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THE EFFICACY OF INTERACTIVE STRATEGIES IN TEACHING ENGLISH MEDICAL TERMINOLOGY TO MEDICAL STUDENTS IN DISTANCE LEARNING ENVIRONMENT

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ЕФЕКТИВНІСТЬ ІНТЕРАКТИВНИХ СТРАТЕГІЙ ВИВЧЕННЯ АНГЛІЙСЬКОЇ МЕДИЧНОЇ ТЕРМІНОЛОГІЇ СТУДЕНТАМИ-МЕДИКАМИ В УМОВАХ ДИСТАНЦІЙНОГО НАВЧАННЯ

Abstract. This article investigates the effectiveness of teaching strategies for learning English medical terminology in the context of distance learning, focusing on interactive online platforms. Distance learning has transformed medical education by providing accessibility and mobility to students worldwide. However, ensuring active student engagement remains a challenge, especially in specialized subjects like English for Specific Purposes (ESP). The study analyzed interactive strategies of English medical terminology by learning medical students, including interactive tests, multimedia presentations, debates, and discussion forums. Data collection involved surveys, continuous feedback, and performance assessment. The results indicate a significant improvement in student engagement, motivation, and understanding due to the implementation of interactive strategies. Discussion forums, multimedia presentations, and gamification have proven valuable tools and approaches to enhance student learning experiences. Future research prospects include studying additional interactive elements and technologies to further improve learning outcomes. Conducting research in this direction is crucial for the development of teaching methodology and enhancement of the distance learning experience in medical education.

Key words: distance learning; medical education; English medical terminology; engagement strategies; multimedia presentations; discussion forums; gamification; instructional design.

Анотація. Ця стаття досліджує ефективність стратегій викладання англійської медичної термінології в умовах дистанційного навчання, зосереджуючись на інтерактивних онлайн-платформах. Дистанційне навчання трансформувало медичну освіту, надаючи доступність та мобільність студентам по всьому світу. Однак забезпечення активної участі студентів у роботі під час занять залишається викликом, особливо у процесі вивчення предметів, таких як англійська мова за професійним спрямуванням в умовах дистанційного навчання. У дослідженні було проаналізовано інтерактивні стратегії вивчення англійської медичної термінології студентами-медиками, а саме: інтерактивні тести, мультимедійні презентації, диспути та форуми для обговорення. Збір даних включав опитування, постійний зворотний зв'язок та оцінку успішності. Результати свідчать про значне покращення залучення студентів, їх мотивації та розуміння завдяки впровадженню інтерактивних стратегій. Форуми для обговорення, мультимедійні презентації, гейміфікація виявилися цінними інструментами та підходами для покращення навчального досвіду студентів. Перспективи подальших досліджень включають вивчення додаткових інтерактивних елементів та технологій для подальшого покращення результатів навчання. Проведення досліджень у цьому напрямку має важливе значення для розвитку методики навчання та покращення досвіду дистанційного навчання в медичній освіті.

Ключові слова: дистанційне навчання; медична освіта; англійська медична термінологія; стратегії залучення; мультимедійні презентації; форуми для обговорення; гейміфікація; методика навчання.

Introduction. In early 2020, the onset of the COVID-19 pandemic, subsequent lockdowns, and the war in 2022 in Ukraine prompted a notable shift in the educational landscape. Educational institutions quickly realized the necessity of adapting to a new reality, where digital learning emerged as a prominent solution. Suddenly, individuals across various sectors found themselves working remotely without prior preparation. This abrupt transition required educators, trainers, and those involved in higher education to access and utilize materials remotely, even if they hadn't created them. They grappled with new challenges, such as effectively communicating despite being geographically close. Worldwide, students were thrust into mandatory online learning environments, necessitating rapid adaptation by

both learners and instructors in the absence of traditional face-to-face lectures. This adaptation included familiarizing themselves with online platforms like Google Meet, Teams, and Zoom. Consequently, the landscape of higher education underwent a profound transformation, transcending local and national boundaries to become a global phenomenon. Despite the availability of traditional methods, certain aspects of online teaching and learning, particularly in subjects reliant on classroom interaction, posed significant challenges for students and instructors alike. Thus, there remains a need for further evaluation and study to assess the effectiveness of various online teaching methods and strategies.

Distance learning has become increasingly prevalent in medical education, offering flexibility and accessibility to learners across various geographical locations. However, ensuring active student engagement remains a critical challenge in this mode of instruction, particularly in specialized subjects such as English for Specific Purposes (ESP). Effective engagement strategies are essential for fostering student participation, motivation, and comprehension in a virtual learning environment.

The aim – to investigate the efficacy of engagement strategies implemented in distance learning for teaching English medical terminology, with a specific focus on interactive online modules.

Theoretical framework. The study was conducted over a semester-long course on English medical terminology delivered through a distance learning platform "Teams". Engagement strategies were designed and implemented in the form of interactive online modules, which incorporated features such as interactive quizzes, multimedia presentations, virtual discussions, and real-world case studies. Data collection methods included pre- and post-course surveys to assess student attitudes and perceptions, continuous feedback collection during module delivery, and performance assessments to evaluate learning outcomes.

Effective engagement strategies for fostering student participation, motivation, and comprehension in the process of learning English medical terminology in a virtual learning environment include interactive quizzes or flashcards, virtual case studies, discussion forums, multimedia presentations, collaborative projects, virtual labs or simulations, gamification, feedback and reflection, interactive online modules, and real-world applications.

The creation of interactive quizzes or flashcards covering medical terms, definitions, and their usage is one of the key engagement strategies in the process of learning English medical terminology in a distance learning environment. The interactive quizzes can be self-paced and provide immediate feedback to enhance comprehension and retention. The example of interactive quizzes in a form of a test design are presented in our University Moodle system. Each topic includes more than 400 test options taken by each student during every lesson. The interactive quizzes in English medical terminology learning during English lessons at medical universities play a crucial role. They help to engage students actively in the learning process. Rather than passively listening to lectures or reading materials, students participate actively by answering questions, which reinforces their understanding of medical terminology. Interactive quizzes provide immediate feedback to students. They can instantly see whether their answers are correct or incorrect, which helps them identify areas of strength and weakness in their knowledge of English medical terminology.

Research suggests that active engagement through quizzes improves information retention. By actively recalling medical terms and concepts in a quiz format, students are more likely to remember them in the long term [3].

Quizzes serve as an effective form of formative assessment, allowing instructors to check students' understanding of English medical terminology throughout the course. This enables instructors to identify areas where students may be struggling and provide additional support as needed.

Interactive quizzes can enhance student motivation. The gamified nature of quizzes, with points, timers, and leaderboards, can make learning English medical terminology more enjoyable and engaging for students. Online platforms often offer interactive quiz tools that allow instructors to create quizzes tailored to the specific learning objectives of the lesson or course. Quizzes can be designed to cover a wide range of topics within English medical terminology, from anatomy and physiology to diseases and treatments. Quizzes can also facilitate peer learning and collaboration. Instructors can incorporate group quizzes or discussion forums where students can discuss answers and learn from each other's perspectives [7].

Therefore, interactive quizzes play a vital role in enhancing English medical terminology learning during English lessons at medical universities by promoting active engagement, providing immediate feedback, improving information retention, assessing learning progress, motivating students, and fostering peer learning.

Virtual clinical case studies is one of the intereactive methods of learning English medical terms. Presented virtual case studies require students to apply medical terminology in real-life scenarios. This hands-on ap-

proach helps students understand how medical terms are used in practice, improving comprehension and motivation.

The potential virtual case studies that could be used for enhancing health care students' engagement in distance learning for English medical terminology are presented in our article. A good example is a development of virtual patient case scenarios where students are presented with a patient's medical history, symptoms, and diagnostic tests. They must then identify and understand the relevant medical terminology associated with the case. Virtual case studies involving medication management, including drug interactions, side effects, and dosage calculations help to learn pharmacology vocabulary. Students can analyze these cases and discuss the relevant medical terminology related to pharmacology. Interactive anatomy and physiology modules where students can explore the anatomy and physiology of different body systems. Integrated quizzes and activities reinforce the understanding and usage of medical terminology related to each system. In our classes we provide virtual diagnostic imaging files (e.g., X-rays, MRIs, CT scans) along with descriptions of the medical conditions they represent. Students can practice interpreting these images and describing their findings using appropriate medical terminology. The development of virtual simulations of common medical procedures (e.g., blood draws, physical examinations, surgical procedures) with step-by-step instructions and terminology explanations is also commonly used in distance learning of medical terms. This allows students to familiarize themselves with medical procedures and associated terminology in a controlled environment. Multidisciplinary team meetings one more relevant step in learning medical terminology. Simulate virtual multidisciplinary team meetings where students role-play different healthcare professionals (e.g., physicians, nurses, pharmacists) discussing patient cases encourage collaborative learning and reinforces medical terminology usage in a clinical context. Our classes include medical chart documentation exercises where students practice writing patient notes using proper medical terminology. Feedback can be provided on their documentation accuracy and terminology usage [2, p. 321].

These virtual case studies can be supplemented with discussion forums, quizzes, and interactive activities to further engage students in the learning process. Additionally, incorporating multimedia elements such as videos, animations, and virtual reality simulations can enhance the immersive learning experience.

The implementation of discussion forums play a crucial role in ESP course, particularly in the context of learning medical terminology in distance education.

We establish regular online discussion forums or chat groups where students can discuss medical terminology concepts, ask questions, and engage in peer-to-peer learning. Encourage active participation by posing thought-provoking questions and facilitating discussions. They provide a platform for students to express their thoughts, ask questions, and engage in discussions related to medical terminology, fostering a deeper understanding of the subject matter. For non-native English speakers studying medical terminology, discussion forums offer a valuable opportunity to practice using English in a professional context. Students can practice writing in English, improve their vocabulary, and learn to communicate effectively using medical terminology. Discussion forums facilitate peer learning, allowing students to learn from each other's perspectives and experiences. Students can share insights, exchange ideas, and collaborate on solving problems related to medical terminology, enhancing their learning outcomes. Students can use discussion forums to seek clarification on challenging concepts or terminology. Instructors and peers can provide explanations, examples, and additional resources to help students better understand the material. Discussion forums promote critical thinking and analytical skills development. Students can engage in discussions that require them to analyze medical terminology in different contexts, evaluate its usage, and apply it to real-world scenarios [1, p. 87].

In a diverse learning environment, discussion forums provide an opportunity for students to gain insights into cultural differences in medical terminology usage. Students from different cultural backgrounds can share their perspectives, helping to broaden everyone's understanding of medical terminology in an international context.

Discussion forums allow students to receive feedback on their contributions from both instructors and peers. This feedback encourages reflection on their understanding of medical terminology and helps them identify areas for improvement.

Discussion forums contribute to the sense of community among students in a distance learning environment. Through discussions, students can connect with their peers, share experiences, and support each other in their learning journey.

Overall, discussion forums serve as a dynamic and interactive platform for learning English medical terminology in a distance education setting, fostering collaboration, communication, and critical thinking skills development among students.

The use of multimedia presentations is an important strategy in the process of ESP studying, particularly when leraning medical terminology.

Multimedia presentations can provide visual representations of medical terms, concepts, and procedures. Images, diagrams, animations, and videos help learners visualize complex medical terminology, enhancing their understanding and retention. They can incorporate interactive elements such as clickable diagrams, quizzes, and simulations. These interactive activities engage learners actively in the learning process, allowing them to apply medical terminology in various contexts and receive immediate feedback. Audio pronunciation of medical terms greatly helps in improving English vocabulary learning. Hearing correct pronunciation is essential for mastering medical terminology. Multimedia presentations can include audio recordings of terms pronounced by native speakers or professionals, helping learners improve their pronunciation and listening skills. These topic audio recordings of terms are prepared and implemented by means of Quizlet online platform.

Multimedia presentations can contextualize medical terminology within real-world healthcare settings. Case studies, patient scenarios, and simulations presented through multimedia provide authentic contexts for learners to understand how medical terminology is used in clinical practice [6, p. 84].

Multimedia presentations can be accessed asynchronously, allowing learners to study at their own pace and review content as needed. Learners can pause, rewind, and replay multimedia presentations to reinforce their understanding of medical terminology. They can be also accessed on various devices, including computers, tablets, and smartphones. This flexibility enables learners to engage with the content anytime, anywhere, making distance learning more convenient and accessible.

Multimedia presentations can accommodate various learning styles and preferences. Learners with different learning modalities (visual, auditory, kinesthetic) can benefit from multimedia presentations that cater to their individual needs, promoting inclusivity in the learning environment [4].

Multimedia presentations are inherently engaging and can stimulate learners' interest in the subject matter. The dynamic nature of multimedia, coupled with interactive elements and real-world examples, motivates learners to actively participate in the learning process and stay engaged with the material.

Thus, multimedia presentations are valuable tools for teaching English medical terminology in distance learning settings. They provide visual and interactive learning experiences, facilitate self-paced learning, accommodate diverse learning styles, and enhance learner engagement and motivation.

Gamification, the integration of game design elements into non-game contexts, can significantly enhance the learning experience for ESP learners studying medical terminology in a distance learning environment. It may include the introduction of gamified elements such as leaderboard rankings, badges, and rewards for completing medical terminology tasks or achieving milestones. Gamification can enhance motivation and engagement by adding a competitive and enjoyable aspect to learning. It makes learning more engaging and enjoyable by incorporating elements such as challenges, competitions, rewards, and progress tracking. This motivates learners to actively participate in the learning process and stay focused on mastering medical terminology [5, p. 13].

Gamification encourages active participation and interactivity through various activities, including quizzes, puzzles, simulations, and role-playing games. Learners can apply medical terminology in realistic scenarios, reinforcing their understanding and retention of the material. It can also strengthen collaboration and social interaction among learners through features such as leaderboards, multiplayer challenges, and discussion forums. Learners can engage in peer-to-peer learning, share insights, and support each other in mastering medical terminology [5, p. 14].

Gamified learning platforms often provide immediate feedback on learners' performance, allowing them to assess their progress and identify areas for improvement. This real-time feedback helps learners correct mistakes and reinforce correct usage of medical terminology. These learning platforms can adapt to each learner's pace and preferences, offering personalized learning paths based on individual progress and performance. Learners can choose activities and challenges that match their learning objectives and interests, making the learning experience more tailored and effective.

Gamification allows learners to set goals, track their progress, and earn rewards for completing tasks and mastering medical terminology. This sense of achievement and progression motivates learners to continue their learning journey and strive for success.

By transforming learning into a game-like experience, gamification increases learners' motivation and commitment to studying medical terminology. This sustained engagement fosters long-term retention of knowledge and skills, ensuring that learners can ef-

fectively apply medical terminology in real-world contexts [8].

Gamification can simulate real-world healthcare scenarios where learners must use medical terminology to solve problems and make decisions. This contextualized learning approach helps learners understand the practical application of medical terminology in clinical settings.

Therefore, gamification enhances the ESP learning experience by increasing engagement, providing interactive learning opportunities, offering immediate feedback, fostering social interaction, personalizing learning paths, promoting goal setting and achievement, facilitating long-term retention, and simulating real-world scenarios. By leveraging gamification, distance learning platforms can create dynamic and effective environments for mastering English medical terminology.

We provide regular feedback on student progress and encourage self-reflection on their understanding of medical terminology concepts as, on our opinion, constructive feedback helps students identify areas for improvement and fosters continuous learning and engagement.

Interactive modules with multimedia content, interactive exercises, and self-assessment quizzes cater to diverse learning preferences, promote active learning, and enhance comprehension through hands-on practice.

Our course is to connect medical terminology learning to real-world applications by incorporating examples from medical literature, patient case studies, or medical records. Demonstrating the relevance of medical terminology in clinical practice fosters motivation and engagement among students.

Various kinds of online vocabulary tools and activities are available for language learners, as outlined in the literature on effective practices in language vocabulary teaching and learning. These include mobile applications like Vocup and Quizlet, which allow users to create vocabulary flashcards and games. Additionally, platforms like Quizizz, Duolingo, and Kahoot offer interactive learning experiences through games, quizzes, and activities tailored to improve vocabulary acquisition. Studies have shown the effectiveness of these tools in enhancing vocabulary learning outcomes, particularly in remote or distance learning environments [2].

Analysis of survey data revealed a significant improvement in student engagement and satisfaction with the course following the implementation of interactive online modules. Students reported increased motivation to participate in discussions, enhanced comprehension of medical terminology concepts, and a greater sense of connection with their peers and instructors. Performance assessments indicated higher retention of key terminology and improved performance on assessments compared to traditional instructional methods.

The findings suggest that engagement strategies incorporating interactive online modules can effectively promote student engagement and learning outcomes in distance learning environments for English medical terminology. The interactive nature of the modules facilitated active participation, stimulated critical thinking, and provided opportunities for collaborative learning among students. These findings have implications for instructional design in distance education, highlighting the importance of incorporating interactive elements to enhance student engagement and comprehension in specialized subjects.

Conclusions and Prospects for Research. The conclusion of the research article emphasizes the effectiveness of engagement strategies, particularly interactive online modules, in promoting student engagement and improving learning outcomes in distance learning environments for English medical terminology. The study revealed that incorporating interactive elements such as quizzes, virtual case studies, discussion forums, multimedia presentations, and gamification significantly enhanced student motivation, comprehension, and retention of medical terminology concepts. Analysis of survey data indicated a notable improvement in student engagement and satisfaction with the course following the implementation of these interactive strategies.

The research findings underscore the importance of active student participation, critical thinking, and collaborative learning facilitated by interactive online modules. These findings have implications for instructional design in distance education, emphasizing the necessity of incorporating interactive elements to address the challenge of ensuring active student engagement, particularly in specialized subjects like ESP. By leveraging interactive strategies, distance learning platforms can create dynamic and effective environments for mastering English medical terminology, thereby enhancing student engagement and comprehension.

Prospects for further research in this area could include exploring additional interactive elements and innovative technologies to enhance student engagement and learning outcomes in distance learning environments for English medical terminology. Future studies could investigate the long-term effects of interactive strategies on student retention of medical terminology knowledge and their ability to apply it in clinical practice. Additionally, research could focus on comparing

the effectiveness of different engagement strategies and identifying best practices for designing interactive online modules tailored to the specific needs of medical terminology learners in distance education settings. Overall, continued research in this field is essential for advancing instructional design and improving the quality of distance learning experiences for medical students.

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