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Digitalizing medical English learning: challenges and prospects

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Abstract. *English proficiency in medical contexts is essential for medical students and practitioners. Digitalization creates opportunities but presents technical, methodological, and psychological challenges. Current trends include ESP (English for Specific Purposes) approaches, immersive technologies, and microlearning. Effective implementation requires a hybrid learning approach, authentic content, faculty training, and adaptable platforms. For Ukraine, digitalization serves as a strategic tool for European academic integration.*
Keywords: *educational digitalization, medical English, higher education, postgraduate education, immersive technologies, microlearning, adaptive learning.*

Introduction.

The current stage of medical science development is characterized by accelerating internationalization and integration into global scientific networks. English functions as a universal means of professional communication, becoming essential for accessing, critically evaluating, and disseminating scientific knowledge. For medical students, graduate students, postgraduate learners, and practicing physicians, mastering professional English represents not merely a competitive advantage but a fundamental competency without which participating fully in international academic communities becomes impossible.

Developing medical English proficiency proves necessary for numerous tasks: reading and analyzing scientific articles, preparing research publications, drafting abstracts and presentations for international conferences, and effectively interacting with colleagues and patients in multicultural environments. Thus, language education becomes integral to professional development and career advancement for modern medical practitioners.

Recent advances in digital technologies have opened new possibilities for enhancing educational processes. Online platforms, multimedia resources, adaptive learning systems, and immersive technologies enable more flexible, individualized, and practice-oriented English language learning. This proves especially relevant in medical higher and postgraduate education, where achieving high language proficiency must occur despite time constraints and heavy workloads.

However, digitalizing educational processes does not offer a universal solution. It presents various challenges: technical (unequal access to resources and technologies), methodological (a lack of specialized digital materials for medical English), and psychological (digital resistance, "online fatigue"). These challenges require comprehensive analysis and developing strategies for overcoming them, which determines this study's relevance.

This process holds particular significance for Ukraine, where modernizing medical education aims at meeting European quality standards and integrating into international educational and scientific spaces. Significant challenges affecting medical education in Ukraine have been identified, stemming from war-related disruptions such as interruptions in teaching, financial limitations, elevated workloads, and heightened mental stress, all of which impede effective student learning [1, p. 9]. Digitalizing language education has become an important tool for facilitating this integration.

Problem Statement.

Despite the clear benefits of digitalization, a substantial lack of systemic solutions remains for effectively integrating digital tools into English language learning in medical higher and postgraduate education. While digital technologies offer opportunities for enhancing individualized learning, integrating interactive resources, and providing immersive experiences, their implementation in real educational contexts is often fragmented and not fully aligned with curricula and professional standards. Major barriers include technical limitations, such as unequal access to modern platforms and equipment, as well as methodological challenges, including the scarcity of specialized digital resources for medical English and difficulties in embedding digital tools within established classroom practices.

Psychological factors, including faculty resistance, students' preference for traditional learning methods, and digital fatigue, further impede the widespread adoption of innovative approaches. These circumstances underscore the need for a comprehensive analysis of current challenges and the development of effective strategies to overcome barriers, optimize the learning process, and strengthen professional language competencies, ensuring that future medical specialists are fully equipped for international scientific and professional communication.

The article **aims to** comprehensively study the challenges of digitalizing English language learning in medical higher and postgraduate education, including the analysis

of technical, methodological, and psychological obstacles that reduce the effectiveness of digital tools. Furthermore, the research focuses on examining current trends and best practices contributing to the development of professional language competence among students, master's and doctoral candidates, and medical practitioners. Special attention is given to evaluating the potential of hybrid learning models, immersive technologies, and adaptive platforms, as well as to developing strategies for integrating digital resources into the educational process while considering time constraints, workload, and professional requirements.

To achieve the stated objective, the following **methods** were employed in the study:

1. The comparative-analytical method was used for comparing international experience in digitalizing English language learning in medical education with the practices of domestic universities and postgraduate programs.

2. Generalizing pedagogical experience allowed assessing the effectiveness of using digital technologies, hybrid learning models, immersive platforms, and adaptive resources, as well as identifying possibilities for their integration into the educational process.

3. A systematic analysis was conducted to identify the key barriers and factors influencing the effectiveness of digital language learning.

Global Trends in Digitalization of Medical Education.

1. Shifting from General English to ESP (English for Specific Purposes).

In all levels of medical education, there is an increasing focus on medical English. In universities, this involves working with academic and scientific materials, while in postgraduate education, it centers on preparing publications and delivering presentations for international conferences.

2. Using Immersive Technologies.

Simulators, virtual patients, and VR/AR platforms are being integrated into the educational process, supporting the development of both clinical and communicative skills within an English-speaking professional environment.

3. Microlearning and Just-in-Time Learning.

Mobile applications and modular courses enable integrating English language learning into the demanding schedules of students and medical practitioners, allowing for flexibility and personalizing learning.

Challenges and Barriers of Digitalization.

Technical: Uneven access to the internet and modern resources, coupled with high performance requirements of VR/AR technologies. It has been highlighted that the development and implementation of online learning in medical education are often hindered by factors such as limited time, insufficient technical skills, and inadequate infrastructure [2, p. 1].

Methodological: Lacking high-quality specialized digital educational resources for medical English and encountering difficulties integrating digital tools into structured curricula.

Psychological: Experiencing digital resistance among faculty and students, adhering to traditional learning formats, facing digital fatigue, and fearing a reduction in live professional communication.

Prospects.

1. Implementing Hybrid Learning Models involves combining independent work in digital environments with face-to-face and online sessions focused on speaking and writing.

2. Creating Authentic and Specialized Content includes using materials from international medical journals, conferences, and podcasts.

3. Developing Faculty Competence focuses on enhancing digital literacy and methodological skills for effective use of LMS, interactive resources, and AI tools. It has been noted that educators often face challenges due to a lack of specific pedagogical approaches for hybrid formats, even when teaching multiple courses with remote students [3, p. 11].

4. Adopting Adaptive Learning allows analyzing students' and postgraduates' texts and providing targeted feedback on style, grammar, and terminology.

Conclusion.

Digitalizing English language learning in medical higher and postgraduate education is an objective and necessary process. Its effectiveness relies on creating high-quality specialized digital resources, developing faculty competence, and integrating hybrid learning models.

This approach enables personalizing educational trajectories, with digital technologies performing a supportive role while instructors act as mentors and experts in academic communication, preparing future medical professionals and researchers for full integration into the international scientific community. For Ukraine, this process is particularly significant, as digitalizing medical education and advancing English language proficiency both enhance the quality of professional training and strengthen the competitiveness of national medical science within European and global academic communities.

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