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MODELLING OF THE PREPARATION OF MASTERS OF PROFESSIONAL EDUCATION FOR ACTIVITIES IN THE INFORMATION AND DIGITAL ENVIRONMENT

Abstract. The article theoretically substantiates the model of training and formation of future teachers' of vocational education readiness to work in the information and educational environment based on the development of their digital competencies. Upon analyzing the types of activities of a future teacher with a master's degree that are specified in the professional standard and the field of application of their digital competencies, the research paper reveals their interconnection and presents the possibilities of developing these graduate competencies within the proposed educational and professional master's program. The program is elaborated upon studying the applied profile of the future teacher's digital competencies. The research methodology is based on the analysis of the digital competencies of the teacher and the logic of elaboration of the subject preparation of future masters for successful and effective professional activity in the context of information and digital activities.

The content of the teacher's basic digital competencies is analyzed in the study; a model of training and formation of a graduate's professional readiness to work in the information and digital environment based on the development of relevant competencies is proposed; the content of the educational and professional program "Computer Technologies in Management and Education" for the master's degree in the field of knowledge 01 Education/Pedagogy, specialty 015.39 Vocational Education (Digital Technologies) on the basis of the development of digital competencies of a future specialist within his/her professional training is suggested.

The research demonstrates that it is necessary to include subjects aimed at developing digital competencies at a certain level in the content of their professional training in order to increase the effectiveness of teachers' activities in the modern conditions of informatization and digitalization of society and the formation of a virtual social and educational system.

1. INTRODUCTION

Problem formulation. For several decades, modelling has been one of the most relevant methods of scientific research. It is widely used in pedagogical research. The modelling method makes it possible to combine the empirical and theoretical in pedagogical research, that is, to combine experimentation, the construction of logical structures and scientific abstractions in the process of studying a pedagogical phenomenon. Quite often, teachers and researchers face the need to use pedagogical modelling in studying pedagogical phenomena. However, according to some scholars [1; 2, 3, 4, 5, 6], modelling is not given enough attention in the modern pedagogical science and practice, which is one of the reasons for the ineffectiveness of the modernization of Ukrainian education.

The scientific literature states that a model is an artificially created object in the form of a diagram, figure, table, physical structures, symbolic forms or formulas, which, being similar to the object (or phenomenon) under study, reflects and reproduces in a simpler form the structure, properties, relationships and relations between the elements of this object [3].

It is impossible to imagine how humanity can do without models of the world around it in its activities (scientific, educational, technological, and artistic). Strict and precise rules for building models are quite difficult to formulate, but today humanity has accumulated a lot of experience in modelling various objects and processes. The creation of models is continuous, as is the development of sciences.

Modern pedagogy, including didactics, cannot do without the method of modelling, which is proven by the experience of both theoretical and practical teachers. In a pedagogical science, it is customary to model both the content of education and learning activities [4]. Scientific models are elaborated as an apparatus for teaching specific academic disciplines. The need to master the modelling methodology is related to both the general method of scientific knowledge and psychological and pedagogical thoughts. When students elaborate various models of the phenomena under study, modelling acts as a teaching tool, a way to summarize the educational material, and to present it in a condensed form. In addition, modelling of educational material is widely used for its logical ordering, construction of semantic schemes, visualizing educational information and relying on figurative associations using the so-called mnemonic rules [6].

The success of modelling, including pedagogical one, heavily depends on the existence of a theory that describes the phenomenon to be modelled, as well as on the degree of formalization of the provisions of this theory [1]. Based on the analysis, synthesis and systematization of scientific sources on the problem of pedagogical modeling of training of various specialists, including masters of vocational education in digitalization of education, it can be argued that the problem of modelling the training of specialists based on modern methodological approaches - competence, contextual and activity-based - is becoming highly relevant at present.

Analysis of recent research and publications. The problem of training masters of vocational education is relevant, and certain aspects of it are being developed in almost all pedagogical universities (Vinnytsia, Hlukhiv, Drohobych, Kyiv, Ternopil, Uman, Kharkiv,

etc.), and the educational and scientific program of training specialists is constantly being improved and modernized. For this purpose, modelling in various forms and schemes is widely applied. Such scientists as R. Horbatiuk, R. Hurevych, D. Kilderov, V. Kobysia, O. Kovalenko, V. Kurok, L. Orshansky, S. Tkachuk, A. Tereshchuk, H. Tereshchuk, L. Shevchenko, etc. pay serious attention to it.

The training of masters of vocational education and other specialties has been significantly intensified in the context of the development of digital information technologies and the formation of digital competencies in future vocational teachers. A significant amount of effective research in this area is carried out by the Institute for Digitalization of Education (IDE) of the National Academy of Pedagogical Sciences of Ukraine, headed by Academician V. Bykov (O. Burov, T. Vakaliuk, S. Ivanova, S. Lytvynova, L. Luparenko, M. Mariienko, O. Pinchuk, O. Spirin, A. Sukhikh, S. Semerikov, L. Tymchuk, M. Shyshkina, A. Yatsyshyn).

Research on the digital training of future specialists is also carried out by a group of scientists at the Institute of Vocational Education of the National Academy of Pedagogical Sciences of Ukraine under the leadership of Academician V. Radkevych (A. Gurzhiy, A. Pryhodiy, P. Luzan, O. Ovcharuk et al.) as well as scientists from pedagogical universities of Ukraine (M. Bondarenko, T. Bondarenko, A. Hedzyk, R. Horbatiuk, R. Hurevych, M. Kademia, D. Kilderov, V. Kobysia, L. Konoshevsky, M. Koziar, A. Lytvyn, V. Osadchy, V. Khomenko, L. Shevchenko, and many others).

Relevant in modern research are topics related to the use of such instruments/ technology in education as Information and Communications Technology [7], digital tools [8], digital technologies [9, 10], digital educational environment [11], digital portfolio [12], cloud-oriented educational and scientific environment [13], elements of dual education [14], pedagogical modeling [15], SMART-complexes of educational disciplines [16], network technologies [17], Web-based education [5], websites [18], augmented reality [19], virtual reality [20], Artificial Intelligence [21].

Despite the numerous studies, we have noted that not all the problems have been solved.

The research goal. The aim of our research is the theoretical justification of the creation of a model of the information and digital space and the formation of the professional readiness of future teachers to work in such an environment based on the continuous development of their digital competence.

2. THEORETICAL FOUNDATIONS OF THE STUDY

Contemporary processes of digital transformation of society and education actualize the task of developing new methods and technologies for training specialists who will be ready and able to work effectively in the modern information and digital environment. Currently, the term "digital literacy" is actively used in Ukrainian and world pedagogical and scientific-methodological literature, which, in our opinion, is to some extent synonymous with the term "computer literacy", introduced into pedagogical practice in 1985, but adapted to the current conditions of digitalization of education in the context of the formation of a digital image.

Let us turn to one of the variants of the definition of this term suggested by the United Nations (UN), which states that "digital literacy is the ability to safely and appropriately manage, capture, integrate, exchange, evaluate, create and access information using digital devices and system technologies to participate in economic and social life" [22].

Thus, digital literacy in general is a set of knowledge, skills and abilities that a person needs to use safely and effectively. The main components of digital literacy are the following:

– digital use - active use of the Internet, online media, social networks, public services, telemedicine, cloud technologies, etc;

– digital competencies - the ability to search for information, use digital devices, social networks, conduct financial transactions, make online purchases and create multimedia content;
– digital security - the use of personal and strong passwords, legal content and information security.

Digitalization concerns not only the content of education, but also the technology of organizing the educational process itself [23]. Therefore, we can state that the specifics of the use of digital technologies are ensured, which in the modern information and digital environment are not only the object of study, but also the means of learning and communication. The digitalization of the educational process is characteristic of the realities of both management, training, and education.

Nowadays, thematic digital educational resources, subject-specific virtual laboratories, educational thematic websites, social networking services and web applications for various purposes (social networks, messengers, platforms for webinars and remote discussion - Google Meet, Skype, Zoom, Mirapolis, Discord, etc.) Teachers at different levels of education actively use various educational technologies (electronic, distance, mobile, mixed), including those based on information and digital systems. Various digital technologies are used to address issues of social, educational and organizational work in educational institutions, as well as to interact with students' parents [24, p. 246-247].

In the context of the global digitalization of modern society, we believe that the use of virtualization technologies in the educational process is one of the most promising areas of educational technology development. Virtual technologies allow solving a fairly wide range of tasks, both in the interaction in the teacher-student system and in the organization of the educational process in general. The development of digital technologies leads to the fact that the information and digital means of educational institutions, integrating with the powerful capabilities of the social digital Internet space, form a virtual social information and educational environment, in which the activities of all participants in the educational process are provided: teachers and administrators of the institution, students, assistance and tools.

Therefore, modern teachers should not only possess the knowledge, skills and abilities that form modern digital competencies, but also be able to form these competencies in students studying at different education levels. The study of the readiness of modern teachers to use digital technologies in the educational process was carried out by the staff of the IEC of the NAES of Ukraine [11; 12; 13, etc]. For example, a significant number of working teachers of gymnasiums and lyceums do not yet fully use digital solutions for effective teaching of children and are not active in creating their own digital resources. They are not fully competent in creating and modifying digital learning materials and resources, make little use of Internet resources and online services in the classroom for students to work in teams for joint project and research activities, and use digital tools to provide students with feedback to a lesser extent than university teachers. Among the reasons for this is the lack of necessary technical devices in schools: computers, various gadgets, etc.

Moreover, according to the experts who conducted the study, it is in the use of digital technologies that teachers (including university professors) often give way to their students. Unfortunately, there are situations in educational institutions where digital technologies are actively used by a small number of teachers who are able to improve the efficiency of the educational process only in their own subjects. However, it is obvious that such partial examples cannot improve the efficiency of the entire traditional educational process. Some scientific and methodological works [11; 13; 17; 19; 25, 26 etc.] point out that the digital transformation of educational systems is being implemented unevenly, as the reforms carried out in education are ineffective precisely because of the lack of digital literacy of educators.

Our analysis of the requirements for the professional training of future teachers in the current documents of the Ministry of Education and Science of Ukraine in the field of "Vocational Education" (for bachelor's and master's degrees) showed the need to revise and deepen the content of training future teachers for professional activities in the virtual information and digital environment based on the development of relevant competencies. The fundamental document in the field of education is the priority project "Concept of Digital Competence Development until 2025" (2021), which aims to identify priority areas and main tasks for the development of digital skills and digital competencies, increase the level of digital literacy of the population, including able-bodied persons, the elderly, low-income families, persons with disabilities, and other vulnerable groups, in the context of the development of the digital economy and digital society [27].

The project takes into account the development of distance education and also includes such areas of work as the creation of public services and integration solutions, regulatory support for the development of online learning and the creation of a system for assessing the quality of online courses. Regarding the information mentioned above, we consider the issue of forming the professional readiness of future teachers to work in a virtual information and digital environment based on the development of their competencies in professional training within the proposed educational and professional program "Computer Technologies in Management and Education" for Master's Degree in Knowledge Area 01 Education/Pedagogy, specialty 015.39 Vocational Education (Digital Technologies) to be relevant.

In the current conditions of digitalization of the educational process, scientific and methodological research in the field of teacher's professional training and retraining, as well as the study of approaches and methods for forming the components of their digital competence/literacy, is of particular relevance. Moreover, it is obvious that high school (lyceum) teachers who receive professional training as part of a master's degree should have deeper knowledge and skills in the use of digital technologies than gymnasium teachers. This, in our opinion, is due to the fact that they are actively involved in the training of students who will soon find themselves in the digital realities of our time. In 2017 The European Union Education Committee presented an exemplary profile of digital competencies of teachers, Digital Competence of Educators (DigCompEdu), which includes six areas of teacher competencies [27].

Here is an exemplary profile of teachers' digital competencies according to [28]:

1. The use of digital technologies in the professional pedagogical environment: organizational competence, competence in the field of professional cooperation; professional competence in the field of self-analysis of practical activities; competence related to continuous professional development in the field of digital resources.

2. Possession of professional skills in searching, creating and sharing digital educational resources: the ability to select digital resources depending on the purpose, context of learning and pedagogical approach; develop and make changes to digital resources; ensure the management, protection and exchange of digital resources to organize digital content and make it accessible to students, parents and other educators.

3. Use of digital tools in learning and teaching: planning and implementation of digital devices and resources in the learning process; use of digital technologies for individual and group work; use of digital technologies as a means of improving communication and cooperation between students; use of digital technologies to support their self-learning (plan, monitor and record the results of their own learning, provide evidence of progress, share knowledge).

4. Mastery of digital tools and strategies for assessing learning outcomes: use of digital technologies for formative and summative assessment; ability to select, critically analyze and

interpret digital evidence of student activity, performance and progress in learning; use digital technologies to provide targeted and timely feedback to students; correctly interpret evidence provided by digital technologies and use it to make decisions.

5. Using digital tools to expand students' educational opportunities: the teacher's ability to ensure the availability of learning resources for all students, the ability to analyze the impact of digital resources on students, respond to contextual, physical or cognitive limitations for their use in the learning process; readiness to use digital technologies to diversify learning tools, ensure the progression of students taking into account different levels of mastering the curriculum, adhere to the principle of individualization of learning; art.

6. Supporting the process of developing a student's digital competence: the teacher's ability to search for professionally important information and resources in digital environments, process, analyze and interpret it, compare and critically evaluate it, determine the reliability of information and its sources; ensuring digital communication for the purpose of cooperation; creating content using digital means in various formats; ensuring responsible use of digital learning technologies for the physical, psychological and social well-being of students.

3. RESEARCH METHODS

To implement the tasks, the following methods of scientific and pedagogical research were used: theoretical (studying the literature on the research topic; studying and summarizing innovative pedagogical experience in the professional training of masters of vocational education; analysis and synthesis; systematization; comparison; classification; modelling; design); empirical (questionnaires; testing; observation; conversation; analysis of the products of the activities of students; their expert evaluation).

Contribution of the authors to the article: the idea of writing the article, the structure of the article, the formulation of conclusions – N. Lazarenko, selection of theoretical material for the content of the article, formulation of the purpose of the work – R. Gurevych, graphic design of the article, organization of expert assessment – A. Kobysia, selection of theoretical material for the content of the article, analysis of existing works on the topic – V. Kobysia, translation into English, design of literature – N. Opushko.

4. RESEARCH RESULTS

We formulated a concept that describes the components and directions of forming a teacher's professional readiness to work in the social information and digital environment based on the development of relevant competencies. The main idea of the concept is that the development of digital competencies of modern teachers to carry out professional activities in the relevant environment should be carried out during training in solving educational professional tasks of different levels of complexity and in accordance with the selected type of specific teacher's activity using digital technologies. Based on the analysis of the main tasks solved by the participants of the information and educational environment, we have identified and summarized the types of network tools (digital technologies) required by the participants to solve them (Table 1).

Table 1.

Main tasks of participants of the social information and educational environment and necessary digital technologies

Participants of the information and educational environment	Main tasks	Digital technologies (networking tools)
Students (users of different categories)	Receiving services, learning, storing information, leisure (interests, games, communication)	Websites with various resources on the Internet, including websites of government organizations and services; Information and educational learning systems (learning management systems LMS); E-mail (communication); Social networks (communities, communication); Web applications (creation of various information); Network services and clouds (creation and storage of various information, collaboration); Mobile applications and technologies; Messengers (communication)
Parents of students	Communication with the educational institution, receiving information about the achievements of their children	
Teachers	Creation and storage of educational materials, organization of educational interaction and management of the educational process, recording the results of the educational process, information interaction (students, parents, administration, teachers), professional communities	
Administration of an educational organization	Organizational and management activities, storage of documentation, monitoring the quality of the educational process, communication with higher education authorities	

Developed by the authors [24].

Let's list them. This is mastering:

1) basic concepts of a teacher's information and legal culture;

2) methods of using social networking services in the educational process;

3) methods of using information and digital systems in education;

4) knowledge, skills and abilities to use digital technologies to monitor and evaluate achievements;

5) modern digital technologies for organizing the educational process (mixed, distance, mobile, immersive, cloud, etc.);

6) digital technologies of social interaction in society, science and education [24, p. 254].

The analysis of the types of activities and professional competencies of the future teacher, as well as the understanding of the scope and role of digital competencies of the teacher in his/her professional activity, allows stating their close relationship (Fig. 1) [24, p. 256].

According to regulations, a future teacher must be prepared (competent) for such activities as teaching, research, design, methodological, managerial, cultural and educational activities. To varying degrees, each of the types of professional activity immediately implies that the teacher has mastered digital technologies, which is determined by the presence of certain digital competencies. According to the indicative list of digital competencies of a teacher given in the document, each of the areas shown in Fig. 1 areas describes a number of relevant competencies (21 competencies in total):
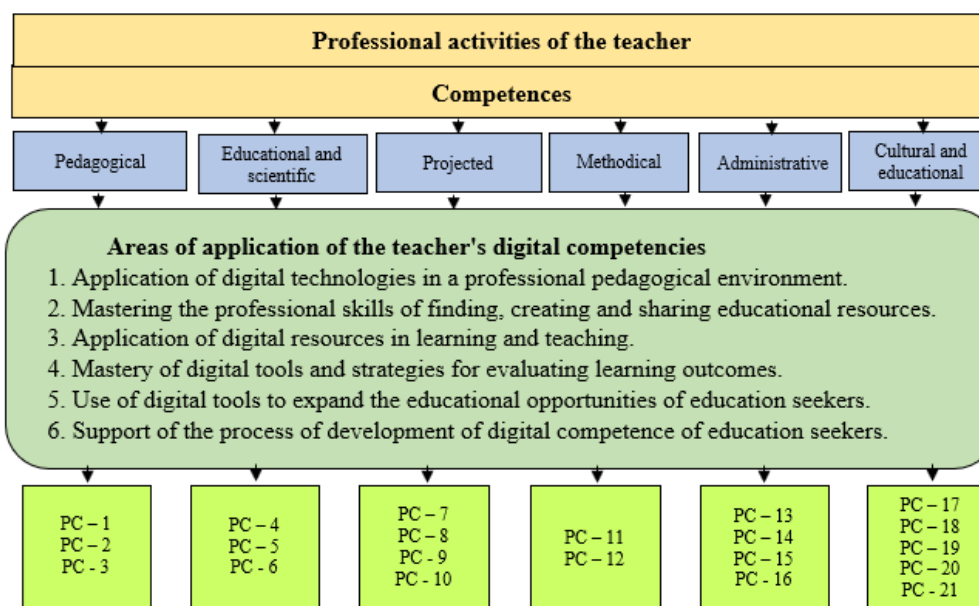
Fig. 1. Interrelation of digital competencies and types of professional activities of a teacher
*Developed by the authors [24]*

1. Ability to search, filter data, information and digital content.
2. Ability to evaluate data, information and digital content.
3. Ability to use and manage data, information and digital content.
4. Ability to communicate using digital technologies.
5. Ability to share information using digital technologies.
6. Ability to contact society, use public and private services using digital technologies.
7. Ability to interact using digital technologies.
8. Knowledge of "netiquette", i.e. knowledge of the rules of behavior and etiquette in the digital environment.
9. Digital identity management, i.e. the ability to create and manage accounts.
10. Creating digital content.
11. Ability to change, improve, use digital content to create new content.
12. Awareness of copyright and licensing policies for data, information and digital content.
13. Programming, i.e. the ability to write program codes.
14. Ability to protect devices and content, knowledge of security measures, understanding of risks and threats.
15. Protection of personal data and privacy.
16. Health protection, i.e. knowledge and skills to protect one's own health and that of other people in terms of both the ecology of digital technologies and the risks and threats to the safety of citizens.
17. Environmental protection, i.e. understanding the impact of digital technologies on the ecology, the environment, in terms of their disposal, as well as their use, which can cause damage, for example, to critical infrastructure, etc.
18. Ability to solve technical problems that arise with computer hardware, software, networks, etc.
19. Ability to identify needs and find appropriate technical solutions, or to customize (adapt, configure) digital technologies to their own needs.
20. Creative use or ability to use digital technologies to create knowledge, processes and products, individually or collectively, to solve everyday life and professional problems, etc.

21. The ability to independently determine the need for additional digital skills [29].

The teacher's digital competencies (basic knowledge, skills and abilities) indicated in the exemplary profile allowed us to offer the content of training within the framework of the concluded educational and professional program "Computer Technologies in Management and Education" for the preparation of masters within the field of knowledge 01 Education/Pedagogy, specialty 015. 39 Vocational Education (Digital Technologies), which, in our opinion, will allow both improving the digital competencies of future teachers and expanding their knowledge, skills and abilities in the use of digital technologies in the educational process (Fig. 2).

It should be noted that Fig. 2 shows the correspondence of the areas of application of teacher's digital competencies (numbers 1-6) and the corresponding subjects of the suggested master's program within their subject training in the field of digital technologies. In the process of developing the educational and professional master's program, we put forward its structure and the components of content, methods, forms and means of teaching aimed at developing the digital competencies of the teacher and their application in the educational process; formulated criteria for the formation of levels of digital competencies within the framework of professional readiness for activities in the social information and digital environment. In this regard, according to S. Semerikov [19] and others, and in the context of our study, we meant that the professional readiness of a teacher is the level of his/her professional competence at the stages of formation of his/her professionalism.
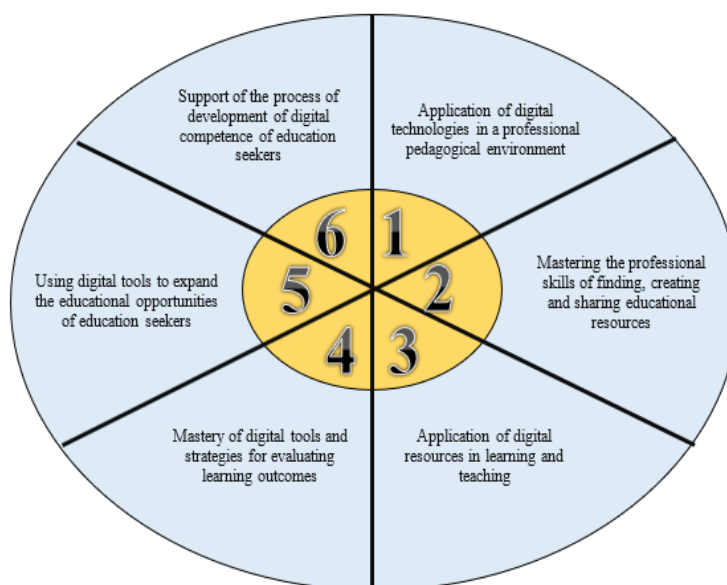
Fig. 2. Correspondence of the content of the educational and professional program "Computer Technologies in Management and Education" for masters within the field of knowledge area 01 Education/Pedagogy, specialty 015.39 Vocational Education (Digital Technologies) to the exemplary profiles of digital competencies of a teacher
Developed by the authors [24].

Discussion of the research results. As already mentioned, the study formulated the concept of forming the professional readiness of a future teacher to work in the information and educational environment based on the development of his/her digital competencies. It should be noted that, according to the suggested concept, at the highest level of professional readiness to work in the social information and educational environment, a modern teacher begins to demonstrate competence in the use of digital technologies in his/her practical activities when solving the tasks of the professional sphere. Here we understand that,

according to the competence approach outlined in [23; 30], any competence is formed gradually, first at the key and then at the basic levels. And only when this competence is formed at the level of the specialty, can we say that the teacher has a professional readiness to apply this competence in solving problems that arise in practical activities, showing professional competence in his/her field.

Thus, the professional competence of a teacher in the field of digital technologies should be manifested in the case of his/her readiness to work in the information and educational environment and the ability to solve various problems in the field of digital technologies (cloud, distance, mobile, virtual). It should be emphasized that the professional competence of a teacher should be based on developed logical thinking, a sufficiently high level of information management and digital skills.

Considering the development of digital competencies of a teacher at the level of specialty, or rather, competencies in the use of digital technologies in the educational process, we believe that they are necessary at the levels (key, basic), these competencies were formed in the process of previous professional training, in particular at the bachelor's level (for example, within the discipline "Information Technology in Professional Activities" and/or various elective courses implemented by us in higher education institutions. In this context, the main goal of our activities was to select learning tasks that meet the professional tasks of a teacher and to identify criteria that correspond to a special level of digital competencies in accordance with their areas of application.

In developing the proposed model of forming the professional readiness of future teachers to work in the information and educational environment (Fig. 3), we included six subjects in the content of training (theoretical and technological component) that correspond to the areas of application of the teacher's digital competencies listed above [24, p. 258].

The practical block includes components of the master's practical activity. We single out the activity, modular, and project approaches as the main ones among the methodological approaches to the implementation of learning, without which reflection and awareness of one's activities are unthinkable. We would like to emphasize the role of teaching aids, which should be used in the implementation of the proposed master's program in the use of digital technologies.

This should include not only training in the use of digital technologies in future professional activities, but also the application of these technologies within the educational process in order to ensure that the emerging digital competencies are in demand already in educational activities and appropriate reflection.

In the course of the study, the educational and professional program "Computer Technologies in Management and Education" for Master's Degree in Education within the field of knowledge 01 Education/Pedagogy, specialty 015.39 Vocational Education (Digital Technologies), aimed at forming the readiness of a future teacher to widely use digital technologies in his/her professional activities in IES, was developed and brought to partial practical implementation in the conditions of higher education institutions.

Here is the indicative content of the subjects (blocks) that, in our opinion, contribute to the formation of future teachers' skills and abilities to use digital technologies in the educational process, obtained in the framework of the master's program, which has a modular structure.

Block 1. Information and legal culture of the teacher: Protection of information in educational and management activities, Theory of management in information systems, Computer systems of artificial intelligence, Technological innovations in educational and management activities, Digital technologies of scientific research, Methodology and methods of scientific research.

Block 2. Network services of education: Digital technologies of project management, Organization, diagnostics and testing of e-learning, Intelligent management systems of the IT industry, Organization of dual education in professional (vocational) educational institutions,

Block 3. Information and educational systems in education: Equipment of computing centers in the education system. Design and expertise of high-tech information educational environment.

Block 4. Assessment of learning outcomes based on digital technologies: Innovative methods, technologies and quality monitoring of e-learning, System analysis in the field of digital technologies, Software engineering.
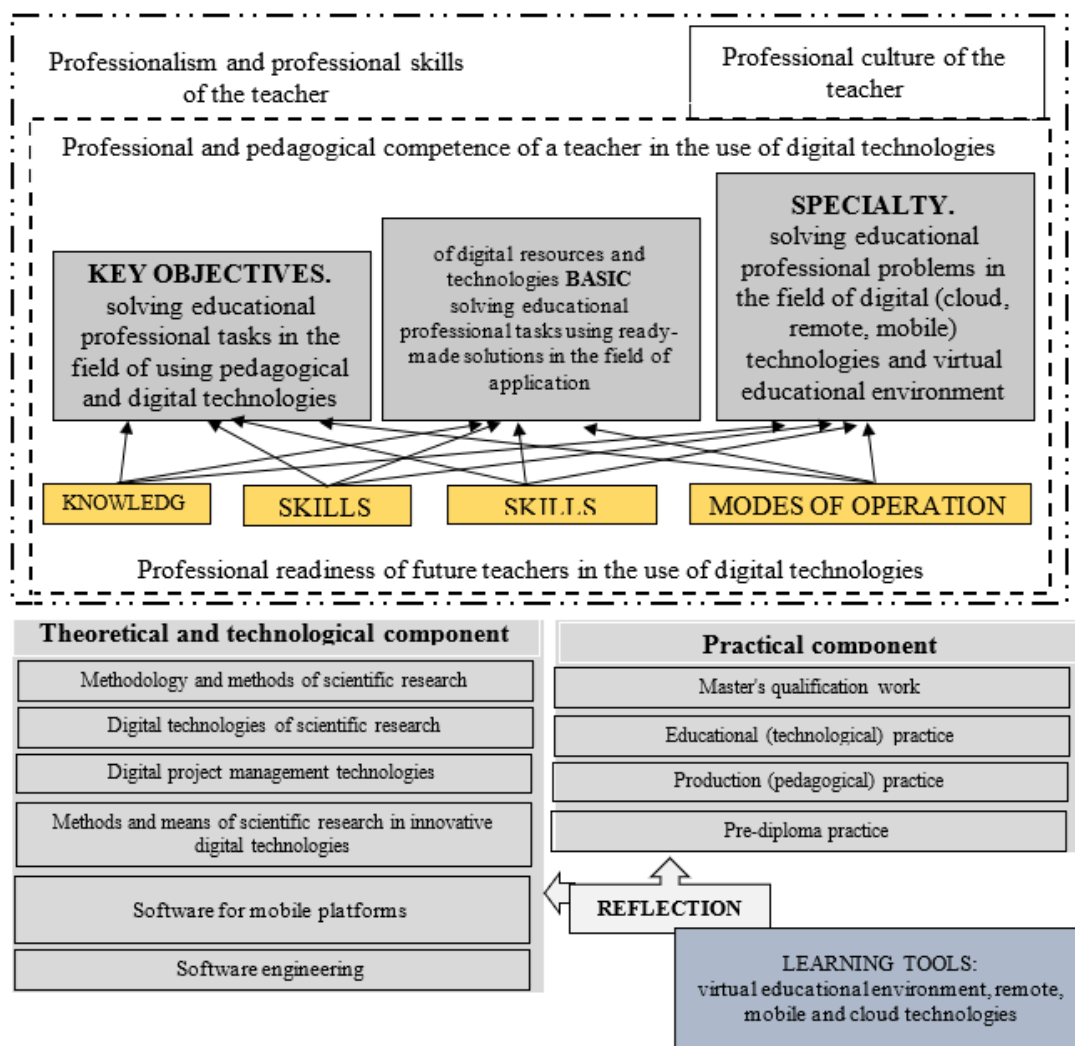
Fig. 3. Model of forming a teacher's readiness to work in the information and educational environment based on the development of digital competencies
Developed by the authors [24]

Block 5. E-learning technologies: Methods of teaching computer (digital) technologies in vocational (vocational and technical) education institutions, Pedagogy and psychology of vocational (vocational and technical) education.

Block 6. Services of the digital society: European and national strategies for monitoring and managing research projects in professional activities, Software for mobile platforms, Methods and tools for scientific research in innovative digital technologies, Web design and 3D modeling, Tools for digital collaboration and communication in education and

management, Digital technologies for statistical processing of experimental data, Digital technologies for recruiting and evaluating staff performance.

5. CONCLUSIONS AND FUTURE RESEARCH

Having analyzed the requirements for the professional training of future teachers in the current documents of the Ministry of Education and Science of Ukraine for the specialty "Professional Education" (for the degrees "bachelor" and "master") and the model profile of digital competencies of a teacher Digital Competence of Educators (DigCompEdu), adopted by the Committee of Education of the European Union, we singled out six groups of teacher competencies, on the basis of which connections with the competencies of vocational education teachers have been established.

The results of the analysis have been applied to the formation of a list of educational disciplines that correlate with the areas of application of the teacher's digital competence and are reflected in the theoretical and technological components of the model of the formation of the teacher's readiness for activities in the educational environment based on the development of digital competencies.

According to the results of the analysis of the regulatory documents and modelling of the formation of the teacher's readiness for activities in the information and educational environment based on the development of digital competencies, the "Computer Technologies in Management and Training" educational and professional program has been developed and practically implemented for master's training in the field of knowledge 01 Education/Pedagogy in the specialty 015.39 Professional education (Digital technologies), which is aimed at forming the readiness of the future teacher for the wide use of digital technologies in the framework of his professional activity in the IOS.

Areas for further research include the study of methods of using a mobile-oriented educational environment, augmented and virtual reality technologies, the introduction of platforms for learning robotics and working with project management environments in the preparation of masters of professional training.

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МОДЕЛЮВАННЯ ПІДГОТОВКИ МАГІСТРІВ ПРОФЕСІЙНОЇ ОСВІТИ ДО ДІЯЛЬНОСТІ В ІНФОРМАЦІЙНО-ЦИФРОВОМУ СЕРЕДОВИЩІ

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Анотація. У статті теоретично обґрунтовано модель підготовки та формування готовності майбутніх педагогів професійного навчання до діяльності в інформаційно-освітньому середовищі на основі розвитку їх цифрових компетентностей. У процесі аналізу видів діяльності майбутнього педагога професійного навчання ступеня вищої освіти магістра, зазначених у відповідному професійному стандарті, та галузі застосування його цифрових

компетентностей виявлений їх взаємозв'язок і наводяться можливості розвитку цих компетентностей випускника в межах запропонованої освітньо-професійної програми підготовки магістрів професійної освіти. Програма побудована на основі вивчення прикладного профілю цифрових компетентностей майбутнього педагога професійного навчання. Методологія дослідження спирається на аналіз цифрових компетентностей педагога і логіку побудови предметної підготовки майбутніх магістрів професійної освіти до успішної та ефективної професійної діяльності в умовах інформаційно-цифрової діяльності.

У дослідженні проаналізовано зміст основних цифрових компетентностей педагога професійного навчання; запропонована модель підготовки та формування професійної готовності випускника до діяльності в інформаційно-цифровому середовищі на основі розвитку відповідних компетентностей; запропоновано зміст освітньо-професійної програми «Комп'ютерні технології в управлінні та навчанні» підготовки магістра в межах галузі знань 01 Освіта/Педагогіка за спеціальністю 015.39 Професійна освіта (Цифрові технології) на засадах розвитку цифрових компетентностей майбутнього фахівця в межах його професійної підготовки.

Показано, що для підвищення ефективності діяльності педагогів у сучасних умовах інформатизації та цифровізації суспільства і формування віртуальної соціально-освітньої системи необхідно введення в зміст їх професійної підготовки навчальних дисциплін, спрямованих на розвиток цифрових компетентностей на визначеному рівні.

Ключові слова: професійний стандарт спеціальності; професійна підготовка педагога; освітньо-професійна програма підготовки магістра; готовність до професійної діяльності; інформаційно-цифрове середовище; цифрові компетентності педагога.