Introduction of Innovative Technologies and Methods of ICT Competency Building of Scientific-Pedagogical Staff Under the COVID-19 Pandemic: Preconditions and Challenges of Future Education System (Ukrainian Experience)

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The article considers the problem of the formation of innovative ICT-competence of scientific and pedagogical staff against the background of the implementation of quarantine measures to counteract the COVID-19 epidemic. Particular attention is paid to the content and goals of ICT-competence. The structure of its components is highlighted and the peculiarities of its functioning to ensure research and educational processes during the pandemic and to overcome its consequences are analyzed. Particular attention is paid to the prerequisites for the rapid formation of ICT competence in times of crisis. The features of the process of computerization and digitalization of the academic sphere in the world and Ukraine are analyzed and highlighted. The article analyzes the main trends and vectors of innovative ICT-competence development, notes its current and future goals and objectives.

Keywords: higher education, innovative competencies, scientific activity, educational space, COVID-19 pandemic

INTRODUCTION

The COVID-19 pandemic was a shock to education systems around the world, negatively affecting educational opportunities. The pandemic forced many educational institutions to adjust to the new

conditions. On the other hand, the introduction of total quarantine measures was, to some extent, a stimulus for the introduction and strengthening of innovative digital technologies (Bader, Oleksiienko, & Mereniuk, 2022). This solution to the issue of strict quarantine measures put the issue of the formation of ICT-competence of scientific and pedagogical staff on a qualitatively new level. Overcoming the medical, economic, and social consequences of the pandemic and the results of the direct impact of the pandemic on educational organizations has become a priority challenge for the Ukrainian educational community. Beyond the walls of the ZHEI, the pandemic has damaged the physical and mental health of educational workers, their families, and close relatives affected by the coronavirus disease. It has become an economic disaster for millions of people around the world, slowing the functioning of the global economy. Measures restricting face-to-face meetings and travel have also undermined the functioning of educational and research institutions. Table 1 shows the goals and actions that have emerged in opposition to the implementation of quarantine measures.

TABLE 1
CONTENT OF GOALS AND ACTIONS AGAINST THE IMPLEMENTATION OF QUARANTINE MEASURES IN SCIENCE AND EDUCATION

Increasing the Effectiveness of Educational Strategies in a Pandemic Outbreak	**Overcoming the effects of the pandemic and establishing teaching and research processes**	**Enhancing the ability of academic fields to function steadily during future crises**
Assessing the changing circumstances of the educational delivery system	Assessment of changes in the system of educational services	Assessment of the state of formation of ICT competencies
Developing strategies for coping with outbreaks of the pandemic and its consequences	Development of strategies to overcome crises	Development of strategies for improving ICT competencies
Capacity building for building ICT competencies of academics and educators	Formation of innovative ICT competencies	Formation of innovative ICT competencies of scientific and pedagogical workers

Source: authors' own development

The economic impact of the pandemic has spilled over into the education sector. As part of social distancing measures taken to contain the spread of the virus, education authorities have suspended face-to-face education. In most countries of the world, the practice of introducing a distance form of the scientific and educational activity has become common (Derrick, 2020).

Intensive introduction of digital technologies during quarantine, formation of information space, and development of electronic educational systems lead to the formation of new scientific and pedagogical ideas about the organization of scientific and educational process, a qualitative rethinking of approaches to education, as well as the acceleration of its development. The wide introduction of digital and information technologies into the educational process is a global trend and is one of the most significant processes that have occurred in the system of education in recent times. To understand the problems of this process, we should pay attention to the historical foundations of the formation of digitalization of education, the main stages of transformation and development of the educational system, their essence, and main characteristics (Chin & Wang, 2021).

According to scientific and pedagogical research in terms of the penetration of information, digital technologies in educational and scientific practice, the main stages can include computerization, informatization, and digitalization of education. In this case, the computerization of education, which acts as a stage of technological renewal of its sphere, along with the introduction of computer technology in the educational process is the organization of the educational process based on computer technology, the creation of methods of computer learning, digital systems, and educational programs. The beginning of the

computerization stage is often associated with the development of the theory of programmed learning in the USA in the middle of the last century (Alan, 1981).

The existing researches devoted to the problems of computerization of educational and scientific activities are united by the common opinion that this stage of educational system transformation determined the following directions of its development: acquisition of necessary ICT competencies by specialists in the educational sphere; modernization of educational programs and implementation in the content of general educational informatics; development of approaches and application technologies as means of teaching computer technology; development of information culture and worldview in the society (Dustnazar, Kakhramon, Ranajon, Bobirjon & Khadicha, 2021).

In 2005, Ukraine's accession to the Bologna Declaration served as a catalyst for the modernization and reform of national education (A theoretical analysis of the literature allowed us to identify the characteristics of the process of transformation of education, which preceded the pandemic COVID-19 in Ukraine:

1. Development of the direction - pedagogical informatics, aimed at improving the effectiveness of the educational process in the introduction of modern information technologies and application of new pedagogical tools through the creation of new forms, educational methods, and teaching tools.
2. Information support of the educational process with the help of modern telecommunication and information means, providing remote access of all participants of the educational process to the world scientific and educational resources.
3. Development and dissemination of distance learning, which expands the scope of the educational space at the expense of new approaches to the implementation of learning and self-learning processes and provides access to education for the population of the country.
4. Modification of the content of education at all levels and the construction of the educational process aimed at the formation of students with fundamentally new personal qualities and skills required in the post-industrial information society (Saukh, Nabok, Kizilov & Kuzina, 2021).

The concept of digitalization of the scientific and educational process does not yet have an established definition and interpretation. Various authors' definitions can be found in scientific works. At the present stage of the development of society, informatization of education is considered by some researchers and teachers as a component of digitalization. The introduction of digital technology in the educational process allows you to take the best of the traditional educational system and use electronic tools to support and accompany the learning process.

PREREQUISITES FOR INNOVATIVE TRANSFORMATION OF THE ACADEMIC SPHERE DURING THE COVID-19 PANDEMIC

The intensive introduction of digital technologies into the life of modern society, the formation of information space, and the development of electronic educational systems lead to the formation of new scientific and pedagogical ideas about the organization of the educational and scientific process. This requires a qualitative rethinking of approaches to education, the content of innovative ICT-competences of a modern teacher and scientist. The widespread introduction of digital and information technologies into the education system is a global trend, which could not bypass the Ukrainian educational space as well (Faes & Moens, 2019). Although there is still a problem with the ICT competence of scientific and pedagogical staff. Existing studies devoted to the problems of computerization and informatization of education are united in the single opinion that this stage of transformation of the scientific and educational space has determined the directions of its development, namely:

- training of specialists for professional activity in the field of computer and information technologies;
- modernization of educational programs and introduction of general computer science into their content;
- development of approaches and technologies of computer technology application as a teaching tool;

- development of information culture and outlook in society.

The Main Trends and Prospects for the Development of Education and Science

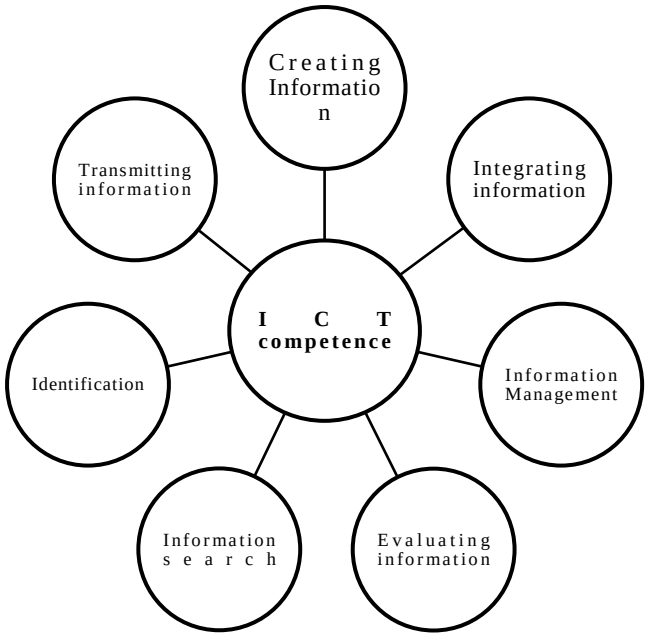
When dealing with the problems of the information society, creation, and application of information and communication technologies in scientific and educational activities, there is always the question of the effective acquisition of relevant competence by scientific and pedagogical workers. Informatization of education is defined as a process that initiates approaches to management based on the use of automated data banks of scientific and pedagogical information, information and methodological materials, as well as communication networks; development of strategic principles for the formation of content, forms and methods of training and education, aimed at personal development of the student in the implementation of information and communication technologies; development of teaching methods and methodological systems that develop intellectual abilities

It is necessary to note a variety of definitions of the concept "informatization of education", analyzing the content of which it is possible to classify as:

- part of the process of informatization of society;
- a set of activities and socio-pedagogical transformations;
- activities aimed at the introduction of computer and information and communication technologies;
- the process of providing the educational system;
- sphere of human activity (Anderson, 2019).

The formation of innovative ICT competencies is a strategic task solved through the development and wide implementation of digital teaching methods, which is now becoming a priority and occupies a special place in the global educational space. The concept of ICT-competence has no established definition and interpretation. Various authors' definitions can be found in scientific works. At the stage of societal development, some researchers and educators regard ICT competence as a component of digitalization. The content of ICT competence is presented in Figure 1.

FIGURE 1
CONTENT OF THE ICT-COMPETENCE OF A MODERN SCIENTIFIC-PEDAGOGICAL EMPLOYEE



Source: authors' own development

The modern level of digital technologies leads to the formation of holistic technological environments of "living" (ecosystems, platforms), within which the user can create for himself the friendly environment he needs (technological, instrumental, methodological, documentary, etc.). This allows us to state the attempts of organic incorporation of the concepts of computerization and informatization of education into a more complex and broader concept of ICT-competence (Tartavulea, Albu, Albu, Dieaconescu & Petre, 2020).

As a result of the development of the technological basis of the scientific and educational process, the formation of a fundamentally new hybrid world, which is a fusion of real and virtual space, which certainly entails the restructuring of the processes of personal socialization, the formation of a digital worldview and the need to form new competencies. Digitalization of education is the development of a database with shared access, which includes educational and methodological materials in digital form, organization of the educational process in a global information network, the use of modern mobile, cloud, and smart technologies, and widespread use of mass open educational courses and resources. There is also an understanding of the ICT competence of a teacher and scholar as the ability to use digital content in teaching and learning in order to optimize educational activities or modernize the content and goals of education in order to form digital competencies. There is no doubt that the digitalization of education fundamentally transforms the educational process as well as the roles of all its participants (Haleem, Javaid, Vaishya & Deshmukh, 2020).

Digitalization of education leads to changes in the labor market, the creation of new educational and professional standards, relevance in the formation of new competencies of graduates and is focused on the transformation of the educational process, overcoming the barriers of traditional learning, changing the role of the teacher. This determines the need for the development of scientific and methodological foundations and the transformation of methodological systems of teaching at all levels of education. Summarizing the research materials in this area, we can say that the goals and objectives of digitalization of education can be achieved through the digital transformation of the educational system at all levels and the acquisition of innovative ICT competencies (Arthur-Nyarko, Agyei & Armah, 2020).

Advanced learning technologies as one of the basic ICT competencies are technologies aimed at improving the quality of the educational process based on the application of the latest scientific advances. It should be noted that with a seemingly large number of studies, the process of digital transformation of the educational system and the main signs of the stage of digitalization of education against the background of the need to acquire innovative competencies need to be clarified. Digitalization of educational and scientific activities plays a special role in improving the quality and accessibility of education. The introduction of digital technologies into the educational process makes it possible to take the best from the traditional educational system and use electronic means to support and accompany the educational process. All this requires special attention to the formation of innovative ICT competencies.

Summarizing the above and generalizing the results of the analysis, we can state that the transition from the stage of computerization to informatization and from it to the digitalization of education is the only through the process, the core of which are technologies that provide the construction of personal educational trajectories, management of their own learning outcomes, management of the educational. process based on data, personalized-result, motivated learning in modern conditions. However, it should be noted that the learning and the educational process can take place in the absence of a teacher, so a special place in the educational system in the context of digitalization, along with digital technologies should be a teacher and pedagogical technologies that accompany the educational process. In these conditions, the problem of how to organize the educational process, so that it contributes to the formation of a personality, capable of responding to the challenges of time in the conditions of digitalization comes to the fore. In order to provide it, it is necessary to create conditions for the formation of innovative ICT competencies of scientific and pedagogical employees (Bakhmat, Kolosiva, Demchenko, Ivashchenko & Strelchuk, 2022).

Psychological and Pedagogical Aspects of the Acquisition of ICT Competence by Scientific-Pedagogical Employees

The development of the higher education system in modern conditions, due to digital transformation, puts forward new requirements for the construction of the educational process, including the construction of modern electronic information and educational environment using advanced learning technologies, implementation of learning management strategies, and adaptation of educational material based on the individual characteristics of students, while achieving the educational results determined by social order, are key. Under the conditions of intensive implementation of e-learning and development of digital learning environments, educational formats are changing, the educational paradigm is shifting towards a hybrid educational process, implemented in terms of integration of traditional and online education. The relevance acquires the construction of an effective educational process in the new trends of digitalization and overcoming the problems and difficulties arising from the development of digital technology and the spread of digital learning in the modern environment (Bank & Wheelwright, 1983).

In psychology and philosophy as the main features of the digital generation, it is accepted to distinguish: active use of digital devices, constant online communication and the predominance of virtual communication, the formation of a new virtual language and type of communication, the growth of the speed of information perception, changes in the speed of logical operations and actions in students, difficulties in focusing attention, fragmentation and superficiality, changing the structure and intensity of mnemonic processes, changing perception, the transformation of life principles and orientation Under the influence of digital technology there is a multiple increase of mental abilities and the activity and plasticity of the brain increases. It should be noted that there are also opposite processes. For example, there are opinions that the knowledge system is increasingly becoming an operational plane, i.e., Bautista García-Vera, 2021).

In the effective formation of innovative ICT competence, there is a need for a positive profound transformation of both ways of doing things, thinking in general. Despite the difficulties of forming innovative ICT-competence of pedagogical and scientific workers, expands the possibilities of the educational process, allows a dynamic change in the pace, form, and methods of learning. The global introduction of information and digital technologies has led to tremendous changes in many areas of human activity (Morze, Vember & Hladun, 2019).

Relying on the data of modern research, as well as on the results obtained by summarizing and analyzing the existing experience, the following main psychological and pedagogical aspects of forming innovative ICT-competence of scientific and pedagogical workers in the conditions of the COVID-19 pandemic are highlighted:

- the study of psychological and pedagogical regularities of scientific and educational process subjects' activity;
- formation of student-oriented learning aimed at the development of personal educational results, relevant from the student's point of view and the demands of the modern world;
- the content of the disciplines should be integrative and holistic in nature, represent a systematic presentation of knowledge in the educational process, and form a holistic perception with the help of advanced ICT-technologies in education;
- micro-porous variant presentation of the educational material of the discipline;
- transition from a cognitive to an activity-based learning system, i.e., the transition from information circulating in the learning system to independent practical actions and deeds;
- group project activity aimed at its effective planning and obtaining practical results;
- building an educational system that satisfies the principle of accessibility, i.e., a system that provides access to content in a 24/7 "anytime, anywhere" format;
- development of a flexible educational environment that supports active adaptation of the educational process to the needs of students;
- development and application of advanced educational technologies in the educational process (visualization of events, phenomena, and studied processes, gamification of educational activities, etc.)

- search for optimal models of building the educational process using digital technologies and the development of digital didactics, building the educational process in an electronic environment (Rashid & Yadav, 2020).

The highlighted psychological and pedagogical aspects are the key factors of changes in education in response to changing educational expectations of the new generation dictated by interactions with virtual and augmented reality (VR/AR), artificial intelligence (AI), gamification, and personalization, which already determine the educational choices. This entails a change in approaches to the design of the educational process, the inclusion of new methods of delivery, and the restructuring of educational content (Mamarajabov Odil Elmurzaevich, 2022). Viewing educational formats, increasing the share of online learning, and changing the orientation of traditional learning, when the HEE audience is no longer a place of translation and transfer of knowledge but becomes the center of goal-setting, creative learning process, implementation of the component of teamwork "face-to-face", etc.

TRANSFORMATIONS OF THE ACADEMIC SPHERE UNDER QUARANTINE MEASURES

Digitalization offers opportunities for effective adaptation of the academic sphere in a pandemic environment. The seemingly obvious benefits do not cancel out possible major structural changes and thus problems for society as a whole. The academic literature suggests that new technologies stimulate growth and thus have a net positive effect on employment. This was certainly true in the past, as replacing the typewriter with personal computers still required a person at the desk. This relationship between technology and the labor market may be changing in today's era of digitalization. But such transformations require the skills of educational professionals to deeply understand the functioning of the digital space. Therefore, a new feature of this technological change is the need to acquire innovative ICT competencies (Prokopenko, 2021).

In addition to the general changes brought about by the digitalization of work processes, it may be that society has to respond differently, given the demographic transition and the education system as a whole. Research suggests that conflict will develop not only between capital and labor but also between young and old workers, as rationing will disproportionately affect young people. Research interest is also attracted by the fact that, according to experts, the integrative processes of transforming the educational space will be increasingly aimed at the introduction of advanced ICT technologies (Çebi, Özdemir, Reisoğlu & Çolak, 2022).

Digitalization of the Academic Sphere Amid Pandemics

The historical experience of the development of society shows that global pandemics lead not only to the reduction of jobs but also to the emergence of new approaches to the establishment of social processes, respectively, the transformation of the educational space should be aimed at providing the mildest possible conditions for the transition and spread of new technologies. training. Today the desire for digitalization seems promising and progressive, but at the same time, we should not forget about the risks and threats arising in the transition to new conditions of development. It should be noted that the reduction of jobs is only part of the problem, together with which there may be losses due to poor integration into the innovative environment of the economy and society, risks of data loss, formation of security threat conditions, which may lead to social tensions in the country, contribute to the aggravation of social problems not only due to changes in the labor market but also in social and labor relations (Sherman, Samchynska & Kobets, 2021).

The introduction of information technology will significantly change the content of management functions, which requires rethinking management strategies and tactics, requires the study of new approaches to the management of all kinds of resources, the most valuable of which is personnel. At the same time, the sphere of social and labor relations deserves special attention, where transformations concern people with a consciousness that requires restructuring and adaptation to work under new conditions. Even today it is important to try to integrate management theory and practice, which, on the one hand, should be enriched with educational solutions scientific and methodological recommendations that allow a systematic and comprehensive approach to the management of the digital organizational environment, and on the other

hand - to promote the integration of research resources. and practical results into a single system, allowing to effectively perform work processes in the new environment with the greatest efficiency (Naidonova, 2021).

A study of the growth of digital technology in education already means that the problems of digital education are quickly becoming problems of education as a whole. Students do not want only online courses at universities, skype tutoring, which was thought to be no substitute for face-to-face learning. The tangible dimensions of the digital educational environment are being explored, with an emphasis on labor practices and natural resources. It is noteworthy that digitalization in the learning process - having an e-book in the classroom instead of a paper book - has many more aspects behind it. For example, it includes the development of personalized learning systems to individualize the educational process using digital data. Thus, society gets a lot of expectations relying on a post-digital educational future (Sapiński & Ciupka, 2021).

Analyzing the aspects that can affect the educational field, we can talk, firstly, about the mobility of the learning process. For example, giving a lecture or seminar at different locations can be useful for the student as well as for the instructor himself, because it allows combining work and learning processes with personal interests. Consequently, a lecturer has an opportunity to attend a scientific conference in another city without affecting the educational process in the EHE - students can connect to an online conference with a lecturer through a special platform and will not lose classes due to his or her departure. At the same time, the university employee himself will get an opportunity to develop more actively in the academic sphere and advance in his scientific career, without sacrificing his work duties. This has become more relevant than ever with the introduction of quarantine measures during a pandemic.

It should also be noted that the regular use of online resources in the educational process allows us to mobilize actions for which we previously had to organize a face-to-face meeting. For example, the faculty team does not have to come to the meeting in person, because there is an opportunity to connect quickly, which in the long run saves time for all participants in the process. At the same time, students will also be able to organize an online meeting with a supervisor, for example, to discuss the details of a research paper, and to send a link to a document where two or more participants can work on the file in real-time.

Acquisition of ICT Competencies as a Result of Changes in the Work Environment

It is important to note that the development of digitalization in the academic sphere creates a demand for digital competencies of teaching staff, university administrators, and students who receive educational services using information and communication technologies (ICT). Digital competencies are the ability to solve various tasks in the use of information and communication technologies: to use and create content using digital technology, including searching and sharing information, answering questions, interacting with others, and computer programming. Accordingly, teachers are forced to acquire the competence of mastering online platforms in order to meet the demand of the educational space (Bekhta & Kovalevska, 2022).

The general trend towards digitalization leads to a focus on innovation or modernization of teaching and learning within the mainstream of higher education. Since the beginning of the COVID-19 pandemic, HFD experts have advised numerous universities on developing strategies for digitalizing teaching and learning. One would think, therefore, that there is a certain spirit of optimism generated by the now abrupt transition to COVID-19 online learning. However, in summarizing the consultations on the strategy of transition to online learning, the following problems can be highlighted: Ukrainian universities use digitalization primarily to modernize their teaching methods and curricula. Traditional paradigms of teaching, examinations, and certification are rarely questioned... This means that incremental innovation can be seen across the entire spectrum of Ukrainian higher education. So Ukrainian HEAs may have been among the few in the world where the abrupt transition to distance learning during the pandemic occurred more smoothly in the face of the global crisis. Thus, although until 2020 digitalization was gradually introduced in the educational processes, supported by government initiatives. digitalization plan by 2024, university staff are not ready for a sharp transition to distance learning (Williamson, 2020).

Digitalization in the Face of a Pandemic

The COVID-19 pandemic has changed the world and the lives of all people without exception. Even though the long-term consequences of the virus outbreak for people, the economy, and business are still quite problematic to predict, the situation suggests how the approach to workspace organization, the balance of life and work, the quality-of-service provision and, in general, the readiness of society will change now. The situation with the virus is constantly evolving, but the current path indicates the need to change workspace organization strategies for most areas: creating a more efficient system of technological tooling, fine-tuning remote work processes, implementing digital etiquette, and delimiting shared space (Watermeyer, Crick, et al., 2021).

In all likelihood, many areas will soon be faced with the need to revisit development strategies and streamline processes to create a new, adaptable, and efficient working approach. This could be by abandoning premises through moving some activity to an online format or, conversely, by moving to a more suitable space that could provide the necessary distance to organize work, but for all will be the challenge of ensuring the security and continuity of life spheres. It is important to note that the processes taking place with online education due to the pandemic cannot be equated with the usual understanding of distance learning because it was a forced measure taken as an emergency. Emergency distance learning was introduced as a result of "official" necessity and was originally intended as a response to the crisis situation in which education found itself in connection with the development of COVID-19 around the world.

Accordingly, academics were not fully prepared for such a rapid transition to a fully online format and experienced noticeable difficulties and technical problems. Unfortunately, for many educators, the pandemic was a significant challenge. Studies show that the number of students who regressed academically increased significantly in 2020. Fortunately for students, virtual programs were established that provided continuing education during an absolutely crisis period for the world. This prompted the formation of entirely new ICT competencies for science educators (Motsyk, Shchyrba & Mukoviz, 2021).

The Covid-19 pandemic has made its own adjustments to the implementation of sustainable science goals. This situation is also reflected in the current crisis state of science - institutions of higher education around the world were forced to switch urgently to an online mode of operation. Even though in 2015, when the sustainable development goals for quality education were outlined, a factor such as the shock acceleration of digitalization due to the pandemic could not be taken into account. This aspect could change the vector of direction (Holovko, 2021).

The situation during the full quarantine in 2020 expressively showed the urgent need for information and communication technologies and the importance of their use in a situation of forced digitalization of educational processes. However, this situation also highlighted an important aspect of the digital divide. This was expressed in unequal access to technical equipment, unstable Internet connections, and the banal lack of skills with computers and online platforms. Nevertheless, HEAs found themselves in a slightly better position in the transition to a distance format, since many platforms of electronic information and educational environments (EIEs) had already been used on a regular basis. Such as e-scheduling, use of electronic libraries, viewing and performing practical and theoretical tasks while mastering an educational course, grade control, electronic credit books, etc. (Lutsenko & Lutsenko, 2022).

Thus, the changes associated with the COVID-19 pandemic have made notable adjustments to the transformation of the educational space. Higher education institutions were ready to instantly adapt to online education. Consequently, there is a need to study how the transition to a distance format at the university took place in more detail since at this point research is turning its focus to the student experience. Of course, students find themselves in a difficult situation where they need to urgently mobilize for the distance format, but this should not mean ignoring the experiences of university staff. This research can contribute to building a more realistic picture of what the future format of work and interaction in academia might look like (Prokopenko, 2021).

CONCLUSION

Based on the analysis of philosophical and scientific-pedagogical studies in Ukraine and abroad, the main stages of educational system development during the pandemic are shown: computerization, informatization, and digitalization, their essence and main characteristics. Scientific articles and analytical sources describing the phenomenon of digital transformation of education during the pandemic and the development of distance learning, as well as regulatory documents determining the priority development of the education system in Ukraine allowed to state that the transition from the stage of computerization to the stage of informatization For him digitalization of education is a single through the process, the core of which are technologies that provide the construction of personal educational trajectories, managing their own re The process of such transition requires the formation of innovative ICT-competence from scientific and pedagogical staff.

The main features of the current stage of digitalization of education, which should be holistically implemented in their interconnection in the construction of the educational process in HEAs under pandemic conditions, are highlighted. It is pointed out that the learning and the educational process cannot happen with the complete absence of a teacher, so a special place in the educational system in a pandemic, along with digital technology should be a teacher and pedagogical technologies that accompany the educational process.

The main psychological and pedagogical aspects of ICT competence formation in a digital environment in the pandemic, which are key factors in the development of digital didactics, the creation of new models for building the educational process using digital technology and changing approaches to the pedagogical design of the educational process. Also considered the most commonly used concepts of traditional and online education, established their approaches to learning as a movement towards the personalization of learning. With the help of content analysis, the features, commonalities, and distinctive features of these educational approaches are identified.

It was established that the implementation of the distance form of organizing the educational process and research activities requires acquiring profound ICT-competence by all scientific and pedagogical staff. The analysis of technological capabilities for the implementation of personalization has established that adaptive technology is the most effective form of learning. The existing distance learning models were considered and the prospect of integrating online learning methods with the best practices and approaches of traditional learning, which have proven their ability and effectiveness, was shown. Noted the advantages of using the opportunity to combine effective pedagogical techniques and methods with modern digital learning technologies.

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