

# Digital Competencies of Teachers in the Transformation of the Educational Environment

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## Abstract

The purpose of this study is to determine the main directions of development of digital competencies of teachers to ensure a quality educational process in the transformation of the educational environment. The relevance of this study is due to the need to determine the main directions of development of the education system for adaptation in the context of digitalization of society. It is established that the transformation of the educational environment requires an increase in digital literacy and digital improvement competencies of teachers in terms of digitalization of the educational process. The effectiveness of the educational process with the use of digital technologies is based on digital competencies, which are now universal and provide participants in the educational process with adaptive mechanisms to the digitalization of society. The product of this study is the optimization of the model of digital competencies of the teacher, which establishes a single structure of digital and professional competencies based on the general theory of activity: "values - purpose (subject) - actions". The novelty of the study is determined by the fact that the paper uses the approach of identifying elements of digital competencies in the integrated application of pedagogical technologies. This approach allows us to identify levels of assessment of the conditions necessary for the construction of a digital educational process of vocational education and training. The authors show that digital technologies play a key role in the organization of the educational process, if you use them as a tool for collaboration, inclusion and involvement in the process of all participants, the personification of learning. Research has shown that the role of digital literacy for all participants in the learning process is growing significantly. Digital literacy, as a set of competencies, becomes the basis for the full participation in the knowledge society of the teacher personally and the involvement of their students, revealing their talents. The study was conducted on the example of Ukrainian educational institutions based on the results of the organization of the educational process during the quarantine period 2020. The assessment of the organization of the distance form of the educational process using digital tools and technologies in higher education institutions. The authors show that level of skills and ability to use digital technologies in the organization of the educational process among research and teaching staff is quite mediocre, as less than half of respondents used such tools on a regular / regular basis. At the same time, a fairly high level of digital literacy of both teachers and students was revealed. According to the results, it is established that the problems of digitalization of the educational environment in Ukraine are systemic. Therefore, it is necessary to continue reforms of the education system, to implement specific measures to form a digital culture and philosophy of digitalization of the educational environment. Accordingly, the basis of such transformations is digital literacy and digital competencies of all participants.

**Keywords:** Digital competencies; Teachers, educational process; Educational environment; Transformation.

## 1. Introduction

### 1.1 Relevance of the topic and problem statement

The introduction of digital technologies in education and training is the basis for adapting the vocational education system to the demands of the digital economy. Under the influence of digital technologies there are qualitative transformational changes in the education system. Such transformations are due to the formation of a digital educational environment (a set of digital learning tools, online courses, e-learning resources), as well as the modernization of the educational process designed to provide practical training for the digital society (Yanitsky,

2019; Testov, 2019; Marcum, 2019; Bila et al., 2019).

The digital transformation of education is a set of interrelated profound changes in the education system at all levels. The changes affect all components: goal setting, content, learning process, quality assessment, management (Bondarenko et al., 2018; Gumennykova et al., 2020). The basis for the transformation of the education system is the mutual adaptation of digital and pedagogical technologies (Sharma & Monteiro, 2016; Abad-Segura & González-Zamar, 2019; Perevozova et al., 2020). The digital transformation is accelerating with the development of new technologies such as artificial

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intelligence and cloud computing. Digital technologies play a key role in this, if they are used as a tool for collaboration, inclusion and involvement in the process of all, the personification of learning. On the other hand, there are transformations of digital technologies, in order to adapt them to the most effective solution of pedagogical tasks (United Nations, 2015). Currently, digital pedagogy is being formed, based on information and communication technologies, digital didactics, modern tools for creating educational materials, communication tools for effective delivery of content and knowledge of students for effective teaching. Digital pedagogy is based on technological convergence and continuous improvement of pedagogical and information and communication technologies to achieve the goal - increasing the efficiency and effectiveness of the educational process, maximum adaptation of the educational environment to the requirements of digital society, forming critical thinking to work with information to succeed. digital world (Slawsky, 2010; Sita Nirmala Kumaraswamy & Chitale, 2012; Gurung & Rutledge, 2014).

To address such challenges, educators need to possess and continually improve digital competencies that are technology-related (El-Dahshan, 2019). Competence is a broader and more capacious concept than skills (Almerichet al., 2016; Mahlow & Hediger, 2019). Competence (form of activity) always has a subject to which it is directed. Actions to achieve the goal include: knowledge, skills, abilities, experience. Currently, digital competencies play an important role in the teaching and learning process. In addition, approaches to assessment are changing, as the influence of the factor of personal contact at the level of "teacher-student" decreases, communication moves to the plane "teacher - machine - student". With the development of technology and the transformation of the educational environment, technological (digital) literacy is actualized as a person's ability to find, evaluate, use, share and create content using information technology and the Internet (Almerichet al., 2016). Digital literacy includes skills of practical use in the educational process of software products and devices (smartphones, tablets, laptops, personal computers) for communication, information transfer, cooperation. Thus, digital competencies are not identical with knowledge. In the context of digital pedagogy, subject knowledge is transferred using digital technologies, which, provided digital literacy, can significantly enrich the curriculum, thereby improving pedagogical approaches (Bridgstock, 2014; Hanemann, 2019). Thus, digital literacy becomes a set of competencies necessary for the full participation in the knowledge society of the teacher personally and the involvement of their students here, revealing their talents (Casey, 2014; Uvarov, 2019).

Digital literacy and digital competence issues have been discussed in recent years in policy papers and discussions at various levels. At the state level, strategic documents are being adopted to digitize all spheres of society, including education. Sometimes the concepts of digital

literacy and digital competence are used interchangeably, although they are not identical in origin and meaning. The European Union's Competence Framework defines digital competence as one of the eight core competences that provide the confident and critical use of information society (IST) technologies for work, leisure, communication and lifelong learning (The Digital Competence Framework).

Thus, technology is becoming a powerful tool for transforming the educational environment, as well as the learning process. An important aspect of technology in education is its ability to create a digital field of new additional opportunities for students. The learning process becomes more personalized, which can help develop the relationship between teachers and students, invent new approaches to learning and collaboration, make the performance appraisal process fairer, adapt the learning experience to meet the needs of all students.

In order to fully understand the benefits of technology in the education system and to provide learning in the digital space, educators need to use technology effectively in their practice. In this sense, the issues of the level of readiness of teachers and students (students, listeners) for the educational process in the context of digitalization are relevant. The experience gained in 2020 due to the urgent need for the transition of educational institutions to distance learning has become unique. Given this, it is important to identify existing problems and the main determinants of the development of the education system and the organization of the educational process in a digital society. Such a study is especially important for a country with a low level of technological development, which is Ukraine. Thanks to this study, the main vectors of development of digital competencies of teachers to ensure a quality learning process in the transformation of the educational environment were identified. The formulation of the problems answered in this study is as follows: Which the basic concepts of transformation of the educational environment are important for digital improvement competencies of teachers in terms of digitalization of the educational process?

The product of this study is the optimization of the model of digital competencies of the teacher, which establishes a single structure of digital and professional competencies based on the general theory of activity: "values - purpose (subject) - actions". The need to establish a value-motivational basis for digital competencies (problem-solving activities) is established by the conditions of the 4th Industrial Revolution.

## **2. Materials and Methods**

The methodological basis of this study is a personal activity approach, design thinking approach (how can I reach my students? How can I help them?), within which the unity of personal and activity components is considered. The study was conducted on the example of higher education institutions, but the results are relevant to all participants in the educational environment.

The personal approach actualizes the development and self-development of social and personal qualities of the teacher, the formation of experience, the need for self-organization, self-determination and self-development. We need to combine fundamental knowledge and social skills and understand how to give the student the tools to realize himself in the digital world. The personal approach aims at professional education on the formation of individual experience of the teacher, with the identification of the main components of the development of key competencies.

The activity approach reflects the process of developing the necessary skills within the digital competencies in the dynamics of social and pedagogical interaction with other participants in the educational environment. The activity approach is implemented by the principles of reflexivity, interactivity and self-actualization (Gumennykova, 2020). The principle of reflexivity in relation to values is a reflection of the meaning of pedagogical activity. When designing the educational process in the digital environment, this principle makes specific demands on pedagogical methods for elements of digital competencies. The principle of interactivity involves interactive interaction during the organization of the learning process using digital tools, based on the interaction, cognitive and emotional perception of participants. The basis for the choice of methods and pedagogical techniques based on digital competencies is a situational approach, with an emphasis on the mechanisms of formation of personal experience (reflection, awareness). The essence of the situational approach to the development of digital competencies of teachers is expressed in the possibilities of self-realization and self-improvement of professional qualities. The selected approaches became the basis for choosing a model for the development of digital competencies of teachers, in accordance with the demands of the current stage of development of the digital society, as adaptive mechanisms for the transformation of the educational environment. The study was conducted on the basis of Ukrainian educational institutions:

- Kherson State University, Kherson, Ukraine;
- Podilsky Special Educational and Rehabilitation Socio-Economic College, Kamianets-Podilskyi, Ukraine;
- Kamianets-Podilskyi Ivan Ohienko National University, Kamianets-Podilskyi, Ukraine;
- Mykolayiv National Agrarian University, Mykolayiv, Ukraine;
- National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", Kyiv, Ukraine.

Was conducted anonymous survey of research and teaching staff and applicants for higher education institutions of all types and forms of ownership to assess the use of information technology in distance learning in the national quarantine (Resolution of the Cabinet of Ministers of Ukraine of March 11, 2020 № 211 "On prevention of proliferation in Ukraine coronavirus COVID-19"). The survey was aimed at identifying achievements, as well as reflecting the problems associated with the use of information and communication

technologies in distance learning from the standpoint of the level of digital competencies of the educational community.

A total of 660 respondents took part in the survey - 528 applicants for higher education and 132 research and teaching staff. Survey participants in terms of industries (profiles) of teaching and learning, types and forms of ownership of higher education institutions by the number of respondents were: education / pedagogy (56% of students and 54% of teachers), management and administration (10% and 7% respectively), law (9% and 6%), humanities (7% and 16%), information technologies (14% and 12%), as well as culture and art (4% and 5%) (Table 1).

Table 1  
Characteristics of the sample of survey participants

Branch	Applicants		Research and teaching staff	
	persons	%	persons	%
Education / Pedagogy	295	56	71	54
Management and administration	53	10	9	7
Right	48	9	8	6
Humanities	37	7	21	16
Information Technology	74	14	16	12
Culture and art	21	4	7	5
Total	528	100	132	100

The study was conducted in two stages:

- at the beginning it was determined what experience of using information and communication technologies and distance learning technologies had scientific and pedagogical workers before the introduction of quarantine. Surveys and questionnaires were used for the analysis. The study revealed the level of use of digital technologies in educational institutions. It also assesses the level of formation of digital competencies and identifies key issues;

- at the second stage, a study was conducted on the level of organization of the educational process by institutions using digital distance learning technologies. Data collection tools such as interviews, test results and surveys were used in the study. As a result of this stage of research the set of digital tools which were used during the organization of educational process in the conditions of quarantine actions is revealed. An assessment of the level of satisfaction of the participants in the process with the obtained results is also given. The main problems of feedback are identified. Factors that negatively affect the quality of implementation of digital distance learning technologies and lead, in particular, to a low level of student involvement in learning and prevent the teacher from providing quality educational services were also identified.

On the basis of the actually collected material the needs in formation of digital competences in the conditions of introduction of quarantine measures are analyzed,

regularities and problem aspects of the organization of educational process are revealed. On the basis of the conducted research it is allocated basic concepts of transformation of educational space that are important for improvement digital competencies of teachers in terms of digitalization of the educational process.

### 3. Results

#### 3.1. Digital structure competencies: what teachers should be able to do

The following general elements are distinguished as components of any competence: motivational-target component, cognitive component, operational-activity component, reflection component (Hartig et al., 2008). In the conditions of digitalization of all spheres of life, digital competences acquire qualities of universal (obligatory) character.

Digital competence is a set of knowledge, skills, abilities that are necessary for the practical use of information and communication systems and digital media for work, creation and execution of tasks, communication and collaboration, information management, reflection and communication, etc. (Struyven, & De Meyst, 2010; McGill et al., 2014, Babenko et al., 2020). Experts define areas of competence and levels, because it is impossible to set the same requirements for computer science teachers and those who teach other subjects. It is not so much about owning tools as about using them to achieve a pedagogical goal. Sometimes digital literacy is about not using any online technology to cover a topic, because it's not appropriate. Digital competence according to the document (The Digital Competence Framework) is identified in five areas: information literacy; communication and cooperation; creation of digital content; security; problem solving. The teacher can no longer work without modern technology. He begins to use a variety of services not only to facilitate their work, but also to communicate with colleagues, students, parents, society. Today, such services as e-mail, Internet search, video calls have become indispensable, and thanks to their convenience - universal. However, there are many new tools needed for teachers in their daily work, for interesting learning and the development of critical thinking of students, which are freely available and worth trying.

Thus, in the conditions of transformation of the educational environment there are new tasks to the educational process - the formation of the necessary to achieve the desired result of the competencies of all participants: both students and teachers.

The latest pedagogical opportunities concern first of all - student safety on the Internet, new quality of education, digital technologies at the service of educators, introduction of Google Apps for Education, use of Google tools. During the 2020 pandemic and the transfer of distance learning, Google's online products (free web services) have become especially popular. There is experience introduction of STEM-schools as an innovative teaching system. Such a system of education

teaches to live in a real fast-changing world, to be able to react to changes, to think critically and to be a developed creative person. To use existing tools, it is important to constantly improve your digital literacy, especially for teachers and research and teaching staff.

#### 3.2. Previous experience and level of satisfaction of participants in the educational process with technologies used in higher education institutions in the context of distance learning

We can identify the following pedagogical technologies that are needed to build a digital educational process of vocational education and training:

- technology of network communication as a basis for the implementation of pedagogical technologies of digital education;
- distance learning technology, using adaptive learning systems and integrated case technology;
- blended learning technology, including flipped learning, mobile learning;
- technology of organization of project activity of students, with the use of network projects.

According to the results of a survey of teachers and students of Ukrainian higher education institutions on the digitalization of the educational process during quarantine, the share of research and teaching staff who had experience in using distance learning technologies before the introduction of quarantine (Figure 1).

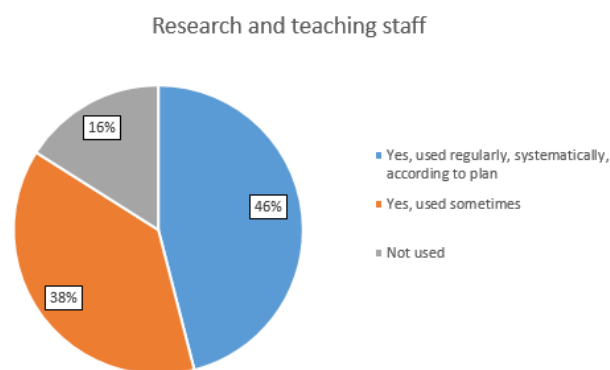


Fig. 1. The level of previous experience of teachers in the use of digital technologies in the educational process

The results of the survey showed that the level of skills and ability to use digital technologies in the organization of the educational process among research and teaching staff is quite mediocre, as less than half (46%) of respondents used such tools on a regular basis. This is evidence of a rather inert approach among teachers to the assimilation and use in practice of digital technologies.

If we evaluate the areas of training and specialties, the highest level of systematic use of digital technologies until the introduction of quarantine and, as a consequence, a fairly high degree of readiness for new working conditions can be noted in research and teaching staff teaching disciplines of the humanities (17%), pedagogy (13%), management and administration (12%),

information technology (10%), social and behavioral sciences (7%), law (6%).

If we talk about the level of satisfaction of participants in the educational process with digital technologies used in higher education institutions in the conditions of distance work, the results of the survey are presented in Figure 2.

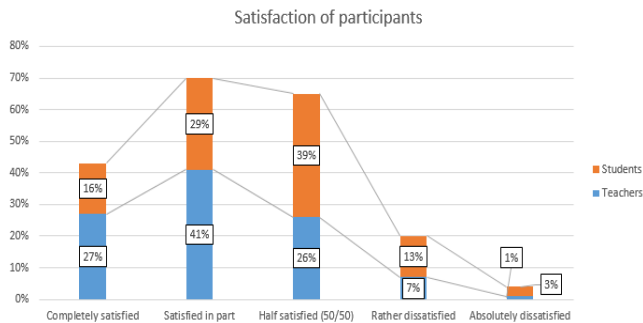


Fig. 2. The level of satisfaction of participants in the learning process using digital technologies

According to the survey, the majority of respondents, both students and researchers, are satisfied with the introduction of digital distance learning technologies in higher education institutions. In particular, 84% of students and 94% of research and teaching staff, respectively, expressed their full and partial satisfaction with such forms of education. Only a small proportion of students (16%) and research and teaching staff (8%) expressed their dissatisfaction. Thus, the practical introduction of digital technologies in the educational process helps to increase the level of cognitive activity of students, helps to achieve certain results in theoretical, practical skills and in the forms of final control. Such results indicate a fairly high level of digital literacy of both students and teachers.

However, according to the survey, the most popular tool for distance learning teachers noted the selection of teaching materials and preparation of tasks for students (48%). Only 46% of the surveyed teachers evaluate their experience of working with virtual educational environments as positive. At the same time, 80% of them believe that digital tools are the most effective for distance learning technologies. However, among the respondents who have a positive experience of working with virtual educational environments, 25% do not use them to develop their own educational content and only a third of them provide advisory and methodological guidelines for laboratory, practical, seminar classes with their use.

It is noteworthy that among those who have their own positive experience in using various distance learning tools, about half would like to hear about the positive experience from other colleagues and apply it in their practice. This confirms the idea that educational experience is not individual. The experience of a person who has acquired certain competencies can be used to make recommendations for the development of another person who has similar personal qualities, the current level of development of competencies, and so on. Thanks to digital technologies, systems can be created that will

help a person make the right decision about the vectors of their own development. For example, the use of monitoring technology Big Data will make it possible to compare the effectiveness of certain educational methods for a particular person or types of people, and artificial intelligence is capable of self-learning in the formation of recommendations for the optimal trajectory of development. The challenge of digital technology is to learn to capture the connection between a particular act of learning (in all its complexity, taking into account the whole context in which it took place) and the learning outcome for the student.

The analysis of the share of respondents' use of digital technologies to provide feedback (transmission / receipt of information) showed that The main tools of distance learning are asynchronous learning tools - messengers (noted more than 2/3 of both applicants and teachers), e-mail (every second respondent of both categories) and e-cabinets on the sites of institutions (every fifth respondent from both students and and from among scientific and pedagogical workers).

Analysis of the share of applicants who joined distance learning (the percentage of students who actually participate in the learning process in quarantine), showed that only every second teacher testified that during the two months of quarantine (a month before the end of the semester) from 70% to 100% of students joined the study of his subjects. The share of students who took part in distance learning for every third teacher surveyed does not exceed 70%. An even more difficult situation was evidenced by the answers of 10% of surveyed teachers, who noted that only every second applicant for higher education joined the study of their discipline, and some of them - that every fourth.

Among the reasons for this situation, obviously, should be considered the lack of self-organization of students and a sharp change in the approach of most teachers to the assessment system. The consequences of this state of affairs will significantly affect the quality of education. Analysis of the problem of low level of attendance of students in distance learning showed that the transition to new learning conditions did not change the pattern of student behavior and this was not properly taken into account by teachers when choosing distance learning tools for the educational process.

Survey of students on the reasons for absence from classes showed that the most common problem is the lack of uninterrupted access to the Internet (36%), 24% said that the home does not have the necessary equipment, 15% of students do not have the necessary skills to work with equipment, and on lack of self-organization indicates one in four higher education. These reasons may complicate the timeliness of distance learning during quarantine.

Teachers agree with the following risk assessments: 43% of respondents noted the risk of reducing the quality of education due to insufficient level of ownership of digital distance learning technologies by all participants in the educational process and its insufficient technical support.

Applicants for higher education who took part in the survey, among other factors that complicate distance learning include: biased assessment (33%), which, apparently, results in irregular communication with the teacher, which was confirmed by 27% of students surveyed. Teachers called the lack of live contact between teachers and students the most significant factor that negatively affects the quality of the educational process (64% of research and teaching staff). The problem highlights the lack of developed advanced online courses. Some inertia in the practical application of digital technologies in the educational process is explained by insufficient motivation of teachers, not the formation of a general digital culture in the education system.

This is confirmed by the not very comforting situation in general in the educational environment of higher education institutions of Ukraine.

Figure 3 presents the results of a survey on the place of digital technologies in the educational process of educational institutions of Ukraine. Assessment of the situation regarding the orientation of educational institutions of Ukraine to the development of digital technologies in the learning process showed that 87% of higher education institutions in Ukraine, according to respondents, do not consider the development of digital technologies in the educational process as a separate strategy.

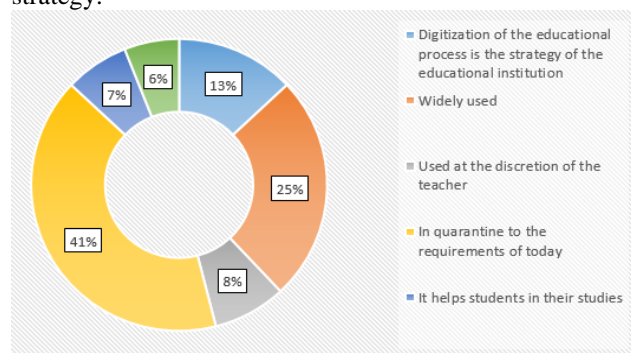


Fig. 3. The level of focus of educational institutions on the development of digital technologies

Such educational technologies are a separate development strategy aimed at expanding access to quality education for EU citizens of different ages and social groups.

Analyzing the results of respondents' assessment of the goals and implementation of digital technologies in the organization of distance learning, we can say that only 41% institutions of higher education of Ukraine consider distance learning technologies and information technologies in general as an integral or priority component of development. At the same time, more than half of higher education institutions in Ukraine do not consider the use of information technology in the organization of the educational process as a priority issue for the institution, and in most cases shift the responsibility to the faculties, departments or teachers themselves. Such results indicate the unpreparedness of both individual institutions and the higher education system as a whole to accept change, the lack of tools to adapt to modern rates of development of society in the

context of digitalization. Most of the learning process takes place using the usual methods: textbook, board, teacher. Under such conditions, the task of digitizing the education system is complicated by the unpreparedness of the system itself for the necessary changes.

#### 4. Discussions

The results of the study show a fairly high level of digital literacy of both teachers and students. However, there are some differences in the level of readiness of students in (students) of educational institutions and teachers to use digital technologies in the educational process. In addition, the level of digital literacy in the organization and participation in distance learning of different groups of respondents differs.

Yes, students are much more likely to exchange ideas and materials through cloud systems. Students use gadgets and smartphones more, while teachers prefer desktops.

University teachers, in turn, showed higher results in other competencies. They are more active in using digital solutions for effective communication at work, as well as creating their own digital resources. University teachers are more competent in creating and modifying different types of digital learning materials and resources, and are more likely to require fans to work in teams and use the Internet, including online services for joint project activities. Teachers are also more likely to use digital tools to provide listeners with the necessary feedback.

Thus, this study recorded the existing model of competencies of participants in the educational process (students and teachers), within which they demonstrate their current skills and development goals. Fixing the precedents of the manifestation of competencies makes it possible to record the fact of the manifestation of a particular competence of the participant in the process, with a description of the specific circumstances in which this competence was manifested. Big Data technology, summarizing the data obtained during the included assessment, allows you to monitor the educational process. If all the facts of the manifestation of competencies are entered into a digital platform (using the evaluation and feedback system), a competency portrait of each participant in the process is formed. Thus, it is possible to create a special digital profile of participants and record the dynamics of the growth of competencies.

It is important to understand that the model of digital competencies is substantive, ie fixes, in addition to competence, also its subject area - where this competence is applied. Only then does the model become a language for formulating educational goals by students and a language for describing the educational outcomes of activities for analysts.

Only the fixation of the precedent of the manifestation of competence in the activity is insufficient from the point of view of the analysis of the educational results of the event. For a detailed analysis and comparison of the results of different activities it is necessary to record the type of event, its structure, its results in relation to each individual participant. Without this detail, it is almost impossible to interpret the described precedent.

These studies have shown what digital competencies teachers need to develop in the first place.

The following competencies require special attention:

- use of digital communication tools with students and colleagues;
- use of cloud technologies for information exchange, creation of materials, subject communication with fellow teachers;
- use of software products to create new learning materials and adapt existing ones;
- practical skills in ways to protect information;
- tools for identifying information and identifying false or biased information;
- safe, ethical and responsible use of digital technologies in practice and as a means of communication;
- creative approach in the use of digital technologies to solve educational problems;
- creating feedback with students by means of digital technologies and tracking online activity of students in the learning process;
- use digital tools to monitor student progress and identify the need for additional support.

These are such tools as recommendation systems for personal development trajectories, systems for monitoring the effectiveness of educational processes, digital profile systems are taught. In order to help students build their development trajectories, we must learn to reflect in the data all the important elements of these trajectories, to record the digital footprint of human development, the facts of new activities, the movement to succeed in solving new problems.

In order for teachers to use digital technologies more often and more consciously in the educational process, they had one personal interest and desire for self-development on their part. It is also necessary to hold training seminars and meetings with experts in educational institutions. In addition, the situation could improve if standards and programs for improving the digital literacy and digital competence of teachers were adopted in the field of education. Based on the results of the assessment of their digital competencies, each teacher can determine their individual strategy for improving them. To do this, teachers can independently assess their information and communication competence by passing the test on the website of the European Commission.

## 5. Conclusion

In this study the main aspects of the development of digital competencies of teachers to ensure a quality educational process in the transformation of the educational environment are considered. The novelty of the study is determined by the fact that the work uses the approach of identifying elements of digital competencies in the integrated use of pedagogical technologies, which allows to identify levels of assessment of conditions necessary for building a digital educational process of vocational education and training. The authors show that digital technologies play a key role in the organization of the educational process, if you use them as a tool for

collaboration, inclusion and involvement in the process of all, the personification of learning. Research has shown that the role of digital literacy for all participants in the learning process is growing significantly. Digital literacy, as a set of competencies, becomes the basis for the full participation in the knowledge society of the teacher personally and the involvement of their students, revealing their talents. The effectiveness of the educational process with the use of digital technologies is based on digital competencies, which are now universal and provide participants in the educational process with adaptive mechanisms to the digitalization of society. A study was conducted on the level of readiness of higher education institutions for the introduction of digital technologies in the organization of the educational process, while providing distance learning in the conditions of the introduced national quarantine in Ukraine. From the above analysis it is established that level of skills and ability to use digital technologies in the organization of the educational process among research and teaching staff is quite mediocre, as less than half of respondents used such tools on a regular basis. At the same time, a fairly high level of digital literacy of both teachers and students was revealed. According to the results, it is established that the problems of digitalization of the educational environment in Ukraine are systemic. Therefore, it is necessary to continue reforms of the education system, to implement specific measures to form a digital culture and philosophy of digitalization of the educational environment. Accordingly, the basis of such transformations is digital literacy and digital competencies of all participants.

The direction of further research is to develop the concept of adaptability of the education system to the digital transformation of society.

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