

DOI: <https://doi.org/10.34069/AI/2021.48.12.17>

How to Cite:

Kharytonov, E., Kharytonova, O., Kolodin, D., Tkalych, M., Larkin, M., Tolmachevska, Y., Rojas-Bahamon, M.J., Arbeláez- Campillo, D.F., & Panchenko, O.I. (2021). Distance learning in the conditions of Covid-19: problems and prospects of their solution. *Amazonia Investiga*, 10(48), 157-169. <https://doi.org/10.34069/AI/2021.48.12.17>

Distance learning in the conditions of Covid-19: problems and prospects of their solution

Дистанційне навчання в умовах ковід-19: проблеми та перспективи їх вирішення

Received: November 9, 2021

Accepted: December 25, 2021

Written by:

Evgen Kharytonov⁶⁴<https://orcid.org/0000-0001-5521-0839>**Olena Kharytonova**⁶⁵<https://orcid.org/0000-0002-9681-9605>**Denis Kolodin**⁶⁶<https://orcid.org/0000-0001-6368-0849>**Maxym Tkalych**⁶⁷<https://orcid.org/0000-0003-4224-7231>**Mikhail Larkin**⁶⁸<https://orcid.org/0000-0002-4676-460X>**Yuliia Tolmachevska**⁶⁹<https://orcid.org/0000-0002-7964-8875>**Magda Julissa Rojas-Bahamon**⁷⁰<https://orcid.org/0000-0003-4882-1476>**Diego Felipe Arbeláez- Campillo**⁷¹<https://orcid.org/0000-0002-9041-9563>**Olha Ivanivna Panchenko**⁷²<https://orcid.org/0000-0003-4365-0495>

Abstract

The problem of ensuring the quality of educational services is extremely important. It is known that the level of education and education as such are of great importance for most areas of life as an individual, and each country and the world as a whole. The authors of the article tried to analyze the current state of education, namely - distance education, in terms of transformational processes. In their study, the authors tried to take into account the total digitalization of education

Анотація

Проблема забезпечення якості освітніх послуг має надзвичайно важливе значення. Відомо, що рівень освіти і освіченість як така, мають неабияке значення для більшості сфер життя як окремої людини, так і кожної країни, і світу в цілому. Автори статті спробували проаналізувати сучасний стан сфери освіти, а саме – дистанційну освіту, з точки зору трансформаційних процесів. У своєму дослідженні автори спробували врахувати

⁶⁴ Doctor of Legal Science. Professor of Civil Law Department and Head of same Department at National University “Odesa Law Academy”, Odesa, Ukraine. Corresponding Member of National Academy of Law Sciences of Ukraine. Honored Science and Technology Worker of Ukraine.

⁶⁵ Doctor of Legal Science. Professor of Intellectual Property and Corporate Law Department and Head of same Department at National University “Odesa Law Academy”, Odesa, Ukraine. Corresponding Member of National Academy of Law Sciences of Ukraine. Honored Science and Technology Worker of Ukraine.

⁶⁶ Ph.D., Associate Professor of Criminal law Department, Head of Civil law and Economic Justice Faculty of National University “Odesa Law Academy”, Odesa, Ukraine.

⁶⁷ Ph.D., Associate Professor of Civil Law Department of Zaporizhzhia National University, Zaporizhzhia, Ukraine.

⁶⁸ Ph.D., Associate Professor of Department of Criminal Law and Justice of Zaporizhzhia National University, Ukraine.

⁶⁹ Ph.D. candidate of Civil Law Department at National University “Odesa Law Academy”, Odesa, Ukraine.

⁷⁰ Ph.D. Educación y cultura ambiental. Docente IE Jorge Eliecer Gaitán, Universidad de la Amazonia, Colombia.

⁷¹ CEO editorial Primmate SAS, Colombia. Grupo de Investigación Lenguajes, Representaciones y Educación, Universidad de la Amazonia, Colombia.

⁷² Ph.D in Law. Specialist of the Department of Doctorate and Post-graduate Studies of the National Academy of Internal Affairs, Ukraine.

and objective reality in general, the introduction of innovative technologies, and took into account the factor of the pandemic, which in one way or another affected all processes of public life. The result of this study was a reflection on the main trends in the development of distance education and education in general, as well as general recommendations for improving the education system at both local and global levels.

This study was conducted on the basis of a number of methods that allowed to make adequate generalizations about the state of distance education: the methods of system analysis, comparative analysis, sociological method, the method of observation, methods of analysis and synthesis, the method of abstraction and the method of generalization of objective phenomena.

Keywords: distance learning, pandemic, quarantine, lockdown, new school.

Introduction

The COVID-19 pandemic has been going on for two years now, threatening the lives and health of people, the stable functioning of economic mechanisms, and the social existence of society. According to various forecasts, a pandemic could last another two to five years, which should stimulate humanity to learn to live / exist in a pandemic. Vaccination should help to address the problems that arise, but it is not being successful enough in all countries. Thus, if in the USA 66.63% have already been vaccinated (Ministry of Finance Media, 2021a), and in Israel, a booster / third vaccination has been started, in Ukraine as of October 2021 only 26.35% have been vaccinated (Ministry of Finance Media, 2021b). This state of affairs necessitates more active use of distance learning, for not to interrupt the educational process during the lockdown, closure of schools and other educational institutions for quarantine, etc. Such distance learning of schoolchildren and students has been used before, but it was the COVID-19 pandemic that stimulated the activation / significant growth of interest in this form of learning.

As the attitudes of government officials, teachers and parents of pupils, as well as pupils and students themselves towards the use of distance learning are ambiguous, it is advisable to consider its advantages and disadvantages.

At the same time, it should be emphasized that modern distance learning is radically different from what existed at the beginning of the era of

totalnu цифровізацію освіти і об'єктивної реальності загалом, запровадження інноваційних технологій, та взяли до уваги чинник пандемії, який так чи інакше вплинув на всі процеси суспільного життя. Підсумком цього дослідження стали міркування щодо головних тенденцій розвитку дистанційної освіти та освіти в цілому, а також загальні рекомендації щодо удосконалення системи освіти як на локальному, так і на глобальному рівні.

Це дослідження проведене на підставі низки методів, які надали змогу зробити адекватні узагальнення щодо стану дистанційної освіти: метод системного аналізу, порівняльного аналізу, соціологічний метод, метод спостереження, методи аналізу і синтезу, метод абстрагування та метод узагальнення об'єктивних явищ.

Ключові слова: дистанційне навчання, пандемія, карантин, локдаун, нова школа.

distance learning. If a few decades ago, teachers and students used mail or even television, in today's information age, everyone can take full advantage of the Internet to organize a quality learning process. Modern equipment, in particular, smartphones, and convenient and clear software, allow us to optimize learning processes.

Interestingly, the pandemic, which was declared by the WHO in March 2020, contributed to the intensification of distance learning, as it has become a matter of survival. After the start of vaccination, educational activities were partially resumed offline, but experts predict that even after the virus is completely overcome, the educational process will take place in a mixed format, as distance learning, taking into account the achievements of information technology, is the optimal form of educational activity. Among other things, this format allows to reveal to a greater extent the individual abilities of each pupil and student and promotes the development of soft skills.

The overall result of the study was the existence of a number of distance learning tools, as well as the emergence of new forms of educational activities related to innovative methods of interpersonal communication. At the same time, one of the main tasks of today is the introduction of such forms of learning that would allow the development of personality, encourage

creativity, independent search, and not promote mechanical memorization.

Theoretical Framework or Literature Review

It is worth noting the existence of several studies on the organization and provision of distance learning (Bissell (2011), Libin-Levav (1998), Pilaeva (2016), Zanuda and Kovalevska (2021). At the same time, most of them concern general problems of distance education. There is no analysis of ways to solve these problems, and so on. This gap should be filled, which is the purpose of our article and led to the research methodology.

Moore, Dickson-Deane, and Galyen (2011) in their research called «E-Learning, online learning, and distance learning environments: Are they the same?» analyzed the essence of distance and other forms of education. The authors researched a number of scientific articles to establish the exact content of each form of education, as well as clarified the essence of a mixed form of education. The authors also surveyed several dozen people to find out their individual understanding of each type of education. The authors conclude that there are currently no common approaches to understanding the concepts of distance learning, e-learning and online learning.

da Silva, Dias, Rigo, Barbosa, Leithardt, & Leithardt (2021) in their paper «A literature review on intelligent services applied to distance learning» have found out, that distance learning plays an important role in the global education system. This is due to the possibility of transmitting large amounts of educational data. The authors of the article researched a large volume of scientific articles to identify the main ways to improve the system of distance education. In addition, the authors analyze the behavior of students when receiving online services in education in order to optimize such behavior and improve learning outcomes.

Romero-Hall (2021) in her article «Current initiatives, barriers, and opportunities for networked learning in Latin America» explores the issue of distance online learning in Latin America. The article focuses on the study of elements of learning through social networks, in particular - the use of user accounts, the provision of educational services through platforms that transmit video information, the dissemination of educational hashtags and more. The author concludes that the multiplicity, diversity and heterogeneity that represent the culture,

languages and socio-economic status of the Latin American population are also characteristic of the large number of online learning initiatives throughout the region. In addition, the author explores the problems that exist for the development of distance online learning on the continent, including the lack of access to the Internet (digital divide) and the restriction of access to certain Internet resources. At the end of her research, the author makes recommendations for Latin American officials to improve policies aimed at developing online education.

Liliana Yonué Covarrubias Hernández (2021) in her article «Distance education: transformation of learning». The author of the article reflects on the new reality in the field of education, which arose in connection with the declaration of a global pandemic. The article examines the prospects of education in Latin America, given the lack of access of certain social groups to the Internet. The author emphasizes the need to ensure access to modern technologies for all segments of the population, as well as the humanization of educational processes in general.

Aura María Lozano Ríos, Sebastián Restrepo Quiceno, and Daniela Saavedra Montoya (2021) in their article «Digital divide and virtual education: understanding social exclusion through an analysis of public schools in Cali, Colombia». The authors of the article explore the features of distance learning in a pandemic in Colombia on the example of the city of Cali. In particular, the article examines the problem of the digital divide. In addition, the authors of the article provide their own recommendations for bridging the digital divide and ensuring the availability of primary education in the pandemic and after the pandemic as well.

Methodology

This study was conducted on the basis of a number of methods that allowed to make adequate generalizations about the state of distance education in different countries, as well as to formulate general recommendations for its improvement. Such methods include the methods of system analysis, comparative analysis, sociological method, the method of observation, methods of analysis and synthesis, the method of abstraction and the method of generalization of objective phenomena.

The central methodological technique used in this study is the method of system analysis. The use of this method allowed to consider the health

care system and the education system as subsystems of a higher-level social system, and on this basis, to determine the nature of their interaction and the potential to overcome the problems posed by the COVID-19 pandemic.

In addition, the method of comparative analysis was actively used, with which the authors compared the experience of several countries (USA, Finland, Israel, Denmark, Ukraine, Japan, etc.) on the use of distance learning, means of overcoming obstacles in its implementation in COVID-19, etc.

During the preparation of the article, some materials of sociological research conducted, in particular, by scholars from the University of Copenhagen, Ukrainian and Polish sociologists were used. It helped identify differences in attitudes towards distance learning and its effectiveness among Danish, Polish, and Ukrainian students.

The method of observation provided an opportunity to analyze the empirical material on the transformation of distance education at different stages of its development, in different countries - to the present moment.

The methods of analysis and synthesis made it possible to analyze the category of distance education and education in general in the set of their constituent elements, and identify the most important of these elements, which should be taken as a basis for further improvement of education in Ukraine and in other countries.

The method of abstraction and the method of generalization of objective phenomena gave the authors the opportunity to start from the realities of today and predict the most important trends in the education system in the world.

Thus, these methods of scientific knowledge have enabled the authors to achieve the objectives set before the study.

Results and Discussion

Origin and purpose of distance learning

At the beginning of our study, we should note that distance learning has its own, already quite long, history. Some researchers suggest counting down its existence from the dissemination by disciples of Jesus Christ of his speeches throughout the world (Pilaeva, 2016). However, it seems more reasonable to link its emergence as a form of education with the establishment of a

stable / reliable postal service. The starting point is 1840, when Isaac Pitman offered to teach those who wanted to master the art of shorthand, by mail. As a result, those who enrolled in the courses received teaching materials by mail, corresponded with teachers, received consultations, etc.

From the middle of the twentieth century, the number of non-traditional universities began to grow due to the expansion of continuing education programs, advanced training, and retraining. Classical universities look problematic for mass education: they are very expensive because the main working time of the teaching staff is intended for research work, and if we consider the costs of maintaining the university and higher education in general, the expense of training per student is very high; requirements for students are very high, and most importantly strict: the student must spend all his time on education; the psychological atmosphere in such universities does not meet the objectives of integration into university life and the involvement in higher education of people from different walks of life with diverse backgrounds and different levels of training (Libin-Levav, 1998). UNESCO has also supported innovations in higher education aimed at transforming conservative and elite higher education systems into public, realizing the concepts of lifelong learning. Thus, the issue of creating alternative higher education institutions became urgent. In 1969, the Royal Charter for the Establishment of the Open University of the United Kingdom was issued as an independent, peer-to-peer, and autonomous university with the right to award degrees. A characteristic feature of this university, followed by other distance learning universities, is the dominant role of government in the process of their emergence. At his inauguration, the first chancellor of the Open University, Crowther, described it as "open to people, open to places, open to methods, and open to ideas." This principle has been fundamental to the university for five decades. The Open University of Great Britain was founded due to the belief that communication technologies can provide a high level of quality education for people who have not had the opportunity to attend classes at traditional universities. The opening of the university in May 1969 was the beginning of intensive work: 43,000 applications were submitted to the university, 25,000 were accepted. The competition for positions at the Open University was very large: 1,200 applications were submitted for 34 positions. The recruited staff worked very efficiently, and the working study

material was ready for the first students in early 1971.

To create the first fundamental courses, "Course Teams" were organized, which included all faculty members, educational technologists, the BBC producer, editors, and representatives of other faculties. The model of the course team has been formed over the years, but its basic principles remain unchanged: autonomy, collective decision-making, and a combination of academic project management and the formation of special media personnel. Course teams and research groups at the Open University were the first to explore and learn to use media tools such as VCRs, CD-ROMs, DVDs, computer training programs, websites, and more in the educational process (Bissell, 2011).

Thus, for the first time in the history of distance education at the Open University of Great Britain, a comprehensive approach to learning was used using a wide range of technical means. According to researchers, the results of the Open University have shown that the quality of distance education is competitive in the market of educational services. The UK Open University has become a model for open universities in other countries. The French National Distance Learning Center has 2.5 thousand training courses, 185 thousand users, branches in 120 countries, 5 thousand teachers participate in the development of training courses and educational activities. The technical means used to organize the work of the French National Distance Learning Center include satellite television, video and audio cassettes, e-mail, the Internet, and traditional literary sources.

Currently, Distance Education Centers also exist in Spain, Germany, the Netherlands, Stockholm (Baltic University, which unites 10 countries in the Baltic region), Canada, and China (Shanghai Television University, which now unites more than 500,000 students). The United States has created the Public Television System (PBS TV), which is a consortium of 1,500 colleges and broadcasters. PBS TV includes several training programs that are broadcast on four educational channels. A special place among them is occupied by the adult education program, which offers courses in various fields of science, business, and management. In the '70-'80s of the twentieth century. Latin America has intensively introduced distance learning, seeking to expand access to knowledge through television. However, television educational projects could not become an economic alternative to traditional learning, as television lacked the function of

dynamic teacher interaction with learners. Therefore, at present, educational television only complements distance learning, which is carried out with the help of telecommunication satellite educational technology (Pilaeva, 2016).

In the late 1980s, the advent of personal computers gave a new impetus to the simplification and automation of the learning process. Computer training programs appeared on the first computers in the form of games.

In Ukraine, January 21, 2004, can be considered the official start date of distance learning, when Order No. 40 of the Ministry of Education and Science of Ukraine approved the "Regulations on Distance Learning", which initiated the introduction of new technologies in the field of education.

In the 21st century, the availability of computers and the Internet has contributed to the spread of distance learning, which has influenced the course of this process in Ukraine (Pribilova, 2017).

According to experts, the classroom system was useful for the industrial age. Standardization and unification have turned the education system into a conveyor belt for making people according to a specific pattern. This system was designed to teach people to reproduce instructions without errors and to meet standards.

But now, there is a demand for personal development. Increasingly, employers expect from people, not just solid, professional knowledge and skills, but certain traits of character, behavior, and way of thinking. (Project.Liga, 2021).

Therefore, the learning trends were:

- Solutions for the development of soft skills and cognitive processes. Lifelong learning practices are increasingly combined with talent management practices and are becoming more human-centered. Demand and proposals for social and emotional learning are rapidly forming. In 2021, there is a demand for online courses in such areas as mindfulness, vitality, anxiety management, stress, meditation, awareness. The Deloitte report (The 2021 Global Human Capital Trends) also focuses on the well-being trend: it is critical to help employees cope with stress, stay calm, cope with anxiety, and raise awareness. According to Transparency Market

Research, the global market for soft skills development in 2016 was at \$ 11 billion and, according to experts, will triple in the next 5-10 years.

- The market for LMS systems is growing, offering solutions for distance learning for both children and teachers. New professions are emerging in the educational labor market: online course methodologist, online school principal, or online content packer.
- Asynchronous learning loses out to innovative learning practices. The practices and solutions for mutual or cross-learning P2P-Learning, as well as more popular project-oriented learning, are demanded.

In total, the global online education market, according to Global Market Insights, will reach more than \$ 280 billion by 2023, which is commensurate with the money currently circulating in Hollywood or the online gaming market.

It is possible that in 5-10 years, the world will not become fully digital. But digital solutions and technologies will become a mandatory part of learning. Some components will be taken online, some will be left offline (that is, blended learning will prevail).

In Europe, digital distance education is receiving considerable attention. The European Commission has approved a Digital Education Action Plan for 2021-2027. It focuses on the development of an effective digital education system (infrastructure, technical means, communication, development of teachers' competencies, production of high-quality digital educational content) and the improvement of digital skills (24 Osvita, 2021a).

COVID-19 as an incentive for the transition to distance learning

As noted, distance education arose due to the need to meet the educational needs of people who could not traditionally receive a full education due to the significant distance of their place of residence from educational centers, inability to attend schools due to health problems, lack of funds for living in the location of educational institutions with qualified teachers, etc. Under the influence of these natural factors and following the development of communication technologies, distance education was gradually introduced into the social life of different countries.

The process was rather slow, despite the advent of radio, television, and then computer technology. However, the COVID-19 pandemic proved to be a powerful, shocking factor, which proved the expediency and even the need for distance learning, and also significantly accelerated its implementation.

In many countries, the situation was such that in the conditions of quarantine, lockdown, etc., a dilemma arose: either the country (region of the country) switches to distance education, or the educational process is completely suspended during quarantine / lockdown.

Vaccination can prevent the restriction of classes in educational institutions. However, the situation in this area differs significantly from country to country.

First of all, it should be remarked that vaccination against COVID-19 is not mandatory in most countries. However, the governments of France, Italy, Greece, the United States, Russia, and a number of other countries have decided to oblige certain categories of citizens to be vaccinated against the coronavirus, mostly medical and social workers. In some countries, decisions on compulsory vaccination of various categories of citizens are made by local authorities. In Germany, for example, the possibility of requiring kindergarten and school staff to be vaccinated is being discussed.

In general, it can be stated that at the beginning of the school year, there are the following approaches to vaccination of educators (teachers of educational institutions of different levels) and pupils (students):

In the United States, as of August, approximately 60% of New York City educators and 43% of 12- to 17-year-olds received at least one dose of the vaccine. New York City teachers have been required to vaccinate before the start of the school year, which begins on September 13. The day before, the city authorities issued a similar directive stating that educational staff should be vaccinated or regularly examined at COVID-19. Unvaccinated people will have to take appropriate tests regularly.

The introduction of compulsory vaccination or testing is likely to be difficult for schools as the question arises as: to who will be responsible for meeting the requirements, what should be the regularity of tests, who will organize, conduct testing, and monitor this time-consuming process. Moreover, it is still unclear what the

reaction of the school administration should be when someone appears at work without the test results, and what means of influence can be applied to him. Instead, the head of the union, which represents school principals, Marc Cannizzaro, says the requirement for vaccinations or regular check-ups for city educators "sounds reasonable" (Golovina, 2021). Israel has introduced voluntary vaccination for adults and children over 12 years of age.

Lena Zelman (a teacher of special inclusive education within secondary schools) said in a comment to the New Ukrainian School that at the beginning of the pandemic, teachers were one of the first to be given the right to be vaccinated. Schools promptly prepared lists of those willing to be vaccinated, which allowed teachers to be vaccinated faster. Today, outpatient clinics accept all those who want to be vaccinated without restrictions. For such professions as teachers, psychologists, psychotherapists, tutors, caregivers, a green passport is mandatory. If you have not been vaccinated, you need to take the test in 72 hours. It is unclear who will pay for these tests. Until now, the tests were free. The government is proposing to introduce restrictions on the payment of unvaccinated people to convince them of the need for vaccinations (i.e. to oblige them to pay for the tests themselves).

Even before the start of the school year, teachers in Israel were warned that it was possible to return to mixed secondary and high school education if the incidence rate increased. The quarantine system remains in place: if one of the teachers or students in the class falls ill, self-isolation is mandatory for the whole class for two weeks. Or one week, if two tests in a row show a negative result.

It should be regarded that, although some schools had the opportunity to arrange rapid inspections on Covid-19, many parents reacted negatively to this initiative (Golovina, 2021).

In Japan, vaccination against Covid-19 is not mandatory, as it is considered a violation of the Constitution. Instead, the Japanese rely on collectivism and civic responsibility. PCR tests are taken only if necessary - if you experience the first symptoms of the disease or have been in contact with a patient with coronavirus. Masks must be worn in all rooms. This mandatory rule has been in force in Japan for a year and a half.

The New Ukrainian School has not had distance learning since the coronavirus pandemic began. But she does not know about other schools. In

general, according to her, "Everyone is waiting for their turn and invitations. It is not about vaccinating children. There is no coercion, no sanitary passes, codes, discrimination, etc." (Golovina, 2021).

In Finland, before the beginning of the last school year, the rules of training in the conditions of COVID-19 were promulgated. These rules are essentially recommendations of the Finnish National Education Agency, the significance of which is since, following the current exceptional arrangements caused by the situation with COVID-19, the Finnish National Education Agency (EDUFI) advises and produces support materials for education and training providers. (most often municipalities or joint municipal authorities as local education authorities). The guidelines consider current legislation, the guidelines prepared by the Ministry of Education and Culture, and the Finnish Institute of Health and Welfare (see guidelines below).

Based on the recommendations of the national level, the principals and management of the municipal education (together with the staff and other members of the educational community) decide on the detailed practices to be adopted, according to the best works best in the local context. These practices may differ in various parts of the country. Education providers monitor the epidemiological situation and possible constraints in their region and can rely on constantly updated national guidance when deciding on arrangements at the local level.

The defining focus of this document is that the National Level Instruction stipulates the possible need for a rapid transition to appropriate measures in education - as was done in the spring. To prepare for a potential new outbreak of the COVID-19 virus, a temporary amendment was made to the Basic Education Act. The amendment allows for the temporary introduction of exceptional training activities in primary and lower secondary education at the discretion of the education provider if contact training cannot be organized safely. The safety assessment of contact training will be carried out in cooperation with the regional authorities responsible for infectious diseases, based on a decision to be issued following the Law on Infectious Diseases.

For secondary schools, vocational schools, universities, and universities of applied sciences, as well as for educational institutions that provide a liberal education and basic adult education, the decision to use distance learning depends on the

education provider and does not require a separate administrative decision of the infectious disease authority.

Simultaneously, vaccination against coronavirus in the country is voluntary for everyone aged 16 and older. Kari Kivinen (the principal of the Finnish-French Gymnasium in Helsinki) told the New Ukrainian School that The Finnish Teachers Union had asked the government at the beginning of the vaccination campaign to give teachers the right of first vaccination to receive two doses before the start of the school year. However, he noted the existence of problems, which are that "today 10,000 Finnish teachers remain unvaccinated. This is around 50% of teachers. Discussions are underway in the government on how to allow unvaccinated teachers to work. How often and regularly do they have to take PCR tests, at whose expense? There are no clear instructions yet. Currently, PCR tests are free, if there are indications – someone is feeling unwell or has been in contact with a patient with the coronavirus (Golovina, 2021).

In Ukraine, which has been in the yellow quarantine zone since September 23, 2020, many schools have begun to move to online education. Many school teachers have not yet been vaccinated. In addition, a certain number of teachers do not promote but resist vaccination against COVID-19, which negatively affects the general state of the organization of the traditional educational process. Moreover, the resistance to vaccination is accompanied by appeals in court against the obligation of teachers to be vaccinated (Leshchenko, 2021), legal advice on the consequences of refusing vaccination, with hints of their rather skeptical attitude to its implementation (Romanova, 2021). (However, as noted above, this attitude also occurs in other countries).

As a result, only a third of schools in Ukraine will be able to work offline in the yellow zone. According to Hryshyna, out of 17,000 schools in Ukraine, only 38% can work offline and not switch to distance learning. She also said that, according to regional state administrations, almost all schools in Chernivtsi, Lviv (90%), and Ivano-Frankivsk regions should be closed. They have a vaccination rate of less than 80%. According to her, not all schools will be able to work in other regions: in the Poltava region, only a third (246 schools) will be able to work, others will switch to distance education; in the Zaporizhzhia region, all educational institutions will be completely closed, where 80% of those vaccinated are not until the staff is vaccinated; in

Kyiv region, 48% of kindergartens, 57% of schools, 48% of out-of-school educational institutions and 86% of vocational education institutions will continue to operate. In addition, Chernivtsi, Volyn, Ivano-Frankivsk, and Ternopil regions are approaching the red level of epidemic danger in Ukraine.

It would seem that under such conditions, the transition to distance learning is unalterable, but as of October 7, 2021, only 10.9% of schools in Ukraine operate using distance learning. As reported by the Ministry of Education and Science at the request of Ukrainian News: "According to the operative information of local education authorities, as of October 6, 1574 general secondary education institutions operate using distance learning" (Yakymenko, 2021).

Jaime Saavedra and Emanuela Di Gropello (2021) in their article «COVID-19 and the Learning Crisis in Latin America and the Caribbean: How Can We Prevent a Tragedy?» assess the difficult situation in the field of education in Latin America and the Caribbean, which arose after the introduction of quarantine measures, as catastrophic. They predict a possible loss of prospects for 120 million pupils and students, ie for a whole generation of young people who are forced to miss at least a year of study. The problem is exacerbated by the lack of Internet access for a large number of pupils and students. In particular, no more than 77% of pupils and students in the region have access to the Internet. At the same time, among the poorest sections of the population of the respective countries, this percentage is even lower: Peru 14%, Mexico - 19%, Panama - 24%, Colombia - 25%. At least 15 percent of students may never return to school. As education deteriorates, poverty in the region could rise by more than 20 percent, from a baseline of 51 percent to 62.5 percent, equivalent to about 7.6 million non-students. After 10 months of school closure (full school year), 2 out of 3 junior high school students (71 percent) may not understand the medium-length text, compared to 55 percent before the pandemic. This could increase to 77 percent if schools remain closed longer. These results also have a direct cost to both the individual potential of students and future productivity for their countries. For example, losses in education could lead to a fall in future potential aggregate revenue for the region of \$ 1.7 trillion, or about 10 percent of total basic income, equivalent to about 16 percent of regional GDP. According to the authors of the article, the governments of the region should act now to mitigate the negative effects of the crisis.

Thus, in many countries, the COVID-19 pandemic has become or may become a powerful stimulus for the active use of various forms of distance learning. However, such a transition is associated with significant difficulties, largely due to the same COVID-19.

COVID-19 as a factor in the problems of distance learning

The experience shows (and experts confirm) the emergence of several problems in the practice of distance learning, which is carried out in extreme pandemic conditions.

Among these problems are the following.

1. Psychological unwillingness of children and their parents to move to distance learning (the consequences of which in Ukraine, in our opinion, are also due to the general psychological unwillingness of Ukrainian society to work remotely (Zanuda, & Kovalevska, 2021). The former Minister of Education Hrynevych states that distance learning is a forced step in the situation that has developed due to the pandemic. She is confident that online learning will never be able to replace full-time (24 Osvita, 2021b).

According to Makarenko, co-founder of the Smart Education NGO, parents said (in a survey) that children began to study worse during quarantine, and the tensions in the family around the school increased. 80% of students experienced stress, anxiety, sadness, loneliness, difficulty concentrating on learning, and decreased motivation.

The WHO said that the level of domestic violence in Europe had increased by 60%. And there are objective reasons for that. Previously, the family decided to transfer the child to distance, the family form of education or external, when they felt ready and had the desire. There were 4-5% of such families. After all, the transfer of knowledge is only one of the functions performed by the school. Someone had to take responsibility and deal with the problems of learning, development, and socialization of the child. Other features include safe storage of the child while parents are at work, as well as the ability to communicate and interact with friends and other people. During quarantine, most of those, who found themselves in forced distance learning were not ready for it.

Not all parents can be good teachers for their children. They have no pedagogical education,

are busy with work, and are stressed. Added to this are the natural problems in the communication of parents with adolescents who are forced to stay in the same room in quarantine around the clock.

Even in countries such as the United States and the Netherlands, where quarantine education is better organized, they also face irritability, stress, and increased aggression because they are forced to lose their jobs or have to work from home, to give children and their education more time and attention than usual. They are also afraid of losing credibility and having an incompetent look in the child's eyes when helping with learning.

In turn, teachers have increased the workload from preparing for online lessons, extreme learning of digital competencies, communication with students' families 24/7.

Therefore, not surprisingly, the expert believes that sociologists around the world record mass fatigue, immediately before distance learning as such and the desire to return as soon as possible to the usual classroom system in school (New Ukrainian School, 2021).

This, although to a lesser extent, applies to university students, who last year identified several major shortcomings in distance learning. These include too many homework assignments, poor organization of classes, and low computer literacy among teachers.

According to university teachers, distance learning is a good opportunity for students to learn to better organize themselves. While studying at home, students do not need to spend time on meetings and the way to the university and back. During this time, they will be able to do something useful or better study the material. But, on the other hand, some students use it and are present only formally (24 Osvita, 2021c).

2. Organizational (managerial) unpreparedness for widespread use of distance learning in a pandemic.

Thus, in Ukraine, during the "hard" quarantine in 2020, an unprepared, methodically unsustainable attempt was made to conduct lessons with the help of television, which greatly contributed to discrediting the very idea of such lessons.

At the same time, in the spring and summer of 2020, the Ministry of Digital Transformation of Ukraine, instead of creating and disseminating

cognitive and methodological materials on the essence, meaning, organization of distance learning, was engaged in creating a series on how to become a popular YouTube blogger; educational series about TikTok, Instagram, and Facebook, about open data for business, etc. (MediaSapiens, 2020).

12% of families, according to the education ombudsman, did not have enough computer equipment for online learning. There were problems connecting to high-speed Internet, and sometimes it was not there at all. Then teachers had to leave paperwork in schools or transport them by bicycle.

Undoubtedly, over the past year and a half, teachers' digital skills have improved immensely. Many teachers have mastered Zoom, Google Classroom, Microsoft Teams, and more. At the same time, most try to conduct the same lessons as in the classroom, only through gadgets – and this is called the synchronous mode of distance learning. They also send students in Viber tasks for self-study from a paper textbook and receive back the photos with the homework photographed on the phone. And this is called the asynchronous distance learning mode.

"Obviously," says the expert, "this is not a real distance learning" (New Ukrainian School, 2021).

3. Technical threats in the field of information.

Distance learning poses threats to information security, including threats to the security of personal data.

BBC News Ukraine's study of the ethical issues surrounding quarantine online schooling has shown that it has also raised the issue of cybersecurity.

Among the relatively innocent side effects of distance learning (strange or even unacceptable nicknames in student ZOOM chats, online disruption of lessons, etc.), some can harm the psyche of students. In particular, in Telegram channels, in addition to the link to the ZOOM-lesson, the names of classmates are added, under which you can go so that the teacher does not calculate the stranger. Usually, unknown people limit themselves to outrageous performances with obscene language, start broadcasting provocative videos, turn on music loudly, but there are also dangerous incidents when scary pictures are turned on and children are addressed by name, children are really scared.

Education Ombudsman Serhiy Gorbachev confirmed to BBC News Ukraine that this is a serious problem of distance education: "Unfortunately, we know this problem quite well. At the moment, together with the Digital Ukraine Association, we will prepare recommendations on how to prevent this" (Kobra, 2021).

Concerning universities, the damage to information security can occur in cases of breaches of confidentiality, which often occurred at the beginning of the use of distance learning on the day of the first lockdown (quarantine).

Thus, in April 2020, the narratives (which spoke about the usefulness of this platform for those in quarantine) mentioned that there are problems with confidentiality.

In particular, "during the quarantine, a program for video calls called Zoom became popular. It can be used for lectures, student presentations, discussions, and virtual working studies," wrote TeachOnline. What is more, Zoom is available in the free version, which has most of the key features.

But even then, there was alarming information that some companies refused to use Zoom for video conferencing due to concerns about security vulnerabilities. Ilona Maska's rocket company SpaceX and NASA banned employees from using Zoom, and SpaceX referred to "significant privacy and security issues." SpaceX imposed the ban a few days after a warning from the FBI urging users not to post meetings or share links in the program. The FBI has received reports of unidentified individuals interfering with the conference in the application. The Attorney General of New York also asked Zoom about its ability to cope with the growing number of users. The letter, published in the New York Times, said that Zoom was in no hurry to eliminate the vulnerabilities, "which could allow attackers to gain hidden access to consumer webcams" (TSN, 2020).

Prospects for distance learning in the conditions of COVID-19 and after it

Despite the mentioned shortcomings of distance learning in COVID-19, experts are convinced that this is a temporary condition that can be improved, as distance learning, in particular, allows you to learn at your own pace, choose the level of complexity, and perception, flexible schedule. Adolescents can sleep an extra hour,

which is critical to their development. You can spend more time with your favorite subjects.

The results of a comparative study of the effectiveness of classroom and distance learning are interesting and encouraging.

For example, the University of Copenhagen has found that online students participate more in lectures than physical participants.

In particular, this is since the COVID-19 pandemic has forced the introduction of flexible teaching methods. As a result, many instructors have learned to deliver their plans and instructions through Zoom and Teams. In the fall of 2020, students returned in limited numbers. They were welcomed by HyFlex Learning, in which half received distance learning and the other half were physically present. This new rule has become part of the daily lives of UCPH students.

A researcher at the University of Copenhagen found out how the HyFlex instruction for large lectures worked in practice and reported in a publication in the Danish journal *Læring og Medier* (Learning and Media).

“What surprised us was how active the online students were in terms of questions about their studies. They asked a lot of questions in their chat rooms, as opposed to physical visitors who asked very few questions to teachers,” - explains Helle Mathiasen, a professor at the research department behind the study.

Students recognize that it is easier to ask questions in a chat than in a physical space where students do not want to be tied up as “he or she who asked a dumb question.” Another possible explanation for why online students were more active in chats may be that they are used to communicating with each other in writing on social media,” - suggests Mathiasen.

Differences in participation between online and physical participants are also related to expectations of what the lecture should look like. Professor Mathiasen explains: “Some students expect that large lectures involve mostly one-way communication with the instructor. But... several research projects show that students learn the most when they actively interact with the material, for example, by asking about things they are not sure about or looking for confirmation.” “If we do not actively use what we learn in learning, it is quickly erased from our memory. That’s why chats provide a fertile

ground for deeper understanding, because there is more communication between students, as well as with the teacher,” - she says.

Although chat can be a useful learning tool, some aspects cannot replace physical attendance, where students experience gestures, eye contact, and body language as part of learning.

“Online education cannot stand alone. However, blends such as HyFlex can serve as learning formats that will be more widely deployed in the future. And in particular, if there is an electronic moderator who includes questions from the chat and controls the camera in a dynamic way that allows distant students to see when the lecturer writes on the board or points to slides, which generally makes them feel seen,” she said, concluding: “However, we must fight our tendencies to censor ourselves or be ashamed to ask important questions. Here, the instructor can play an important role in telling his students that it is normal to make mistakes” (Mathiasen, & Bregnhøj, 2021).

The thesis about the need for physical communication, eye contact in the learning process, is related to the need to improve the technical means used in this area.

And the necessary steps in this direction are already being taken. In particular, Facebook announced the development of a new technology Horizon Workrooms. You wear a VR headset and see your colleagues as avatars in a virtual room. According to the tech giant, the technology will not only help get rid of annoying calls in Zoom but also return us to the “chemistry” of personal communication. Theoretically, an avatar in cyberspace will reproduce gestures and body language. Horizon Workrooms does not aim to replace the real world but rather complements it. Therefore, it will be attractive to the younger generation, familiar with the world of virtual games.

Another alternative is holograms. Canadian company ARHT Media has launched a 3D display that places users in meetings. Technology startup Spatial implements meetings in holographic style through the Facebook headset Oculus Quest.

In March 2021, Microsoft launched an augmented and virtual reality tool called Microsoft Mesh. Mesh, where the technology involves both the use of holograms and what the company calls “holoportation” - a virtual visualization of your real “I” in the digital space.

Other options for online communication are being developed, related to the invention of more effective tools (Miro online board, which allows users to collaborate in real-time, etc.) (Zanuda, & Kovalevska, 2021).

Conclusions

The study of the importance of distance learning in the context of COVID-19 showed the existence of several problems in this area.

First, there are the problems of ensuring (technical, organizational, ethical, etc.) the process of such training. As the practice of lockdown has shown, the vast majority of universities have been unprepared for distance learning. If, for example, some companies gave all employees computers with the necessary software at home, regularly conducted training for employees, etc., then for most universities it was too expensive a pleasure, and, therefore, they limited themselves to the general organization, shifting in most cases its adjustment to teachers who read the relevant courses.

Secondly, it is necessary to provide quality methodological support for distance learning.

It is worth noting here that Smart Education has specifically studied the successful experience of organizing distance learning to help teachers and parents to establish training in quarantine.

At nus.org.ua, there are many recommendations, examples, tools, and best practices for distance learning, which, according to experts, should be used.

Third, there is the problem of ensuring the psychological readiness of participants in the learning process and society as a whole for distance learning because even after the end of the pandemic, society will continue to develop online.

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