

Informatization of education: driving force for integration of modern higher education in the global information space

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Abstract

The informatization of education is paramount for the existence and development of modern higher education. As the main driving force for integration into the global information space, informatization necessitates the widespread adoption of information and communication technologies (ICTs) in the educational process. This paper delves into the historical underpinnings of informatization, emphasizing the pivotal role of computerization in its. The paper highlights the significance of free software in promoting access to education, particularly during times of crisis such as the COVID-19 pandemic. The use of GNU-licensed systems has enabled the continuation of learning activities through distance learning modalities. The paper analyzes the impact of informatization on the structure of the educational process, noting the changes it has brought about for both teachers and learners. The paper concludes by emphasizing the relevance of informatization in ensuring the continued relevance and competitiveness of higher education institutions in the 21st century.

Keywords

informatization of education, information and communication technologies (ICTs), free software, distance learning, COVID-19 pandemic

1. Introduction

In the contemporary digital era, the informatization of education has emerged as a pivotal factor in the sustenance and evolution of modern higher education. This is primarily due to its overarching objective of fostering the growth and development of individual potential. The informatization of education encompasses a myriad of interconnected processes, including organizational, legal, socio-economic, educational, methodological, scientific-technical, industrial,

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and management. These processes collectively aim to cater to the information, computing, and telecommunication needs of all participants involved in the educational process. This includes not only learners but also those who manage, maintain, and provide scientific and methodological support to this process. By leveraging information technologies and implementing novel methodological developments, the informatization of education enhances the efficiency and intensification of the learning process [1, 2].

The international dimension of a state's policy also extends to its educational sector. As part of its international activity in education, Ukraine's primary goal is to integrate into the global educational community as an equal partner. Such integration will enable the national education system to refine all facets of education by practically applying international experience. The Law of Ukraine "On Higher Education" underscores that one of the principles of state policy in higher education is the integration of Ukraine's higher education into the European Higher Education Area [3]. This is to be achieved while preserving and developing the accomplishments and progressive traditions of national higher education. Given its significant population and territorial size, Ukraine plays a crucial role in global integration processes in today's interconnected world.

1.1. Problem statement

Considering the goals of informatization of the educational process of higher education, we identified a number of problems associated with legal, economic, educational, methodological, and scientific and technological processes. Implementation and application of ICT in the training of future professionals will play an important role not only as a tool for the disclosure and development of individual abilities of the individual, but also as a catalyst for comprehensive informatization of society. ICT in education are part of pedagogical technologies aimed at the establishment of knowledge and the acquisition of acquired skills and abilities that, under the slightest effort, can be adapted to the individualities of any person who wants to study.

According to Velychko [2], the use of information and communication technologies in educational activities will enable future specialists to use a wide range of modern methodological approaches and technologies and will help to reveal their inner creative potential, become a "visual guide" to the skills and abilities of information and communication technologies use to achieve higher learning results.

Many studies are devoted to the problems of informatization of education and the purposes of informatization of education. The most significant of them by Bykov [1], Lapchik [4], Rakov [5], Zhaldak [6]. Theoretical aspects of the application of ICT in education are reflected in the writings of Ermolayev et al. [7], Semerikov [8], Soldatkin [9], Spirin [10], Zhaldak and Khomik [11]. Conceptual pedagogical provisions, issues of e-learning didactics are reflected in the studies of Andreev [12], Khutorskoi et al. [13], Kukhareno et al. [14], Semerikov et al. [15], Shyshkina and Marienko [16], Symonenko et al. [17], Vlasenko et al. [18, 19].

The problems associated with the widespread introduction of ICTs in higher education institutions and informatization of education are considered by Hurevych et al. [20], Hurzhii [21], Kiiianovska et al. [22], Kramarenko et al. [23], Kyslova et al. [24], Lovianova et al. [25], Manako and Sinitca [26], Merzlykin and Semerikov [27], Morze [28], Markova et al. [29], Nechypurenko and Soloviev [30], Tkachuk et al. [31], Tryus [32], Velychko [2]. The integration of higher

education in Ukraine into the European educational space and the implementation of this process are considered in the scientific works of Astapieva [33], Burdonos [34], Marichereda et al. [35], Rayevnyeva and Stryzhychenko [36], Striuk et al. [37], Tkachenko et al. [38], Zheliaskov et al. [39].

Modern education requires the variety of the forms, methods and techniques of the organization of educational activities. The preference should be given to the forms, methods and techniques that use information and communication technology, which can personalize the process of learning, enrich the acquired knowledge and allow individuals to become effective in professional activities [2, 40]. The introduction of the latest ICT into the educational process will accelerate the realization of such an objective as informatization of education. Currently, it is possible to share the features of this process from the experience of other countries such as the United States, South Korea, England, Finland, Estonia, Ireland, Bulgaria, Germany, Switzerland and others [22, 41]. Such experience gives modern scholars a clear understanding of the integrity of building a system of informatization of education through the introduction of ICT in the educational process of institutions of higher education.

1.2. Research aim

The purpose of the article is to emphasize the importance of introducing information and communication technologies in the educational process of higher education institutions, emphasizing the special importance of informatization of education as the main aspect of integration of modern higher education into the global information space.

1.3. Research methods

Research methods are: analysis of publications on the problems of informatization of education, the use of information and communication technologies in education; review of the contribution of higher education to the formation of the global information space and the transition to the information society; systematization and generalization of research information.

2. Results

The state sets specific goals for higher education. The structure of the action plan and a clear course in the humanities determines the increasing role of higher education and science as the basis for Ukraine's effective "knowledge economy" (an economy in which most of the domestic product is provided by production, processing, storage and dissemination of information and knowledge). This is also stated in Article 10 of the Law of Ukraine "On the Principles of Domestic and Foreign Policy" [42].

Integration of modern higher education into the global information space is one of the priority tasks of modern Ukraine. The strengthening of society as an information state has become dependent on new knowledge, the effective transfer of information through higher education and vocational training systems. The use of information and communication technologies becomes indispensable in this process. Innovations in the tools of creating, disseminating and

using knowledge have acquired new significance. Intellectual achievements become the most important product. At the heart of this strategy is a knowledge and skills management system.

Ukraine's course towards European integration requires qualitative changes in the field of science and education. Dynamic integration into the European higher education area will give the state an important link in this structure. However, active changes in the modern world require the development of new mechanisms of cooperation, taking into account the rules of interdependence and the creation of conditions for the adaptation of Ukrainian legislation to the requirements of the European Union. One of the priority areas of Ukraine's internal and external socio-economic and political strategy is its entry into the single European information and cultural environment. The exchange of graduates of higher education institutions of Ukraine with graduates of the European Union guarantees not only the integration of the education system into the European space, but also entry into the world information space.

The information space is a separate phenomenon. It is based on a set of databases, technologies for the use of information and telecommunications systems. Operation is carried out through the use of common principles and general rules, which provides information interaction. Each state has its own information space, regardless of the form of government. The content of the information space depends on such factors as territorial, technical, economic, human, etc. The boundaries of the information space are identified with the geographical borders of the country, covering the national territory and all spheres of society.

The information space consists of several components, one of which is the informatization of education.

Informatization of education is aimed not only at the formation of knowledge, but centered on the person who can apply the acquired knowledge and skills to work with information resources for successful activity in any sphere of public life and for the innovative development of society [1]. The level of innovation development of society directly depends on the level of informatization of education. Informatization of society is a process of education and establishment of each individual of a new generation in conditions of qualitative improvement of modern information and technical structures and processes created for the satisfaction of needs and the realization of life existing rights of a modern citizen [43, 44].

The basis of the process of informatization of education is the process of computerization of education, which started at the beginning of the XX century. In general, the process of computerization of education (Bykov [1], Morze [28], Semerikov et al. [45, 46], Velychko [2] and others) is divided into three stages, but the initial date varies from the 20-ies XX century to the 50-ies of XX century. So, for example, Serhiy O. Semerikov, determined the beginning of the first stage is exactly the 20-ies of XX century. According to him, the first stage (20-50th years of the twentieth century) is described as the period of application of mechanical, electromechanical and electronic individualized devices [45, 47], with which the teaching material was provided and the control and self-control of knowledge were implemented – the technology of programmed learning. The second stage (50-80s of the twentieth century) is characterized by the wide introduction of computers into practical training activities. And the third stage (since the 80s of the last century) is specified as the stage of personal computers and computer networks [8].

Informatization of education is inextricably linked with existing learning models. In the 1950s and 1960s computer technologies were actively used in the implementation of the theory of behaviorism. The cognitive model of learning inherent in the 70-80s was used to develop critical

thinking. Constructivism of the 90s with the use of computer technology solved the problem of changing personal relationships and building a social model. Modern information technologies have enabled the development of a new learning model – connectionism. Connectionism is evolving due to modern trends – distance education, mobile learning, mass open online courses, e-education and cloud technologies [48].

It is important that the entire initial stage of the development of informatization, which involves the development of computers and software related to universities. The development of computer technology needed highly skilled specialists who were trained directly at universities where the first computers were built [2]. Informatization of education is definitely connected with the development of material and technical bases and the preparation of complexes of educational methods for their use. A significant factor in the delay of the development of informatization of education, as well as the informatization of society as a whole, is the lack of sufficient financing of these projects by the state. That is why groups of programmers created free distribution software [49]. Thanks to these software products, teachers have had more opportunities to use computers in the learning process, which gradually led to the widespread use of ICT in educational activities which resulted in the informatization of education [50]. The first software products used in university education belonged to open software as there was no global software commercialization. It should be noted that such software had limited scope and was used primarily for mathematical calculations [51, 52].

The use of free software in preparation at the present level of informatization of educational activity plays a special role in preparation and in the formation of a scientific outlook, understanding the essence of practical orientation of informatics disciplines. The main objective of introducing of free software lays in the formation of a new citizen of the information society, who feels comfortable in society, freely operates with information through new information technologies, respect the opinion of others and has his own opinion and knows how to deliver it, is capable of self-education, self-analysis and has a motivation to obtain new knowledge and to self-improvement, while also understands the importance and inevitability of information education and society at large, giving preference to the latest information and educational technologies [53].

Further evolution of informatization of education, which took steps from equipping educational institutions with electronic computers of the first generation to the application of the most modern tools of ICT, reflects both the achievements of scientific and technical progress. Cybernetics, computer science, IT industry, and achievements in the appropriate training of teaching and management education, computer level oriented scientific and methodological support of the educational process, automated systems of education and training led to the widespread introduction of ICT in educational practice [1]. Consequently, ICT are rapidly being introduced into the educational activities of higher education institutions and step by step, with the help of graduates of higher education, mastering other branches of education such as secondary schools, technical schools, schools, etc.

Through the use of ICT in education, all those who had not previously been able to afford it were given the opportunity to study and gain knowledge and skills in a variety of categories and areas. For example, people with special needs for whom, having regard to their physical condition and state of health, previously, higher education was not an achievable dream, now due to existing technologies and developed methods, they are able not only to acquire knowledge,

but also desired diplomas.

Currently, there are many types of education directly related to ICT. Such types of learning as distance learning [54, 55, 56, 57, 58, 59], e-learning [15], mobile learning [60, 61, 62, 63, 64, 65, 66, 67], blended learning [68, 69, 70], etc., expand opportunities and choices for anyone who wants to study or improve their own qualifications or receive additional education. These opportunities are associated with the emergence of new, virtually unlimited pedagogical opportunities that have arisen as a result of the introduction of ICT in education and successfully used. For the individualization and differentiation of the educational process the use of additional information educational resources resulted in a wide range of pedagogical methods and technological training options. Changes in the nature of educational communications are increasing the procedural and multimedia characteristics of study and the expansion of the space of innovative pedagogical activity [1].

These different emphases reflect the expected but also the unexpected impacts of the introduction of these digital technologies in the learning process. In the history of E-learning, initial definitions were more device-driven (focusing in immediacy, convenience, access and mobility) while the latter ones are more personal and social-driven, exploring affordances that relate to new technological features of mobile devices such as location awareness, motion detection and augmented reality [71].

In the context of the latest world events related to the COVID-19 pandemic, such a form of e-learning as distance learning has received special attention [72, 73, 74, 75, 76, 77, 78]. It should be noted that the best learning management systems used to organize and support distance learning are created under free software licenses. Today, free software products have become widely popular in Ukraine due to limited funding for all areas of education. In essence, distance education is an individualized process of transfer and acquisition of knowledge, acquisition of skills and abilities, which occurs through the indirect interaction of distant participants in a specialized environment created on the basis of modern psychological, pedagogical and information and communication technologies [79], organization of the educational process on the basis of information and communication technologies based on the principles of independent work. Distance learning is individual process of gaining knowledge, abilities, skills and the ways of personal cognitive activity, occurring mainly at the mediated interaction of the participants of the training process, being distant from one another, in the specialized environment, functioning on the basis of modern psychological-pedagogical and information-pedagogical technologies [57]. This form of education is progressive, because it provides more freedom and flexibility, promotes the development of individuality, allows learning incognito, helps to get education to anyone. Currently, several systems are used to organize distance learning: the well-known course management system Moodle, and its lesser-known, but no less important and full-fledged systems ATutor, Claroline, Dokeos, ILIAS, JClc, LAMS, OLAT, OpenACS, Sakai are not inferior in functionality to proprietary software from IBM, Oracle and others and comply with the Tin Can API (successor to the SCORM standard) that exists for distance learning systems. The listed software products (Moodle, ATutor, Claroline, Dokeos, ILIAS, JClc, LAMS, OLAT, OpenACS, Sakai) belong to the free software.

The main advantage of Moodle distance learning system is the possibility of its free using. At the same time, the functionality of the distance learning system in the Moodle system is not inferior to commercial analogues. Another important advantage of the distance learning system

Moodle is that it is distributed in open source, which allows you to adapt it to the specifics of the tasks that must be solved with its help [80]. The advantage of such training is the emergence of opportunities for students to perform training tasks in any convenient place and in their spare time. In addition, the use of modern computer technology in the learning process allows you to get skills that will be useful in work and everyday life. The system also provides the ability to test their knowledge by testing, which makes more effective using of electronic learning materials [81].

The use of ICT to create distance learning courses creates new requirements for both the methodology of using the software and the software itself.

By scientists and researchers definition there is a classification of pedagogical software tools, based on which pedagogical orientation that is the realization of certain didactic functions in the learning process [2]:

- demonstration programs (designed for a demonstration of the training material of a descriptive nature);
- training programs (aimed at the acquisition of new knowledge; implemented usually in the form of a dialogue);
- simulators (provide the formation and consolidation of practical skills, and also used in self-education activities);
- control programs (designed to control a certain level of knowledge and skills. Application of such programs enables to increase the efficiency of training, to intensify and increase the productivity of the teacher, provides the necessary stability and invariance and independence from subjective teacher settings);
- simulation and simulation programs (allowing to simulate objects, phenomena and processes of the real world. Their effectiveness is achieved when the process or the phenomenon cannot be practiced (micro and macro world). In the process of using such programs, abstract concepts become more specific and easier to perceive by those who learn);
- information and reference programs (intended for search and output the necessary information for educational, methodological and other purposes. Such programs include electronic encyclopedias, knowledge bases. Today the value of their application is to organize access to information through modern telecommunication networks;
- programs for problem learning (designed to activate cognitive activities of students through the formulation of various problems and tasks that need to be resolved through attempts and errors).

The practice of introducing ICT in the educational process of higher education institutions is spreading every day. Many software products, methods and technologies used at the beginning of the informatization of education have undergone many changes and updates, new ones have appeared. Currently, information and communication technologies are rapidly being introduced into the educational process of higher education institutions. If the first implementations concerned the use of software products for purely mathematical calculations and in the teaching of disciplines of the mathematical cycle, now this range is almost limitless [82]. Educational software products are used in the teaching of all disciplines, from psychology and law to

philology, physical education and music. And the wider the range of different software used within a given discipline, the greater the benefit to learners as they gain new functionality, which significantly affects the learning process and is more useful in achieving certain goals.

ICT are innovative pedagogical technologies of the education system used to create new opportunities. The transfer of knowledge (the activities of the teacher), the perception of knowledge (the activities of students), the assessment of the quality of education and the comprehensive development of personality during the educational process [83], makes the educational process more intense and productive through the use of multimedia capabilities, intersperses interpersonal communication provides the search for information from various sources, creates convenient circumstances for communication in the most appropriate form [84].

Modern teaching methods involve the use of information and communication technologies in the educational process. The use of ICT has not only changed the methods of traditional learning, redistributed priorities between forms of learning, but new forms of learning have emerged. For any method or form of training that uses high information technology, software is required, without which the technologies lose their meaning [85].

Scientists paid much attention to the use of ICT in education and described in their doctoral dissertations. So, for example, it is noticed that a computer science teacher with fundamental knowledge in the field of informatics is needed even in secondary school [4]; the main goal of computer science students is the formation of professional informational competencies, which are based on public order, state higher education standards and personal choice of a student, the function of fundamentalization of informatics education is the basis for the formation of new qualities of a future specialist [8]; vocational guidance function of the fundamentalization of informatics education has the following structural components: target, content, technological and the final ones [28]; multimedia in education – a promising direction in the field information processing of human activity, integration of heterogeneous data computer systems in order to more fully present the results of intellectual production in science, art, education, industry etc. [86]; informative awareness – the ability to implement the systemic knowledge, skills and abilities of acquiring and transformation of information in various fields of human activity for the qualitative performance of professional functions and conscious prediction of the consequences of its activities [87]; informational competence includes the ability to independently search, analyze and select the necessary information, organize, transform, store and transfer it using real objects and information technologies [13]. Digital competence is the main component of the information culture as part of the overall culture of the individual [11, 88, 89, 90]; information culture is a collection of informational worldview, systems of value orientations, knowledge, skills, providing purposeful and effective independent activity with the purpose satisfaction of own and professional needs in information products [91]; informatization of education is one of the most important elements of culture in general, characterizing the material and spiritual development of society, the level of organization of information processes, the degree of satisfaction of the needs of people in informational communication, timely, reliable and exhaustive information and provides a coherent vision of the world [11]; the use of ICT in education includes skills and work skills in the information and communication pedagogical environment, the ability apply multimedia teaching aids for the tasks of professional activity, the ability to use knowledge control with the help of a computer, the ability to use ready-made

electronic tools and independently develop their own multimedia teaching aids, forms Internet communication skills [91] and many other works devoted to informatization of education and the use of ICT in education [92, 93].

Informatization of education is stipulated by branch directions. Considering the goals of informatization of education Bykov [1] noted that at the present stage of development of society and education the main goal is to prepare those who are studying for active and productive life in the information society, to provide high-quality, affordable and effective education, to create educational conditions for life-long learning at the expense of widespread introduction into the educational practice of methods and means of ICT and computer-based technologies. Informational education provides two strategic goals. The first of these is to increase the efficiency of all types of educational activities through the use of ICT. The other is in elevation the quality of training specialists with a new type of thinking that meets the requirements of the information society [94].

Also, the issue of integration of modern higher education into the global information space and innovative teaching aids has not gone unnoticed by scientists. In the higher education sector, a new era has begun with the advent of ubiquitous learning environments. Ubiquitous learning tools allow improving context-aware as well as learning experiences by offering seamless availability regardless of location all the time. There are numerous available ubiquitous e-learning tools that can be employed in higher education. E-learning tools also offer training and higher education to many students that have different higher educational levels and come from diverse cultural backgrounds [95].

Responsibility for greater integration with the EU and removal of the Soviet legacy Consideration of the dichotomy between the EU and the Soviet legacy university management becomes increasingly important in view of a greater push from the Ukrainian public to create a European-type of university and become more effective members of the European space of higher education. Ukrainian institutional researchers need to seek greater integration of the EU criteria for development [96].

In accordance with the current legislation, the Law of Ukraine on National program of informatization, the informatization means a set of interrelated organizational, legal, political, socio-economic, scientific and technical, production processes aimed at creating conditions for meeting the information needs of citizens and society through the creation, development and use of information systems, networks, resources and information technologies based on application of modern computing and communication technology [97].

Every teacher who works now and in the future should know that informatization of education is a modern resource getting answers to questions that are of interest to educators and students. Possessing skills using information resources is the major way of improving their own professional ability. And this is also one of the goals of education informatization.

For the primary goals of informatization of education we have to include the following components as:

- establishment of skills of self-education and self-realization [98, 99];
- advancement of the potential of each person and its development;
- development of the educational spectrum of services for people with special needs [100, 23];

- increase in the quality of education [101, 102];
- formation of the skills for building own educational trajectory [103, 104];
- raising the fundamental level of general and education [1];
- creation of new special methods, tools and educational technologies [105];
- raising the level of pre-professional training of higher education students of general school [1];
- increasing the aptitude to analyze the extended knowledge and skills of students;
- expansion of methods and means of teaching using modern scientific and technical developments;
- providing favorable conditions for those wishing to upgrade their qualifications;
- development of postgraduate education and adult education;
- expansion of limits and possibilities of self-realization [1];
- establishment of the society with the informatively experienced population [2];
- development of the intellectual potential of the nation;
- enhancement and modernization of traditional forms of training curriculum.

The degree of informatization of education is a direct reflection of the level of informatization of society, which is why the information development of education becomes the major factor in the growth of the general level of training of students. Students develop skills to create and implement the latest technologies for future professional activity and form the theoretical basis of knowledge while studying at a pedagogical higher educational establishment.

Informatization of education is the main driving force for the integration of modern higher education into the global information space. Support for the informatization of education by the state is carried out through such actions as the adoption of the Law of Ukraine “On the National Informatization Program” [97], the Law of Ukraine “On Higher Education” [3], the Law of Ukraine “On Principles of Domestic and Foreign Policy” [42], The Law of Ukraine “On Scientific and Scientific-Technical Activity” [106], the Law of Ukraine “On Education” [107], the National Strategy for the Development of Education in Ukraine until 2021 [79] and others. Indeed, the priority of the state educational policy of Ukraine is to improve the infrastructure of the information educational space and, as a consequence, the creation of electronic educational resources of educational institutions. However, to solve this promising task it is necessary to overcome the problems associated with the imperfection of the legal framework governing this issue, the difficulties in creating electronic educational resources, the lack of clear coordination of all participants in the educational space.

It is important to understand that for the wide and full use of information and communication technology products in educational institutions it is necessary to create interest in the necessary changes not only in the state, but also in the educational environment. Creating an appropriate legal framework, increasing control over the use of software, adopting standards for electronic documents, the transition to the study of information and communication technologies are just some of the actions needed to address this issue.

It should be emphasized that Ukrainian researchers have conducted a lot of research on education funding. Such studies indicate that increasing government expenditures on higher education has a positive effect on the dynamics of GDP per capita. The analysis was carried

out using R software. Four models were used for the analysis: pooling, random, with-in, and between. Data for analysis are available from World Bank and OECD data bases on tertiary educations expenditures. Data were organized as a panel data. The panel consists of indicators for twenty-seven countries for time horizon 2006–2015. The study includes mainly high and medium-income countries. Countries included into panel are Australia; Austria; Azerbaijan; Belarus; Brazil; Colombia; Czech Republic; Denmark; Estonia; Finland; France; Germany; Hong Kong SAR, China; Hungary; Ireland; Japan; Latvia; Lithuania; Norway; Poland; Portugal; Slovak Republic; Spain; Sweden; Switzerland; Ukraine; United Kingdom. The total number of observations amounts to 262 [108].

In today's world, knowledge has become a key force in social transformation in defining the model of learning, cultural development and change in the social structure of society. It is clear that the field related to the production of knowledge, methods of their production, processing and dissemination of information will always remain dominant in the information society. The intellectual potential of mankind and skills determine the pace of economic development and scientific and technological progress of society. A society based on information and knowledge about information is becoming the most promising model of social development.

Considering this question, scientists note that under globalization processes, the influence of the problem of interdependence between national education system efficiency and safety condition of the country is becoming more and more important. Now the aim of the countries is to provide competitive advantages on the international scene. The state of educational system and its potential plays the main role in this regard. Government safety is provided by all the means and resources which the government has. But amid them human resources occupy a special place. The role of education in national safety system is important as sustained development and support for possibilities of intelligent, economic, and industrial facilities on a high level, which is necessary to realize reliable satisfaction of requirements during the time of peace and war [109].

3. Conclusions

The integration of modern higher education into the global information space is a continuous process, necessitating the constant updating of methods and the digitization of education. This digitization is a critical factor in the existence and development of contemporary higher education and society as a whole. It is therefore imperative that the digitization of education at all levels becomes a primary and significant task for the state.

The digitization of education forms the foundation for the digitization of society as a whole. Consequently, the issues related to the digitization of educational facilities should be prioritized at both local and national levels. The digitization of education directly influences the content of education and its organizational methods, and it has pedagogical goals and objectives. It provides the necessary conditions for integrating Ukraine's educational system into the global information space.

Learning activities based on information and communication technologies (ICT) instigate changes in teachers' work processes, form a new perception of educational material by learners, and influence the development of self-education through information learning resources. This

experience in using ICT is crucial for future professional activity.

The widespread introduction and application of ICT in education is key to advancing scientific research and development. The quality of educational software products is improving, leading to continuous development of pedagogical technologies based on ICT. New training courses, methods, forms, and technologies of teaching are being developed and implemented in the field of education.

Given the attention paid by scientists and researchers to the digitization of education and the introduction of ICT in the educational process at all levels and fields, it can be concluded that the digitization of education is a constant process. This process contributes to development, improves quality of life and education, and fosters growth in teaching forms and methods.

In conclusion, this paper has demonstrated that the digitization of education is not just an ongoing process but also a necessary evolution in response to advancements in technology and societal needs. As we move forward into an increasingly digital age, it is clear that our educational systems must adapt to keep pace with these changes.

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