Educational Information Technologies in Pandemic: Advantages and Disadvantages

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Olena Kunderevych [a], **Petro Bogonis [b]**, **Yuliia Kliuchko [c]**, **Liubov Chukhrai [d]**, **Oksana Sinenko [e]**

Corresponding Author [a]

Abstract

The purpose of the article is to analyze information technologies in education in a pandemic, to identify the main advantages and disadvantages of their use in the educational process. The following research methods were used to solve the set tasks: theoretical (study and analysis of scientific and pedagogical, psychological and pedagogical, reference, specialized literature, regulatory documentation on the topic of research, additional professional advanced training programs; analysis, comparison, classification of the information received and generalization); empirical (pedagogical experiment, observation, questionnaire survey, survey, conversation, testing); mathematical (statistical data processing). The article raises a problem that is caused by the need to find the best ways to form the digital literacy of a teacher in the process of professional development in the developing information space. Among the main problems of the information society, important are those that relate to the philosophical and pedagogical foundations of the strategy for the development of education in Ukraine, including problems related to informatization and computerization of the educational process, the emergence of the concept of digitalization of the individual. Telecommunications occupy the main place in the educational process of modern higher education. The main disadvantages and advantages of using multimedia technologies in education are analyzed.

Contents

[a] Kyiv National University of Culture and Arts, Kyiv, Ukraine
[b] Kyiv National University of Culture and Arts, Kyiv, Ukraine
[c] Kyiv National University of Culture and Arts, Kyiv, Ukraine
[d] Kyiv National University of Culture and Arts, Kyiv, Ukraine
[e] Kyiv University of Culture, Kyiv, Ukraine

1 Introduction

The computer revolution has taken place. With the advent of computers, new sciences are emerging that are designed to study the colossal possibilities of computers and the possibility of using them to facilitate human labor. A new type of technology is emerging - information, i.e. information processing technologies based on computer computing systems. These include processes where the "source material" and "product" are information. Of course, the processed information is associated with certain material carriers and, therefore, these processes also include the processing of matter and the processing of energy. But the latter is not essential for information technology. The main role here is played by information, not its carrier. Today it is impossible to imagine a branch of human activity in which computers would not be used. Increasingly high requirements are being applied to computers, this forces specialists to improve information processing technologies. The wider the use of computers, the higher their intellectual level, the more types of information.

Computer testing; Use of electronic collections-simulators; Work with electronic encyclopedias; Presentation based on multimedia presentation. The presentation involves a demonstration on a large screen accompanied by the author and contains the titles of the main sections and abstracts of the speech, as well as still and moving illustrations (photos, videos, animations). Multimedia performances increase the effectiveness of the educational process by: enhancing the perception of students through the use of sound and visual demonstrations, highlighting the main thoughts; during the speech, the teacher does not turn to the blackboard, thus does not lose contact with the class, does not waste time writing a text on the blackboard; a large amount of information can be obtained from the Internet and CDs and reproduced on the screen, in a format visible to all students; it is easier for students to answer when he relies on the presentation plan displayed on the screen (Smith et al., 1999; Ananda et al., 2022).

Currently, many citizens of our country are actively showing interest in the modern education system. Often, many of them are parents of schoolchildren who are concerned about the education of their children. Even people who are not directly related can notice problems in the field of education, but teachers are most acutely aware of the existing problems and contradictions (Ankem, 2004; Xu et al., 2020).

Information technologies are used, are disseminated with the help of information flows in society, and form a world information space. Today in the world they are becoming more widespread because society needs to update information. Almost all spheres of society use information technology. The central part of this process is the computerization of education (Harris & Sutton, 1986).

Computer technologies have penetrated and continue to penetrate all spheres of human activity. It is impossible to imagine a single industry that does not use electronic computers. The education sector is no exception and has also undergone computerization. Moreover, computers are considered not as an additional learning tool, designed to significantly increase their efficiency. But for solving educational problems, the computer is not always fully used (Cecil et al., 2018; Granell et al., 2016).

This is since information technologies have not yet found their proper application in school. In schools, however, not all of the capabilities of computer technology are realized. Many teachers are familiar with new information technologies and do not know how to use them in teaching. In most cases, computer science teachers conduct lessons at school with the use of a computer, due to the specifics of their training, who poorly represent the conditions necessary when using computer technologies to teach individual subjects. The educational sphere has recently aroused increased interest in pedagogical science (Kaloxylos et al., 2013).

It follows that the teacher is obliged to constantly improve his knowledge and teaching methods. But not all teachers are ready for this. Sometimes teachers say the following: "We were not taught this. We were not given such material. This was not the case in the courses. "Nevertheless, the requirements for modern

teachers provide that teachers have competencies. Main part. The modernization of systems expands the innovation potential. It is based on the implementation of new conceptual approaches to the development of education.

Now it is possible to introduce a systemic-activity approach in teaching students based on the pedagogical technologies, which are aimed at the formation of certain competencies and universal educational actions (Harris & Sutton, 1986; Mukhtar et al., 2022). The introduction of IT into practice is one of the most important areas of modernization. It allows not only to increase the level of education but also to develop information competencies, to reveal the intellectual potential of a person.

In the last decade, school education has undergone large-scale computerization: more and more classrooms are supplied with computer facilities, more and more media resources offer textbooks. Now it is impossible to imagine a school class without a teacher's computer, interactive whiteboard, and other computer equipment (Tolmacheva et al., 2021). With the help of communication means and information carriers, information technologies provide an opportunity for people to be aware of events not only of the current time but also of the past. Information technologies are divided into two types: analog; digital.
Analog technologies represent information in the form of a continuous random variable;
Digital information technologies use a discrete way to represent information in the form of binary arithmetic. The digital representation of information protects against interference upward, including during transmission over communication channels.

Thus, information technology and informatics are closely related. Informatics is the science of methods, means, and technologies for their automation, creation, and functioning. Computer science as an academic subject encompasses content that can shape the thinking of students. For example, these are the topics of "concepts", "structuring of information", "reasoning", etc. Thus, informatics as an academic subject is called upon by its content to form in students the methods of working with information, methods of thinking (Harris & Sutton, 1986; Widana et al., 2021).

2   Materials and Methods

Information technology (IT) (also-information and communication technologies (ICT)) is a process communication technologies open up real prospects for improving the education system, namely:

- The widespread introduction of ICT tools for visual, dynamic presentation of educational information using video images, sound, and remote access to information resources (Savinova et al., 2021);
- Continuity and continuity of computer learning at all levels of education - daytime, correspondence, and distance learning - due to computer support for all subjects and disciplines of the educational process (Kotsiantis et al., 2010);
- Creation of a scientifically and methodologically grounded education system based on new information technologies. learning: information technology (Iasechko et al., 2021; De Vriendt et al., 2009).
- Disadvantages of using ICT tools, However, when using ICT in education, some disadvantages arise. The educational institution must have the necessary equipment to conduct classes with ICT, the purchase of which is not expensive;
- Teachers must have the appropriate skills to be able to teach and create lecture material using ICT;
- Setting up a technique can be dangerous;
- Availability of software (software), in cases of paid software, a license is required to use it (POLAT, 2001).

Ethical problems also arise: the use of ICT entails the creation of an information-oriented society (Consoli, 2012; Schaper & Pervan, 2007). Thus, by teaching computer skills, teachers prepare for life in a new society. ICT accessibility consists of accessibility and comfort itself (Montequin et al., 2014). Increased availability has been achieved thanks to various changes in computer systems, primarily the development of personal computers and computer networks. Comfort is achieved through the use of a graphical interface and

functional standards assessment of the effectiveness of ICT in education, which includes, on the one hand, the feasibility of using the technology, on the other, the ways of using it (Iasechko et al., 2021).

ICT classification:

Development of information technologies in Ukraine

In terms of the level of informatization, no matter what indicators we measure it, the catastrophically lags behind the leading and even some developing countries of the world. For example, the volume of production of computer technology in our country barely reaches 6% of the US level. The material and the technical problem is to bridge the gap between the existing state of the material and technical support of the information sphere and the level of this support required for the information society. The technological problem is caused not only by the backwardness of information technology (Iasechko et al., 2021). The main options that solve the problem of lagging in the information content of education are the absence of:

- The formation in the country of a single information space, as one of the stages of the transition to an information society, through the development and creation of a single national information and communication infrastructure;
- Formation of a single national information resource;
- Ensuring information security of Ukraine;
- Creating conditions for increasing the efficiency of the economy, state and local government, ensuring the rights of citizens and legal entities to freely search for and receive information about the state;
- Improvement and the formation of an export-oriented information technology industry (IT industry);
- Improvement of the legislative framework and the system of state regulation in the field of informatization, creation of legal and regulatory and methodological support for the widespread in all spheres of the public life of the country (POLAT, 2021);
- Creation of automated information and analytical decision support systems for managing socio-economic processes in the country, which should improve bodies and local self-government bodies through the use of information and communication technologies ("Electronic government") (Iasechko, et al., 2021);
- Development of informatization processes in the real economy sector, including the creation of an e-commerce and logistics system;
- Training of specialists and users in technologies, the formation of professional programs, including a distance learning system (Rovai & Downey, 2010; Rovai, 2003);
- Promoting the development of culture.

The priority tasks in this direction are the formation of information resources of the National Library and other leading libraries, the creation of an electronic encyclopedia of national culture and its presentation in the national sector of the Internet, the creation of a machine fund of the Ukrainian language. Creation of new means of information protection aimed at improving the country's information security system.

3 Results and Discussions

True, some talk about this with a grain of salt: the lag of the republic from the developed countries in the field of high technologies is too great. However, the very fact of realizing the need to increase the level of computerization, and especially the Internet, allows us to conclude that changes for the better are still taking place. Development is becoming a major factor in the life of the world community today. Their distribution qualitatively transforms the life of society and causes revolutionary shifts in the economic, social, cultural, and other spheres. Information technologies are constantly developing and improving, providing more and more opportunities for improving quality, reducing the time frame, and making work easier. The study of the world experience in the scientists to realize the need for prompt involvement in this process.

4 Conclusion

Thus, the problem, optimal ways to form the teacher's information culture in the process of professional development in the developing information space. Among the main problems of the information society, important are those that relate to the philosophical and educational foundations of the strategy for the development of education in Ukraine, including the problems associated with the informatization and computerization of the educational process, the formation of the information culture of the individual. The use of information technology helps to improve educational activities, increases the quality of the learning process, and increases the efficiency of individual activities of students. Also, the use of information technologies in the educational process prepares qualified specialists in the development and application of modern technologies and means of informatization of education.

Informatization of education means focusing on a new quality of education. The school is obliged to prepare graduates for a successful life and work in the conditions of an abundance of information. Information and communication competence, which was previously the property of a few, should now be available to everyone. This requires updated educational standards. Informatization of education is a process of change. School computerization is undoubtedly an expensive thing. Currently, the worldwide network and various software products are diverse in their assortment. It is precise because of the development of information technologies that the idea of continuous additional education is being fully implemented. Also, information technology to a greater extent motivates people to study, conduct various research projects, create innovative projects and articles.

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Biography of Authors

Olena Kunderevych
Department of Philosophy and Pedagogy, Kyiv National University of Culture and Arts (Kyiv, Ukraine)Areas of research interests: formation of professional speech of future primary school teachers; preparing students to develop language and speech skills of junior high school students.
Email: kunderevych@gmail.com

Petro Bogonis
Department of Music, Kyiv National University of Culture and Arts Kyiv, Ukraine. Areas of research interests: formation of professional speech of future primary school teachers; preparing students to develop language and speech skills of junior high school students.
Email: bohonis@gmail.com

Yuliia Kliuchko
Department of Museology and Examination Process of Historical and Cultural Sites, Kyiv National University of Culture and Arts, Kyiv. Areas of research interests: formation of professional speech of future primary school teachers; preparing students to develop language and speech skills of junior high school students.
Email: kliuchko@gmail.com

Liubov Chukhrai
Department of Museology and Examination Process of Historical and Cultural Sites, Kyiv National University of Culture and Arts, Kyiv. Areas of research interests: formation of professional speech of future primary school teachers; preparing students to develop language and speech skills of junior high school students.
Email: chukhrai@gmail.com

Oksana Sinenko
Candidate of pedagogical science, Associate Professor of the Department of Stage, Singing Private Institution of Higher Education "Kyiv University of Culture", Kyiv, Ukraine. Areas of research interests: formation of professional speech of future primary school teachers; preparing students to develop language and speech skills of junior high school students.
Email: sinenko@gmail.com