

# E-LEARNING: CURRENT TRENDS DURING THE COVID-19 PANDEMIC

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## ABSTRACT

*The development of digital technologies has significantly influenced the spheres of human activity around the world. The article examines the key features of the modern education system, taking into account the reform of the educational process through the introduction of modern online technologies. The existing educational services are structured to make it possible to single out the process of transformation of the education system under the influence of the new trends.*

*All of the educators around the world were arguing the features of e-learning during the covid-19 pandemic. The intensive use of digital resources in the education field will ensure the effectiveness of the educational process and its adaptation to the volatility and uncertainty caused by the pandemic around the world. We considered and highlighted the main aspects of the development of e-learning platforms in the context of the pandemic.*

*The article formed a comparative characteristic of the most used e-learning concepts, which made it possible to substantiate that the development of e-learning platforms within the covid-19 pandemic is the most effective and rational method to conduct multichannel training.*

**Keywords:** E-Learning; Digital technologies; Education system; Pandemic Covid-19.

## INTRODUCTION

In the context of the digitalization of all sectors of economic activity, the development of distance learning is quite relevant. This is because professional knowledge is aging very quickly due to globalization and internationalization. Thus, it is necessary to constantly and continuously improve our knowledge and skills. The development of multi-channeled digital technologies is making increasing demands on the training of new university personnel. In addition to high professional competence, university personnel must possess knowledge of modern information technologies and be actively able to use them. They need to know how to use and implement distance e-learning. It should be noted that the consumers of educational services comprise are only schoolchildren and college and university students, but also a significant portion of the adult population.

In the context of the transformation processes of the world economy, there has been a sharp increase in the demand for educational services, including distance e-learning. E-learning is the most widespread form of distance learning. Its use has steadily expanded over

the past 10 years. E-learning can remove many barriers in the learning process: geographical, physical, socio-economic, and financial. All learners can engage in the learning process in a place that is convenient for them.

The use of e-learning may lead to reducing remuneration, the rental costs of premises, and the payment of various fees and expenses associated with regular face-to-face education. The use of e-learning allows us to expand the capabilities of universities and gain access to those students who cannot attend classes for a variety of reasons. It should be noted that traditional educational institutions were the first to try e-learning. Various forms of e-learning, including hybrid programs or a mixture of face-to-face learning and online learning are offered by many colleges and institutes. E-learning may be offered in synchronous or an asynchronous mode. In a synchronous mode, learners may listen and/or see live broadcasts of teachers. They can interact with the professor in real-time. Thus, both the professor and student must be available at the same time. In an asynchronous or non-synchronous mode, the learners may listen or view recording and complete online activities at a time and place of their choosing. To ensure the continuity of the educational process during the covid-19 pandemic and to reduce the physical contact of all participants in this process, e-learning is being used more than ever.

The first attempts at introducing distance learning in the world occurred in the 30-60 of the twentieth century in Western Europe and the USA. The world's first university of distance education was the Open University, which was created in the UK. It was personally supervised by Prime Minister Harold Wilson, who contributed to the development of curricula, programs and teaching materials and new educational approaches to teaching. According to the German scientist Peters (1971), this approach to organization is a more one-way communication, which was provided using television broadcasts, audio and video recordings and is a period of the industrialization of society. Today in England, the Open University is a leader in the use of digital technologies in the educational process and the spread of distance learning among the countries of the European Union. For many institutions, the marketing of e-learning is to attract foreign students rather than domestic students. Another impetus to the development of distance learning was the development of railways in Western America.

The first Correspondence Education program opened at the University of Illinois in 1974. According to Keegan & Rumble (1982) the beginning of the development of distance learning is associated with the scientific and technological progress in various industries. For example; the development of computer technology, the expansion of postal services and railways all spurred the development of distance learning. In contrast to this view (Volov, 2000) believes that the prerequisites for the development and appearance of distance learning appeared in the twelfth century with the development of pedagogical tools, the opening of universities, as well as the development of book printing and the formation of research methods. Particularly noteworthy is the fact that in the last decade of the twentieth century, some educational institutions, including London University, Scottish University of St. Andrew, Royal University of Canada, Chicago University (USA), Queensland University (Austria) and many others developed correspondence courses (Alfarsi et al., 2020). It was at this time that the concept of "distance learning" was introduced. However, the development of the primary forms of distance learning became possible thanks to scientific and technological progress, namely the massive introduction of postal, telegraph, telephone, radio, and television. A new stage in the development of distance learning began with the use of computer technology and training in the 1960s.

According to Barnard (2020); Sleeter and Zavala (2020); Whang and Yan (2020) the establishment of distance learning is directly related to technical progress, namely, the

development of computer technology. The main factor that impeded the use of computer technology in distance education was the cost of these technologies. The appearance of computers in the 1970 necessitated the improvement of curricula that incorporated information technology. During this period, educational innovations increased in Western Europe, United States of America and Canada. This contributed to the appearance of some changes in the field of science in the countries of Eastern Europe. The emergence of the global Internet began in the 1990. At that time, digital pages were standardized and the NTML format for presenting data on the network was developed by Sintema (2020), who studied the development and leading methods used in open education observed that distance education was increasing accessibility by enabling those who could or were unlikely to obtain an education by traditional means to obtain an education. It should be noted that open education, as opposed to distance education, is primarily aimed at searching for new teaching methods and tools, updating training and organizing the educational process, and new technologies matter only in the context of their creative use in the education system. Another common in modern conditions is electronic education, which demonstrates a different type of educational system, the educational process of which is supported by digital technology (Kibuku et al., 2020). However, the presented historical data and scientific approaches to the formation of distance learning indicate that in the literature there is no single approach to the definition of "distance learning" and no single point of view regarding the types of training used. A more detailed study and analysis could be conducted. E-learning is quite popular and one of the most effective teaching method offered by modern universities.

## MATERIALS AND METHODS

As the coronavirus infection spreads globally and quarantines continue, there has been an increased use of online technologies in all sectors of the world economy, including education. Because of the relevance and necessity of using e-learning during a global pandemic, this article focuses on a critical analysis of the theoretical foundations for the development of distance learning and its trends in the world. A systematic analysis of existing research in the field of education was conducted to ascertain the concept of "distance learning". We focused on examining the historical aspects and stages of development of distance education and its relationship to information technology. The structural and logical analysis allowed us to consider the key features of the modern education system, taking into account the reform of the educational process using modern online technologies. The results of this analysis allowed us to determine the key features and benefits of distance and e-learning and their use in the world.

Theoretical generalization and critical analysis allowed us to identify the main types of the most used online learning platforms at universities around the world. The specificity and key characteristics of modern e-learning platforms that are used in different countries were clarified. The main e-learning platforms that are most used in the global coronavirus pandemic are classified. The results of this classification made it possible to conduct a comparative analysis of the presented educational e-learning platforms in the countries of the world, highlighting the key specifics of their activities and methods of use.

This approach allowed us to conceptualize a single e-learning platform. Those were intensively organized and used in educational processes in the world in the context of the coronavirus pandemic. It is proved that the transformation of existing types of educational services to optimize this process, the development of an individual approach, personal motivation, the convenience of using active forms of learning and the rational distribution of time leads to the active development of various forms of e-learning in the world. Using a

comparative analysis and classification of existing education platforms, it is proved that the intensive development of various e-learning platforms in the context of the covid-19 pandemic is one of the most effective and rational methods that allow multichannel learning in modern conditions.

## RESULTS AND DISCUSSION

Many countries have determined that they need to transform the education system to benefit from the global economy. Distance learning has become an integral part of modern education - currently, this type of training is no longer an option; it has become a primary means for delivering an education. In the effort to reduce covid-19 infections, UNESCO, more than 1.5 billion schoolchildren or 87% of the total number of students were left without schools (Bates, 2001).

Distance learning and digital technology are being used to provide education during the spread of the covid-19. The educational departments in many countries have established digital platforms for learning and instruction. They have provided teachers access to videoconferences, webinars and plans for educational events. The digitalization leader in South Korea is the prevalence of e-learning in ordinary schools and universities up to 80%, and there are options for full or partial training in virtual schools and cyber universities (Alfarsi et al., 2020). It should be noted that since 2007 the country has been running the Electronic Textbook program, which was developed and used as a virtual interactive 3D book using additional reality, which has additional combinations of images of real objects, text and other information.

The implementation of this program provided an increase in the percentage of academic achievement by an average of 30%. Since 2015, the digital revolution began in the field of education, the government abandoned paper textbooks and materials. Similar trends in the digitalization of the education system are observed in Singapore, with the goal of building the world's first intellectual nation. Virtual laboratories, interactive maps, and many other innovative approaches to the education system are being actively introduced. In the United States, public schools remain closed until the end of the school year due to the proliferation of the coronavirus pandemic. As for digitalization, in the United States since 2012 a program has been developed for the interactive teaching of pupils and students (Jones, 2019; Fei, 2020). The transition to an interactive form of training and the rejection of paper textbooks significantly reduced the cost of many textbooks. However, Finland is considered the most advanced state in Europe in the field of e-learning, since its progressive education system is based only on innovation.

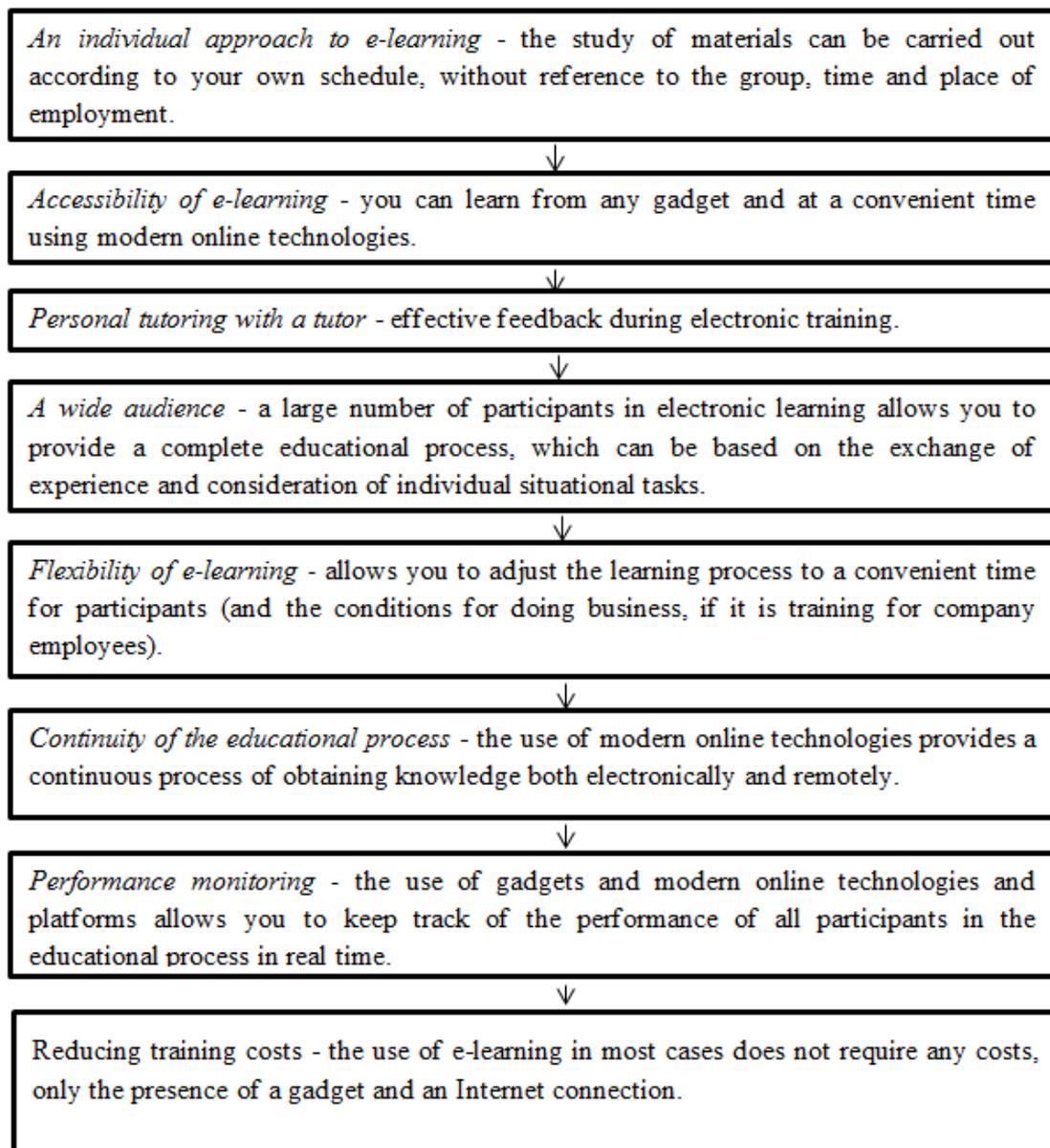
The educational process takes place with the use of advanced digital online technologies, but not everyone has access to these technologies, which emphasizes the inequality in Finnish education as well as throughout the world.

This is because the easier it is to consult with the teacher about the correctness of the assignment and study the topic, the higher will be the result of this e-learning. Particular attention should be paid to the fact that the Internet and digital technologies have combined the concepts of online and distance learning. These two training options in the current conditions of the spread of the covid-19 pandemic imply learning outside the classroom on an individual schedule. The main advantages of using e-learning in the world in a covid-19 pandemic environment are presented in Figure 1.

The covid-19 pandemic made enormous adjustments to the educational processes in all countries of the world, which led to the revision of curricula, the development of

individual innovative learning platforms and individual educational sites and portals for organizing e-learning using innovative technologies.

The emergency transfer of training to the electronic version in a pandemic has significant differences from properly planned e-learning based on the massive open online courses and lessons. Educational organizations, forced to work with their students remotely in order to reduce the risks of the spread of coronavirus, should be aware of this difference when evaluating the effectiveness of this type of e-learning. It should be noted that in the context of the spread of coronavirus infection, most universities, colleges, schools around the world, on the recommendation of the World Health Organization, have decided to switch to e-learning.



**FIGURE 1**

**THE MAIN ADVANTAGES OF USING E-LEARNING IN THE WORLD IN THE CONTEXT OF THE COVID-19 PANDEMIC**

On average, about 80% of educational institutions have switched completely to e-learning. However, this process requires technical personnel who support electronic platforms and e-learning systems, which can also be accompanied remotely, but also require an actual presence in the buildings of universities, colleges and schools, but the staffing level of such employees is small and does not contradict quarantine measures (Firmansyah, 2021).

Numerous studies in the field of educational technologies are based on the fact that the basis of e-learning is a carefully planned educational process, which should be accompanied by methodological support and a focused sequence of teaching materials that ensure the achievement of learning outcomes in a particular learning format.

To ensure the effectiveness of e-learning for authors developing programs and courses, it is necessary to take into account the main aspects of design with alternative options for implementing online learning:

1. A learning model (use case for the provision of educational services: e-learning; blended learning with a different ratio of full-time and online learning formats; webinars);
2. The rate of development of educational material (mastering at any convenient place, which is set by the teacher, the set learning rate affects the end result of the training);
3. The number of students (depending on the audience and the number of participants, it is worth planning a training course and its main stages);
4. A pedagogical approach and educational technologies (an explanatory course or a practical orientation course for organizing a joint e-learning process);
5. The purpose of assessment in the course (determination of key criteria for the student's readiness for new material, organization of adaptive learning, diagnostics of the achieved results of e-learning);
6. Feedback (automation of the process of providing educational services, including the process of interaction between participants).

Therefore, correctly formed approaches to the organization and planning of e-learning will provide students with an educational result, and a teacher with positive feedback.

In the current conditions of the intensive spread of the coronavirus pandemic, the transition to e-learning should be carried out as soon as possible, all the necessary conditions for organizing e-learning should be created in advance, and teachers should have experience using online learning tools and innovative educational platforms and student support services. Due to the high risk of coronavirus infection, the only possible and adequate response of universities and colleges to an external challenge was a temporary complete transition to distance learning. In addition, under these conditions, all possible resources of universities, partner universities, external content and service providers were used to implement the educational process via the Internet.

Digitalization of the global economy and the intensive development of Internet technologies lead to transformational processes in the education system. Over the past decade, the world education system has ceased to be standardized; more and more often, representatives of the Z generation consciously choose remote channels for educational services using innovative e-learning platforms (Akhmetshin, 2021; El Refae, 2021).

This demand for various e-learning tools is provided by an appropriate offer on the market, which is characteristic of the emergence of large resources, both on a paid basis or a free basis. In modern conditions, training is available from anywhere in the world, you just need to have the appropriate gadget and Internet connection.

In modern conditions, e-learning is adapted to the thinking mechanics of more advanced and competent people who seek to expand the channels of information and want to

increase the level of specific professional skills, while the cost of this training will be a weighty argument for this. It should be noted that in recent years there has been a rapid increase in the share of e-learning in the world, which is associated with costs, or rather less than full-fledged obtaining a diploma at universities and colleges.

It is important to note that the intensive use of modern e-learning platforms is associated not only with its cost or free of charge, but also with many other weighty arguments such as a personal approach to learning; adaptation mechanisms for obtaining knowledge; the flexibility and convenience of organizing learning processes depending on the form and type of activity.

Based on this, according to the results of a study of the main trends in the development of modern e-learning platforms in the world, their classification, and the key features of using each of them in the educational system, which is presented in Table 1, are compiled.

<b>TABLE 1 CLASSIFICATION OF MODERN E-LEARNING PLATFORMS IN THE WORLD AND THEIR KEY FEATURES OF USE</b>	
<b>E-learning platform</b>	<b>Features of using the e-learning platform</b>
Coursera	The advantage is the existence of an official mobile application for iPhone and Android. This platform provides post-graduate courses in physics, engineering, humanities, art, medicine, biology, mathematics, computer science, economics and business.
Khan Academy	Nonprofit educational academy, created in 2006 by a graduate of MIT and Harvard Salman Khan. This platform provides high-quality education in the field of quantum physics, historical sciences, culture and literature. Training is carried out by reviewing overview videos and cycles of materials in these areas.
Microsoft Virtual Academy	This e-learning platform is based on teaching users the basics of programming, in the most accessible format. All courses are free, using the knowledge of Microsoft experts. The list of educational programs includes learning HTML5, CSS3 and JavaScript, developing games, applications, visualizing servers and much more. Courses are provided for different levels of training, from beginners to advanced programmers.
Universarium	The largest Russian online learning platform was launched in 2013. The choice of courses is quite large: from basic sciences, such as physics, chemistry, mathematics, to niche courses in robotics and aircraft modeling.
LoftBlog	Online platform in the field of electronic learning by IT technologies. This training is free, which is carried out through video lessons that are implemented in a harmonious website design. The team of the educational portal consists of practitioners with real experience in this field. The partners of the project are Microsoft, Google, IC, Yandex and many others.
Lectorium	The non-profit project of the founders from St. Petersburg began its work in 2009. It is the largest video archive of the educational direction in Russian. Collaborating with the Ministry of Education and Science of the Russian Federation, Lectorium enlisted the support of leading universities in Russia and Europe.
Zoom	An American company in San Jose, California, which provides remote conferencing services using cloud computing, created the platform.

4Brain	The platform is designed to develop personal qualities and skills that are not taught in the walls of schools and universities: analytical, creative, communicative and organizational. 4Brain offers to learn leadership skills, negotiation, writing, pump creative thinking and emotional intelligence.
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Table 1 presents the most used e-learning platforms in the current context of the coronavirus pandemic. The presented classification is not final and in every country and region of the world there are many of its own, internal platforms for implementing e-learning in the context of the coronavirus pandemic. In this regard, it is worth considering in more detail the features of the organization of the process of obtaining educational services in the context of a coronavirus pandemic. After the World Health Organization determined on March 11, 2020, all scientific institutions around the world began to shut down in an attempt to slow its spread (Lassoued et al., 2020). The emergency transition in e-learning is the result of efforts to combat and prevent the entry of coronavirus into student communities. A training program for all travel participants (Liu, 2019). Consequently, the rapid transition to online platforms destroys curricula, which is associated with the inability of many teachers to manage new e-learning tools. All of these services have been suspended (Al-Ababneh & Alrhaimi, 2020). It should be noted that although the fact that the emergency shift requires training, it has its advantages, and students cannot waste time and money traveling to the university, attend public transport, classrooms, public cafes and more.

E-learning allows you to ensure a full-fledged cycle of obtaining educational services while minimizing financial costs, as well as over time to acquire new knowledge, which in turn reduces the risk of spreading and contracting coronavirus infection through distance learning. Based on this, it is worth considering in detail the main aspects of the functioning of innovative e-learning platforms in various countries of the world during a pandemic.

In modern conditions of digitalization of society, educational platforms allow people to gain new knowledge easily, quickly and efficiently. It is worth noting that in the world there is a tendency to reduce the use of passive learning with a classical approach. Passive learning is characteristic of the fact that the student simply listens to the necessary material at the lecture, which, as modern practice shows, is not very effective, unlike the integrated combination of watching short videos, exercises, conducting discussions and webinars.

These approaches can be applied in the classical scheme of providing educational services, however, for this it is enough to integrate the lecture part of training with active exercises, discussions using interactive teaching methods and modern online technologies.

However, it should be noted that for the effectiveness of the educational process it is necessary to constantly improve it and apply new approaches, techniques and tools. In connection with the spread of coronavirus infection in the world, the issue of ensuring the continuity of the educational process through distance and electronic training formats has become an acute issue (Syed, 2020).

The World Bank is actively collaborating with the Ministries of Education of countries to provide support for their efforts to use all kinds of educational technologies to provide pupils, students with the opportunity to gain knowledge during the quarantine period to combat the covid-19 pandemic. During the pandemic period, the education system will not be implemented as usual, and the use of innovative technologies that will fill in the gaps in education and restore its continuity is mandatory.

One of the reasons why e-learning does not reach its potential is due to the digital divide. This is the result of different degrees of access to the Internet and mobile networks. This digital divide is due to the inaccessibility of mobile and Internet networks in middle and low-income countries (Al-Ababneh et al., 2020). However, the government of these countries

can provide immediate support by informing teachers of schools, universities and universities about simple grassroots platforms where they can share their own educational decisions. Educational television and radio broadcasts in combination with new channels for obtaining educational services are quite effective channels between participants in this process.

The massive closure of schools and educational institutions due to the spread of coronavirus infection affects the process of obtaining knowledge around the world. As of late March 2020, more than 180 countries have closed educational institutions, affecting approximately 87.4% of students (more than 1.5 billion students). It is worth noting that the government of different countries took measures to help organize the learning process remotely using electronic channels (Helle, 2019).

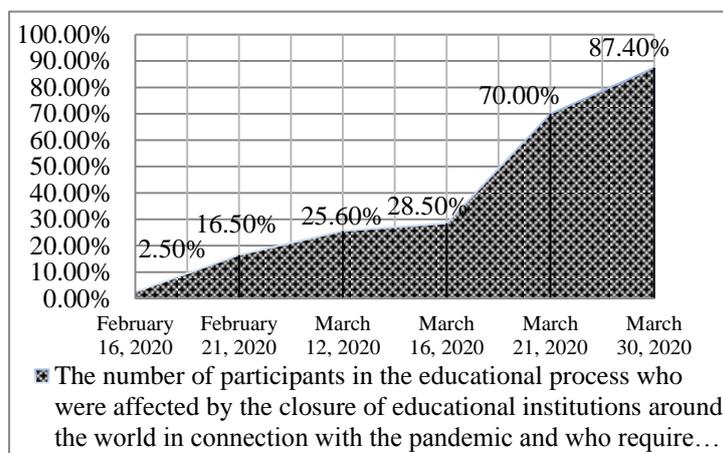
However, the use of electronic channels for distance learning does not make it possible to fully organize this process as it faces several problems associated with emergencies in the field of health care at the national level and a possible gradual economic downturn. This effect is characterized by an increased risk of abuse of the participants of the educational process, which contributes to the loss of self-confidence, lower self-esteem, efficiency and quality of educational services. The main concepts of e-learning in the world are presented in Table 2.

<b>Country</b>	<b>E-Learning Platform</b>	<b>Electronic Channel</b>	<b>Subjects and directions</b>
Argentina	Educ.ar	Electronic portal, radio, TV	Multi focus
Brazil	Futura Chanel	YouTube channel	Multi focus
Chile	Aptus	Electronic platform	Multi focus
China	China's national cloud platform.	Electronic platform	Multi focus
Colombia	Aprender	Electronic portal, radio, TV	Multi focus
Dominican Republic	Central portal	Website	Multi focus
Egypt	EKB	Electronic platform	Multi focus
France	My class at home	Electronic portal	Multi focus
Georgia	Online learning platform with Microsoft	Electronic portal, radio, TV	Multi focus
India	DIKSHA, e-Pathshala, Swayam	Electronic portal, radio, TV	Multi focus
Indonesia	TV Edukasi , Televisi Pendidikan Indonesia,	TV	Multi focus
Japan	Centralized website	Website	Multi focus
Jordan	Darsak,	Electronic portal	Multi focus
Malaysia	EduwebTV	Website, TV	Multi focus
Macedonia	Eduino	Electronic portal, radio, TV	Multi focus

The dynamics of the number of participants in the educational process who were affected by the closure of educational institutions around the world due to the intensive spread of the pandemic and who require the introduction of e-learning is presented in Figure 2.

The mass closure of educational institutions in the world was quick, so the closed educational institutions had very little time to prepare a strategy and program for the mass

transition to distance and e-learning. Many training programs are focused on full-time study and cannot be quickly adapted to e-learning, and students and teachers are afraid that they do not know how their educational process and system will develop soon.



**FIGURE 2**

**DYNAMICS OF THE NUMBER OF PARTICIPANTS IN THE EDUCATIONAL PROCESS WHO WERE AFFECTED BY THE CLOSURE OF EDUCATIONAL INSTITUTIONS AROUND THE WORLD IN CONNECTION WITH THE PANDEMIC AND WHO REQUIRE E-LEARNING, %**

However, the development of online platforms for e-learning is growing rapidly and is growing rapidly. The introduction of emergency measures to combat the spread of coronavirus infection is due to the intensive changes in educational processes in many countries of the world, which contributed to the development of distance and electronic learning. However, it should be noted that there are significant digital gaps in countries with a weak economy and socio-economic instability, which does not allow all participants in the process to provide the necessary gadgets and connect to electronic channels and Internet networks.

**CONCLUSION**

The intensive development of digital technologies provides all the prerequisites for their application in the field of education. However, the results of the study made it possible to substantiate that in the scientific literature there is no single approach to the consideration of distance and electronic education, which confirms the relevance of this study and the need for a more detailed study.

Given the trends in the spread of coronavirus infection in the world and the introduction of emergency quarantine measures to combat it, an analysis of current trends in e-learning in the world in a pandemic is carried out.

The main types and the most used modern educational online platforms are structured. The specificity and key characteristics of modern learning platforms in a pandemic have been clarified, in contrast to existing approaches; this approach is based not only on listing the main characteristics but also on their accessibility for the population in different countries of the world depending on the level of economic development.

This approach is a theoretical justification based on the developed methodological aspects and is not finite and can be studied in more detail. It is proved that the development

of digital technologies leads to the transformation of existing types of educational services to optimize this process, developing an individual approach, personal motivation, the convenience of using active forms of learning, and the rational distribution of time.

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