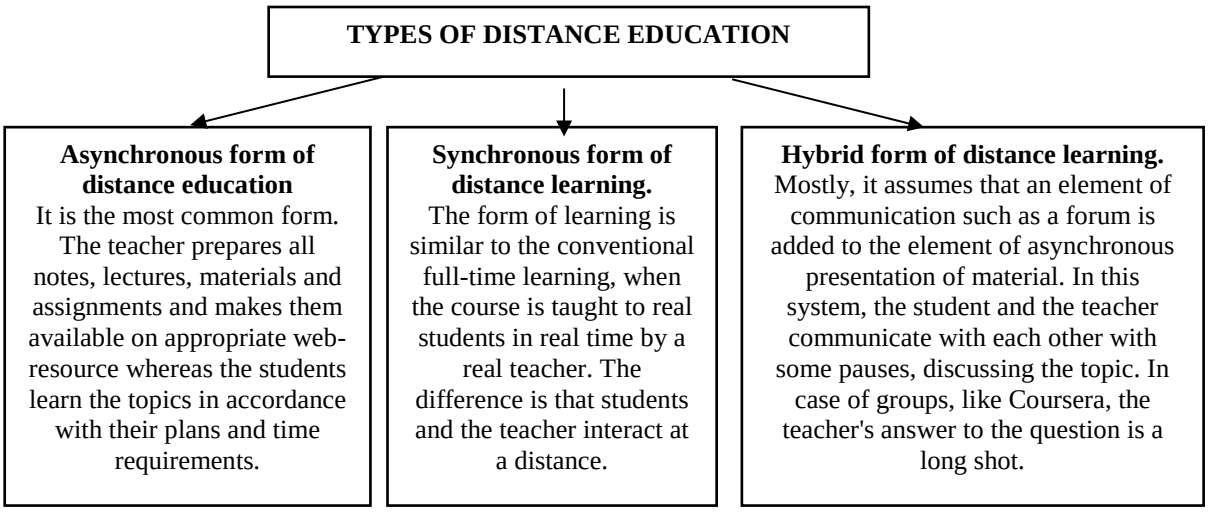


*Figure 1* ***Types of distance education*** *(created by the authors)*

Considering the types of distance education, we want to draw attention to the fact that we are most impressed by the hybrid form of learning, because in this form the interaction of students and teachers is the closest, which primarily meets the interests of students. But the main advantage of this education form is its convenience: 1) the students independently choose the time and place for study; 2) replacement of written notes with electronic resources and the latest teaching methods, constant consultations with the teacher give this form of self-education additional advantages over the others.

An important point in the introduction of distance learning is to identify its features, which give a clear answer regarding its usefulness (Fig. 2) (Akhmad, 2012).

Considering distance learning as one of the most progressive education forms, in which the student can get the full range of necessary knowledge (provided by the curriculum), without exposing himself and others to the risk of

COVID-19, we want to note that in Ukraine today such system has been implemented, and it is based on the following principles (Klokar, Benderets, & Borbit, 2011; Mykhailova, 2014): 1) continuity, which means providing distance education at all levels, which are accepted in the system of continuing education in Ukraine; 2) democratization, which consists in providing equal opportunities to all educational establishments in solving legal, educational, methodological, financial and economic issues: 3) integration, which provides a virtual electronic library of distance learning courses, data banks and knowledge bases with copyright protection; 4) globalization, which means the openness of information resources and the organization of educational processes using telecommunications networks, including the network of the Ukrainian Academy of Sciences; not to hinder the independent activity of educational establishments and to promote the development of various forms of distance education that provide state educational standards; not to destroy existing regional centers or other associations of educational establishments.

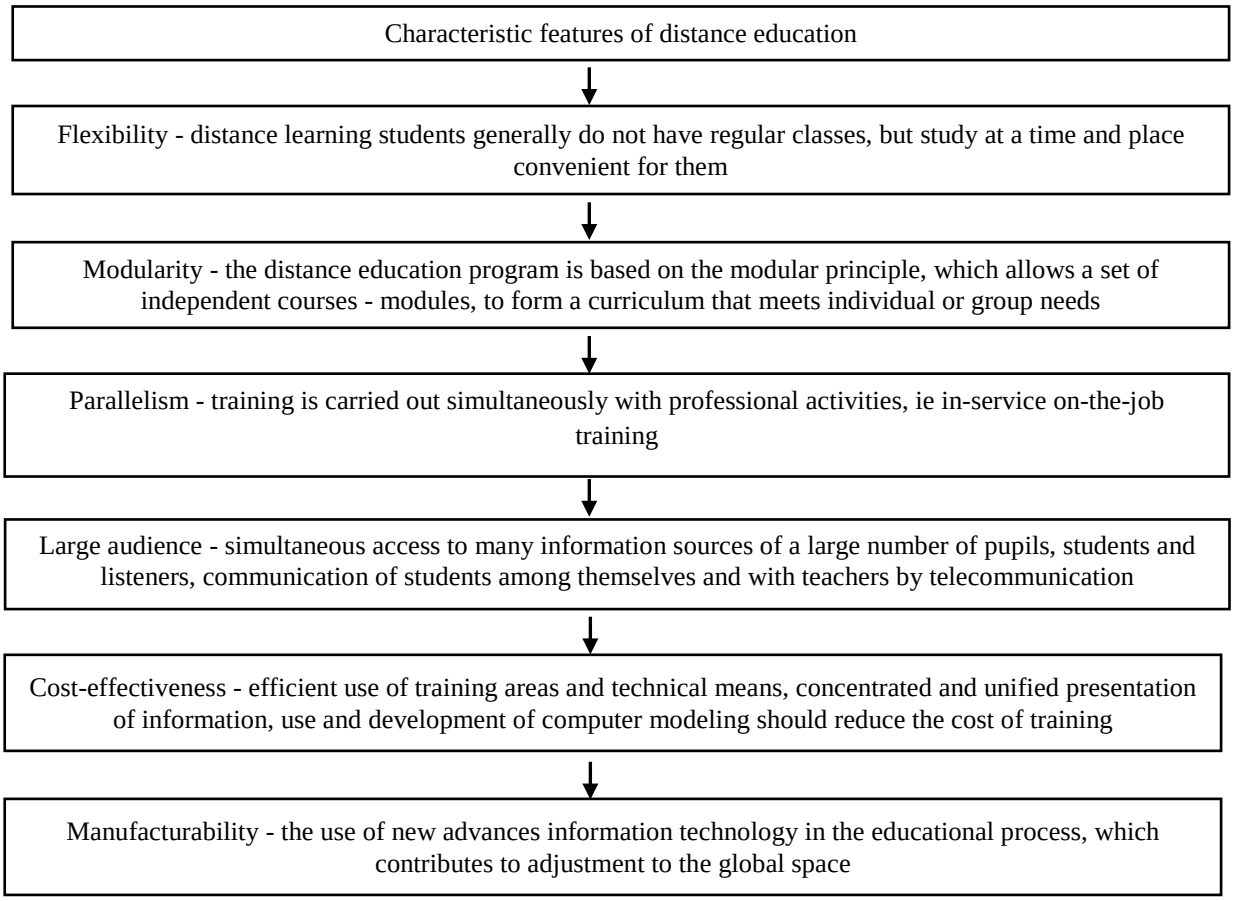


*Figure 2* ***Characteristic features of distance education*** *(created by the authors)*

## Methodology

The total success of 200 medical students at the clinical and theoretical departments of Bukovinian State Medical University has been analyzed. Students' education achievement was assessed as a factor in determining the training success in the context of relationship with the number of Moodle distance learning server visits. Education achievement was assessed in students divided into two subgroups depending on the department. The 1st group includes the students' final results in the process of studying the clinical discipline by the example of the Propaedeutics of Internal Medicine Department. The 2nd group includes the module control results on theoretical discipline biochemistry in Department of Bioorganic and biological chemistry and clinical biochemistry. Statistical processing of the results was performed by determining the Pearson's criterion.

## Research results and discussion

Considering the challenges due to the coronavirus pandemic, the educational process at Bukovinian State Medical University in recent years was conducted distantly with practical classes in synchronous mode using the Google Meet platform and extensive use of Moodle system. We have analyzed the final performance of students, which included a summation of the final module control and current learning outcomes of students of the Medical Faculty of Bukovinian State Medical University (Fig. 3).

Statistical analysis of students' activity in Moodle system revealed high correlation between the frequency of use of the platform (5.29 ± 1.61) and students' educational success (143.78 ± 11.3) at the Department of Propaedeutics of Internal Medicine (Fig. 3a). Pearson's criterion is r = 0,905. A similar pattern is observed in the analysis of the correlation between the use of Moodle and learning outcomes in theoretical disciplines by the example of Bioorganic and biological chemistry and clinical biochemistry department (7.64 ± 1.96 and 133.68 ± 8.61 соответственно) (Fig. 3.b). Pearson's criterion is r = 0.901. The comparative interdisciplinary analysis revealed a tendency towards more frequent use of the Moodle system by students with lower success in the study of biochemistry. This suggests that the established correlation occurs when assessing within a single discipline, and the frequency of use may depend on how tough is the material to study according with the curriculum of the discipline.

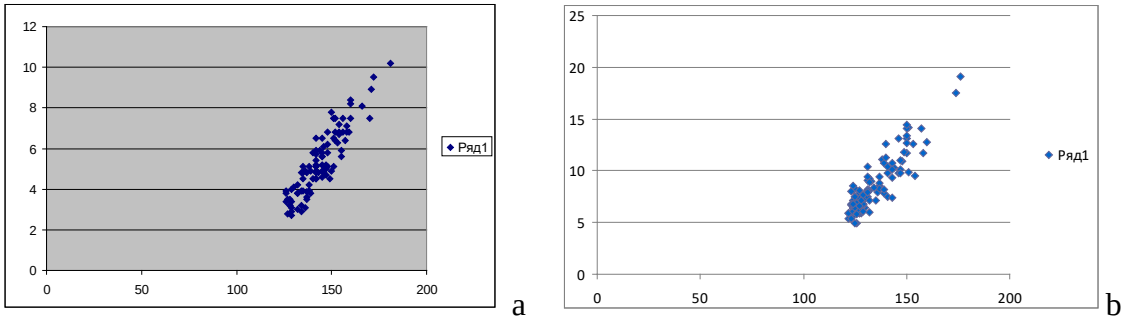


*Figure 3* ***Correlation between the frequency of Moodle system use and students success in studying clinical (a) and theoretical (b) disciplines in the Medical University*** *(created by the authors)*

The effectiveness of the use of Moodle has been traced in the articles of European scientists, in particular when studying the model of e-learning in higher education institutions in Serbia, Lithuania and Bosnia and Herzegovina. Among other things, eight factors were identified that influenced the satisfaction with the use of the e-course (behavioral intention to use in the future, communication, format, quality of information, effectiveness, perceived usefulness, satisfaction and quality of the system) (Damnjanovic, Jednak, & Mijatovic, 2015).

The use of the Moodle system promotes the implementation of the latest learning technologies and allows to promote learning during the process of joint collective solution of educational problems, helps to exchange knowledge, gives students the opportunity to interact with learning materials, teachers, and each other. It should be noted that even the best education system is not ideal. Thus, in the use of distance education is has been revealed the lack of a centralized certification and accreditation system for electronic courses; high complexity of making methodological materials for distance learning; lack of copyright protection of educational software from "hacking"; psychological and computer unwillingness of teachers; significant expenditures for the material base. But despite the problematic situations which arise from the use of distance learning, its effectiveness is obvious.

No less important point in the introduction of distance education is the choice of a "platform" as its basis. Studies show that the most common platforms today are Learning Space, Top Class, WebCT (ver. 3-6), Black Board, Moodle. All the systems listed above, as experience and practice have shown, are similar to each other in their functionality. But personally, based on potential we are more impressed by Moodle which is a free and open-source learning management system (LMS) (*Moodle – Open-source learning platform)* (Fig. 4).

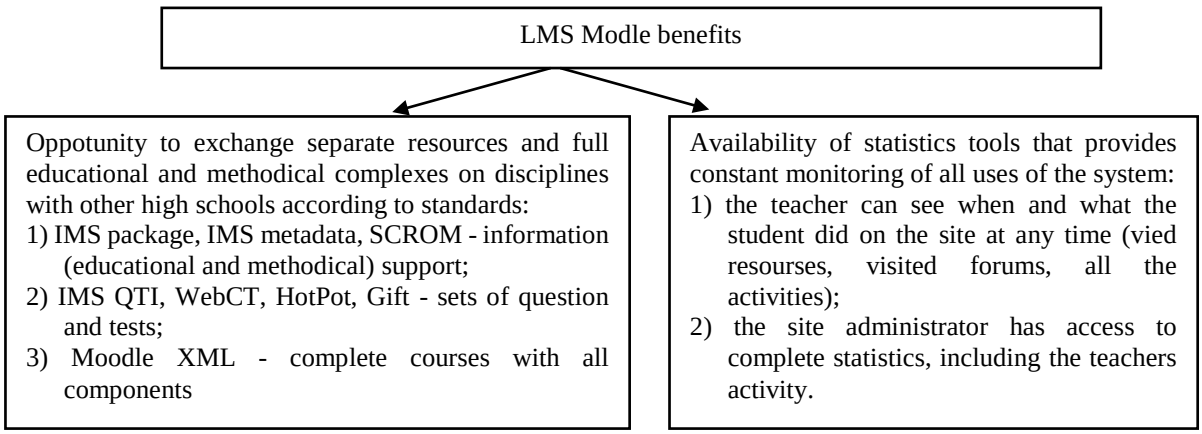


*Figure 4* ***Moodle benefits*** *(created by the authors)*

The frequency of using Moodle is often influenced by students' satisfaction with the learning outcome, determined by the quality of e-learning. The results indicate that the quality of information is the most important indicator of student satisfaction in conditions of high communication. These factors may be exacerbated by the combined mechanisms of the educational process, such as blended and virtual learning (Costello, 2013). Today, e-learning has become part of a complex infrastructure that is now considered critical to higher education. Various technologies of Moodle's use lead to the improvement of the acquired knowledge and optimization of the educational process in the conditions of a coronavirus pandemic (Perez-Perez, Serrano-Bedia, & Pigueres, 2020).

Based on the above mentioned, considering the problems that may occur during the implementation of distance learning in Ukraine in response to the spread of acute respiratory disease COVID-19 caused by coronavirus SARS-COV-2, we propose the following set of organizational activities to reduce the level of morbidity: 1) taking into account the individual characteristics of educational establishments, to give them more independence in the implementation of distance learning technologies; 2) in order to obtain the necessary set of knowledge, students should combine distance learning with other forms of education; 3) the establishment of centres for teachers training to use distance learning technologies (it could be either courses at universities they teach or advanced training courses); 4) to develop a set of standards aimed at achieving maximum efficiency in the introduction of distance learning; 5) to strengthen control of policy-makers over the quality of distance learning.

## Conclusions

Based on the above mentioned, we can draw the following conclusions:

1) in order to prevent the spread of acute respiratory disease COVID-19 caused by the coronavirus SARS-COV-2, an active distance education should be implemented;

2) distance education contributes to the replacement of traditional forms of getting knowledge with electronic resources and the latest methods;
3) distance education helps to avoid many inconveniences and problems that occur in modern conditions, develops information culture;
4) the use of the Moodle platform helps to increase student's educational success in Bukovinian State Medical University in both theoretical and clinical departments.

To improve the organization of distance education in Ukraine, we propose to consider the experience of foreign countries, where this form of education has already been actively and effectively used.

## References

Akhmad, I.M. (2012). *Navchannia v dystantsiinii i zmishanii formi studentiv VNZ*. Materialy VII Mizhnarodnoi naukovo-praktychnoi konferentsii «Suchasni pidkhody ta innovatsiini tendentsii u vykladanni inozemnykh mov» 13 berezni 2012. Kyiv: NTUU «KPI» VPI VPK «Politekhnika».

Bykov, V.Y., Hrytsenchuk, O.O., & Zhuk, O.Y. (2015). Dystantsiine navchannia v krainakh Yevropy ta SShA i perspektyvy dlia Ukrainy. *Informatsiine zabezpechennia navchalno-vykhovnoho protsesu: innovatsiini zasoby i tekhnolohii*. Kyiv: Atika, 77-140.

Costello, E. (2013). Opening up to open source: looking at how Moodle was adopted in higher education. Open Learning: *The Journal of Open, Distance and e-Learning, 28*(3), 187-200. DOI: 10.1080/02680513.2013.856289

Damnjanovic, V., Jednak, S., & Mijatovic, I. (2015). Factors affecting the effectiveness and use of Moodle: students' perception. *Interactive Learning Environments, 23*(4), 496-514. DOI: 10.1080/10494820.2013.789062

Fedorchenko, S.V. (2019). Dystantsiina osvita ta mistse psykholohichnoho zabezpechennia v nii. *Molodyi vchenyi, 9*(73), 51–54.

Golovanova, Y.V. (2015). Problemyi i puti resheniya distantsionnoy formyi obucheniya. *Aktualnyie zadachi pedagogiki: materialyi VI Mezhdunarodnoy nauchnoy konferentsii*. Chita.

Horbatiuk, O.V. (2020). Dystantsiina osvita v Ukraini: osoblyvosti ta osnovni problemy. *Pedahohichna osvita: teoriia i praktyka, 28,* 15-25.

Kartashova, L.A., Bakhmat, N.V., & Plish, I.V. (2018) Rozvytok tsyfrovoi kompetentnosti pedahoha v informatsiino-osvitnomu seredovyshchi zakladu zahalnoi serednoi osvity. *Informatsiini tekhnolohii i zasoby navchannia, 68*(6), 193-205.

Klokar, N., Benderets, N., & Borbit, A. (2011). Model of the Regional System of Distance In-service Teacher Training in Ukraine and Its Implementation. *Journal of Research in Innovative Teaching, 4*(1), 93-105.

Marusei, T., & Bilyk, T. (2018). Suchasni tendentsii rozvytku dystantsiinoi osvity v Ukraini. *Science, Research, Development. Pedagog, 8*, 14-17.

*Moodle – Open-source learning platform.* Retrieved from https://www.moodle.org (accessed 21 November 2021).

Mykhailova, Y.O. (2014). Osnovni pryntsypy dystantsiinoho navchannia v systemi pidhotovky kadriv dlia OVS Ukrainy. *Forum prava, 2,* 269-273.

Perez-Perez, M., Serrano-Bedia, A-M., & Pigueres, G.G. (2020). An analysis of factors affecting students´ perceptions of learning outcomes with Moodle. *Journal of Further and*

*Higher Education*, *44*(8), 1114-1129. DOI: https://doi.org/10.1080/0309877X.2019.1664730

Saukh, P. I. (2011) *Innovatsiia u vyshchii shkoli: problemy, dosvid, perspektyvy*. Zhytomyr: Vyd-vo ZhDU im. Ivana Franka.

Spirin, O.M., Bazeliuk, O.V., Petrenko, L.M., Kalenskyi, A.A., & Maiboroda, L.A. (2018). *Tekhnolohii dystantsiinoho profesiinoho navchannia*. Metodychnyi posibnyk. Zhytomyr: Polissia.

Terenda, N.O., Terenda, O.A., Horishnyin M.I., & Panchyshyn, N.Y. (2020) Osoblyvosti dystantsiinoho navchannia studentiv v umovakh pandemii COVID-19 (za rezultatamy anketuvannia). *Medychna Osvita*, *4*, 57-60. DOI: 10.11603/me.2414-5998.2020.4.11661

Volosovets, A.O., Slonetskyi, B.I., Zozulya, I.S. Bobrova, V.I., Ivashchenko, O.V., Verbytskyi, I.V., Kramereva, O.G., & Savchenko, D.S. (2020). Osoblyvosti dystantsiinoho navchannia v ramkakh pisliadyplomnoi pidhotovky likariv z medytsyny nevidklad-nykh staniv. *Medychna osvita*, *3*, 5–8. DOI: 10.11603/me.2414-5998.2020.3.11434

Zakon Ukrainy «Pro osvitu» (2017). *Vidomosti Verkhovnoi Rady*, 38-39, 380. Retrieved from https://zakon3.rada.gov.ua/laws/show/2145-19 (accessed 10 November 2021).