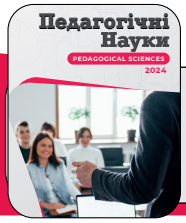

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Maryna Kiryanova*
Teacher
Poltava State Medical University
36011, 23 Shevchenko Str., Poltava, Ukraine
https://orcid.org/0000-0001-6732-9239

The educator's information and digital competence as a foundation for professional success in the context of the information and educational environment

Abstract. Information and digital competence has become a key component of an educator's professional success, as it facilitate the integration of innovative approaches into teaching and align with the needs of modern pupils. The purpose of this study was to assess the level of educators' digital competence and develop recommendations for its enhancement to ensure the effective use of digital technologies in education. The research was based on the application of theoretical methods, including analysis, synthesis, generalisation, and systematisation, which enabled the identification of current trends in the use of digital technologies in education. The empirical part of the study involved a survey conducted among educators working in general secondary education institutions. Special attention was given to the role of digital competence in ensuring the effectiveness of the teaching and learning process within the dynamic development of digital technologies. It was found that information and digital skills not only enhance pedagogical expertise but also create favourable conditions for integrating innovative approaches into teaching. Such competencies enable educators to adapt teaching methods to the needs of modern pupils, who are shaped by a digital environment and accustomed to the active use of technology in their daily lives. The survey results revealed the extent to which teachers utilise digital tools in developing educational materials, organising interactive lessons, and integrating information and communication technologies into the learning process. This study identified the level of educators' digital competence and highlighted key challenges in implementing digital technologies, including insufficient technical support, the need to improve knowledge and skills, and a lack of educational resources. The practical value of the article lies in the potential use of the findings to develop targeted professional development programmes for educators, aimed at enhancing their digital literacy and facilitating the effective integration of technology into the teaching and learning process

Keywords: educational space; learners competence; educational workers; information society; digital technologies

INTRODUCTION

The modern era is characterised by the rapid development of information technology, which is steadily making its mark on all aspects of society, including education. The increasing accessibility of information and the use of innovative technologies are transforming learning and the educational process, thereby presenting new challenges and opportunities for contemporary education. Under these conditions, the question of an educator's professional success is becoming increasingly relevant and inextricably linked to their ability to possess digital competence. This is defined not only by the ability to use modern technical devices but also by a deep understanding of the digital

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*Corresponding author

environment, its capabilities, and challenges. It is a key element for the successful implementation of innovations in the educational process, creating a stimulating and dynamic environment for pupil development. In this context, the digital competence of educators becomes a necessary component for the formation of a creative and competitive educational space.

Information and digital competence is one of the key components of a contemporary person's professionalism. In the context of globalisation and rapid technological advancement, it has become indispensable for effective functioning across various spheres of life. The ability to effectively use digital tools and work with information not only contributes to increased productivity but also ensures competitiveness in the job market. Digital competence encompasses more than just the ability to operate digital tools; it also involves the capacity to effectively use information to solve various problems, analyse data, and make informed decisions. O.M. Trifonova (2020) argued that in a world where digital technologies permeate all aspects of life, the development of this competence is a prerequisite for successful activity in both professional and personal spheres. It forms the basis for adapting to a rapidly changing environment and opens up new opportunities for learning, communication, and self-development.

Analysis of scholarly and pedagogical literature has revealed the existence of research within the Ukrainian academic sphere dedicated to the development of information and digital competence in various professional groups. For instance, O. Semenog *et al.* (2022) focused on developing this competence among future naval officers in non-formal educational settings. A. Barbinova (2022) analysed the specifics of developing digital competence among future educational managers within the context of innovative educational activities, emphasising the importance of this competence for the effective management of educational processes and the implementation of new technologies in educational practice. O.V. Silkova & N.V. Lobach (2021) investigated the development of digital competence among students of higher medical education institutions, particularly in the context of studying medical information systems, enabling the training of specialists capable of effectively working with digital technologies in the medical field. O.P. Kirdan (2019) concentrated on developing this competence in the process of professional training for future economists, underlining the importance of digital skills for analysing financial data and making strategic decisions in the field of economics. All of these studies attest to the significance of developing digital competence in various professional spheres as a necessary condition for successful activity in the modern world.

Therefore, the development of digital competence becomes an interdisciplinary task that encompasses a wide range of professional fields. The modern era, characterised by the rapid development of information technology, is steadily influencing all aspects of society, including education, and places increasing demands on the effective use of digital technologies in professional activities, which is a determining factor in ensuring the quality of specialists' work. The growing accessibility of information and new technologies is transforming the learning process, presenting new challenges for education. An educator's professional success now hinges on digital competence, which encompasses not only the ability to use technology but also an understanding of the digital environment. This is necessary for implementing innovations in teaching and creating a dynamic learning environment. Consequently, the importance of digital technologies in education is increasing, and research on this issue is becoming increasingly relevant.

An educator's information and digital competence is one of the key aspects of modern education, actively studied in the context of society's rapid technological transformation. As M.V. Sapogov (2020) argued, this competence not only ensures the effective use of new technologies in the teaching process but also serves as a powerful tool for developing critical thinking, creativity, and a teacher's ability to adapt to the challenges of the digital world. It is precisely these qualities that make an educator competitive, able not only to keep up with technological changes but also to create conditions for the comprehensive development of pupils. Despite the widespread scientific interest in the problem, the issue of developing an educator's digital competence remains multifaceted and requires further research. As research has shown, contemporary studies cover various aspects of this topic: from methodological approaches to developing competence in future educators to the implementation of digital tools in the teaching process.

However, many aspects remain insufficiently studied. Moreover, the rapid pace of technological change and the diversity of digital tools create new challenges that make it difficult for educators to adapt to the modern environment. In this context, there is a need to develop innovative approaches to educator professional development that take into account both the technical and pedagogical aspects of their work. Thus, despite significant progress in studying this problem, it remains open for further scientific research and practical implementation. Therefore, this article aimed to investigate an educator's information and digital competence to develop professional skills and create conditions for effective learning in a digital environment.

MATERIALS AND METHODS

The research comprises theoretical and empirical sections, each with its specific characteristics and research methods. The theoretical part was based on the use of analysis, synthesis, generalisation, and systematisation methods. The method of analysis allowed for the examination of existing scientific approaches and theoretical concepts related to digital technologies in education, as well as the identification of key problems and trends. Synthesis made it possible to combine different aspects of the research topic and create a holistic picture of the use of ICT in pedagogical practice. Generalisation allowed for drawing conclusions based on the data considered, which helped to identify

the main patterns in the development of educators' digital skills. Systematisation was used to structure and order information from various sources, which allows for a clear distinction between concepts and ideas related to teachers' digital competence.

The empirical part of the research aimed to study the level of digital technology use among educators in general secondary schools in Poltava. The main stages of the research included: preparation, data collection, analysis, processing of results, and formulation of conclusions. At the preparatory stage, the research aim was defined, which was to identify the characteristics of the use of digital tools by educators, and a survey method was chosen to collect data. Educators with varying experience, age characteristics, and specialisations were involved. In September 2024, an anonymous online survey was conducted among 50 educators aged 25 to 62. This approach ensured the representativeness of the collected information for further analysis. The survey questions were focused on studying aspects such as the use of digital tools in professional activities, the creation of interactive tasks, the adaptation of educational materials to a digital format, the main difficulties in applying digital technologies, and the identification of educators' needs for their further development in this area. The data collection process was carried out in strict adherence to the ethical norms outlined in the Declaration of Helsinki (2013). All participants were previously informed about the purpose of the research and the use of their responses solely for scientific purposes. The survey results made it possible to determine the current state of educators' digital competence, the main challenges in its implementation, and promising directions for the development of professional development programs.

RESULTS AND DISCUSSION

The education sector is undergoing dynamic changes driven by the impact of information technology, which influences the process of knowledge acquisition and the development of personal competencies. Digital technologies have the potential to foster more inclusive and sustainable development, stimulate innovation, and enhance the effectiveness of educational services. Moreover, they have become a crucial tool for learning during the COVID-19 pandemic, which negatively impacted society worldwide and the education sector in particular. In the current context, leveraging the benefits of digital transformation is essential for job creation, providing access to educational services, and addressing potential challenges. The modern information society is a significant driver for the development of industry, education, and culture, particularly in the context of computerisation, informatisation, and automation of all spheres. As a result of digital transformation processes in societies, the education sector faces several challenges. Among them are ensuring access to quality educational content, the need to modernise outdated teaching methodologies, the readiness of learners to become part of the new workforce in the future, the rapid increase in living costs, the need to maintain affordable tuition fees, and the growing rejection of traditional approaches and methods of teaching among the new generation of young people.

Within the education system, schools serve as a crucial stage in the formation of a modern, competitive individual who is not only a participant in the educational process but also a future citizen, an active participant in social, economic, and political processes and reforms in the country. Consequently, one of the key objectives for the education system and the state as a whole is the active development of an information and digital environment in educational institutions. This is a necessary condition for integrating the latest technologies into the educational process, providing access to knowledge, improving the quality of education, and creating conditions for the continuous development of pupils and educators in the digital space. In this context, O.S. Storonska (2023) highlighted the importance of organising and developing a digital learning environment, emphasising its significance in the context of current transformations in the education sector, particularly through the implementation of innovative approaches and technological solutions that contribute to the modernisation of the learning process and ensure interactive interaction between participants in the educational process.

In the methodological manual written under the guidance of O.V. Ovcharuk *et al*. (2022), the information and digital learning environment of a general secondary education institution is considered "as a systematically organised set of information, technical, and educational-methodological support for general secondary education institutions (GSEIs), aimed at organising the interaction of pupils, teachers, school leaders, and the public, as well as carrying out educational and upbringing influences supported by digital means of data collection and transmission, hardware and software, and teaching and methodological support".

An information and digital environment is a domain where people, technology, and information resources interact. It is defined by the availability and use of digital technologies, information systems, and communication tools for collecting, processing, transmitting, and utilising information. In an information and digital environment, rapid information exchange, the use of electronic communication tools, access to online resources, and the use of digital tools to solve problems are the primary elements. This environment fosters the development of information technology skills, promotes effective communication, and expands opportunities for learning, working, and interacting in various spheres of life.

Therefore, it can be argued that the information and digital environment of educational institutions is a complex of technological, organisational, and methodological resources that ensure the effective use of ICT in the educational process. It includes both hardware (computers, multimedia devices, network resources) and software (educational platforms, electronic textbooks, digital tools for learner interaction), as well as internet resources that allow

for organising access to information and providing interactive forms of learning. Such an environment contributes to the development of digital skills in educators and pupils, supports inclusivity and accessibility of education, and creates conditions for lifelong learning and self-education in the context of digital transformation.

According to the Concept of Digital Transformation of Education and Science until 2026, the creation of a unified digital environment that connects all subjects of educational and scientific activities will facilitate communication and data exchange. This will simplify management processes and significantly reduce the bureaucratic burden in the education and science system. One of the tasks of the concept that will contribute to the creation of an information and digital environment is to provide educational institutions with computer equipment and software (Concept of digital transformation..., 2021).

At the end of 2024, Russia's active aggression against Ukraine, which began in 2014 and intensified after the invasion of Russian troops into Ukrainian territory on 24 February 2022, is still ongoing. From the first days of the conflict, Ukraine suffered significant losses in all regions of the country, both in terms of human potential and infrastructure, including the destruction of educational institutions. Many pupils and students are unable to attend educational institutions, and teachers face significant difficulties and even a complete loss of the ability to organise the educational process. Moreover, access to electronic educational resources for those in occupied territories is limited and often impossible. Under such conditions, the issue of developing an information and educational environment in educational institutions and ensuring access to it for all participants in the educational process becomes particularly important. The use of information and communication technologies is an effective solution to this problem.

In the dictionary Information and Communication Technologies in Education, the term "information and communication technologies" is defined as a set of methods, tools, and procedures used for collecting, systematising, storing, processing, transmitting, and presenting various messages and data using computer technology and communication means (Information and communication..., 2019). When considering information and communication technologies in the context of education, according to the same dictionary, this concept is viewed as a complex of methods, techniques, production processes, and software and hardware tools that are integrated to develop information and digital educational systems, create electronic educational resources (EER), and build communication networks. ICT in education also includes technologies for solving learning tasks using these systems, resources, and networks, which contribute to the optimisation of the learning process, provide access to information, and allow for effective interaction between participants in the educational process through digital platforms and resources. Thus, ICT in education is the foundation for creating innovative, interactive forms of learning that provide a personalised approach to each pupil and also open up new opportunities for educators in planning and conducting lessons.

The comprehensive implementation of ICT in the educational process and management of educational institutions and the education system as a whole should become a key element in ensuring the success of the reform known as the "New Ukrainian School", which is a key initiative of the Ministry of Education and Science. In the education sector, the application of information and communication technologies should evolve from individual projects to a systemic approach that covers all aspects of activity, as this will contribute to expanding the capabilities of educators, optimising management processes, and fostering the development of important technological competencies among pupils, which are key to the modern world.

According to the Conceptual Foundations of Secondary School Reform (2016), the main goal of the aforementioned reform is to create schools where learning is enjoyable, and pupils acquire not only theoretical knowledge, as was the case before but also the skills to apply it in real life. This is why the modern world, which is complex and rapidly changing, requires children not only to acquire information but also to be able to use it effectively. It is important to note that the "New Ukrainian School" aims not only to transmit knowledge but also to teach pupils to apply this knowledge in various situations of everyday life. Given the complexity and diversity of the modern world, this reform places a primary emphasis on the development of pupils' life skills. These competencies include not only academic knowledge and skills but also values and orientations necessary for successful self-realisation in life, learning, and work.

The Concept of the New Ukrainian School (2016) defines 10 key competencies that form the foundation for the comprehensive development of pupils. Each of these is developed by children while studying various subjects at all stages of education (Hrynevych *et al.*, 2016). These competencies are marked by the need for personal realisation, development, an active civic stance, social inclusion, and employment, as well as the ability to ensure personal fulfilment and lifelong success. These competencies also include the information and digital competence of learners. According to the Conceptual Foundations of the New Ukrainian School (2016), information and digital competence involves the ability to confidently and simultaneously critically use information and communication technologies to create, search for, process, and exchange information in a work environment, in the public sphere, and personal communication. This competence includes information and media literacy, the basics of programming, algorithmic thinking, database management skills, knowledge of internet safety and cybersecurity, as well as an understanding of the ethical aspects of interacting with information, such as copyright, intellectual property, and others.

Therefore, given the challenges of the modern world, pupils need a teacher who can not only impart knowledge

but also teach children how to use it effectively. The knowledge and skills acquired should interact deeply with the values of each child to form the vital competencies necessary for successful self-realisation in learning, life, and career. Educators working with modern pupils must have the knowledge to help them solve problems that arise in the digital environment, such as information overload, privacy breaches, plagiarism, protection from online fraud, cyberbullying, and so on. The development of pupils' information and digital competence will only be facilitated by teachers who themselves possess the relevant skills and knowledge in this area. Such educators act not only as intermediaries in the transmission of theoretical knowledge but also as guides in teaching pupils practical skills in working with information technologies. They open up a world of innovation and creativity for pupils, fostering critical thinking and the ability to effectively use information resources. Therefore, the competence of educators in the field of information and digital technologies is an important factor that ensures the successful development of pupils' information and digital literacy.

Educators who possess information and digital competence have the ability to create a stimulating learning environment where pupils can experiment, create, and solve real-world problems using information technology. This promotes active pupil engagement in the learning process and a deeper understanding of information world concepts. Therefore, the professional skills and knowledge of teachers in the field of information and digital competence determine not only the level of education quality but also the readiness of young people to solve problems in today's information society.

In the methodological manual written under the guidance of O.V. Ovcharuk *et al*. (2022), it is noted that one of the priority directions of teachers' professional development is to increase their digital competence and ability to effectively use the information and digital environment. The authors emphasise that an educator's digital competence includes the ability to apply various tools of the information and educational environment, such as computers, software, and networks (local and global), as well as the ability to integrate these technologies into pedagogical activities. A high level of digital competence among teachers is critically important for the effective use of the information and educational environment in the learning process and is one of the main criteria for the success of their professional activities. In addition, this level is an important factor for the further development and improvement of teachers' professional competence. The information competence and media literacy of an educator who is oriented in the digital environment helps them become a full-fledged participant in social, economic, and cultural life. Such a teacher will support and encourage pupils to be active and responsible for their actions, contributing to the formation and development of their information and digital competence.

Within the scope of this research, there is a need for a detailed examination of the structure of educators' information and digital competence, as this analysis allows for a deeper understanding of the complexity and diversity of the requirements placed on teachers in the context of the modern information society. Unpacking the components of this competence will help identify areas in which educators need to enhance their skills and knowledge, thus supporting more effective integration of digital technologies into teaching and assessment processes. Researching individual aspects, such as the ability to work with information resources, proficiency in technical tools, the ability to conduct critical analysis, and other key aspects, will help create a complete and comprehensive picture of the level of educators' competence in this context. To examine the structure of educators' information and digital competence, it is necessary to analyse the literature covering theoretical approaches, its components, and methods for developing digital skills in pedagogical activities. This will help to form a clear understanding of the main components of educators' information and digital competence, identify effective methods for its development, and the impact of digital technologies on the educational process.

When studying the structure of information competence, Yu.S. Zaporozhtseva (2019) identified three main components: *the information component*, which determines the ability to effectively work with information in any form of its presentation; *the computer or computertechnological component*, which defines the skills and knowledge required to use modern computer tools and software; and *the applicability component*, which refers to the ability to apply information and computer technology tools to work with information and solve various tasks. These components form the foundation of comprehensive information competence, which is essential for successful activity in the context of the modern information society.

Within this research, a significant role was played by the theoretical aspects outlined in the Methodological Recommendations on the Formation of Information and Digital Competence of Educational Workers (2022). These recommendations confirmed the author's belief that modern teachers should demonstrate professional communication and collaboration, using creative and innovative methods through digital technologies. It is important that they are aware of the functional features, limitations, consequences, and risks of using these technologies, as well as understand the general principles, mechanisms, and logic behind the creation of digital services. Their knowledge of the basics of the functioning and use of various digital devices, computer programs, and networks is also important. It should also be noted that these recommendations emphasise the importance of educational workers being aware of and adhering to the principles of security in the digital space. In addition, they should be able to critically evaluate the reliability and credibility of information sources, understand their impact on consciousness and personal development, and be aware of the legal and ethical aspects associated with the use of digital technologies.

In August 2024, the Professional Standard "Teacher of General Secondary Education Institution" was approved. Along with its previous versions, it structures and specifies the content of a teacher's information and digital competence by highlighting three broad areas: orientation, resources, and processes. Within these areas, the specific knowledge, skills, and abilities that a pedagogical worker must possess are clearly defined. Thus, the structure of information and digital competence according to the teacher's professional standard includes: "the ability to navigate the information space, search for and critically evaluate information, and operate with it in professional activities; the ability to effectively use existing and create (if necessary) new electronic (digital) educational resources; and the ability to use digital technologies in the educational process".

Therefore, the analysis of the literature on this issue has led to the identification of the components of an educator's information and digital competence. These include: *the informationseeking component* – the ability to use various sources to search for information, as well as to critically assess and select the necessary data; *digital literacy of the educator* – the proficiency in digital tools, electronic devices, and software required for conducting educational activities; *the practical-activity component* – the ability to apply acquired knowledge and skills in professional practice, particularly in the development of digital learning resources and interactive tools. These components form the foundation for developing effective information and digital competence in educators, enabling them not only to successfully use technologies in the learning process but also to adapt effectively to the rapidly changing information environment. By developing these components, an educator can ensure innovative approaches to teaching, and integrate digital tools into the educational process, which enhances learning effectiveness and fosters critical thinking among pupils.

Thus, an author's understanding of the concept under investigation can be formulated as follows: an educator's information and digital competence is their ability to use information and digital technologies to effectively carry out the educational process, including gathering, processing, analysing, and transmitting information, developing digital thinking, mastering the fundamentals of information and communication technologies, as well as the ability to critically evaluate and use information with ethical responsibility.

The formation of an educator's information and digital competence is a key task in the context of the modern educational paradigm, as contemporary education requires a high level of orientation towards information technologies and digital resources. M. Averkina & Yu. Lykhosherstova (2023) expressed the view that a high level of this competence allows teachers to effectively use digital technologies for teaching and educating pupils. They can integrate interactive tools, virtual resources, and innovative methods into the learning process, creating engaging and informative lessons. In addition, thanks to their own information and digital competence, educators can influence the development of pupils' ability to critically evaluate information, effectively integrating digital technologies into the learning process. They can create conditions for analysing and comparing different sources, verifying facts, and recognising manipulation, which contributes to the development of skills in searching, filtering, and evaluating information. E.Yu. Zheleznyakova & I.V. Zmiivska (2024) argued that by using digital platforms, educators teach pupils to apply tools for verifying content, such as fact-checking and analysing the reliability of sources. This not only contributes to the development of critical thinking but also prepares pupils for independent work with information, helping them make informed decisions in a digital environment.

Therefore, developing this competence becomes an important task for the modern educator, and this is supported by several key aspects. First, a high level of information and digital competence expands the possibilities for learning. Teachers who possess this competence are able to effectively use a variety of pedagogical tools, from interactive presentations to virtual laboratories, creating an engaging and innovative learning process. Second, the development of this competence allows educators to actively implement modern approaches to assessment and reporting, using electronic platforms and tools for convenient and objective assessment of pupils' learning achievements. This approach promotes individualised learning and creates conditions for the development of the intellectual and creative abilities of each pupil. Third, the increased use of digital resources contributes to the creation of a global learning environment, where pupils can communicate, collaborate, and exchange knowledge without being limited by geographical boundaries. This approach develops pupils' readiness for interaction in a world that is increasingly oriented towards technological development and global cooperation. Thus, the development of an educator's information and digital competence determines not only the success of learning but also the readiness of pupils for life in the modern world.

The theoretical research into the nature of educators' information and digital competence served as the foundation for conducting an empirical study. Within this study, which was focused on analysing the application of digital technologies in the educational process, a survey was conducted among 50 educators in GSEIs in Poltava. Figure 1 presents diagrams of the distribution of educators by age group, teaching experience, and subject specialisation.

According to the survey results, 15% of the participants were under 30 years old, 45% were between 31 and 45 years old, 30% were between 46 and 60 years old, and 10% were over 60 years old. In terms of work experience, 18% of participants had less than 5 years of experience, 24% had 5 to 10 years of experience, and 58% had more than 10 years of experience. Representatives of different subject specialisations were distributed as follows: 20% teach mathematics, 18% teach natural sciences, 22% teach humanities, 14% teach foreign languages, and 26% teach other subjects (physical education, arts).

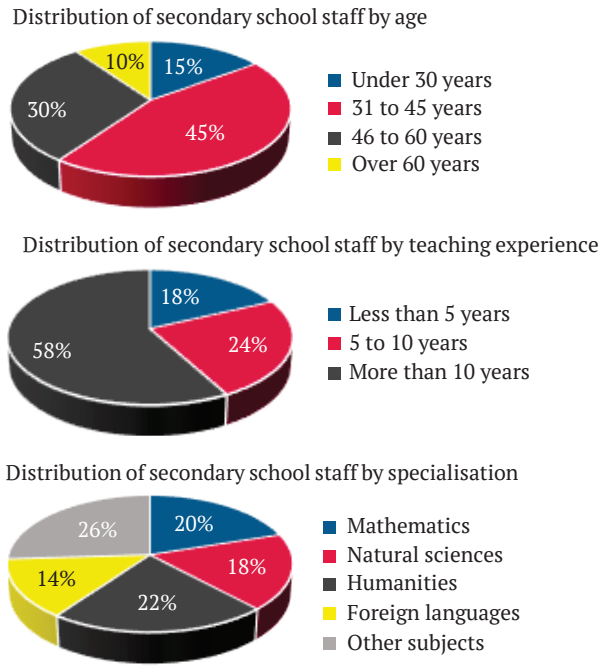

Figure 1. Diagrams of the distribution of secondary school staff by age, teaching experience, and specialisation
Source: developed by the author during the research

Regarding the use of digital tools, the most common among survey participants were presentation creation programs (PowerPoint, Google Slides), used by 92% of educators, as well as web platforms for online lessons (Zoom, Google Meet), used by 76% of participants. Tools for creating interactive tasks, such as Kahoot, Quizlet, and Padlet, are actively used by 62% of educators. Text and graphics editing programs, such as Word, Excel, and Canva, are used by 84% of respondents. Only 34% of participants use other tools, including educational platforms such as Moodle. A large proportion of teachers (86%) indicated that they adapt teaching materials to a digital format. Specifically, this applies to textbooks, tests, quizzes, and interactive materials. 72% of educators adapt videos and presentations for lessons, 60% adapt interactive tasks and tests, and 68% adapt textbooks and workbooks.

Among the main challenges faced by teachers when using digital technologies, the largest proportion is the lack of time to learn new technologies and implement them in the teaching process (66%). Technical problems, including the lack of necessary equipment or connection failures, were reported by 56% of participants. Psychological barriers, such as fear of new technologies and low self-confidence, were indicated by 40% of respondents. Lack of support from administration or colleagues was a problem for 22% of teachers. Regarding the needs of educators, 72% indicated that they need additional courses or training to improve their skills in using digital technologies. Technical support is desired by 50% of respondents, while 44% seek access to resources for selflearning. Administrative support is also important for 38% of participants. In terms of assessing digital competence, 18% of educators consider their level to be high, 60% – average, and 22% – low. Most respondents noted that they want to improve their skills in working with interactive tasks and multimedia resources, as well as increase their confidence in using new technologies.

The survey results demonstrate a heterogeneity in the level of digital competence among educators, necessitating a differentiated approach to their professional development. The high level of activity in using basic digital tools, such as presentation software (92%) and online lesson platforms (76%), indicates that educators are adapting to the basic requirements of modern education. However, the relatively low level of use of tools for creating interactive tasks (62%) and educational platforms (34%) indicates a need to expand educators' skills in working with innovative technologies.

An important factor is the high percentage of educators (86%) who adapt teaching materials to a digital format. This indicates their readiness to implement digital solutions in the learning process. However, the unevenness in the implementation of certain technologies, such as the adaptation of video materials (72%) compared to interactive tests (60%), indicates a need for additional resources and learning opportunities. An analysis of the difficulties faced by educators highlights the key challenges of digital transformation in education. The largest proportion of respondents (66%) indicate a lack of time as the main problem, which requires a review of the organisation of the workload and the creation of conditions for learning new technologies. Technical problems (56%) indicate the need for investments in infrastructure, while psychological barriers (40%) point to the importance of motivational support and building educators' confidence.

The significant need for additional training (72%) is a signal for educational program developers and administrations of the need to create effective and accessible forms of professional development. Attention to training, technical support, and the provision of self-learning resources should become a priority in planning the development of teaching staff. Thus, the research results show that the development of educators' digital competence is not only a current challenge but also a key condition for improving the quality of education and its compliance with the requirements of the digital age. To achieve this, it is necessary to create more opportunities for teachers' professional growth in the field of information and digital technologies, including through the organisation of courses, training, and the provision of technical support. This will contribute not only to improving their digital skills but also to the more effective implementation of innovations in the educational process.

Numerous scientific research emphasise the importance of developing this competence among educators as a foundation for improving educational approaches, integrating innovative technologies into teaching, and ensuring the quality of education for pupils and students. This issue is widely explored in the studies of many Ukrainian scholars who examine various aspects of the formation of

information and digital competence of educational workers. Among the studies devoted to the information and digital competence of educators, the following are worth noting: M.O. Antonchenko (2018) investigated the essence of this concept in the context of postgraduate pedagogical education; T. Berezhna & N. Bessarab (2024) focused on the formation of information and digital competence of teachers for the implementation of the concept of the New Ukrainian School; O. Polyakova (2022) considered the information and digital competence of educators as the basis for introducing a culture of democracy into the educational process; O. Samborskaya (2019) studied the factors influencing the formation of this competence among future primary school teachers. O.Ya. Stoyka (2023) analysed the possibilities of developing information and digital skills in future educators in the context of distance learning; V.M. Stoma (2019) focused on the methodological foundations of forming this competence in students of natural science and mathematics specialities during professional training; L. Titova (2022) studied Ukrainian experience in developing information and digital competencies in future educators, while O.M. Trifonova (2018) compared foreign and Ukrainian approaches to this issue; O.V. Fonaryuk *et al.* (2022) emphasised the importance of teachers' information and digital competence for the successful implementation of e-learning in the student environment. Each author offers their own interpretation of the concept of "information and digital competence" and outlines its structural components, which are determined by different contexts of using this concept. Such a variety of approaches is determined not only by the specifics of professional activity but also by individual experience, scientific beliefs, and methodological approaches chosen by the researcher. Thus, the lack of clear agreement and a common understanding of this concept highlights the need for a deeper analysis to clarify its essence and significance in the modern information and digital environment.

CONCLUSIONS

An educator's information and digital competence is a crucial foundation for achieving professional success in today's information and educational environment. The ability to use information and digital technologies, develop digital thinking, work effectively with information, and demonstrate ethical responsibility are becoming key components of successful pedagogical activities in modern educational settings. Possessing these skills not only improves the quality of teaching and learning but also facilitates adaptation to rapid changes in the field of education, ensuring that educators maintain a competitive professional level. Developing educators' information and digital competence is a vital step in ensuring a high-quality and contemporary educational process where digital technologies are used to expand assessment opportunities and enhance the quality of learning. Thus, this research determines the importance of providing pedagogical staff with the necessary knowledge and skills to successfully integrate digital technologies into the assessment process, thereby influencing the quality and effectiveness of learning.

Based on the research findings, several challenges have been identified, including an insufficient level of proficiency in modern digital tools, a lack of systematic training and courses to improve digital skills, and a low readiness of some educators to integrate new technologies into the teaching process. In addition, there is a lack of support from school administrations in the implementation of information and digital technologies. In this regard, it is important to provide educators with more opportunities for professional development, including through the organisation of regular training courses, the creation of platforms for sharing experiences, and involvement in programs focused on the practical mastery of modern digital tools. This will allow them to increase their competence in using ICT and contribute to the more effective use of digital technologies in the teaching process. Future research prospects lie in studying the impact of educators' information and digital competence on their professional motivation and career development.

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CONFLICT OF INTEREST

None.

REFERENCES

[1] Antonchenko, M.O. (2018). The essence of the teacher's information and digital competence in the system of postgraduate pedagogical education. *Information and Digital Competence of the Teacher: Theory and Practice: A Collection of Scientific Works*, 4-12.

[2] Averkina, M., & Lykhosherstova, Yu. (2023). Digital platforms in interactive learning. *Modeling the Development of the Economic Systems*, 1, 128-132. doi: 10.31891/mdes/2023-7-18.

[3] Barbinova, A. (2022). Development of information and digital competence of future managers of education in the conditions of innovative educational activity. *Current Issues of Humanitarian Sciences*, 51, 408-413. doi: 10.24919/2308-4863/51-63.

[4] Berezhna, T., & Bessarab, N. (2024). Formation of information and digital competence of a modern teacher of a new Ukrainian school. *Problems of Modern Transformations. Series: Pedagogy and Psychology*, 3. doi: 10.54929/2786-9199-2024-3-02-01.

[5] Concept of digital transformation of education and science for the period until 2026. (2021). Retrieved from https://mon.gov.ua/news/kontseptsiya-tsifrovoi-transformatsii-osviti-i-nauki-mon-zaproshue-do-gromadskogo-obgovorennya.

[6] Declaration of Helsinki. (2013). Retrieved from https://www.wma.net/what-we-do/medical-ethics/declaration-of-helsinki/.
[7] Fonaryuk, O.V., Ulyanova, V.S., & Partiko, N.V. (2022). Information and digital competence of the teacher as a key to successful electronic learning of students. *Innovative Pedagogy*, 52, 157-161. doi: 10.32782/2663-6085/2022/52.2.32.
[8] Hrynevych, L., *et al*. (2016). *New Ukrainian school: Conceptual principles of secondary school reform*. Kyiv: Ministry of Education and Science of Ukraine.
[9] Information and communication technologies in education. (2019). Kyiv: Comprint.
[10] Kirdan, O.P. (2019). Formation of information and digital competence in the professional training of future economists. In *Modern information technologies in education and science*: *II All-Ukrainian scientific internet conference* (pp. 68-69). Uman: Visavi.
[11] Methodological recommendations for the formation of information and digital competence of pedagogical workers. (2021). Retrieved from https://uied.org.ua/wp-content/uploads/2022/07/metodychni-rekomendaczyiy-z-rozvytku-czyfrovoyi-kompetentnosti.pdf.
[12] Order of the Ministry of Education and Science of Ukraine No. 1225 "On Teacher of a General Secondary Education Institution" (2024, August). Retrieved from https://mon.gov.ua/npa/pro-zatverdzhennia-profesiinoho-standartu-vchytel-zakladu-zahalnoi-serednoi-osvity.
[13] Ovcharuk, O.V., Hrytsenchuk, O.O., Ivanyuk, I.V., Kartashova, L.A., Kravchyna, O.E., Leshchenko, M.P., & Malytska, I.D. (2022). *Development of the information and digital educational environment of the institution of general secondary education: Methodical guide*. Kyiv: Institute of the National Academy of Sciences of Ukraine.
[14] Polyakova, O. (2022). Information and digital competence of the teacher as a factor in the implementation of the culture of democracy in education. In *5th All-Ukrainian scientific and practical internet conference "Implementation of democracy principles in preschool and primary education: Balance, awareness, experience"*. Kyiv.
[15] Professional standard "Teacher of general secondary education institution". (2024). Retrieved from https://mon.gov.ua/npa/pro-zatverdzhennia-profesiinoho-standartu-vchytel-zakladu-zahalnoi-serednoi-osvity.
[16] Samborskaya, O. (2019). Informational and digital competence of the future primary school teacher: Forming factors. *International Scientific Journal of Universities and Leadership*, 7, 114-125. doi: 10.31874/2520-6702-2019-7-1-114-125.
[17] Sapogov, M.V. (2020) Teacher's digital competence as an integrated ability in smart learning. *Scientific Journal of the National Pedagogical University Named After M. P. Drahomanov. Series 5: Pedagogical Sciences: Realities and Prospects*, 73(2), 61-65. doi: 10.31392/NPU-nc.series5.2020.73-2.14.
[18] Semenog, O., Burtovyi, R., & Yurchenko, A. (2022). Development of information and digital competence of future naval officers in the conditions of non-formal education: The essence of key concepts. *Physical and Mathematical Education*, 36(4), 70-78. doi: 10.31110/2413-1571-2022-036-4-010.
[19] Silkova, O.V., & Lobach, N.V. (2021) Formation of information and digital competence in students of higher medical education institutions during the study of medical information systems. *Pedagogy of Formation of Creative Personality in Higher and Secondary Schools: Collection of Scientific Works*, 3(74), 130-133. doi: 10.32840/1992-5786.2021.74-3.24.
[20] Stoma, V.M. (2019). Methodological foundations of the study of the development of information and digital competence of future teachers of natural and mathematical specialties in the process of professional training. *Innovative Pedagogy*, 14, 150-154. doi: 10.32843/2663-6085- 2019-14-1-30.
[21] Storonska, O.S. (2023). Principles of building a modern digital educational environment. *Academic Vision*, 27.
[22] Stoyka, O.Ya. (2023). Formation of information and digital competence of future teachers in the conditions of distance learning. *Pedagogical Sciences: Theory and Practice*, 2, 66-72. doi: 10.26661/2786-5622-2023-2-10.
[23] Titova, L. (2022). Domestic experience of forming information and digital competence of future teachers. *Science and Technology Today*, 12(12), 168-177. doi: 10.52058/2786-6025-2022-12(12)-168-177.
[24] Trifonova, O.M. (2018). Information and digital competence: Foreign and domestic experience. *Scientific Notes of Central Ukrainian State Pedagogical University Named After Volodymyr Vinnichenko. Series: Pedagogical Sciences*, 173(2), 221-225.
[25] Trifonova, O.M. (2020). *Methodical system for the development of information and digital competence of future specialists in computer technologies in the teaching of physics and technical disciplines*. (Doctoral Dissertation, Central State University named after V. Vynnychenko, Kropyvnytskyi, Ukraine).
[26] Zaporozhtseva, Yu.S. (2019). Informative - digital competence as a component of the modern educational process. *Theory and Methodology of Professional Education*, 12(1), 79-82. doi: 10.32843/2663-6085.2019.12-1.15.
[27] Zheleznyakova, E.Yu., & Zmiivska, I.V. (2024). Digital platform as a tool for digitalisation of education. *Business Inform*, 3, 129-135. doi: 10.32983/2222-4459-2024-3-129-135.

Марина Кір'янова
Викладач
Полтавський державний медичний університет
36011, вул. Шевченка, 23, м. Полтава, Україна
https://orcid.org/0000-0001-6732-9239

Інформаційно-цифрова компетентність педагога як основа його професійного успіху в умовах інформаційно-освітнього середовища

Анотація. Інформаційно-цифрова компетентність стає ключовою складовою професійного успіху педагога, оскільки вона сприяє інтеграції інноваційних підходів у навчання та відповідає потребам сучасних учнів. Метою роботи було визначити рівень цифрової компетентності педагогів та розробити рекомендації для її вдосконалення з метою ефективного використання цифрових технологій у навчанні. Дослідження базувалось на застосуванні теоретичних методів, таких як аналіз, синтез, узагальнення та систематизація, що дало змогу визначити сучасні тенденції використання цифрових технологій в освіті. Емпірична частина дослідження охоплювала проведення опитування педагогів закладів загальної середньої освіти. Особлива увага приділяється її ролі у забезпеченні ефективності навчально-виховного процесу в умовах динамічного розвитку цифрових технологій. Визначено, що інформаційно-цифрові навички не лише сприяють підвищенню педагогічної майстерності, але й створюють сприятливі умови для інтеграції інноваційних підходів у навчання. Зокрема, такі компетентності дозволяють педагогам адаптувати методи навчання до потреб сучасних учнів, які формуються у цифровому середовищі та звикли до активного використання технологій у повсякденному житті. Результати опитування дозволили з'ясувати, наскільки активно вчителі використовують цифрові інструменти у створенні навчальних матеріалів, організації інтерактивних занять та загальній інтеграції інформаційно-комунікаційних технологій у навчальний процес. У межах даного дослідження окреслено рівень цифрової компетентності педагогів та виявлені ключові труднощі впровадження цифрових технологій, серед яких відсутність достатньої технічної підтримки, необхідність удосконалення знань і навичок, а також брак навчальних ресурсів. Практичне значення статті полягає у можливості використання отриманих результатів для створення цільових програм підвищення кваліфікації педагогів, які сприятимуть розвитку їхньої цифрової грамотності та успішній інтеграції технологій у навчально-виховний процес

Ключові слова: освітній простір; компетентність здобувачі освіти; педагогічні працівники інформаційне суспільство; цифрові технології