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*Professional Readiness of Teachers for Distance Learning
in Quarantine in Ukraine*

Gotowość zawodowa nauczycieli do nauczania na odległość podczas kwarantanny w Ukrainie

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ABSTRACT

This paper discusses the use of digital tools for distance learning by teachers of secondary schools in Ukraine. In 2021, teachers and school administrators were surveyed on their willingness to use digital tools. The Google survey was used as a survey tool to list data on teacher readiness and their digital competence. The survey involved 1,463 respondents who identified the use of digital learning tools for distance learning during the quarantine period caused by the COVID-19 pandemic. The study was conducted in all regions of Ukraine. The results show that teachers need to acquire knowledge and practical skills in digital tools for organizing distance learning with students. The survey tool was developed on the basis of European approaches to determining the level of digital competence of citizens, in particular DigComp 2.0 and DigCompEdu. Proposals for solving the issues of increasing the level of digital competence of teachers and creating conditions for the use of digital tools for the organization of distance learning in Ukraine are presented.

Keywords: distance education; teachers; teacher readiness; digital competence

PROBLEM STATEMENT

Modern education systems today are developing in the context of the large-scale use of information technology. The challenges facing the education system are closely related to the impact of the global information society on all human processes, especially education and professional activities. In 2019, humanity found itself in an environment where education and professional activities became impossible without the use of digital media, and the skills to use information market products became a necessity for everyone due to forced quarantine measures related to the global COVID-19 pandemic. These circumstances have highlighted the need for teachers to use distance learning tools in schools and training institutions. In the conditions of active use of digital technologies, the school environment acquires new features, among which digital tools and means become important. After all, today through digital means there is an exchange of information between teachers and students, and between parents and the administration of educational institutions. In addition, the educational process is organized. A significant proportion of training takes place in the distance and mixed formats, which is associated with quarantine measures. Certain limitations encourage teachers to find effective forms of distance work with students and exchange experiences between teachers, which require all participants in the educational process to have a sufficient level of digital competence.

The modern digital environment of the educational institution should become part of the educational system aimed at meeting the requirements and needs of students and teachers, the entire educational community. That is why today the focus is on the readiness of teachers to use the tools and means of the digital world, their ability to create and ensure the functioning of a secure digital environment (Al Khateeb, 2017). All this has become a challenge for educational circles and teachers, and necessitated the creation of conditions for the continuous development of digital skills, the creation of material and technical conditions for local school teams.

An important question concerns the level of teachers' preparation for these challenges since 2019, and whether there have been some changes in their ability to implement distance learning in practice, constantly improving their professional skills in the use of digital learning technologies (Ivaniuk, Ovcharuk, 2020; Ovcharuk, Ivaniuk, 2020).

A survey of teachers on their willingness to use digital tools for distance learning and training provided an opportunity to identify recommendations for educational institutions, managers and specialists of the training system, which were presented to the public in 2021 (Ivaniuk, Ovcharuk, 2021).

RESEARCH RESULTS

O. Hrytsenchuk, I. Ivaniuk, L. Kartashova, M. Leshchenko, O. Ovcharuk, I. Plish, N. Soroko investigate the development of information and digital environment in general secondary education institutions and the use of digital tools by teachers in Ukraine (Ovcharuk, Ivaniuk, Soroko, Hrytsenchuk, Kravchyna, 2020; Ovcharuk, 2020a, 2020b). Issues of professional training of teachers are considered in the works of N. Nychkalo, L. Lukyanova and L. Pukhovskaya (Nychkalo, Lukyanova, Khomych, 2021).

Problems with using ICT in distance learning faced by teachers of educational institutions are covered in the works of the following researchers: V. Bykov, O. Burov, O. Spirin, V. Lugovyi, V. Oliynyk, N. Morse, M. Shyshkina, S. Lytvynova and others (Shyshkina, 2017; Bykov, Lytvynova, Lugovyi, 2019; Lytvynova, 2017). These researchers outline issues related to the methodology of using digital tools, creating a digital environment for teachers and students.

METHODS

A wide range of methods was used during the survey: research on the phenomenon of digital competence development of teachers; a systematic approach to information retrieval; collecting data on teachers' readiness to use digital tools and on the existing problems. The online questionnaire was created based on European documents, including DigComp 2.0 and 2.1 (Redecker, Punie, 2017; Carretero, Vuorikari, Punie, 2019). Special importance was attached to the analysis and synthesis of information based on general scientific methods of analysis and synthesis. In addition, computational methods of information processing were used during the online survey and data processing.

ANALYSIS OF THE EXPERIENCE OF TEACHERS' READINESS FOR DISTANCE LEARNING

The study was conducted in the period from 10 January 2021 to 10 March 2021. Empirical data from the online survey were collected for the period from 12 January 2021 to 28 February 2021. The online survey was attended by teachers from the following areas: Vinnytsia, Volyn, Dnipropetrovsk, Donetsk, Zakarpattia, Zaporizhia, Zhytomyr, Ivano-Frankivsk, Kyiv, Kirovohrad, Luhansk, Lviv, Mykolaiv, Odesa, Poltava, Rivne, Sumy, Ternopil, Kharkiv, Kherson, Khmelnytsky, Cherkasy. The geographically conducted online survey covered the East, West, South, North and Centre of Ukraine. A random sample was used to conduct an online survey of teachers.

The number of respondents is 1,463 people, including 1,298 women and 149 men. The survey covered three main age categories: 40–55 years (42.6%); 26–40 years (32.9%); 55 years and older (20.5%). As for the type of educational institutions, the largest number of respondents represented secondary school – 67.2%, lyceum – 13.9%; educational complex – 10.3%; gymnasium – 3.4%. As regards the type of settlements, 46.8% of respondent live in the city, 36.7% – in the village, and 16.5% is an urban-type settlement.

The form of the online questionnaire was filled in by the respondents only at their request. The poll was anonymous. The questionnaire was published on the websites of the Institute of Information Technologies and Learning Tools of the National Academy of Educational Sciences (NAES) of Ukraine, on the website of the Presidium of the National Academy of Educational Sciences of Ukraine and distributed to postgraduate pedagogical education institutions. All study participants were informed about the objectives of the study.

Analysis and interpretation of quantitative data were carried out using the methods of descriptive and mathematical statistics, the results are presented in the form of diagrams and their interpretations, which are placed in the relevant thematic blocks. General scientific approaches to the analysis of results are set out in the “Regulations on the procedure for forming, conducting and monitoring the implementation of scientific research and scientific and technical (experimental) developments of the NAES of Ukraine”. The following approaches were used: novelty and relevance; compliance with public policy priorities and thematic areas of research and scientific and technical development; practical usefulness, possibility of realization of the given recommendations and conclusions; availability of previous experience and achievements of scientists in performing scientific research.

As mentioned above, all questions are based on international approaches, including the Digital Competence Framework for Citizens 2.1 (Carretero, Vuorikari, Punie, 2019), adapted to the current version of the online questionnaire. Dig-Comp 2.1 includes the following levels: basic user, independent user, professional user. It outlines five areas of digital competence: information and digital literacy, communication and collaboration, digital content creation, safety and problem-solving. The study was built according to these areas and levels.

In the field of “Information and Digital Literacy”, when asked about the ability to search for information, 33.9% of respondents said that they could search for information on the Internet using a search engine that meets the basic level of the user; 44.6% of respondents said they could use different search engines to find information that matches the level of the independent user; 21.5% of respondents answered that they could use advanced search strategies to find reliable information on the Internet, for example, using web feeds that correspond to the level of the professional user (Figure 1).

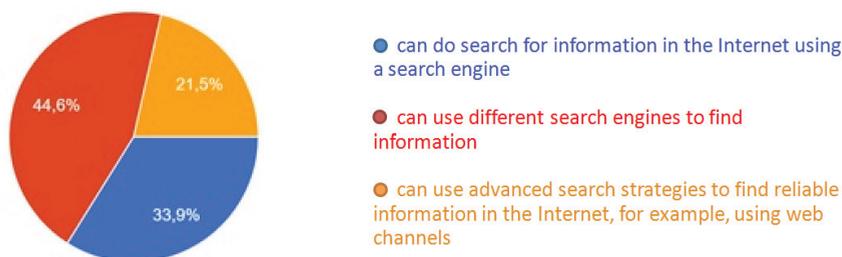


Figure 1. Respondents' answers in the field of "Information and Digital Literacy"

Source: Authors' own study.

When asked about the possibility of assessing the accuracy of information during the search, 30.5% of respondents said that they knew that not all information on the network is reliable, which corresponds to the basic level of the user; 22.3% of respondents said that when searching, they used certain filters to compare and assess the accuracy of the information found, which corresponds to the level of the independent user; 47.1% of respondents said they could assess the reliability of the information on several criteria that meet the level of the professional user.

In the area of "Communication and Collaboration", when asked about the ability to communicate through various means of communication, 21.8% of respondents said they could communicate with other users via Skype or chat – using basic functions (e.g. voice messages, SMS, text exchange), corresponding to the basic level of the user; 11.5% of respondents said that they could use the advanced capabilities of several means of communication (e.g. using Skype and file sharing), which corresponds to the level of the independent user; 66.7% of respondents said that they actively used a wide range of means of communication for online communication (e-mail, chat, SMS, instant messaging, blogs, microblogs, social networks), which corresponds to the level of the professional user (Figure 2).

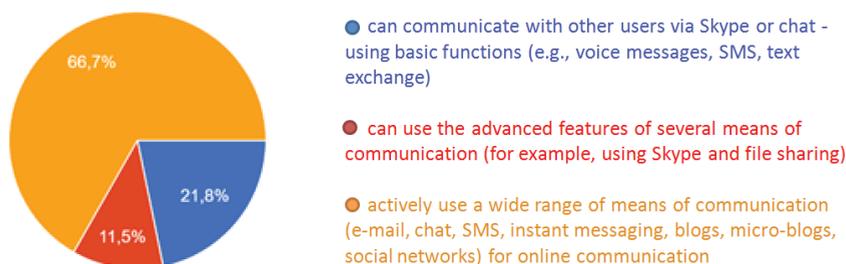


Figure 2. Respondents' answers in the field of "Communication and Collaboration"

Source: Authors' own study.

When asked about the ability to create and manage content using collaboration tools, 27.1% of respondents said they could share files and content using simple tools that match the basic user level; 50.1% of respondents indicated that they could use collaboration tools and distribute, for example, shared documents/files created by other people, corresponding to the level of the independent user; 22.8% of respondents said that they could create and manage content with the help of collaboration tools (e.g. project management systems, spreadsheets on the Internet), which corresponds to the level of the professional user.

When asked about the use of online services, 22.1% of respondents answered that they could use online services (e.g. e-banks, e-governments, e-hospitals, etc.), which corresponds to the basic level of the user; 44% of respondents said that they used the functions of online services (e.g. government services, e-banking, online shopping, etc.), which corresponds to the level of independent users; 34% of respondents said that they actively used the Internet and several online services (e.g. government services, e-banking, online shopping, etc.), which corresponds to the level of the professional user.

In the area of “Digital Content Creation”, when asked about the possibility of creating multimedia content in different formats using different digital tools and environments, 55.6% of respondents said that they could create simple digital content (e.g. text, tables, images, audio files) at least in one format using digital means, which corresponds to the basic level of the user; 38.2% of respondents said that they could create complex digital content in various formats (e.g. text, tables, images, audio files) and use tools to create web pages or blogs that correspond to the level of independent users; 6.3% of respondents said that they could create complex multimedia content in different formats, using a variety of digital tools and environments, and could create a website using a programming language that corresponds to the level of the professional user (Figure 3).



Figure 3. Respondents' answers in the field of “Digital Content Creation”

Source: Authors' own study.

When asked about the possibility of using content formatting features and various tools, 27.6% of respondents said that they could perform basic editing of content created by other users (e.g. add and remove) that corresponds to the basic level of the user; 63.4% of respondents stated that they could apply basic formatting (e.g. insert links, charts, tables) to content created by them or other users that corresponds to the level of an independent user; 8.8% of respondents said that they could use the features of advanced formatting of various tools (for example, merging e-mail, merging documents of various formats, using advanced formulas, macros), which corresponds to the level of the professional user.

In the field of “Safety”, when asked about the ability to protect the system of devices and programs, 54.7% of respondents said that they can take basic steps to protect their devices (e.g. use antivirus and password), which meets the basic requirements – the user level; 32.5% of respondents said they could install security programs on devices they use to access the Internet (e.g. antivirus, firewall), which corresponds to the level of the independent user; 12.8% of respondents said that they often checked the security configuration and systems of devices and/or programs that they regularly use to access the Internet, which corresponds to the level of the professional user (Figure 4).

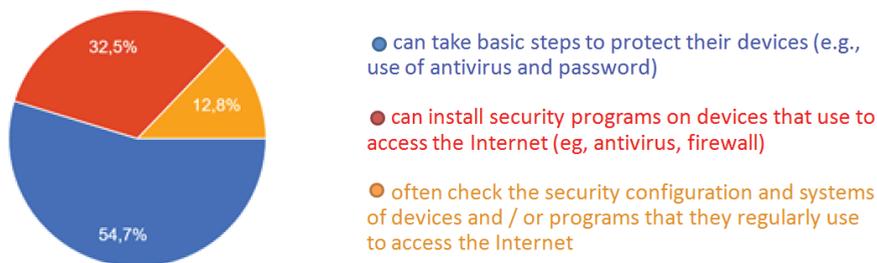


Figure 4. Respondents' answers in the field of “Safety”

Source: Authors' own study.

When asked about the possibility of protecting personal information on their digital devices, 47.3% of respondents said they knew that credentials (username and password) could be stolen and that they should not disclose personally identifiable information on the Internet (basic user level); 34.9% of respondents stated that they used different passwords to access equipment, devices and digital services, periodically changing them according to the level of the independent user; 17.9% of respondents said they knew how to react if a computer was infected with a virus, they could configure or change the antivirus and adjust the security of their digital devices to the level of the professional user. When asked about the possibility of safe use of ICT for their health, 22.1% of respondents said that they knew that the use of digital technologies affected their health, which corresponds

to the basic level of the user; 34% of respondents said that they understood the health risks associated with the use of digital technologies (e.g. the risk of addiction), which corresponds to the level of the independent user; 43.9% of respondents said that they could use ICT to avoid health problems (physical and psychological), which corresponds to the level of the professional user.

In the area of “Problem Solving”, when asked about the ability to solve problems that arise when using digital technologies, 56.5% of respondents said that they found support when a technical problem occurred or when using a new program – that meets the basic level of the user; 37.3% of respondents said that they could solve most of the problems encountered when using digital technologies, which corresponds to the level of independent users; 6.2% of respondents said that they could solve almost all the problems encountered when using digital technologies, which corresponds to the level of the professional user (Figure 5).



Figure 5. Respondents' answers in the field of “Problem Solving”

Source: Authors' own study.

When asked about the possibility of choosing and using the appropriate digital tool to solve technological problems, 54.7% of respondents said that they could use familiar tools to solve technical problems that correspond to the basic level of the user; 38.6% of respondents said that they could solve technological problems by studying the settings of programs or tools that correspond to the level of an independent user; 6.7% of respondents said they knew about new technological developments and understood how new tools work, which corresponds to the level of the professional user.

The results of the survey of teachers on the level of their digital competence indicate the following: positive dynamics is observed in the field of “Information and Digital Literacy”, the vast majority of teachers can search for information at the level of independent (44.6%) and professional (21.5%) users; assess the reliability of the information at the level of professional (47.1%) and independent (22.3%) users; is able to store the information found at the level of professional (48.3%) and independent (28%) user. Approximately 29% of respondents have a basic level of user and need training.

During the survey, the respondents were asked to identify the most acceptable and effective, in their opinion, forms of training. According to the teachers surveyed, the most effective online forms of professional development include: online courses (32.1%); online masterclasses (19.2%); webinars (17.9%); online conferences/seminars (12.1%); mass open courses (10.6%); online professional competitions (4.6%). Among other things, the teachers pointed out: online projects, webinars, face-to-face courses, etc. (Figure 6).

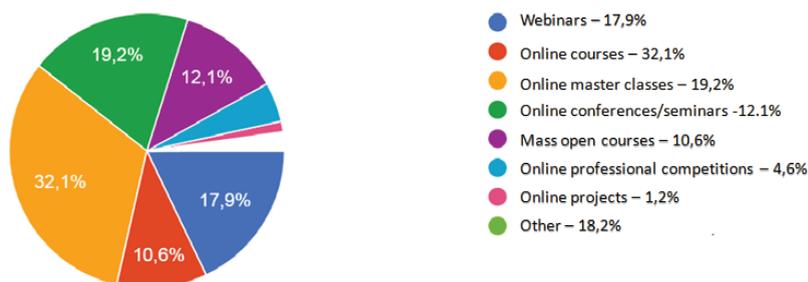


Figure 6. Respondents' answers to the question: What online forms of professional development do you consider the most effective?

Source: Authors' own study.

CONCLUSIONS

Teachers are key players in distance learning. That is why the main attention of the state should be focused on comprehensive assistance to teachers in this process. Not all teachers are on an equal footing in the organization and implementation of distance learning, as evidenced by the results of the survey. Despite significant efforts in the field of IT implementation in education, a wide range of scientific developments and guidelines on how to use digital tools in the learning process, the issue of capacity building and maintaining the readiness of teachers to use IT remains unresolved. The survey allowed the authors (for the first time in the Ukrainian context) to use the tool of self-assessment of digital competence of teachers based on the Digital Competence Framework for Citizens and Digital Competence Framework for Educators. Assessing their own digital competence in general, the teachers outlined their attitude to the use of digital media.

Based on the results of the assessment of the current state of the level of digital competence of teachers, recommendations were developed and presented to stakeholders, in particular, for the network of teacher training institutions. For these institutions, we recommend introducing an already proven self-assessment

tool as part of existing tools to help teachers identify needs and gaps in their level of digital competence.

The presented survey can also be used as a tool and source of information on possible topics and modules for teacher training programs and future training. Researchers expect that by the end of the 2020/2021 school year, regional in-service training institutes will assess the level of digital competence of teachers, using the proposed self-assessment tool, which will determine the real situation in each direction. At the end of the 2021/2022 academic year, a group of researchers plans to conduct an all-Ukrainian online survey and compare how much the situation has changed with regard to the development of digital competencies of teachers.

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ABSTRAKT

W artykule omówiono wykorzystanie narzędzi cyfrowych do nauczania na odległość przez nauczycieli szkół średnich w Ukrainie. W 2021 r. przeprowadzono ankietę wśród nauczycieli i administratorów szkół pod kątem chęci korzystania z narzędzi cyfrowych. Ankieta Google została wykorzystana jako narzędzie ankietowe do zestawienia danych na temat gotowości nauczycieli i ich kompetencji cyfrowych. W ankiecie wzięło udział 1463 respondentów, którzy zidentyfikowali korzystanie z cyfrowych narzędzi do zdalnego nauczania w okresie kwarantanny spowodowanej pandemią COVID-19. Badanie przeprowadzono we wszystkich regionach Ukrainy. Wyniki pokazują, że nauczyciele muszą zdobywać wiedzę i praktyczne umiejętności w zakresie narzędzi cyfrowych do organizowania nauczania na odległość z uczniami. Narzędzie ankietowe zostało opracowane na podstawie europejskich podejść do określania poziomu kompetencji cyfrowych obywateli, w szczególności DigComp 2.0 i DigCompEdu. W opracowaniu przedstawiono propozycje rozwiązania kwestii podnoszenia poziomu kompetencji cyfrowych nauczycieli i tworzenia warunków do wykorzystania narzędzi cyfrowych do organizacji zdalnego nauczania w Ukrainie.

Słowa kluczowe: kształcenie na odległość; nauczyciele; gotowość nauczyciela; kompetencje cyfrowe