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# DEVELOPMENT OF DISTANCE LEARNING AND WAYS OF ITS IMPROVEMENT

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**Abstract:** *The study highlights the relevance of the organization of distance learning in quarantine conditions. The theoretical analysis of normative educational documents, scientific literature on the use of information and communication technologies in the distance education system, as well as directions for solving issues in ensuring the quality of higher education is carried out. The current state of implementation of distance learning in educational institutions is considered, the experience in the organization of distance learning is studied, and the necessary means for the effective organization of distance learning are identified. A theoretical and methodological analysis of scientific literature on the problem of determining the advantages and disadvantages of distance education was carried out. Much attention is given to the prospects for the development of distance education in Ukraine. The directions for further improvement of distance learning are proposed.*

## INTRODUCTION.

The processes of transformation of modern society necessitate the reorientation of modern education and direct the vectors of its development to the distance learning plane. The existing paradigm of education development, taking into account the constant changes in the characteristics of the environment in which it operates, is increasingly becoming the object of transformational changes in its content and structure. Changing of the priorities in the prospects for the development of higher education is aimed at expanding the range of users and applicants of educational and information resources.

In 2013, the Order of the Ministry of Education and Science of Ukraine approved the "Regulations on distance learning" [1], which defines the basic principles of organization and implementation of distance learning in Ukraine.

Due to the threat of the spread of the coronavirus COVID-19 in Ukraine, by the decision of the Cabinet of Ministers [2], [3], from March 12, 2020, quarantine measures have been introduced for a long time, which prohibit

students from visiting educational institutions throughout the country. In such circumstances, the heads of educational institutions of preschool, primary, secondary, vocational, higher and postgraduate education for the period of quarantine are obliged to ensure the organization of the educational process based on distance learning technologies [4]. Teaching staff must quickly and effectively apply the latest technologies, methods and forms of training. In order to help them, within the framework of the reform of education and science, it is planned to create an educational portal with methodological and didactic materials, Ukrainian e-encyclopedias, multimedia textbooks and interactive online resources [5].

Theoretical and methodological support for the development of distance learning has become an urgent problem of modern pedagogy. This is due to the proliferation of information and communication technologies and the intensification of their use in educational practice, additional opportunities for individualization of learning, for the implementation of the principles of accessibility, visibility and "lifelong learning." The solution to this problem can be related to such research areas as: the readiness of teachers to introduce distance learning technologies, which requires a high level of their informative and pedagogical competence; the readiness of students to use such a form of acquiring knowledge and skills, that requires self-organization, high motivation and that is closely related to their perception and attitude to distance education. The study of the experience in organizing distance learning, the advantages and disadvantages of using its specific forms, is useful for identifying ways for the improvement and dissemination of distance education in Ukraine.

The problem of using information and communication technologies in the system of organizing the educational process within the distance form of higher education is the subject of scientific attention of domestic and foreign scientists.

Many scientists made a great contribution to solving the scientific and applied problem of digitalization of education. Much attention is paid to the peculiarities of using information technologies in education and the disclosure of the content of algorithms for the development of e-learning systems [6]. The ways of the introduction of information technologies in the educational process and the management system of the educational institution have been determined [7]. It should be emphasized that the fundamentals of the theory of modeling of organizational systems of open education are also presented and

analysis of modern approaches and tools of educational system development is carried out [8]. Moreover, the ways of the implementation of lifelong education in the information society have been substantiated and the influence of lifelong education technologies on the formation and the development of innovative electronic scientific and educational spaces have been considered [9].

A thorough study has been conducted to assess the negative or positive impact of distance learning on the quality of specialists' training [10]. The focus of scientific attention of researchers was the problem of using distance learning technologies in higher education [11]. Prospects of development of distance education were considered [12].

The overwhelming majority of scientific research in the field of theory and practice of using distance learning has been focused on studying the issues of the effectiveness of distance education and determining the importance of some of its determinants. Despite the sufficient attention of scientists to the problems of substantiating the content of information technologies in education, certain questions still remain open for further scientific research.

This research - based on a systematic analysis of the literature on the development of distance learning and the study of experience in its organization, theoretical and methodological analysis of scientific literature on the problem of determining its main advantages and disadvantages, is aimed to identify the ways for further improvement of distance learning.

The study used the method of theoretical analysis of normative educational documents and scientific and methodological works on problematic issues of teaching methods of pedagogy; synthesis of educational ideas and methods of generalization, systematization to formulate the conclusions of a scientific research were applied.

## **MAIN MATERIAL.**

*A brief historical overview of distance education.* Considering the need to expand the information and analytical basis for the prospects of using distance learning in Ukraine, as well as to determine the determinants of its development, we will consider the historical retrospective of the formation of distance learning at the international and national levels.

The first reference of educational distance courses appeared in 1728 and related to Boston lessons by mail. In Great Britain, the first experience of using

distance education has been known since 1836. Subsequently, this form of education was supplemented by the use of information technologies in accordance with the time when they began to be used in society: radio in the 1930s, television in the 1950s, and multimedia in the 1960s. A feature of these courses was the one-way connection between the student, the teacher, the educational institution and the teaching materials. It was possible to obtain a full-fledged higher education at the University of London in 1858, when candidates from all over the world, regardless of where and how they received their education, were allowed to take Bachelor's and Master's degrees.

In the 60s of the twentieth century, the Open University began its work in Great Britain, which became the first higher education establishment in the world, using an exclusively distance form of knowledge acquisition. Distance education remained one-sided, but thanks to face-to-face consultations, correspondence and short-term courses, interaction between both sides of training became possible.

The first experiments in the field of computer learning using mainly tutoring and training programs date back to the 50-60s of the twentieth century. PLATO project, computer-based education system was created at the University of Illinois (USA) in 1960. A project with the first display-oriented interactive text editor was developed at Stanford University in 1963. The PDP-8 mini-computer helped to combine several thousand terminals with a catalog of lessons and disciplines. IBM introduced the first IBM-1500 computer system for automated learning in 1966, followed by the computerization of New York schools. Due to the proliferation of personal computers with a graphical interface and with the packages of multimedia programs, the corresponding computer training has emerged. It gave impetus to the emergence of several large-scale projects related to distance learning: the TISSET project, which began at the University of Texas and was subsequently extended at Brigham Young University; the CONDUIT project, the creation of a network covering about ten American universities (Oregon, North Carolina, Iowa, Texas, etc.) and unites the information resources of five regional computing centers. Due to the popularity of distance learning, the European Association of Distance Teaching Universities (EADTU) was established in 1987, with 22 members from 20 countries. Most of them are open universities and national associations, the main function of which is distance learning of target groups using distance learning methods, as well as university associations, where most students have internal study, but there is a possibility of distance learning.

In Ukraine, the transformation of the distance learning system takes place on the basis of the achievements of educational science in other countries. Therefore, it is natural that in the late 90s of the XX century the Verkhovna Rada adopted the Law of Ukraine "On the National Informatization Program", which caused positive changes in the way of using the Internet in education and in other aspects related to the introduction of distance learning. The next step in addressing this issue was the national conference in Odessa (1998), at which a memorandum of cooperation was signed between 27 universities of Ukraine. In 1997, by a joint resolution of the Presidium of the National Academy of Sciences of Ukraine and the Board of the Ministry of Education of Ukraine, the Association of Users of the Telecommunication Network of Educational Institutions of Ukraine was created, with the coordinating "Center for European Integration" in Kyiv, which later received the official name of the Ukrainian Research and Academic Network "URAN". The Ministry of Education and Science of Ukraine approved the "Concept for the Development of Distance Education in Ukraine" in 2000, which provided for both the possibility of increasing the contingent of students and the implementation of a lifelong learning system. The Ukrainian Center for Distance Education was established on the basis of the National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute" and training courses were introduced for university teachers and distance course developers, which prompted to conclude cooperation agreements with universities in order to coordinate the process of distance education.

One of the newest forms of distance learning, which is actively developing in world education, is the Massive Open Online Courses (MOOCs) – free online courses with large-scale interactive participation and open access via the Internet [13]. The main contingent of such courses, posted on specialized sites, is students of various previous levels of training - both beginners and experienced specialists. Coursera, edX, Udacity - the main idea of such sites is the development of the concept of lifelong learning. Based on the foregoing, the conclusion of the researchers after the round table "Online education is changing the world" (2013), which approved distance learning as a modern time trend, which allows to gain geographical independence in learning, mobility, flexibility and access to advanced information from all over the world, is quite expected [14].

Consideration of distance learning through the prism of historical retrospective of temporal and spatial challenges allows us to state the fact of

not only its actualization at the level of one of the promising directions in the organization of scientific research, but also its positioning as a task demanded by society.

At the end of 1997, there were about 1,000 distance learning institutions in 107 countries. The number of those who received higher education in the distance education system in 1997 was about 50 million people, in 2000 - 90 million; according to forecasts in 2023 will be 120 million people [15].

According to the results of 2018, the world's most popular providers of online education in the world are Coursera (37,000,000 students), edX (18,000,000 students), XuetangX (14,000,000 students), Udacity (10,000,000 students), FutureLearn (8,700,000 students) [16].

*The current state of implementation of distance learning in educational establishments.* The modern development of distance education can be considered from the standpoint of three key directions: 1) Massive Open Online Course – (MOOC); 2) distance learning in higher education institutions, separately or together with traditional forms; 3) distance universities.

Massive open online courses (MOOC) are characterized by: cooperation of providers with world's leading universities; improving online courses for their convenience and flexibility; increasing the number of courses; increasing opportunities for obtaining educational Bachelor's and Master's degrees; monetization and profit orientation.

Distance education offered directly by higher education establishments can also include the following opportunities: a separate course, a set of courses for obtaining a professional certificate, corporate training, and, of course, programs for an associate degree, Bachelor's and Master's degree. A separate area of learning activity is additional information support for the traditional form of teaching students in classrooms: for example, listening to online lecture, and discussing it in the classroom, performing practical exercises or after the lecture to have access to its video recording to review the material. Finally, by studying distance courses, students can get a certain number of credits, and at the same time they receive offset: credits received at one university can be accepted for attainment of educational degree at another.

The development of distance learning universities is another opportunity to get an education today. In general, there are some features of distance universities: simplified admission (students can be admitted without an entrance exam); wide accessibility is limited mainly only by language knowledge, funds and technical capabilities; leading distance universities

usually conduct face-to-face exams, that is, either at universities, or in special examination centers, or in other official institutions, which allows to counteract possible fraud, but for students, it involves additional financial costs.

There are several online education projects in Ukraine (Prometheus, EdEra, VUM-online), but the amount of courses developed for each project cannot be compared with the leading MOOC platforms. It is possible to get an educational degree through distance education (as a type of tuition by correspondence) in the Ukrainian higher educational establishments, but the number of proposals is quite small. Distance learning technologies are most actively developed as an additional methodological support for full-time and part-time forms of training: more and more distance learning courses are being developed, most often using Moodle, ILIAS or own virtual learning environments, such as "Sikorsky Distance Learning Platform" at the National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute". Theoretical and methodological analysis of scientific literature on the problem of determining the advantages and disadvantages of distance education [17; 18; 19] made it possible to classify them according to the following main types: organizational-pedagogical, informational-technological and psychological, given in (Table 1).

*Table 1*

**The main advantages and disadvantages of distance education**

	Advantages	Disadvantages
Organizational-pedagogical	Free choice of educational institution; regardless of the location of the applicant, that is, the ability to freely be anywhere in the world and at the same time obtain the necessary competencies.	The impossibility of full-fledged feedback of students with the teacher to solve current pedagogical situations associated with the incomprehensibility of completing tasks; explanation of educational material on examples, etc.
	Leveling age restrictions, removing restrictions for people with disabilities and who has basic professional activity, allows attracting a large number of applicants. People who are in military service, on maternity leave, with disabilities, etc., can get the necessary, primarily cognitive, content. Through the introduction of distance education, the postulate of lifelong education is approved.	The significant cost of training resources and labor intensity of higher educational institutions and the teacher. In addition to the necessary technical equipment of the educational institution, the teacher is required to create a distance course, which according to various estimates takes from 500 to 1000 hours with an average planned annual workload

Table 1 (continued)

	Advantages	Disadvantages
		of 1548 hours, that is, a thorough distance course will occupy a significant part of the total load.
	Flexibility and mobility in the implementation of educational activities, which provides its own learning schedule, independent choice of pace depending on individual typological properties, as well as the ability to save its own time.	The lack of full-fledged pedagogical control by the teacher, which is a stimulating factor for effective training.
	The applicant has the opportunity to design an educational place based on his own desires, which will contribute to a more effective acquisition of the necessary competencies by creating a more pleasant atmosphere.	Difficulties in the practical application of educational material, when the applicant receives a large amount of information in a fairly short time, which generates a certain chaos in terms of its use in real life.
	Professional development of teachers, since the development and implementation of distance courses requires the acquisition of innovative and technological competencies.	
Informational- technological	Ability to use various forms of presentation of educational material: from standard text and graphics to more effective - audio and video.	Difficulties with technical support and access to the Internet, causing problems in accessing distance courses and in performing the necessary training tasks.
	Communication and feedback between teacher and students using modern forms of communication through chats, forums, using blogs.	The problem of the applicant's authentication, since the teacher cannot identify whether it is the person who receives education and performs training and control tasks.
	Creating virtual groups, professional communities, through which teachers, applicants and all interested parties can share experiences, solve problems and practical situations, etc.	The availability of material and technical support in higher educational institutions (computers, laboratories, multimedia, software, etc.), which makes it possible to effectively support and administer the distance learning process.
Psychological	The development of such individual psychological qualities of persons studying remotely as internal motivation for learning, independence, individual style of educational activity, adaptability,	The lack of a key condition for effective communication in the educational process: face-to-face, which leads to a lack of emotional contact between the teacher and the

Table 1 (continued)

	Advantages	Disadvantages
Psychological	purposefulness, etc. The defined qualities contribute not only to the effective acquisition of the necessary competencies, but also determine the competitiveness of the future specialist in the modern labor market.	student and inconsistency with such psychological and pedagogical principles of teaching as anthropocentrism and humanism.
	Formation of effective distance communication is a demanded quality of an applicant for a modern employer.	The impossibility of effective learning due to the absence of developed individual psychological qualities: independence, motivation, self-regulation of behavior, etc.

*The data were collected and classified from [20]*

As outlined above, distance education has many advantages, which makes it popular for its introduction into the educational process of leading foreign universities as well as Ukrainian higher educational establishments. However, the application of distance education, particularly in Ukraine, has some disadvantages that prevent the full implementation of this form of education in domestic higher educational establishments and this is a certain flip side of its advantages. It may be noted that, among the negative aspects of introducing distance learning, a special place is occupied by information technology problems, not all subjects of educational activity (students, teachers) have permanent access to the Internet; the level of their information culture is not very high today. Such problems cause the impossibility of full implementation of the assigned tasks and the lack of teacher's feedback. The existing distance learning courses often do not meet the requirements of visibility and interactivity, and the training materials are presented only in text form and contain the simplest graphical illustrations. Of great importance among the problems is the question of finding qualified specialists and teachers to ensure the professional implementation and support of distance education.

The most important prospects for the development of distance education in Ukraine include: implementation of the National Strategy for the Development of Education in Ukraine concerning distance education; expanding the number of offers, for which a degree can be obtained through distance education; development of university's information infrastructure; raising the level of teachers' culture through free courses in higher educational establishments and advanced training institutes.

## CONCLUSIONS.

Modern distance education is rapidly spreading both throughout the world and in Ukraine. Trends in its development are related to increasing opportunities for obtaining both educational online degrees and other types of online education, the search for ways to improve the quality of distance learning and reliable monitoring of its results, commercialization.

The distance learning system in Ukraine is still only at the stage of its formation, but with the use of world experience, combining advanced technologies of distance education with the best technologies and methods of classical forms of learning, it can have many prospects.

The research presents the advantages and disadvantages of distance education, identifies the problems of implementation of distance education in domestic higher educational establishments and outlines strategic and tactical prospects for its development.

The prospects for further research include: monitoring to determine the main factors for assessing the quality of distance education among employers, experienced specialists and experts; monitoring the training level of specialists who have received their qualifications thanks to distance education in Ukraine.

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