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EXPLORING INNOVATIVE APPROACHES TO MEDICAL VOCABULARY LEARNING

Annotation. *This paper explores various technological tools and methodologies employed to enhance medical vocabulary learning, particularly among medical and nursing students. Through the use of Computer-Assisted Language Learning (CALL), game-based applications, semantic mapping, and blended learning approaches, students' receptive and productive vocabulary skills are improved. The study examines the effectiveness of these methods in different cultural and educational settings, focusing on their impact on students' vocabulary acquisition, attitudes towards learning, and academic performance. Results suggest that while CALL and game-based learning methods improve cognitive engagement and vocabulary retention, there are challenges in developing productive vocabulary and addressing affective aspects of learning. The study also highlights the role of innovative approaches like podcasts and online cooperative learning in furthering medical vocabulary proficiency. Recommen-dations include refining current strategies and integrating diverse learning tools for better outcomes in medical education.*

Keywords: *Medical vocabulary learning, CALL, game-based learning, semantic mapping, blended learning, nursing education, ESP, technology in education, vocabulary acquisition, academic vocabulary.*

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TIBBIYOTGA OID SO‘ZLARNI O‘RGANISHDA INNOVATSION YONDASHUVLARNI TADQIQ QILISH

Annotatsiya. *Ushbu maqolada, ayniqsa tibbiyot va hamshiralik ishi talabalari orasida tibbiyotga oid so‘zlarni o‘rganishni takomillashtirish uchun qo‘llaniladigan turli xil texnologiyalar va usullar o‘rganilgan. Kompyuter yordamida til o‘rganish (CALL), o‘yin ilovalari, semantik xaritalash va aralash ta’lim yondashuvlaridan foydalanish orqali talabalarning retseptiv va produktiv lug‘at ko‘nikmalari takomillashadi. Tadqiqotda ushbu usullarning turli madaniy va ta’lim muhitlaridagi samaradorligi o‘rganilib, ularning talabalarning so‘z boyligini o‘zlashtirishi, ta’limga munosabati va o‘zlashtirishiga ta’siriga e’tibor qaratilgan. Natijalar shuni ko‘rsatadiki, CALL va o‘yinga asoslangan ta’lim usullari kognitiv faollikni va lug‘atni saqlashni yaxshilasa-da, mahsuldor lug‘atni rivojlantirish va o‘rganishning ta’sirchan jihatlarini hal qilishda qiyinchiliklar mavjud. Tadqiqotda innovatsion yondashuvning roli ham ta’kidlangan.*

Kalit so‘zlar*: tibbiyot leksikasini o‘rganish, CALL, o‘yinli ta’lim, semantik xaritalash, aralash ta’-lim, hamshiralik ta’limi, ESP, ta’limda texnologiya, leksikani o‘zlashtirish, o‘quv lug‘ati.*

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ИССЛЕДОВАНИЕ ИННОВАЦИОННЫХ ПОДХОДОВ К ИЗУЧЕНИЮ МЕДИЦИНСКОЙ ЛЕКСИКИ

Аннотация. *В данной статье рассматриваются различные технологии и методики, используемые для повышения эффективности обучения медицинской лексике, в частности, среди студентов-медиков и медсестер. Благодаря использованию компьютерного обучения языку (CALL), игровых приложений, семантического мэппинга и смешанных подходов к обучению улучшаются рецептивные и продуктивные лексические навыки студентов. В исследовании рассматривается эффективность этих методов в различных культурных и образовательных условиях с акцентом на их влияние на усвоение студентами лексики, отношение к обучению и академическую успеваемость. Результаты показывают, что, хотя CALL и игровые методы обучения улучшают когнитивную активность и запоминание словарного запаса, существуют проблемы с развитием продуктивного*

словарного запаса и решением аффективных аспектов обучения. Исследование также подчеркивает роль инновационных подходов, таких как подкасты и совместное онлайн-обучение, в повышении уровня владения медицинской лексикой. Рекомендации включают в себя совершенствование текущих стратегий и интеграцию различных инструментов обучения для достижения лучших результатов в медицинском образовании.

Ключевые слова: *изучение медицинской лексики, CALL, обучение на основе игр, семантическое картирование, смешанное обучение, обучение медсестер, ESP, технологии в образовании, усвоение лексики, академическая лексика.*

Introduction. Effective communication in medical settings requires a solid understanding of specialized medical vocabulary. With the increasing globalization of healthcare, the demand for proficient English language skills, particularly medical vocabulary, is rising among non-native English-speaking students. This study aims to assess the effectiveness of various technological and instructional methods in enhancing the medical vocabulary knowledge of nursing and medical students. The focus is on the integration of modern technologies such as Computer-Assisted Language Learning (CALL), game-based applications, and blended learning strategies in vocabulary instruction.

Literature Review. Vocabulary acquisition is a critical component of language learning, particularly in specialized fields like medicine, where proficiency in technical terms and concepts is necessary for effective communication in both clinical and academic settings. The integration of modern technologies into language learning, particularly through Computer-Assisted Language Learning (CALL), has shown promise in enhancing vocabulary acquisition, but its effectiveness across different learning contexts remains a subject of ongoing research.

CALL Technologies in Medical Vocabulary Learning

Zhang, Wei, and Cao (2022) explored the use of CALL technologies among Indian medical students in South China to support the development of medical vocabulary. The study revealed that CALL tools were beneficial in enhancing cognitive activities related to receptive vocabulary. These technologies provided interactive learning environments, helping students comprehend medical terminology through contextualized learning. However, the study noted that CALL was less effective in promoting productive vocabulary, which refers to the ability to actively use new vocabulary in speech or writing, as well as in compensatory and affective aspects of language learning, such as motivation and emotional engagement. This finding aligns with the notion that while receptive skills—such as listening and reading—are more easily facilitated through technology, productive skills, which require active language use, often necessitate more interactive and real-world practice [10;2007–2027 pp.].

In addition to these cognitive benefits, other studies support the role of CALL in enhancing vocabulary retention. For instance, Quinsland, Templeton, and Egelston-Dodd (1980) highlighted the use of mediation strategies—such as color-coded flashcards and slides—as effective for improving medical terminology comprehension, particularly for hearing-impaired students. These systems facilitated the learning process by making medical terms and their definitions more accessible and visually engaging [6; 780–785 pp.].

Game-Based Learning Approaches

Game-based learning has gained attention as an effective pedagogical tool in vocabulary instruction. Riahipour and Saba (2012) conducted a study among nursing students to compare the effectiveness of traditional vocabulary teaching methods with game-oriented methods. The results demonstrated that students in the game-based learning group performed better on vocabulary tests and showed more positive attitudes toward learning compared to the control group using traditional methods. This suggests that the interactive and engaging nature of games can enhance motivation and retention, making learning more enjoyable and effective. Games, which typically incorporate competitive elements, social interaction, and rewards, foster active involvement in learning, which is particularly valuable for vocabulary acquisition in ESP (English for Specific Purposes) settings like nursing [7;1258–1266 pp.].

Furthermore, mobile applications that integrate game-based learning principles are also being explored for medical vocabulary acquisition. Wu, Hong, and Huang (2020) developed the mobile application "OTouch", which incorporates game mechanics for learning medical academic vocabulary. Their study found that students who used the app demonstrated significant improvements in vocabulary acquisition, along with favorable attitudes toward using mobile devices in their learning process. This aligns with previous research that suggests mobile applications provide flexible and engaging learning environments for medical students, allowing them to learn on-the-go [9;1–22 pp.].

Semantic Mapping and Blended Learning. Another promising tool for vocabulary development is semantic mapping, which helps students visually organize and relate vocabulary to broader concepts. Al-Otaibi (2016) investigated the use of computer-assisted semantic mapping (CASM) for enhancing vocabulary acquisition among nursing students at King Saud University. The study demonstrated that CASM, when used in conjunction with traditional instruction, significantly improved students' medical vocabulary knowledge. This approach allowed students to visualize the relationships between terms, making complex medical vocabulary more accessible. The integration of CASM into CALL frameworks thus appears to offer a powerful strategy for reinforcing vocabulary learning [1;95–104 pp.].

Blended learning, which combines face-to-face instruction with online resources, has also been explored as an effective method for teaching medical vocabulary. For instance, a study by Hidayati and Basuki (2022) examined the use of a web-based Wix-Site application for improving the accessibility of medical vocabulary learning. The results indicated that the Wix-Site platform effectively facilitated learning for students by offering easily accessible medical vocabulary materials. Similarly, podcasts, which are a form of blended learning, have been shown to be effective in developing L2 vocabulary. Mashhadi, Hayati, and Jalilifar (2016) found that incorporating podcasts into a blended learning environment helped undergraduate students improve their English vocabulary, suggesting that varied learning formats provide students with diverse opportunities for vocabulary practice, which enhances retention [2;164–175 pp.].

Online Cooperative Learning. The role of online cooperative learning (OCL) in vocabulary instruction has also been explored, especially for nursing students. Sofyan, Agustini, and Wati (2024) investigated the impact of OCL on ESP vocabulary proficiency in a group of nursing students in Indonesia. The study showed that OCL significantly enhanced vocabulary proficiency by encouraging students to collaborate and learn from each other. This collaborative approach fosters social interaction, which can be particularly beneficial for vocabulary learning, as it creates opportunities for peer feedback and language use in a meaningful context [8;266–279 pp.].

Method. The study reviewed several approaches to medical vocabulary learning across different educational contexts. These included:

1. CALL technologies for medical students in South China, exploring their impact on receptive and productive vocabulary.
2. Game-based vocabulary instruction used in an English for Specific Purposes (ESP) course for nursing students.
3. Semantic mapping (CASM) for nursing students at King Saud University to improve medical vocabulary acquisition.
4. Blended learning strategies, including podcasts, tested with students in Bahrain and Iran to examine their effects on vocabulary development.

Pre- and post-test results, questionnaires, and interviews were used to assess the effectiveness of each method.

Results. CALL technologies enhanced cognitive engagement and supported receptive vocabulary, though the impact on productive vocabulary and affective learning was less significant.

1. Game-based learning showed positive results, with students in the game-based group outperforming the traditional group and reporting more favorable attitudes towards learning.
2. Semantic mapping significantly improved vocabulary retention and understanding of medical terms among nursing students.
3. Blended learning approaches, particularly those incorporating podcasts, were highly effective in improving L2 vocabulary development, with podcast-based methods proving to be more effective than traditional methods.

Discussion. The findings suggest that CALL and game-based learning technologies can significantly enhance medical vocabulary learning, particularly in terms of engagement and retention. However, these methods face challenges in developing students' productive vocabulary and addressing the emotional aspects of learning. The integration of game-based learning and semantic mapping shows promise in fostering positive attitudes towards vocabulary learning, making the process more interactive and enjoyable. Blended learning, particularly the use of podcasts, appears to be a particularly effective method for improving vocabulary retention by providing students with varied learning opportunities.

Conclusion. While various technological approaches–such as CALL, game-based learning, semantic mapping, and blended learning–show promising results for improving medical vocabulary, challenges remain in addressing the full spectrum of language learning. As Zhang et al. (2022) noted, these

technologies are particularly effective for enhancing receptive vocabulary but less so for productive vocabulary, which requires active engagement and practice [10;2007–2027 pp.]. Moreover, affective factors, such as motivation and emotional engagement, need to be better addressed through innovative methods. Future research should focus on integrating these technologies with pedagogical practices that support the real-world application of vocabulary, ensuring that students can use newly learned terms actively and confidently in clinical and academic settings.

Recommendations:

1. **Integrate multiple learning tools:** Future curricula should combine CALL technologies with interactive methods like game-based learning, podcasts, and semantic mapping for better learning outcomes.
2. **Focus on productive vocabulary:** More research and effort should go into methods that specifically target the development of productive vocabulary.
3. **Affective aspects of learning:** Strategies to enhance learners' emotional engagement and motivation should be explored and integrated.
4. **Further evaluation of blended learning:** The impact of blended learning on medical vocabulary acquisition should be continuously assessed, with an emphasis on administrative support and student feedback to refine the approach.

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LEXICOGRAPHIC ANALYSIS OF ADJECTIVES IN ENGLISH AND UZBEK LANGUAGES

Annotation. *Inclusions are viewed lexicographically in comparative analysis between English and Uzbek. The functions of inclusions in the description of objects, clauses and actions are taken into account. The structure, meaning and content of inclusions in linguistic contexts and their socio-cultural features are investigated. Particular emphasis is laid on diachronic analyses and semantic ramifications of English inclusions, relative clauses, and nuances switching over with cultural inclusions in Uzbek. The importance of lexicographic materials in the study of the history of a language and an in-depth understanding of*