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Online Platforms for teaching Mathematics: potential and disadvantages

MYKOLA MORMUL, LYUBOV ROMANCHUK, DMYTRO SHCHYTOV, OLEKSANDR SHCHYTOV. **Online Platforms for teaching Mathematics: potential and disadvantages.** *The article analyzes modern digital platforms used in the process of distance education, particularly Zoom, Google Meet, Microsoft Teams, Telegram, WhatsApp, and Viber. It examines their technical capabilities, advantages, and disadvantages from the perspective of their application in education, especially in teaching mathematical disciplines. The main challenges associated with transmitting formulas, graphs, diagrams, mathematical symbols, and organizing interactive student work in a digital environment are identified. Based on a comparative analysis, ways to improve online platforms are suggested, including enhancing mathematical content*

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visualization tools, optimizing sorting functions, informing about work updates, and increasing the convenience of task assessment. The results of the study aim to improve the effectiveness of distance learning and optimize the use of digital tools in teaching exact sciences.

Keywords: *distance learning, digital platforms, mathematical disciplines, online communication, Zoom, Google Meet, Teams.*

1. Introduction

The shift of teaching disciplines to the online environment has become a significant trend in recent years. The COVID-19 pandemic, the processes of globalization and digitalization of society, as well as the military realities in which Ukraine has been living since February 2022, have significantly accelerated the development of remote work formats. Today, educators widely use various platforms for video communication and text-based consultations.

The choice of the appropriate digital tool impacts the quality of communication, confidentiality, the comfort of listeners, and the effectiveness of the learning process. In this regard, there is a need to systematize the capabilities of the most common online platforms and determine the criteria for their professional use in the process of remote teaching.

The purpose of the article is to systematize and compare digital platforms used in educational practice, identify their capabilities and limitations for individual, group, and crisis work, and develop recommendations for their professional use.

2. Relevance of the Research

The relevance of the topic is determined by the fact that the digitalization of education has become a key condition for the modern learning process, and mathematical disciplines require tools that ensure visualization, interactivity, and individualization of learning. Digital platforms open up new opportunities to enhance the effectiveness of mastering mathematics, especially in the context of remote and blended learning, which has been actively developing after the pandemic and in the conditions of martial law in Ukraine. At the same time, there are limitations-unequal access to technology, varying levels of digital competence among educators, and the limitations and imperfections of digital platforms for teaching mathematical disciplines. Therefore, the analysis of the capabilities, advantages, and limitations of digital

platforms in mathematical education, as well as ways to improve them, is extremely important and relevant.

3. Literature Review

The research on digital platforms has been rapidly growing in connection with the spread of remote classes and consultations.

The study of trends and prospects for the development of distance education is thoroughly presented in the works of foreign scholars, including N. Kentnor (2015), E. Banas (1998), V. Emory (1998), K. Harting (2005), and M. Erthal (2005) [1], [2], [3], [4], [5].

In the domestic scientific community, the theoretical foundations of distance learning have been actively developed by O. Andreyev, N. Andrusenko, V. Bykov, D. Vasilyeva, M. Burda, D. Ivanchenko, T. Godovanyuk, as well as V. Kukharenko, N. Morze, Y. Polat, Y. Smirnova-tribulskaya, V. Lapinsky, Y. Bogachkov, P. Stefanenko, A. Khutorsky, M. Mormul [6, 7, 8, 9, 10, 11] and other researchers whose works have shaped the contemporary approaches to organizing and the methodology of distance education.

Researchers Humer et al. (2020) and Connolly et al. (2021) note that Zoom and Microsoft Teams are more suitable for group sessions, while Google Meet provides an optimal balance between ease of use and video quality. According to Jones & Smith (2020), messengers (Telegram, WhatsApp, Viber) are more appropriate for crisis intervention and short-term consultations. However, they should be used with caution due to their limited tools for full-fledged sessions. Thus, researchers and various sources indicate that a platform must meet not only technical requirements but also psychological criteria: the ability to maintain contact, empathy, confidentiality, and secure conditions for therapeutic interaction.

However, in our opinion, there is still a lack of materials devoted to analyzing the nuances of distance learning in mathematical disciplines and finding ways to improve them, which also determines the relevance of the topic.

4. Research Methodology

The following methods have been chosen for the research.

1. Comparative analysis of online platform functions (video communication, security, interactivity, group dynamics).
2. Content analysis of practical platform applications.
3. Expert evaluation of the effectiveness of platform usage.

4. The scientific novelty of the paper lies in the fact that:
5. Technical parameters of leading online platforms have been systematized in the context of teachers' professional activities;
6. A classification of platforms has been proposed based on the level of interaction, security, advantages, disadvantages, and other suitability criteria;
7. Criteria for the effectiveness of online environments, influencing empathy and communication quality, have been defined;
8. A model for selecting a platform based on the purpose of the lesson, the type of discipline, and the specifics of the request has been developed.

5. Main Material

Undoubtedly – and this has been repeatedly emphasized by researchers [9] – there are certain advantages to the format of electronic learning (E-learning) over traditional (Classroom learning). E-learning is more flexible, cheaper (since there are no expenses for travel and accommodation), accessible anywhere, and allows revisiting material and learning at one's own pace.

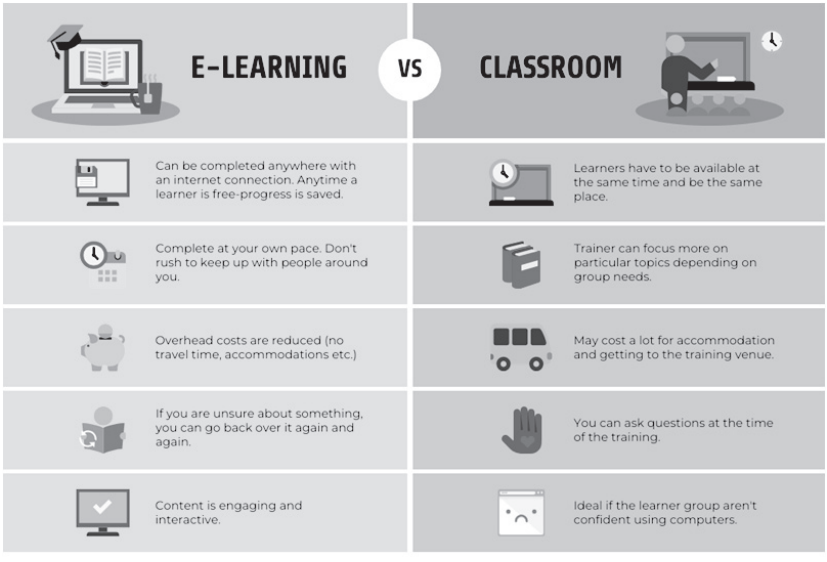

Fig. 1. Advantages of E-learning and Traditional Learning
Source: Author's development

However, traditional education, although more expensive, also has its advantages. It provides live interaction, the opportunity to ask questions in real-time, and is better suited for groups that are not confident in using computers (see Fig. 1).

Table 1.
Advantages and Disadvantages of Digital Platforms*

№	Platform Name	Advantages	Disadvantages	Recommended For
1.	Zoom	– high stability of video communication; – support for group classes (up to 100 participants); – the ability to demonstrate the screen, record, "rooms for group work"; – wide use in educational groups.	– full security – only in paid versions; – requires installation of the application.	trainings, webinars, educational classes.
2.	Google Meet	– easy to connect (link opens in browser); – integration with Google Classroom and calendar; high quality of communication.	– fewer tools for groups than in Zoom; – limited recording capabilities in the free version.	individual consultations, short meetings, school and university practice.
3.	Microsoft Teams	– professional system for teamwork; – integration with Office 365; convenient channels for group interaction.	– more complex interface for clients; – unnecessary functionality for individual consulting.	work in large organizations, educational institutions, corporate psychologists.
4.	Telegram	– the possibility of anonymity; – good quality voice and video calls; – secure secret chats; – creation of channels and chatbots for support groups.	– not all chats have end-to-end encryption; – limited tools for group classes (no demonstration of materials).	crisis lines, support groups, brief consultations.
5.	WhatsApp (Wazap)	– popularity and simplicity; – end-to-end encryption in all chats; – private work with the client.	– poor opportunities for structured classes; – inconvenient for large groups.	individual short consultations, support between sessions.
6.	Viber	– secure calls and messages; large groups and channels; – widespread use among the older age group.	– video communication is less stable than Zoom and Meet; – fewer opportunities for demonstrating materials.	school teachers, consultations, work with clients who prefer simple messengers

* *Source: compiled by the authors*

The characteristics of the main digital platforms used for distance teaching in educational institutions are presented in Table 1.

Table 2.
Comparative analysis of digital platforms*

Parameter / Platform	Zoom	Google Meet	Teams	Telegram	WhatsApp	Viber
Video quality	high	high	high	average / high	average	average
Group classes	★★★★☆	★★★☆☆	★★★★★	★★☆☆☆	★☆☆☆☆	★★☆☆☆
Security/ encryption	average / high	high	high	середня/ high	very high	high
Interaction Tools	rooms, screen display, board	screen sharing, chat	channels, interactivity, collaboration	chat, bots, secret chats	voice/video, chat	chat, groups
Customer Experience	average	high	average	high	very high	high
Individual Work	★★★★★	★★★★★	★★★★☆	★★★☆☆	★★★★☆	★★★★☆
Group work	★★★★★	★★★☆☆	★★★★☆	★☆☆☆☆	★☆☆☆☆	★★☆☆☆
Best suited for:	group classes, trainings	individual sessions	corporate and individual classes	crisis terventions	support between sessions	ndividual sultations

** Source: compiled by the authors*

Digital platforms also differ in other parameters. The most important ones are summarized in Table 2.

Therefore, the following recommendations can be given for choosing a platform.

1. Individual consultations: Google Meet, WhatsApp, Viber, Telegram.
2. Group therapy, trainings: Zoom, Teams.
3. Working with children and adolescents: Meet, Zoom, Viber.
4. Crisis interventions: Telegram (anonymity), WhatsApp.
5. Corporate psychology: Microsoft Teams.

Long-term therapy: the platform should be chosen taking into account the client's habits. Fig. 2 shows an infographic of video conferencing platforms that helps the user choose a service for online communication, study or work. The infographic compares the following platforms: Zoom, Google Meet, Skype, GoToMeeting, Join.me, Discord.

Fig. 2. Infographic for choosing the right digital platforms

(Source: compiled by the authors)

Fig. 3 shows another (typical) infographic for companies, teachers and teams who want to decide: which service suits them better – Teams, Zoom, Slack or Google Workspace (Google Meet), used for: online meetings, calls, video conferences, collaboration or classes. The table shows: the maximum number of meeting participants (depending on the tariff), the maximum duration of group meetings, the ability to show the screen, Together mode – a mode of joint virtual presence, whether meetings can be scheduled, automatic subtitles (live captions), whether meeting recording and transcript creation are supported.

As for teaching mathematical sciences through digital platforms, it has its own specifics, as it requires:

- high accuracy of displaying formulas and graphs;
- interactive interaction with the board;
- the ability to demonstrate step-by-step mathematical transformations;
- organization of individual and group work on tasks.

Compared to humanities, mathematical disciplines require technically more complex digital tools. The main difficulties and disadvantages of using platforms in mathematical disciplines are divided into:

FEATURES		zoom	slack	Google Workspace
MAX NUMBER OF PARTICIPANTS	100 (free plan) 300 (Essentials, Business Basic, Business Standard)	100 (Basic Plan) 300 (Business, Business Plus, Enterprise Plan)	15	100 (Business Starter) 150 (Business Standard) 500 (Business Plus, Enterprise)
MAXIMUM GROUP MEETING DURATION	60 minutes (Free Plan) 30 hours (Essentials, Business Basic, Business Standard)	40 minutes (Basic) 30 hours (Pro, Business, Business Plus, Enterprise)	Unlimited	24 hours (all plans)
SCREEN SHARING	Yes	Yes	Yes	Yes
TOGETHER MODE	49 Users	25 Users	No	No
SCHEDULED MEETINGS	Yes	Yes (Unavailable on Basic)	Yes with integration	Yes (Unavailable on Business Starter)
ENGLISH LIVE CAPTIONS	Yes (plus over 30 additional languages with Business Basic, Business Standard)	Yes (Business, Business Plus, Enterprise)	Only for audio calls	Yes (Plus additional languages)
MEETING	Yes (Business Basic,	Yes (Business,	Yes	Yes (Unavailable on

Fig. 3. Typical infographic for choosing digital platforms
(Source: compiled by the authors)

1) technical:
- instability of video communication makes it difficult to demonstrate solutions,
- image delay makes it impossible to show step-by-step transformations in real time,
- weak drawing tools in messengers;

2) interactive:
- Zoom/Meet sometimes lacks specialized math boards,
- students do not always have a tablet/stylus – it is more difficult to complete written assignments online;

3) problems with formulas:
- not all platforms support LaTeX or rendering of mathematical expressions,
- displaying formulas through the camera causes image distortion [5],
- formulas, graphs, and drawings cannot be entered into the form directly through Word; they must first be converted to .jpg format using the Paint graphics editor , and then attached to the assignment via cloud insertion, which is very inconvenient [5], [7], [8], [11],

- he same applies to superscript and subscript indices and symbols: in order for them to be displayed correctly, the entire text of the task has to be converted into a drawing format;

4) progress control:

- it is more difficult to track the process of solving the problem by the student;

Table 3.
Difficulties of using online platforms in teaching mathematics*

№	Platform Name	Advantages	Disadvantages	Recommended For
1.	Zoom	– high stability of video communication; – support for group classes (up to 100 participants); – the ability to demonstrate the screen, record, "rooms for group work"; – wide use in educational groups.	– full security – only in paid versions; – requires installation of the application.	trainings, webinars, educational classes.
2.	Google Meet	– easy to connect (link opens in browser); – integration with Google Classroom and calendar; high quality of communication.	– fewer tools for groups than in Zoom; – limited recording capabilities in the free version.	individual consultations, short meetings, school and university practice.
3.	Microsoft Teams	– professional system for teamwork; – integration with Office 365; convenient channels for group interaction.	– more complex interface for clients; – unnecessary functionality for individual consulting.	work in large organizations, educational institutions, corporate psychologists.
4.	Telegram	– the possibility of anonymity; – good quality voice and video calls; – secure secret chats; – creation of channels and chatbots for support groups.	– not all chats have end-to-end encryption; – limited tools for group classes (no demonstration of materials).	crisis lines, support groups, brief consultations.
5.	WhatsApp (Wazap)	– popularity and simplicity; – end-to-end encryption in all chats; – private work with the client.	– poor opportunities for structured classes; – inconvenient for large groups.	individual short consultations, support between sessions.
6.	Viber	– secure calls and messages; large groups and channels; – widespread use among the older age group.	– video communication is less stable than Zoom and Meet; – fewer opportunities for demonstrating materials.	school teachers, consultations, work with clients who prefer simple messengers

* Source: author's development based on [9], [10]

- it is more difficult to organize individual support (Table 3).

Thus, modern distance learning platforms used in Ukraine (Zoom, Google Classroom, Moodle, Google Meet) are not sufficiently adapted for teaching mathematical disciplines, as they have a number of functional limitations. The article outlines possible ways to improve them, in particular regarding:

- convenient input of graphs, formulas, figures, indices and special mathematical symbols without the need for prior conversion into images;
- correct information about the principle of sorting students (by name or surname);
- sorting of works by submission time;
- automatic notifications about downloading a new version of the work;
- the ability to add more photos in the answers;
- improving the quality and convenience of the information submitted by students during the check.

6. Conclusions

Online platforms have become an integral part of modern psychological practice. Each of them has its own functional capabilities that affect the quality, safety and effectiveness of psychological support. They open up wide opportunities for psychological practice, but their effectiveness depends on the correct selection taking into account the goals of the lesson, the age group and the technical readiness of the client. The analysis shows that Zoom and Teams are optimal for group formats, Google Meet for individual consultations, and Telegram, WhatsApp and Viber messengers for support, crisis interventions and short sessions. However, these platforms require significant improvement to improve the quality and convenience of conducting classes in mathematical (exact) disciplines.

References:

1. Clark-Wilson, A., Hoyles C., Donevska-Todorova, A., Faggiano, E., Trgalová, J., Weigand, Hans-Georg (2021). Mathematics education in the digital age: Learning, practice and theory. London: 1st Edition, 252 p. [in English].
2. Drijvers, P. (2020). Digital technology in mathematics education: Why it works (or doesn't). Mathematics Education Research Journal, 32(1), 1–19. DOI: https://doi.org/10.1007/978-3-319-17187-6_8. URL: https://www.researchgate.net/publication/268368816_Digital_Technology_in_Mathematics_Education_Why_It_Works_Or_Doesn't [in English].

3. Hegedus, S., & Moreno-Armella, L. (2017). The emergence of mathematical structures in technology-based learning environments. Educational Studies in Mathematics, 94(3), 241–258. URL: https://www.jstor.org/stable/41485934 [in English].
4. Hodges, C., Moore, S., Lockee, B., Trust, T., Bond A. (2020). The difference between emergency remote teaching and online learning. Educause Review. URL: https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning [in English].
5. Pierce, R., Stacey, K. (2010). Mapping pedagogical opportunities provided by mathematics teaching software. Journal of Mathematical Behavior, 29(3), 144–155. DOI: https://doi.org/10.1007/s10758-010-9158-6 [in English].
6. Mormul, M., Shchytov, O., Romanchuk, L., Chupilko, T., Shchytov, D. M. (2022). Ways of improving distance teaching of mathematics under the conditions of martial law in Ukrainian educational institutions. European Humanities Studies: State and Society, 2, 101-114. DOI: https://doi.org/10.38014/ehs-ss.2022.2.05 [in English].
7. Mormul, Mykola, Shchytov, Dmytro, Romanchuk, Lyubov, Shchytov, Olexandr (2024). Proposals for improvement of Google Classroom and Mytestx platforms in distance teaching of exact disciplines. European humanities studies: state and society, 4, 110-126. DOI: https://doi.org/10.38014/ehs-ss.2024.4.07. URL: https://ehs.eeipsy.org/index.php/ehs/issue/view/34 [in English].
8. Mormul, M. F., Shchytov, D. M., Shchytov, O. M., Romanchuk, L. A. (2024). Current approaches to distance teaching of exact disciplines in Ukraine under martial law. Vyshcha osvita Ukrainy u konteksti intehratsii do yevropeiskoho osvitnoho prostoru, 2, II (94), 21-34. DOI: https://doi.org/10.38014/osvita.2024.94.02 [in English].
9. Mormul, M. F., Shchytov, D. M., Shchytov, O. M., Romanchuk, L. A., Chupilko, T. A. (2024). Napriamy pokrashchennia dystantsiinoho vykladannia matematyky v Ukraini za umov voiennoho stanu [Directions for improving distance learning in mathematics in Ukraine under martial law]. European Humanities Studies: State and Society, 2, 74-86. DOI: https://doi.org/10.38014/ehs-ss.2024.2.07. URL: https://ehs.eeipsy.org/index.php/ehs/article/view/437/412 [in Ukrainian].
10. Mormul, M. F., Shchytov, O. M., Shchytov, D. M., Kurbatska, Ye. S. (2023). Shliakhy vdoskonalennia dystantsiinoho vykladannia matematychnykh dystsyplin v ukrainskykh navchalnykh zakladakh za umov voiennoho stanu [Ways to improve distance learning of mathematical disciplines in Ukrainian educational institutions under martial law]. Innovatsiini tekhnolohii, modeli upravlinnia kiberbezpekoiu "ITMK-2023": Mizhnarodna naukova konferentsiia, 1, 28-30 [in Ukrainian].
11. Mormul, M. F., Shchytov, O. M., Shchytov, D. M., Romanchuk, L. A., Chupilko, T. A. (2023). Osoblyvosti dystantsiinoho vykladannia matematyky v ukrainskykh navchalnykh zakladakh za umov voiennoho stanu [Peculiarities of distance learning of mathematics in Ukrainian educational institutions under martial law]. Vyshcha osvita Ukrainy u konteksti intehratsii do yevropeiskoho osvitnoho prostoru, 1, II (91), 131-142. DOI: https://doi.org/10.38014/osvita.2023.91.12 [in Ukrainian].

Transliteration of References:

1. Clark-Wilson, A., Hoyles C., Donevska-Todorova, A., Faggiano, E., Trgalová, J., Weigand, Hans-Georg (2021). Mathematics education in the digital age: Learning, practice and theory. London: 1st Edition, 252 p. [in English].
2. Drijvers, P. (2020). Digital technology in mathematics education: Why it works (or doesnt). Mathematics Education Research Journal, 32(1), 1–19. DOI: https://doi.org/10.1007/978-3-319-17187-6_8. URL: https://www.researchgate.net/publication/268368816_Digital_Technology_in_Mathematics_Education_Why_It_Works_Or_Doesnt [in English].
3. Hegedus, S., & Moreno-Armella, L. (2017). The emergence of mathematical structures in technology-based learning environments. Educational Studies in Mathematics, 94(3), 241–258. URL: https://www.jstor.org/stable/41485934 [in English].
4. Hodges, C., Moore, S., Lockee, B., Trust, T., Bond A. (2020). The difference between emergency remote teaching and online learning. Educause Review. URL: https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning [in English].
5. Pierce, R., Stacey, K. (2010). Mapping pedagogical opportunities provided by mathematics teaching software. Journal of Mathematical Behavior, 29(3), 144–155. DOI: https://doi.org/10.1007/s10758-010-9158-6 [in English].
6. Mormul, M., Shchytov, O., Romanchuk, L., Chupilko, T., Shchytov, D. M. (2022). Ways of improving distance teaching of mathematics under the conditions of martial law in Ukrainian educational institutions. European Humanities Studies: State and Society, 2, 101-114. DOI: https://doi.org/10.38014/ehs-ss.2022.2.05 [in English].
7. Mormul, Mykola, Shchytov, Dmytro, Romanchuk, Lyubov, Shchytov, Olexandr (2024). Rroposals for improvement of Google Slassroom and Mytestx platforms in distance teaching of exact disciplines. European humanities studies: state and society, 4, 110-126. DOI: https://doi.org/10.38014/ehs-ss.2024.4.07. URL: https://ehs.eeipsy.org/index.php/ehs/issue/view/34 [in English].
8. Mormul, M. F., Shchytov, D. M., Shchytov, O. M., Romanchuk, L. A. (2024). Current approaches to distance teaching of exact disciplines in Ukraine under martial law. Vyshcha osvita Ukrainy u konteksti intehratsii do yevropeiskoho osvitnoho prostoru, 2, II (94), 21-34. DOI: https://doi.org/10.38014/osvita.2024.94.02 [in English].
9. Mormul, M. F., Shchytov, D. M., Shchytov, O. M., Romanchuk, L. A., Chupilko, T. A. (2024). Napriamy pokrashchennia dystantsiinoho vykladannia matematyky v Ukraini za umov voiennoho stanu [Directions for improving distance learning in mathematics in Ukraine under martial law]. European Humanities Studies: State and Society, 2, 74-86. DOI: https://doi.org/10.38014/ehs-ss.2024.2.07. URL: https://ehs.eeipsy.org/index.php/ehs/article/view/437/412 [in Ukrainian].
10. Mormul, M. F., Shchytov, O. M., Shchytov, D. M., Kurbatska, Ye. S. (2023). Shliakhy vdoskonalennia dystantsiinoho vykladannia matematychnykh dystsyplin v ukrainskykh navchalnykh zakladakh za umov voiennoho stanu [Ways to improve distance learning of mathematical disciplines in Ukrainian educational institutions

under martial law]. Innovatsiini tekhnolohii, modeli upravlinnia kiberbezpekoiu "ITMK-2023": Mizhnarodna naukova konferentsiia, 1, 28-30 [in Ukrainian].
11. Mormul, M. F., Shchytov, O. M., Shchytov, D. M., Romanchuk, L. A., Chupilko, T. A. (2023). Osoblyvosti dystantsiinoho vykladannia matematyky v ukrainskykh navchalnykh zakladakh za umov voiennoho stanu [Peculiarities of distance learning of mathematics in Ukrainian educational institutions under martial law]. Vyshcha osvita Ukrainy u konteksti intehratsii do yevropeiskoho osvitnoho prostoru, 1, II (91), 131-142. DOI: https://doi.org/10.38014/osvita.2023.91.12 [in Ukrainian].

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Abstracts

МИКОЛА МОРМУЛЬ, ЛЮБОВ РОМАНЧУК, ДМИТРО ЩИТОВ, ОЛЕКСАНДР ЩИТОВ. **Онлайн-платформи для викладання математики: потенціал та недоліки.** *У статті аналізуються сучасні цифрові платформи, що використовуються в процесі дистанційної освіти, зокрема Zoom, Google Meet, Microsoft Teams, Telegram, WhatsApp та Viber. Розглянуто їхні технічні можливості, переваги та недоліки з точки зору їх застосування в освіті, особливо у викладанні математичних дисциплін. Визначено основні проблеми, пов'язані з передачею формул, графіків, схем, математичних символів та організацією інтерактивної роботи студентів у цифровому середовищі. На основі порівняльного аналізу запропоновано шляхи вдосконалення онлайн-платформ, зокрема вдосконалення інструментів візуалізації математичного контенту, оптимізація функцій сортування, інформування про оновлення роботи та підвищення зручності оцінювання завдань. Результати дослідження спрямовані на підвищення ефективності дистанційного навчання та оптимізацію використання цифрових інструментів у викладанні точних наук.*

Ключові слова: *дистанційне навчання, цифрові платформи, математичні дисципліни, онлайн-комунікація, Zoom, Google Meet, Teams.*

MYKOŁA MORMUL, LJUBOW ROMANCZUK, DMYTRO SZCZYTOW, OLEKSANDR SZCHYTOW. **Platformy do nauczania matematyki online: potencjał i ograniczenia.** *W artykule przeanalizowano nowoczesne platformy cyfrowe wykorzystywane w procesie kształcenia zdalnego, w szczególności Zoom, Google Meet, Microsoft Teams, Telegram, WhatsApp oraz Viber. Omówiono ich możliwości techniczne, zalety i ograniczenia z punktu widzenia zastosowania w edukacji, szczególnie w nauczaniu przedmiotów matematycznych. Zidentyfikowano główne wyzwania związane z przekazywaniem wzorów, wykresów, schematów, symboli matematycznych, a także z organizacją interaktywnej pracy studentów w środowisku cyfrowym. Na podstawie analizy porównawczej zaproponowano kierunki doskonalenia platform online, obejmujące rozwój narzędzi służących do wizualizacji treści matematycznych, optymalizację funkcji sortowania, informowanie o aktualizacjach prac oraz zwiększenie wygody oceniania zadań. Wyniki badania mają na celu zwiększenie efektywności nauczania zdalnego oraz optymalizację wykorzystania narzędzi cyfrowych w nauczaniu nauk ścisłych.*

Słowa kluczowe: *nauczanie zdalne, platformy cyfrowe, przedmioty matematyczne, komunikacja online, Zoom, Google Meet, Teams.*