IMPLEMENTATION OF DIGITAL TECHNOLOGIES IN TRAINING THE VOCATIONAL EDUCATION PEDAGOGUES AS A MODERN STRATEGY FOR MODERNIZATION OF PROFESSIONAL EDUCATION

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Implementation of digital technologies in training the vocational education pedagogues as a modern strategy for modernization of professional education

Introduction

Political, social and economic changes that have recently taken place in Europe have led to a number of transformations and changes in the educational sphere. Since Ukrainian education is on its way to entering the European educational space, there is a need for significant changes in the whole system of vocational education and its substantial updating (Sheludko, 2015).

The present stage of the development of world pedagogical science is characterized by the approval of innovations as an important factor of social reproduction that can provide sustainable economic development on the basis of achieving the country's competitiveness. Therefore, the main task of state policy in Ukraine is the formation of institutional mechanisms and infrastructures of innovative ways of strategic modernization of vocational education. Implementation of the strategic tasks of professional training of future vocational training teachers requires new approaches to the transition of quantitative level indicators to qualitative. Of particular importance is the use of appropriate strategies for training teachers of vocational training of competitive labor market, based on the principles of information and computer technology (ICT). Problems of training vocational education teachers are relevant both in Ukraine and abroad (Sheludko, 2017).

Rapid political, economic and social changes in the society have gained such a pace that a system that trains professionals has faced difficulties in meeting the demands of an ever changing environment. The transition from a planned economy, in which the state-owned enterprises dominated, to the economy with market mechanisms also created specific obstacles for higher education institutions as to training and employing the would-be specialists.

The impact of globalization processes and the rapid development of technologies require an instant reaction from education system in order to train a competitive graduate of higher education. The traditional role of the scientific and pedagogical worker (broadcasting and reproduction of educational materials) is replaced by a number of new roles. A modern teacher should be able to choose and use electronic resources for student training; to organize cooperation and communication between participants in the educational process; to design electronic

resources and educational electronic environment, to be a facilitator and assistant for students, to understand and take into account their needs and features in the process of education, cognitive learning styles, new services and tools for effective cooperation, communication, and skills in the 21st century. Consequently, it should meet a certain level of his/her information and communication competence (Morse, Kocharyan, 2015).

Formulation of the problem

The determinants of positive changes in vocational education are the development of technologies and urbanization, which outline the "rules of the game" for all participants in the educational market, inducing them to implement the latest educational models, techniques, technologies, etc.

New technologies determine the civilizational development of humanity affecting the quality of life of people around the world, whether it is a big city or a remote rural settlement. At the same time, the development of digital technologies modernizes approaches to education. At the moment, people are learning a wealth of skills through on-line learning.

In view of this, the general purpose of education is changing. The main task of educational processes in modern institutions of higher education is to develop the ability to think, independently acquire information and evaluate it critically, apart from accumulating and remembering it (Kovalchuk, 2016).

In its study Future Work Skills 2020, the Institute for the Future identifies 10 important skills for success in the future: understanding the meanings; social intelligence; ability to think outside the framework and rules; adaptive thinking; intercultural competence; computational thinking; media literacy; inter-discipline approach; design thinking; information management; ability to work remotely. At the end of last year, the Institute for the Future complemented its list with three other essential skills: self-motivation, time management in managing one's income sources, and management of online recruitment (Key competencies for lifelong learning, 2018). This will help graduates of higher education institutions to get adapted both to the domestic, and the world labor market.

The purpose of the article is to highlight the issue of introducing digital technologies into the educational training of vocational education teachers as a modern strategy for modernizing the vocational education.

Study method

During the study we used the following methods: survey, testing, conversation, dialogue, observation, questioning.

Research results

In recent years, general trends in the development of technology and techniques, which provides for the restructuring of all spheres of human activity, have been

shaped. These trends were called the fourth industrial revolution. This name was given to the current era of innovation, when advanced technologies radically change the entire industries of the economy at an amazingly fast pace.

In the near future there will be a completely new type of industrial production, which will be based on the so-called large data and their analysis, complete automation of production, technologies of complemented reality and the Internet of things.

From the point of view of history, after the invention of machines one of the permanent directions of human activity was the development of machine-guns, and robotic systems – in the future. All this led to the emergence of a new "revolutionary situation" in the technical arena (Industrial Revolution 4.0. On the eve of a new era, 2018).

The rapid development of artificial intelligence in all spheres of human life determines the use of digital technologies in the educational process of higher education institutions. Taking into account the results of previous studies, we can state that digital competence is a key in the 21st century.

Digital competence involves confident, critical, responsible use, and engagement with digital technology for learning, work and community participation. It includes information literacy and data literacy, communication and collaboration, creation of digital content (including programming), security (including digital welfare and competence related to cybersecurity), and problem solving (Key competences for lifelong learning, 2018).

Information and communication technologies actively influence the learning process of future teachers of vocational training, as they change the scheme of transferring knowledge and teaching methods. Their use in the educational process of higher schools stimulates interest in educational activities, promotes the formation of logical and creative thinking, in general promotes the development of students and their information culture. Technologies allow to change the formats of teaching and educating. Information becomes a connecting link between a student and a teacher in the educational process, including all information or messages transmitted in one or another material form. At the same time education serves as the organizer (method) for transferring information and student development.

Information and communication technologies are, on the one hand, an intermediate link between informatics as a science and production (development) of informatics systems and the construction of communication networks, where the intellectual role is played by the intellectual component – knowledge (meaning) about how the reception, storage, processing, submission and transmission of messages and data, as well as (given that a significant part of such systems and networks is being developed for the purpose of providing human activity) psychological and pedagogical support of the development of informatics is of great importance. On the other hand, it is knowledge (meaning) about how it is worth working with data, alienated in the form of algorithms and procedures that can be used to work with certain data in other subject areas – that is, it also refers to certain intellectual technologies – the techniques of formalization and solving tasks in certain subject areas using informatics systems and networks.

Information and communication technologies are technologies with the help of which it is possible to develop informative systems and to build communication networks. This usually involves psychological and pedagogical support for the design, development and implementation processes, as well as formalization and problem-solving technologies in certain subject areas using such systems and networks (Spirin, 2019).

V.Y. Bykov in his scientific papers argues that the use of information and communication technologies (ICTs) radically changes the role and place of teachers and students in the educational process, promotes the implementation of an individual approach to learning – something that is still lacking. In such a model, the teacher ceases to be simply a "retranslator" of knowledge, but is a co-creator of modern, devoid of instruction and preaching, training technology. Informatization and computerization of the educational sphere is one of the most difficult and most important tasks of the state (Bykov, 2018).

With the adoption of an updated revision of key competencies for lifelong learning (2018), changes in terminology have taken place. Instead of "IST" (Information Society Technologies) and "ICT" (Information and Communication Technologies), used in the definition of 2006, "digital technology" is now considered the most appropriate term for naming a complete set of devices, software, or infrastructure. With the proliferation, diversity and integration of using the mobile devices and applications, links to computers and the Internet have been removed, but they are still classified under the broad concept of "digital technology".

Future vocational educators should understand how digital technologies can support communication, creativity and innovation, be aware of their capabilities, limitations, implications and risks. They should understand the general principles, mechanisms and logic underlying the emerging digital technologies, as well as know the basics of the operation and use of different devices, programs and networks, to be critical of the accuracy, reliability and impact of digital information and data means and understand the legal and ethical principles associated with the use of digital technologies (Key competencies for lifelong learning, 2018).

The development of innovative processes in general education in recent years has been increasingly linked with changing emphasis in teaching disciplines by transferring knowledge for developing the ability and readiness to use this knowledge in real life situations. The problem of developing the digital competence of future teachers of vocational training remains relevant. In our opinion, the ways of solving it are in active use in the educational process of digital technologies (Pinchuk, 2010).

Working with digital technologies requires a reflexive and critical, at the same time inquisitive, open and perspective attitude to their development. It also requires an ethical, safe and responsible approach to using these tools.

The understanding and the relevance of digital competences has observed a significant growth since 2006. When reviewing the 2006 Recommendation Framework, these changes should be reflected, which results not only in the redefinition of digital competencies, but also in agreement with the Digital Competency Framework related tools such as consumer-oriented frameworks, educators or organizations, as

well as other existing national frameworks. This was a particularly strong argument put forward in the review and consultation process.

The Documents on Higher Education Modernization (2011) "Re-thinking Education: Investing in Skills for Better Socio-Economic Outcomes" (2012) and "Opening Education" (2013) were devoted to digital and innovative education and emphasized the relevance of digital skills and competences, the role of Open Educational Resources (OER). A joint report by the Council and Commission of 2015 on the implementation of the strategic framework for European cooperation in education and training (ET 2020) highlighted the need for digital competence and the positive contribution of digital technologies to teaching and learning as well as education management. Later educational documents, such as the Digital Single Market for Europe (2015) and Improvement and Modernization of Education (2016), emphasized the importance of developing digital competences and noted the potential for innovation in education through digital tools.

"The New Skills for Europe" (2016) program identified the need to ensure digital competence as a priority, and called on Member States to provide comprehensive strategies to improve the digital competence of people. Outside the European level, a number of national coalitions have been created, and although the structure and activities vary depending on a country, some are closely linked to national educational policies.

The widespread digital competency framework was first published in 2013 and has been updated since then. It contains 21 learning outcomes in 5 areas:

1. information literacy and data, including content management;
2. communication and cooperation, and participation in society;
3. creation of digital content, including ethical principles;
4. safety;
5. solving problems.

Harmonizing the definition of digital competences in the European Qualifications Framework reflects these five areas, while retaining the basic format for knowledge, skills and attitudes (Malykhin, Kovalchuk, Aristova, Hrytsenko, 2017).

The revised description (competencies) tries to be flexible enough to be relevant in today's society and in the future, recognizing the integration of social media and the emergence of technologies such as artificial intelligence, robotics, virtual and augmented reality. It is necessary to strengthen the link to digital security, embracing the management of its own digital identity, so as to positively encourage responsible and critical engagement. The phrase "digital identity" has two meanings in this context: one concerns the protection of data (e.g., e-mail accounts); the other is self-perception in online environments (e.g., behavior in social networks) (Kovalchuk, 2016).

Today a number of educational concepts related to information technologies have appeared. The Educational Technology and Mobile Learning Edition provides 14 strategies that are relevant to today's learning and will be prioritized in the years to come: adaptive virtual classroom, MOOCs, synchronous and asynchronous learning, mixed learning, "inverted" class (inverted learning), self-directed learning, learning management system, "cloud" learning, mobile learning, course

management system (CMS), e-Learning, technology 1:1, gamification. Among the list of technologies that implement the strategy for modernizing vocational education, we have chosen the following: synchronous and asynchronous learning, mobile learning, "cloud" learning, and mixed learning (Malykhin, Kovalchuk, Aristova, Hrytsenko, 2017).

Synchronous learning involves the simultaneous participation of a teacher and a student in the educational process, that is, they are separated only territorially. Communication is done via Internet – through Skype or other communication programs. In this form, the usual educational process is practically simulated, since both audio and video are transmitted from the teacher to the student and from the student to the teacher and communication is carried out in real time. Lectures, discussions and presentations take place at a certain time. All students who want to participate in them should be online at this time.

Asynchronous training takes place when the teacher and student work at different times – for example, when they are in different time zones, etc. In this connection, for the communication of the student and the teacher and the transmission of information using e-mail, audio and video, etc., the direct contact between the teacher and the student online is unstable due to the difference in time.

Mobile learning is a learning technology based on the intensive use of modern mobile devices and technologies. Mobile learning is closely linked to learning mobility in the sense that students should be able to participate in educational activities without time and space constraints. Using mobile technologies opens up new learning opportunities, especially for those who live isolated or in remote locations or experience difficulty in learning. The opportunity to study at any time, which is inherent in mobile learning, is today a general tendency for intensification of life in the information society.

We distinguish:

- Web-model of mobile learning.
- Applied model of mobile learning.
- Cellular mobile learning model.

Due to the growing popularity of Internet and multimedia education in recent years, there is a need to standardize approaches to creating training courses using the Internet and multimedia (Malykhin Kovalchuk, Aristova, Hrytsenko, 2017).

The vast majority of practicing teachers point out that the systematic use of digital technologies in the educational process should contribute to:

- raising the cognitive interest of future teachers of vocational training;
- the quality of knowledge;
- expanding the range of teachers involved in the introduction of digital technologies;
- improving the methods of using digital technologies in the class.

Cloud technologies are technologies that enable Internet users to access server computer resources and use software as an online service.

Examples of using cloud technologies in our study: the use of electronic journals and diaries, communication, testing, remote learning systems, library, mediatec, file storage, sharing (Dropbox, SkyDrive), collaborative work, video conferencing,

college domain e-mail, Google Sites services – free hosting using wiki-technology, Google Translate, translator, YouTube, video hosting, Google Drive – integrated space to store files and work with them.

Combined learning is a combination of online and offline learning in one thread that creates the student's "learning experience" and a self-sufficient logical course or subject. When mixed learning instruction/theory, which the student is mastering online (either in the form of self-reading materials, when viewing demo videos, or when watching a video recording of a teacher's lecture, or in the form of a game), find their application offline (that is, in educational institution during classes) all activities and classes taking place in an educational institution should be combined and, in practice, consolidate the knowledge gained by the student when doing an online job.

Online learning is a format for student training at a computer, when he/she chooses a place for training, controls the time, rhythm and sequence of tasks performed.

Offline learning is the interaction of a student with a teacher and teammates/colleagues on the project.

The mechanism of realization of the concept of mixed learning as a process involves the creation of a comfortable educational informational environment, a system of communications, representing all the necessary training information.

In mixed learning, students are encouraged to watch videos at home and read theoretical material; discussions and practical tasks are discussed at the lecture. At home he completes his paper and sends to the teacher's e-mail. Discussion of problem issues begins by e-mail or in social networks and ends at the seminar, or vice versa. The student activity in this format is increasing. Traditionally, mixed learning takes place in three stages: independent study of material, classroom interactive training, continuing interactive learning and support in the workplace. Combined learning can be seen as integration of formal and informal learning in the workplace.

The necessity of introducing in educational process the strategies of modernization of vocational education offered and considered by us provided the basis for conducting pedagogical research on the use of digital technologies in educational process, the final result of which was the increase of the level of developing the digital competence of future teachers of vocational training of the Oleksandr Dovzhenko Hlukhiv National Pedagogical University and organization and support for the continuity and availability of learning.

Organization of educational activities in the context of the introduction of digital technologies is aimed at optimal solution of fundamental didactic tasks with the most necessary coverage of the whole range of digital technology advantages. The conditions of the digital environment allowed developing a certain electronic basis for supporting the continuous dynamic development of the knowledge system, which is the basis of management and quality assurance of the educational process, the development of cognitive and creative activity of students (Kovalchuk, 2016).

In order to trace the direction in which the "movement" in relation to the introduction of digital technologies in the educational process of institutions of higher education should be carried out, we conducted a questionnaire. The survey was

attended by two groups of respondents. The first one is teachers with a pedagogical experience of at least 5 years, 80% of them have a degree, and their average age is 44 years old. In the second group we included students of specialization 015.17 Vocational education (Technology of products of light industry), 015.18 Vocational education (Technology of production and processing of agricultural products), 015.01 Vocational education (Construction), full-time and part-time study. Experimental basis for conducting questionnaires: the Oleksandr Dovzhenko Glukhiv National Pedagogical University. The subject of questioning is the peculiarities of developing the digital competence of future vocational training teachers in the process of training.

In the development of the questionnaire, we used the experience of Ukrainian researchers (Artiushyna, 2018) regarding the development of information and digital competence of future teachers of vocational training.

According to the results of the questionnaire, we received information on the frequency of use by teachers and students of synchronous and asynchronous learning, mobile, cloud and mixed learning, self-assessment of their digital competences, ability to use digital technologies in educational and professional activities, assessment of the degree of inclusion in a professional network community, etc.

By analyzing the questionnaire for teachers on the question *"Do you know the notion of 'digital technologies' and use them in classes?*" most respondents answered "yes" (75%), others said no (25%). Consequently, most respondents use digital technologies in their classes. To the question: *"Which of the following technologies are known to you: adaptive learning, virtual classroom, MOOCs, synchronous and asynchronous learning, mixed learning, 'inverted' class (inverted learning), self-directed learning, learning management system, 'Cloud learning', mobile learning, Course Management System (CMS), e-Learning, Technology 1:1, gamification?"* we received the following responses: *adaptive learning (12%), virtual classroom (9%), MOOCs (4%), synchronous and asynchronous training (15%), mixed learning (7%), inverted class (inverted learning) (3%), self-directed learning (5%), learning management system (11%), cloud learning (16%), mobile learning (8%), course management system (CMS) (2%), e-Learning (3%), technology 1:1 (1%), gamification (4%)* (Fig. 3).

Thus, we can say that teachers know modern digital technologies. To the question *"List the technologies that you use in the classroom: adaptive learning, virtual classroom, MOOCs, synchronous and asynchronous learning, mixed learning, 'inverted class' (inverted learning), self-directed learning, learning management system, 'Cloud learning', mobile learning, Course Management System (CMS), e-Learning, Technology 1:1, Gamification"*, we have obtained the following results: *adaptive learning (3%), virtual classroom (5%), MOOCs (1%), synchronous and asynchronous learning (15%), mixed learning (13%), 'inverted' class (inverted learning) (8%), self-directed learning (1%), learning management system (2%), 'Cloud' learning (19%), mobile learning (13%), course management system (CMS) (13%), e-Learning (4%), technology 1:1 (1%), gamification (2%).* Therefore, digital technologies are generally known to teachers, but not all of them are used in their professional activities (Fig. 1).

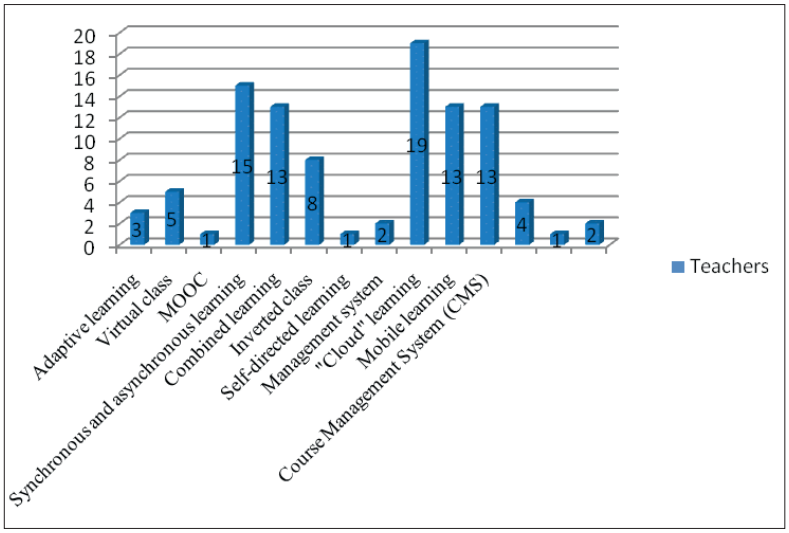

Fig. 1. Distribution of teachers' answers to the use of digital technologies in classes

To the question: *"How often do you use electronic gadgets (computer, smartphone, tablet)?"* the majority of respondents answered: "every hour" (55%), others – "every day" (28%), and the rest – "once a week "(17%). Thus, electronic media play an important role in the life of teachers of higher education institutions.

To the question: *"For what purpose do you use the Internet more often?"*, in which it was possible to select up to 3 responses, most often the respondents chose the option "communication in social networks", in the second place was the answer "search information", the third – "teaching". Consequently, it is these resources (as well as their combination) that are of the greatest importance today for use in education. In the question, *"Which of the following computer Microsoft programs do you master and to what extent?"*, the teachers were asked to evaluate the degree of mastering the Office 365 applications: Word, Excel, Power Point, OneNote, Forms, Sway, OneDrive. As a result, it was found that teachers master Forms the best – 42% and Sway worst – 10%. Therefore, we believe that attention should be paid to these programs. To the question: *"What computer programs do you still own?"*, The teachers pointed out, basically, programs for working out photo images and text information. In the question, *"How do you rate your IT skills?"* the teachers rated their ability to create presentations, social networking, work on the Internet, email and text editor; the lowest – the ability to create a web site and blogging To the question: *"What can promote the involvement of students in the classroom using computer technology?"* the teachers highlighted the new interesting projects, the development of occupations, which use digital technology, high-quality and modern equipment. To the question *"Can you create (capture, voice, edit) a short video educational program"* 32% answered "yes", 10% need extra help, 58% answered "no" (Fig. 2).

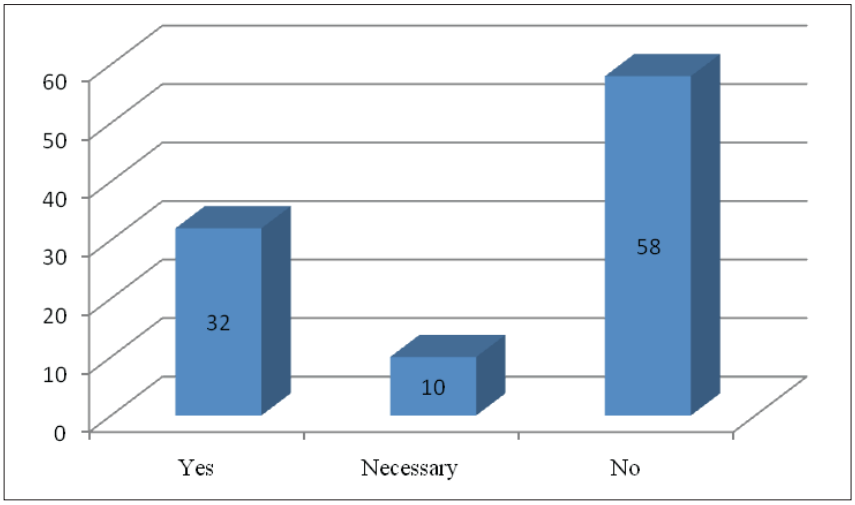

Fig. 2. Distribution of teachers' answers to the skills to create (capture, voice, edit) a short video for educational purposes

Consequently, teachers generally better understand software for image and text information processing, and knowledge of programs for creating and processing video fragments is medium and low. To the question *"Do you have the experience of creating electronic teaching aids"*, 74% answered "yes" and 26% said "no". So, in general, teachers have the experience of creating electronic learning tools, but a significant part of them do not have such experience.

Having conducted surveys among students, we can draw the following conclusions. To the question *"Do you know the concept of 'digital technology'?"*, 82% said "yes" and 18% answered "no". It has been stated that most students understand the meaning of "digital technology" and only a small part of them do not understand this concept. To the question: *"Which of the following technologies are known to you: adaptive learning, virtual classroom, MOOCs, synchronous and asynchronous learning, mixed learning, 'inverted' class (inverted learning), self-directed learning, learning management system, 'Cloud' learning, mobile learning, Course Management System (CMS), e-Learning, Technology 1:1, Gamification?"*, the respondents responded as follows: *adaptive learning (10%), virtual class (11%), MOOCs (8%), synchronous and asynchronous training (14%), combined learning (10%), 'inverted' class (inverted learning) (2%), self-directed learning (5%), learning management system (8%), 'Cloud' learning (11%), mobile learning (9%), course management system (CMS) (3%), e-Learning (4 %), technology 1:1 (3%), gamification (2%)* (Fig. 3).

To the question *"Do you use multimedia equipment for training?"* 58% answered "yes", 19% said that "sometimes" and 23% – "no". Consequently, most students said that they use multimedia equipment, but a large part of them use it sometimes or not at all (Fig. 4).

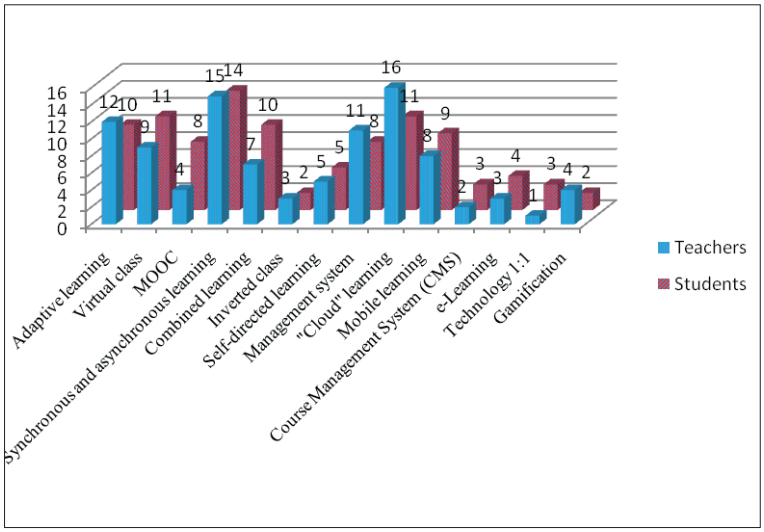

Fig. 3. Distribution of teachers' and students' answers as to knowledge of digital technologies

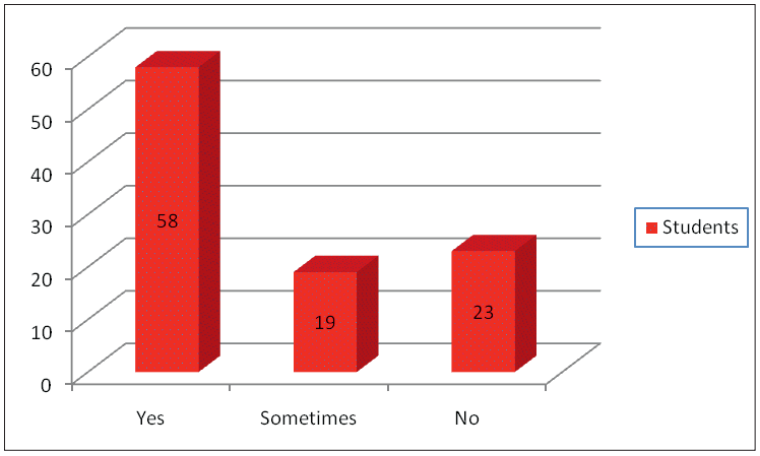

Fig. 4. Distribution of responses of teachers and students regarding the use of multimedia equipment to get prepared for classes

To the question *"How often do you use social networks for communication?"* 54% said that "every hour", 21% – "every day" and 25% answered "once a week". Thus, students often use messengers for communication (Fig. 5).

To the question *"Do you have 24-hour access to the Internet"*, 87% answered "yes" and 13% answered "no". In this regard, we can assert that most students have 24-hour access to the Internet, which enables them to communicate with peers and teachers and perform tasks remotely.

To the question *"Do you constantly use digital technologies in everyday activities to establish communication with other people?"* 89% answered "yes", 11% said "no".

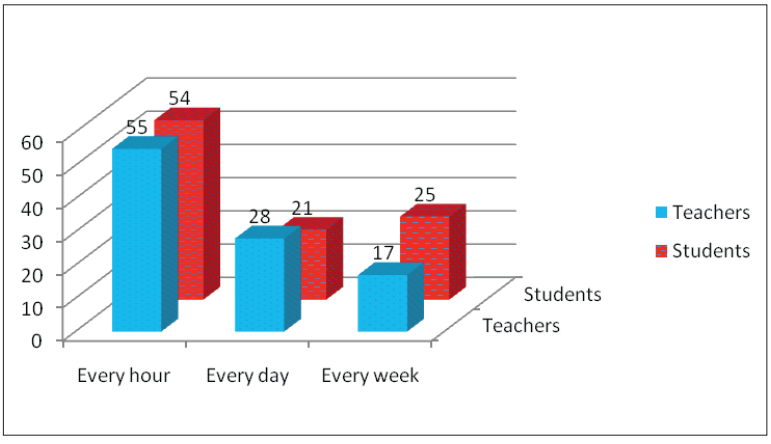

Fig. 5. Histogram of the comparative distribution of responses of teachers and students regarding the frequency of using social networks for communication

This result suggests that students often use digital technology in their daily activities (Fig. 6).

To the question *"Where do you find the basic professional information?"* 83% chose Internet resources, 17% chose printed works.

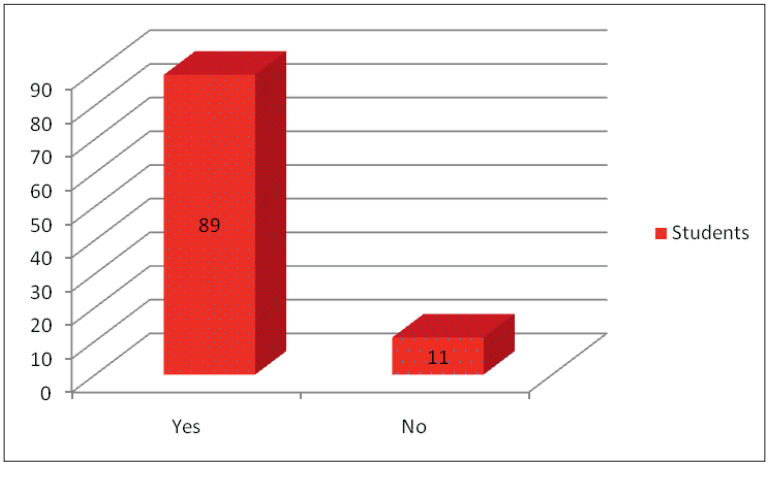

Fig. 6. Distribution of students' answers on the use of digital technologies in their daily activities in order to establish communication with other people

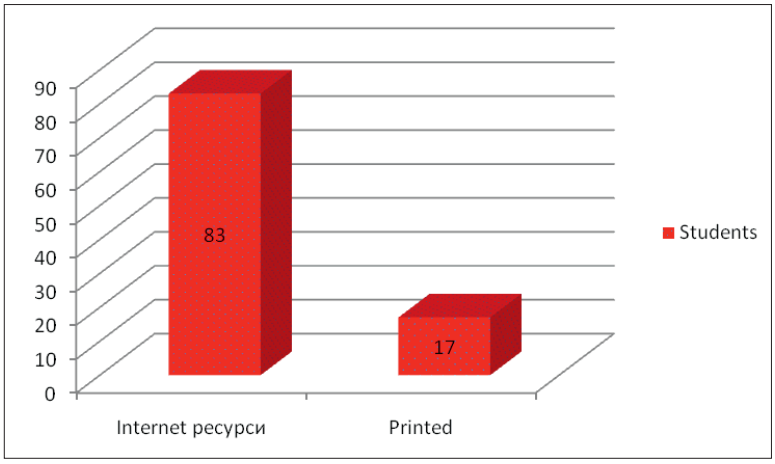

Fig. 7. Distribution of students' answers on how to find information for study

To the question *"Are you a registered user of a professionally oriented Internet resource (service)"* 91% chose the answer "yes" and 9% said "no".

The obtained results of the research demonstrated the necessity of developing the digital competence of students in terms of using modern strategies for the development of vocational education. Synchronous and asynchronous learning, mobile learning, "Cloud" learning, and combined learning are a very convenient tool for organizing the educational process. An important role in studying the professional disciplines is played by the project activity, which enables the development of a set of skills for using digital technologies: information search, communication, synchronous and asynchronous communication, organization of joint activities, exchange of information and materials, conducting an online survey, creating a web portfolio of results, project, multimedia presentation of project results, creation of electronic educational resource as a product of project activity.

In general, the data of the conducted questionnaires show that teachers positively evaluate the possibilities of using digital technologies in education: both for the organization of their own activities and for the educational activity of students. Currently, a significant number of teachers use digital technologies to create various types of individual information banks aimed at supporting and developing their professional activities (methodologies, control tasks for students, etc.). The effectiveness of using digital technologies in the educational process depends fundamentally on the level of the digital competence of teachers themselves (Motylkova, 2014).

In this regard, the data presented quite convincingly show that teachers with a high level of development of digital competence in a fundamentally different way use digital technologies in educational activities, referring to them not only as a means for submitting educational material, but also as a means of objective control of student knowledge (development of educational and methodical electronic tools, their use in educational process, the development of electronic tests, the addition

of home electronic tasks, the filling of an electronic journal (Kartashova, Bakhmat, Bakhmat, Plish, 2019).

In other words, teachers use digital technologies at all stages of educational activity.

Results of introducing digital technologies, indicate their advantages:

- accessibility, understandability and visualization of tools – it is possible to work for users with a low level of digital competence (with its subsequent continuous gradual increase);
- multifunctional toolkit – the ability to organize and implement the educational process, create content,
- availability of a management training system;
- continuous online and offline support – providing educators with advice, training, content training, functional support training, and upgrade versions.

Conclusions and perspectives for further studies

Continuous improvement of the education system in Ukraine, transition to the New Ukrainian school are factors that indicate the need for a new pedagogical thinking. Seeking to meet the needs and conditions of Nurses, creative, highly intellectually and comprehensively educated teachers are looking for ways, methods and means of developing these qualities (Kovalchuk, 2016).

In addition to the positive results in the area of development of digital competency of participants in the educational process (according to the described levels), there is a social effect, which is as follows:

- ensuring the continuity of the educational process (full-time distance learning);
- ensuring free access to education for all and everyone, as well as for those who need inclusive education;
- possibility of involving people from remote and depressed areas in the educational process of the educational institution;
- provision of free access to education for persons residing in uncontrolled territories of Ukraine. It should be noted that the teachers who indicated in the questionnaires that they are able to use the computer vary widely in terms of user skills.

In the course of the research to identify the level of minimum user skills we used: surveys, monitoring the work of teachers in the computer class, analysis of the quality of the electronic documentation of teachers. The following skills were chosen: general (working with a file system), working with a word processor, working with spreadsheets, creating presentations, searching the Internet, acquisition of e-mail.

As it turned out, in their work, teachers use the simplest of the available features of the program. Often tutors are fond of presentations, which is reduced to compulsory accompaniment of classes or extracurricular events with pictures – slides, often even unformatted, of poor quality, overwhelming animations or sound effects. They could well be replaced and were truly earlier replaced by tables and other visual aids.

The work of adherents of traditional technology, who do not use computers at all, is much more effective than similar "innovations". Teachers need the ability to "change", "correct", "rearrange" the existing product, or even create their own, author's. And then, the use of digital technology opens up unlimited opportunities.

This suggests that many teachers have already understood the benefits of digital technology, felt the need to translate their ideas into specific teaching aids and developments, as well as their helplessness, lack of competence, and lack of knowledge and skills in digital technology.

The results obtained in our study allow us to outline three circles of problems related to the possibilities of using digital technologies in education. The first is due to insufficient development of techniques for using digital technologies in specific educational areas. The second concerns the use of digital technologies in non-auditing and distance education. The third is associated with a fairly consistent opinion amongst the teachers about the negative effects of the impact of digital technologies on the health and cultural development of young people.

The directions of further exploration include the study of scientific and methodological foundations of the development of digital competence of teachers in order to develop integrated lessons and sessions, and in the future – integrated disciplines, in the ability to organize cognitive activity of students, to develop their autonomy and creativity through the use of modern digital technologies. That is why the issue of continuous increase of their level of digital competence – quality, the formation of which allows the teacher to use high-professional level digital technology to search, logical selection, systematization, use of educational material and organization of a successful educational process.

Now, in the context of education informatization, only continuous increase of the level of digital competence of future vocational training teachers would allow them to respond promptly and adequately to all variables of progressive conditions of their professional activity.

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Implementation of digital technologies in training the vocational education pedagogues as a modern strategy for modernization of professional education

Abstract

The article presents the results of the theoretical analysis of digitization in vocational education. The possibilities of digitization in the practice of higher education institutions as a mean of developing students' digital competencies are analyzed. The essence of the concept of 'digital' is examined. It is clarified that the rapid development of artificial intelligence in all spheres of human life determines the use of digital technologies in the educational process of higher education institutions. Based on the analysis of the literary sources and educational

practice, the methodical features of applying the strategies for the vocational education modernization are outlined: synchronous and asynchronous learning, mobile learning, 'cloud-based machine learning', and blended learning in the educational process, in particular during the general questioning of teachers and students. By changing the format of teaching and learning, the digital technologies make information a link between the teacher and the student in the educational process. Working with digital technologies requires a reflexive and critical, yet inquisitive, open and future-oriented attitude to their development. The technologies we have identified stimulate students' interest in educational activities, develop their logical and creative thinking, and their digital competence. The digital technologies presented fully perform the tasks, which help to make the vocational education specialists competitive in the labor market. According to the results of the survey of teachers and students, the main shortcomings in digitization in the educational process have been revealed. In particular, the lack of students' training in using digital technologies in self study is confirmed. It is clarified that the low level of digitization is due to insufficient methodological support and improper description of ways of using such technologies in particular didactic situations. It is emphasized that the rapid development of digital technologies and their widespread use in educational activities in recent years provide reasons to forecast optimistically the rapid digitization in higher education institutions.

Keywords: digital technologies, digital competence, the fourth industrial revolution, strategies, vocational education, modernization of vocational education, higher education institution

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