

**CHALLENGES AND PROSPECTS
OF THE USE OF DIGITAL LEARNING INSTRUMENTS
BY TEACHERS DURING THE COVID-19 PANDEMIC**

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Digital technologies in modern life are developing rapidly as an important management tool in various fields, including education. It is important to note that the active expansion of digital educational technologies has changed the value of resources and services, influenced the development of physical processes and data use, led to the emergence of digital trends that turn into innovative services becoming part of the digital economy.

The uncertainty encountered by teachers during the quarantine events caused by the pandemic, the forced need for distance learning, led to the use of a wide range of digital tools that set up and provided distance learning. Also, these processes necessitated the use of new forms and methods of teaching in cases where they usually used a traditional lesson with frontal and group forms of classroom work.

In 2020 Organisation for Economic Co-operation and Development (OECD) issued a Framework that consists of the forecast and recommendations for the education sector regarding the strategies aimed at overcoming the challenges of COVID-19 pandemic. This document contains a framework to guide the development of context-specific education strategies, supported by the results of a rapid assessment conducted between March 18 and March 27 of 2020 [1; 2]. Among the priorities of the presented in the Framework is the statement that education leaders should adopt a proactive approach to contributing to the mitigation of the impact of the pandemic and to prevent learning loss during the period of necessary social distancing. They should

also contribute to the creation of opportunities to help reskill those displaced by the Pandemic and facilitate their reintegration into the labor market [1].

The problems of using information and communication technologies (ICT) in the classroom by teachers are revealed in the works of Ukrainian researchers V. Bykov, O. Burov, S. Lytvynova, O. Spirin, O. Pinchuk, N. Soroko and others [3, 4]. These researchers raise questions about the implementation of ICT in education, the methodology of using digital tools, creating a digital environment for teachers and students [3]. A. Gurzhiy, L. Kartashova, N. Bakhmat, I. Plish point out the needs and methodology of the development of teacher's digital competency and the organization of digital environment in schools as well as the need of raising the professional level of using necessary tools [5; 6].

One of the main problems facing education today is the lack of teacher awareness of digital distance learning tools as well as the use of the digital environment appropriately. Also in today's digital society in Ukraine, the education system is faced with a limited number of rather disparate educational resources and available guidelines to teach their subjects; there is still a problem of teachers' digital skills. The results of recent studies in 2020–2021 evidences that teachers have started to use digital resources and tools to organize distance lessons. There is still the question of the full use of ICT tools for learning video recording and podcasts, the use of online learning materials on the subjects of study and the generalization of information that should be accumulated in school. In addition, teachers identify the problem of organizing the assessment of student achievement, especially in those parts where it comes to formative assessment online.

Due to the introduction of quarantine measures during the 2020/2021 academic year the Ukrainian education system has urgently faced the issue of organizing distance learning in educational institutions, which involves all stakeholders in this process: teachers, heads of educational institutions, students, parents, state and local authorities. Scientists of the Department of Comparative Studies of Information and Educational Innovations of the Institute of Information Technologies and Teaching Aids of the National Academy of Educational Sciences of Ukraine in January 2021 conducted a survey among 1,463 teachers from different regions of the country through an online survey [2; 3].

The analysis of the respondents' answers allowed identifying ten main problems and challenges during the organization and implementation of distance learning in practice. The main problem mentioned by the respondents is *the insufficient material and technical support* of students. Not all students have a personal computer at home, so they are forced to work with different gadgets (tablets, smartphones). The second most common

problem is the *lack of quality Internet connection*. This problem concerns all regions of Ukraine. In rural areas, there is little or no connection. Teachers point out that the problem is *lack of time due to the increased workload*. They need to spend more time preparing for online lessons, because it requires creating presentations, recording video, constant checking of written works.

Educators also note that *outdated equipment and software* are used in the workplace. *Low level of self-organization and motivation of students* is also a problem when organizing distance learning. Teachers note that not all students are present in online lessons, passively respond, do not do homework. Teachers complain about the *lack of support from parents*. This is manifested in the following: lack of control over children over how homework is done; lack of desire to help children; disinterest in productive learning of children [2; 3].

One of the problems is the *insufficient level of digital competence of teachers*, which is manifested in the imperfect mastery of digital tools, the ability to use online platforms and so on. It was important to determine exactly how the survey participants organized distance learning and what tools they used to conduct lessons during distance and blended learning in a COVID-19 pandemic. It was also interesting to find out which online resources serve respondents to prepare for lessons, which of these resources are the most popular and useful for students and teachers. It was found that most respondents use the following digital tools to organize distance learning: Viber – 83 %; Zoom – 58.7 %; the site of the educational institution – 58.7 %; My Class – 20.7 %; Padlet – 18.8 %; GoogleAppsforEducation – 15.1 %; Skype – 14 %; Telegram – 13.8 %; Electronic diary – 11.7 %; Educational platform of the educational institution – 10 %; Jitsi Meet – 9.5 % [3]. Teachers' answers indicate that they often use such resources to conduct online lessons as: Na Urok – 74.4 %; YouTube lessons – 75.8 %; Vseosvita – 64.6 %; All-Ukrainian Online School – 38.7 %; EdEra – 33.3 %; teachers' blogs – 28.4 %; Open online lessons – 27.2 %; Learning.ua – 24.7 %; Prometheus – 19.85 %. They also use Classtime – 7.7 %; Kahoot – 8.1 %; video lessons on Era TV and local TV channels; video lessons of TRK Kyiv (5.3 %); Diya, Digital education (5.2 %).

Today, there is a positive trend in the use of online tools by teachers, as evidenced by the 2020–2021 study. At the same time, teachers point to the use of digital tools for self-learning, raising awareness of the use of existing online platforms as a learning environment. 61 % of teachers are actively provide and distance learning using YouTube channel – 72.9 %, EdEra – 42.3 % and Prometheus platforms – 32.5 % (Fig. 1) [2; 3].

The obtained results of the survey of educators allow us to conclude that today the issue of distance and blended learning remains insufficiently resolved.

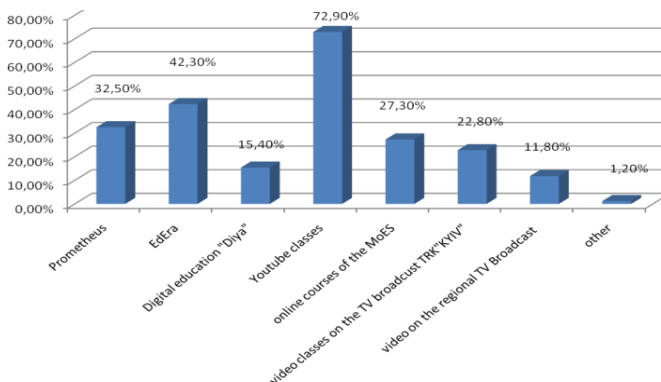


Fig. 1. Digital tools used by teachers to organize distance learning during quarantine

The main drivers of this process are teachers who directly organize such training. Although the teacher survey indicates some progress in the use of online tools for distance learning in the classroom, it also demonstrates a number of new challenges facing teachers and the education system today. That is why it is important to create conditions for teachers to create conditions for the use of digital learning tools. The issue of equipping schools for such work with new tools and software will also contribute to quality of education improvement. Particular attention should be paid to the development of digital competence of teachers that should be provided by teacher training institutions.

Among the main needs for professional development teachers identify the following: methods of online lessons; instruments of blended learning; online courses of New Ukrainian School teachers on distance learning in quarantine; learn to record video and audio training, blogging, edit lessons in the format of presentations and videos; comprehensive training on the use of new, interesting, creative online tools and services; distance learning technologies; integrated online courses in several subjects; more practical advice and lessons on online tools; new workshops for working with students; visibility and availability of online courses, webinars; assessment in terms of distance learning; quick online consultations on specific issues, qualified consultations and practical assistance in mastering new tools by post-graduate institutions specialists; overall educational and methodological support.

One of the evidence of Ukrainian good practice is the functioning of Web portal of Ukrainian Open University of Postgraduate Education aimed at improvement of teachers' knowledge to acquire digital skills and

reveals opportunities and prospects for improving the digital competencies of teachers [8].

Web portal of Ukrainian Open University of Postgraduate Education is a multi-purpose online educational resource developed to organize and to support teachers' postgraduate training. It propose a complex of digital solutions aimed at the successful operation of virtual departments, the implementation of the educational process, professional development of students, coverage of innovative educational practices.

The specialists of the University of Education Management (Kyiv, Ukraine) taking into account the peculiarities of adult learning developed a Web platform 'Learning Management System Adult Learning' (LMS AdL) for the introduction of modern technologies of formal and non-formal postgraduate education. The platform is placed on the web-portal in order to provide a remote stage of professional development of students. Educational activities are carried out on the basis of virtual departments. Each virtual department of consists of technological and intellectual potential and recourses of individual scientists, departments, institutes, institutions of higher education, public organizations [8]. Virtual departments carry out scientific and practical communication of specialists in adult education in various fields and educational institutions, consumers of educational services. The activity of the virtual department consists of: raising awareness of teachers and educational specialists in the integration of the best practices to use online tools; cooperation and coordination of educational activity of institutions with partners; the ability to respond flexibly to changes in the educational environment; implementation of interdisciplinary learning strategies; the possibility of individual learning etc.

Distance learning was already organized for 1,137 students from 401 educational institutions in the period of 2020–2021 on the Web platform LMS AdL (<http://uvupo.ues.net.ua>). Representatives of 23 regions of Ukraine and the city of Kyiv took part in advanced training courses. It was created 50 electronic classrooms for teachers, and 186 teaching materials have been posted in the web library. More than 950 people received certificates of advanced training, and 1,362 people received certificates of participation in webinars [8].

An important component of the effective use of modern educational technologies for the organization of cooperation in the classroom is the ability to select appropriate tools and create content. The teacher must choose software that meets the needs of the educational process. Ukrainian specialists (T.Kovbasiuk and L.Panina) propose the criteria you can use to determine the best online service:

1. The presence of several functions in the tool, which allows students, in teamwork, to use it in different ways.

2. Understandable set of tools and rules that ensure the interaction of computer programs (or devices), easy navigation.

3. Privacy settings. Working with teams does not mean that all conversations and files are publicly available. Sometimes team members need to have private conversations or work on mini-projects [9].

Determining the basic parameters of digital media selection is important for teachers and those institutes that carry out their professional development.

The results of a study on the use of online tools for teachers to organize education revealed a number of problems that schools face today in connection with the introduction of quarantine measures in Ukraine. There were also some improvements and progress in the use of digital teaching aids, opportunities for teacher training. New opportunities today can be outlined in ensuring the continuous professional development of teachers, which will overcome such problems as teachers' reluctance to introduce distance learning, fill gaps in knowledge of digital teaching aids, raise awareness of digital educational resources in teaching subjects. Particular attention should be paid to the development of digital competence of teachers and educators, which should be provided by in-service training institutions and higher pedagogical universities.

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ЭЙНШТЕЙН. ГЕНИЙ ИЛИ ШАРЛАТАН?

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К началу XX века физика достигла огромных успехов. Кажется, что она ответила на все вопросы и исчерпала себя. Однако именно к этому времени стали возникать проблемы, которые противоречили уже известным знаниям и никак не поддавались решению. Многие возникшие проблемы были связаны со светом, который считался загадкой с древнейших времен. Приведем их краткий перечень.

1. В античный период, сложилась корпускулярная теория, согласно которой свет – это поток светящихся частиц. Только в XVII веке Гюйгенс создал волновую теорию. Он рассматривал свет по аналогии со звуком, как продольную волну, источником которой являются колебания особой невесомой, но упругой среды, эфира. Впрочем, волновая теория света сначала не имела успеха. Господствующей оставалась корпускулярная теория, которую поддерживали Декарт и Ньютон. Только в начале XIX века после открытия Френелем интерференции, дифракции и поляризации света, была доказана классическая волновая природа света и поперечность световых волн.

2. Теория Френеля вошла, однако, в противоречие с теорией эфира, так как поперечные волны могут распространяться только в твердой, очень плотной среде. Пришлось предположить, что эфир увлекается всеми движущимися телами. Но это противоречило наблюдениям и эксперименту. Понятие светоносного эфира стало головной болью для физиков. Они насчитывали связанных с ним около 27 зага-