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The educational potential of Microsoft Teams in developing the professional competencies of future doctors

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The article discusses the pedagogical opportunities of using Microsoft Teams in the professional training of future doctors in the context of digital transformation of higher medical education. The relevance of the study is defined by the growing importance of digital educational technologies in organizing distance and blended educational process, particularly in the context of martial law in Ukraine and the COVID-19 pandemic. In today's medical education, digital tools must be flexible enough to enable constant communication, access to educational material, interaction, and the building of medical students and interns doctors' professional skills. The aim of the study is to analyze the scientific literature and identify educational opportunities of the formation of professional competencies and digital literacy of future healthcare professionals using Microsoft Teams. The methodology was developed on the basis of the analysis of scientific publications of the modern period published in the electronic databases Scopus, Web of Science, PubMed, Google Scholar and ResearchGate on the topic of digitalization of medical education, distance learning technologies, and the use of the Microsoft Teams platform in higher medical educational institutions. The study shows that the Microsoft Teams platform is an effective digital learning environment for synchronous and asynchronous learning, video conferencing, group work, assessment, communication and access to educational resources. Consideration is given to the platform's contribution to the development of clinical reasoning, critical thinking, teamwork, professional communication and decision-making skills in clinical case discussions, breakout rooms, collaborative tasks and interactive learning activities. Microsoft Teams integration with Microsoft 365 services increases possibilities for testing, independent learning, multimedia presentation and management of educational content. The results of the study indicate that the use of Microsoft Teams is a positive influence in the organization of the educational process and increases the level of digital competence as an integral part of the modern medical profession.

Keywords: medical education, Microsoft Teams, digital technologies, blended learning, professional competencies, digital competence.

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У статті розглядаються педагогічні можливості використання Microsoft Teams у професійній підготовці майбутніх лікарів у контексті цифрової трансформації вищої медичної освіти. Актуальність дослідження зумовлена зростаючим значенням цифрових освітніх технологій в організації дистанційного та змішаного навчального процесу, зокрема в умовах воєнного стану в Україні та пандемії COVID-19. У сучасній медичній освіті цифрові інструменти мають бути достатньо гнучкими, щоб забезпечувати постійну комунікацію, доступ до навчальних матеріалів, взаємодію та формування професійних навичок студентів-медиків та молодих лікарів. Метою дослідження є аналіз наукової літератури та визначення освітніх можливостей

формування професійних компетентностей та цифрової грамотності майбутніх медичних працівників за допомогою Microsoft Teams. Методологія була розроблена на основі аналізу наукових публікацій сучасності, опублікованих в електронних базах даних Scopus, Web of Science, PubMed, Google Scholar та ResearchGate на тему цифровізації медичної освіти, технологій дистанційного навчання та використання платформи Microsoft Teams у вищих медичних навчальних закладах. Дослідження показує, що платформа Microsoft Teams є ефективним цифровим навчальним середовищем для синхронного та асинхронного навчання, проведення відеоконференцій, групової роботи, оцінювання, спілкування та доступу до навчальних ресурсів. Розглядається внесок платформи у розвиток навичок клінічного міркування, критичного мислення, командної роботи, професійного спілкування та прийняття рішень під час обговорення клінічних випадків, роботи в окремих кімнатах, виконання спільних завдань та інтерактивних навчальних заходів. Інтеграція Microsoft Teams із сервісами Microsoft 365 розширює можливості для тестування, самостійного навчання, мультимедійних презентацій та управління освітнім контентом. Результати дослідження свідчать, що використання Microsoft Teams позитивно впливає на організацію освітнього процесу та підвищує рівень цифрової компетентності як невід'ємної складової сучасної медичної професії.

Ключові слова: медична освіта, Microsoft Teams, цифрові технології, змішане навчання, професійні компетентності, цифрова компетентність

Introduction

Topicality of the problem.

The use of digital platforms and online tools in the organization of the educational process in higher medical education institutions has become an inseparable part of them, since the modern system of medical education needs flexible, interactive and technologically adjusted approach to learning [1, 2]. This role of digitalization has become especially important during the COVID-19 pandemic and also under martial law in Ukraine when distance education and blended learning has become a key tool for maintaining the stability of the education process [3, 4, 5, 6]. The implementation of distance and blended learning has brought about a change in the way medical education has been organized, namely in terms of communication, coordination of educational activities, practical sessions and knowledge assessment, indicating the need for digital services in these areas [7]. Clinical reasoning, analyzing professional scenarios, teamwork and the development of practical skills are all important in medical education and therefore platforms that support not only the teaching of the subject but also interaction between the lecturer, student and interns doctor are particularly relevant. In these circumstances, digital technologies are not only a tool to organize learning, but also an important part of the competencies of future physicians [8, 9, 10].

Microsoft Teams is one of the most popular platforms for organizing the educational process in Higher Education Institutions, which provides the ability to conduct synchronous and asynchronous learning, video conferencing, organizing group work, testing, accessing learning materials, and interaction between participants of the educational process in real time. Medical Higher Educational Institutions can use Microsoft Teams to set up scenarios that allow medical students and interns doctors to integrate modern digital technologies into their professional training, while enhancing digital literacy, communication skills, teamwork and decision making within a context of abundant information and data [11, 12, 13].

The relevance of this topic stems from the need to incorporate, where appropriate, modern digital platforms into the teaching process at higher medical institutions, as these ensure effective and continuous interaction between lecturers, students and interns doctors. This aspect of medical education involves the development not only of theoretical knowledge but also of professional clinical reasoning, teamwork skills, professional communication and

the ability to analyse medical cases, which creates a need for interactive and technologically adapted educational tools. Doctor must be sufficiently digitally competent to cope with the growing use of digital technologies in medical documentation, telemedicine and interprofessional collaboration with other specialists. In this context, the pedagogical aspects of using Microsoft Teams to develop future medical competencies are a topical issue in scientific and pedagogical research.

The purpose of this article is to examine the scientific literature and analyze the educational potential of Microsoft Teams in the development of professional competencies of future doctors taking into account the practical use of digital technologies in education in medical education.

Methodology

Conducted a search for, selected and analysed contemporary academic sources focusing on the digitalisation of the educational process, the use of distance and blended learning, the development of digital educational technologies, and the application of Microsoft Teams in the professional training of medical students and interns doctors.

The search for scientific information was conducted in international scientometric and bibliographic databases such as Scopus, Web of Science, PubMed, Google Scholar and ResearchGate. Publications were selected for analysis that highlight contemporary approaches to organising the digital educational environment in higher medical education institutions, the specific features of using Microsoft Teams in the teaching process, and issues relating to the development of professional and digital competences among future doctors. The main focus is on scientific works published in recent years in connection with the active development of distance learning technologies and their implementation in medical education.

Results

The current development of the higher medical education system is defined by a high level of the use of digital technologies in the educational process, underpinned by global trends of digitalization of society, electronic communications and change of the traditional teaching model [14]. Medical education is increasingly being digitised, which contributes to the improvement of access to educational resources, flexibility of organisation of the learning process and opens the possibility of introducing modern information and communication technologies into the professional training of students [15, 16].

Digital educational technologies have acquired special meaning during the COVID-19 pandemic when higher education institutions had to rapidly shift to distance learning. The digital platforms were the main means of maintaining the educational process, communication between students and evaluating knowledge during this time. This has gained special significance in the medical field where the education of future doctors needs to be a mix of theoretical learning, clinical reasoning, analysis of practical situations, and development of professional skills. Later, martial law brought a new challenge to the Ukrainian educational system and required flexibility in the organization of teaching and an ability to quickly adjust the teaching environment to change [17, 18].

Learning Management Systems and communication platforms are important tools in the digitalisation of medical education to organise the educational process, interact with the lecturer and students, deliver online classes, carry out tests, store learning materials and monitor learning activities [19, 20]. Using digital platforms allows to increase the interactivity of learning, optimize the management of the educational process, build a unified digital education space in a HEI. Microsoft Teams is one of the platforms that is currently used in medical universities; its functional features enable effective implementation of both distance and blended learning [21, 22]. Digital technologies in medical education require all actors in the educational process to acquire digital competences. The lecturer of a medical higher education institution should have the competencies of using the digital platforms, online communication, distance learning organization and creation of electronic educational resources. Medical

students and interns doctors have to be able to work effectively in a digital environment, access and utilise digital educational resources, search and analyse medical information, and utilise digital tools in their professional practice. Digital competence is an important element of the competence of a future doctor, and a condition of his/her competitiveness in the healthcare sector in today's environment [23, 24].

Microsoft Teams is a comprehensive digital environment which enables higher education institutions to communicate, collaborate, and manage the educational process [25]. The platform is in active use in medical universities as a means of supporting medical students and interns doctors in their professional training, in the context of the current development of distance and blended learning. The features of Microsoft Teams can be used to create different learning opportunities, provide interactivity in learning, and establish an integrated digital learning space [26, 27].

The main advantage of Microsoft Teams is the function to conduct video conferences, which allows for the organization of lectures, practical sessions, seminars, clinical cases discussions, consultations in real time. Video conferencing enables direct communication with the students, the organization of professional conversations, the analysis of clinical cases and give immediate feedback. This is especially relevant in medical education, where clinical reasoning and communication skills, as well as discussing medical issues together, are integral parts of the learning process [12, 27, 28]. The platform allows for the presentation of the following: the presentation, multimedia, diagnostic images, video clips of clinical procedures and clinical cases analysis in real-time. Lecturers can share the screen to display teaching materials, laboratory test results, medical images, clinical management algorithms, etc. This helps teachers to picture teaching content and makes it more effective to learn job-related information [29].

One of the key features of Microsoft Teams is Breakout Rooms, which enables students to collaborate in small groups. This method is especially beneficial in medical training when tackling scenario-based problems, analysing clinical cases, creating group projects and simulating professional situations [30]. Small group work helps students learn team communication, decision making, critical thinking, and interpersonal interactions, all of which will be beneficial to the future doctor. Microsoft Teams chats and channels play a key role in organizing the educational process they provide continuous communication between learners. The use of chats enables the discussion of academic issues, giving of advices, exchange of information and keeping students' academic engagement outside the class hours. Channels can be utilised for the structured organisation of the materials for separate subjects or clinical topics or even learning modules, thus facilitating the systematisation of educational materials and access to learning resources.

Microsoft Teams is seamlessly connected to other Microsoft 365 tools and services, greatly enhancing its pedagogical potential. The integration with Microsoft Forms allows for running tests, surveys, and continuous and final assessments of students' knowledge. Electronic tests enable automated grading, immediate feedback on test scores and enable students to self-evaluate. OneNote integration enables students to create digital notes, work collaboratively on learning materials and organise students individual learning activities. The PowerPoint application, when used in the Microsoft Teams environment, will help to present educational content in the lecture room, in practical lessons and also introduce multimedia content into the learning process. Classes are recorded using the Microsoft Stream service, which provides the possibility to improve and edit the teaching content and facilitate distance learning. Recordings of lectures and practical sessions are very important for medical students and interns doctors, as they can edit and revise complicated topics on their own and can enhance their professional knowledge.

Microsoft Teams is one of the main benefits of the system, as it allows you to store all your teaching materials in one place, such as presentations, teaching guidelines, clinical

protocols, test questions and more information resources. This means that students have access to learning material at all times, and it is easier to arrange for students to study independently. The asynchronous format allows students to access the materials when they are most convenient for them, especially for medical interns, who have time constraints for both academic and clinical responsibilities.

One of the key areas of use for Microsoft Teams in medical education is the development of clinical reasoning [31, 32]. The platform allows clinical case analysis, discussion of diagnostic algorithms, case study analysis, and professional simulation. In these sessions students and medical interns can review not only the theoretical material but also use it to analyse and explain particular clinical scenarios, to defend their own point of view and to choose the best course of action. The synchronous presentation of clinical cases facilitates critical thinking, differential diagnosis and sound professional decision making.

Communication skills of the future doctors are also very important [32]. Video conferencing tools, chat rooms, channels and small group work provide the opportunities for active interaction between lecturers and students and within the student and intern groups. In Microsoft Teams, you can conduct group conversations, educational debates, present independent work and collectively analyze clinical situations. This type of learning is conducive to acquiring skills in professional dialogue, argumentation, teamwork, and responsible attitude to joint decision making, important in future medical practice. Microsoft Teams could be a great tool for medical students to use to organise their own study. Students have access to learning materials, teaching guidelines, presentations, video recordings of lessons, test questions and extra resources constantly, allowing students to learn at their own speed. This is especially relevant for medical students and interns doctors who need to revise complex theoretical information in a systematic way, to study clinical protocols on their own, and to gain in-depth understanding of specialist subjects within the field. Individual tasks in digital environment contribute to the sense of responsibility, academic independence and lifelong learning.

A specific field that Microsoft Teams could be used for in education is the creation of digital literacy for future doctors. Digital technologies are being adopted more and more in the healthcare system for keeping medical records, communication, remote consultations, the search for evidence-based medical information, and interdisciplinary collaboration. Using Microsoft Teams enables students and interns doctors to learn how to use the digital learning environment, communicate online, manage information, work with electronic resources and practice professional ethics in the digital space. Therefore, the learning of the platform has not only educational but also professional importance.

Microsoft Teams can be seen as a pedagogical tool that is useful for the holistic development of medical students and interns doctors' professional competencies. It facilitates interactivity of learning process, continuous communication, expands opportunities for independent learning and equips future doctors for professional practice in the era of digital transformation of medicine.

Discussion

Interpretation of results

A review of the existing scientific literature and the experience of using digital educational technologies in higher education institutions shows that MS Teams has significant pedagogical potential in the process of professional training of future doctors. The results obtained will prove that the use of digital platforms in the educational process is not only an effective way to ensure the continuity of education during the period of epidemiological restrictions and martial law, but also a way to change the approach to teaching medical disciplines. The implementation of Microsoft Teams allows you to organize synchronous and asynchronous interaction, promote collaborative learning, provide access to educational materials and provide opportunities for active communication between teachers, students and interns doctors.

Indicate that this platform is a good tool for developing professional skills for future medical practice. The use of video conferencing, shared communications, shared screens, group discussion rooms and integration with Microsoft 365 services, in particular, are important for the development of clinical thinking, critical thinking, communication with a specialist, collaboration and decision-making. The ability to prepare and discuss clinical and professional scenarios with others in a digital learning space allows students and interns doctors to implement theory in a simulated professional environment and acquire practical analytical skills. The results also confirm the achievement of digital competence as one of the most important components of professional competence in healthcare, which is facilitated by the use of Microsoft Teams. The confident use of digital technologies in medicine, such as electronic health records, telemedicine, online communication and evidence-based information retrieval, requires future doctors to work confidently with digital technologies. Therefore, the use of Microsoft Teams in education is not only organizational and methodological, but also has a practical and professional aspect.

At the same time, the effectiveness of the use of digital platforms in medical education depends on several leading factors, such as the level of digital competencies of teachers and students, technological support, methodological materials and skills in adapting pedagogical approaches for medical education in the digital space and blended learning. Thus, the implementation of Microsoft Teams in medical education will be successful only if there is a systematic process, methodological support and continuous improvement of educational practices.

Scientific novelty

The study offers a detailed analysis of the pedagogical potential of the Microsoft Teams environment in the field of higher medical education and postgraduate training of interns. The article summarizes current trends in the use of digital educational technologies and justifies the use of Microsoft Teams as a comprehensive educational environment for the formation of professional competencies of a future doctor. Systematizes the main pedagogical functions of the platform in medical education: structuring synchronous and asynchronous learning, assistance in interactive educational communication, development of clinical thinking based on case discussion, promotion of joint educational activities and improvement of students' self-esteem. Special attention is paid to the importance of using MS Teams in the development of digital competence as part of modern medical professionalism. Also highlights the pedagogical and professional value of Microsoft Teams, taking into account previous studies that primarily considered the technical aspect of distance learning platforms and focused on building competencies for future clinical practice in the context of digital transformation in healthcare and medical education.

Practical significance

The practical value of the work depends on the possibility of using the proposed approaches and methodological principles in organizing the educational process in higher medical educational institutions. The conclusions drawn from the results can be used by teachers, educational administration staff and educational program developers when implementing digital technologies and blended learning in medical education.

Conclusions

The digitalization of higher medical education requires active implementation through the introduction of modern educational technologies, which should ensure the effective organization of the educational process, support constant communication and development of professional skills of future doctors. The analysis shows that Microsoft Teams is a suitable digital educational platform that can be used in medical universities for the implementation of distance education and blended learning. The pedagogical capabilities of Microsoft Teams are related to the ability to organize interactive educational activities, provide access to educational materials in a single digital space, organize collaboration in educational activities and provide

students with the opportunity to work independently. The platform helps students and interns doctors develop clinical thinking, critical thinking, professional communication, teamwork and digital competence. The use of Microsoft Teams in medical education contributes to the flexibility and accessibility of the educational process and opens up opportunities for the modernization of the traditional model of education in accordance with modern educational and professional requirements. However, the effectiveness of digital educational technologies is determined by methodological support and technical means, as well as the digital skills of the participants in the educational process.

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