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**XXXV INTERNATIONAL
SCIENTIFIC AND PRACTICAL
CONFERENCE
«Modern Scientific Research
is the Engine of Technical
Progress»**

**August 21-23, 2024
Karlovy Vary,
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SECTION: MEDICINE

Коробкова І.В., Морозова Н.С., Попов О.О., Лях С.І.
ПРО ЗМІНУ СПЕКТРУ ЕТІОЛОГІЧНОЇ МІКРОФЛОРИ ПРИ
УРОГЕНІТАЛЬНІЙ ПАТОЛОГІЇ..... 83

Сосонна Л.О.
СПІВСТАВЛЕННЯ ІСНУЮЧИХ КРАНІОТИПІВ ЗА
РЕЗУЛЬТАТАМИ ДОСЛІДЖЕНЬ ЧЕРЕПА НА КОМП'ЮТЕРНОМУ
ТОМОГРАФІ..... 85

SECTION: PEDAGOGY, PHILOLOGY AND LINGUISTICS

Грітченко Т.
ОСОБЛИВОСТІ ДІЯЛЬНІСНОГО ПІДХОДУ У ПОБУДОВІ
ОСВІТНЬОГО ПРОЦЕСУ ПОЧАТКОВОЇ ШКОЛИ..... 86

Ігнатенко Н.В.
ПРОБЛЕМА ТРАНСФОРМАЦІЇ ВІТЧИЗНЯНОЇ ТЕОРІЇ ТА
МЕТОДИКИ НАВЧАННЯ ІСТОРІЇ В ШКОЛІ У
НАУКОВО-МЕТОДИЧНИХ ПРАЦЯХ 1991-1996 РР..... 88

Ковтун Л., Ковтун С.
ГЕНДЕРНІ АСПЕКТИ В ВИЩІЙ МЕДИЧНІЙ ОСВІТІ..... 93

Levitska A.I.
GAMIFICATION AND ARTIFICIAL INTELLIGENCE IN MEDICAL
ENGLISH EDUCATION: NEW APPROACHES AND METHODS..... 96

SECTION: PHILOSOPHY

Melyakova Yu.
RETORYKA EKONOMICZNA W KULTURZE PROSUMERYZMU..... 102

SECTION: PHYSICAL AND MATHEMATICAL SCIENCES

Крайниченко А.С., Скіцка М.В.
ОГЛЯД МЕТОДІВ ДОСЛІДЖЕННЯ КРУГОВИХ ТРІЩИН В
ТРАНСЕРСАЛЬНО-ІЗОТРОПНИХ МАТЕРІАЛАХ..... 108

Воева А.
ON A CLASS OF NONSTATIONARY CURVES IN HILBERT
SPACES..... 111

досвіду, що може вплинути на якість навчання і впровадження гендерної рівності в освітній процес.

Таким чином, забезпечення гендерного балансу в освітніх програмах допомагає створити більш інклюзивне середовище, де всі здобувачі можуть досягти успіху і реалізувати свій потенціал у медичній сфері.

Підбиваючи підсумки, можна стверджувати, що медична галузь не є гендерно нейтральною, оскільки і жінки, і чоловіки стикаються з різними викликами в процесі здобуття медичних знань і їх подальшого впровадження в практику. Хоча формально всі здобувачі мають рівний доступ до медичної освіти, насправді умови і можливості можуть значно варіюватися в залежності від статі.

Щоб забезпечити рівність у медичній освіті і практиці, необхідно активно працювати над усуненням гендерних бар'єрів і стереотипів. Це включає створення умов для рівного доступу до всіх спеціалізацій, забезпечення підтримки і менторства для здобувачів обох статей, а також впровадження програм, що сприяють розвитку гендерної чутливості і рівності. Важливо також проводити моніторинг і оцінку гендерних аспектів в освіті та професійній діяльності, щоб забезпечити справедливі умови для всіх медичних працівників, незалежно від їх статі.

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GAMIFICATION AND ARTIFICIAL INTELLIGENCE IN MEDICAL ENGLISH EDUCATION: NEW APPROACHES AND METHODS

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Modern technologies have a significant impact on teaching and learning methods, especially in the field of medical education. With the growing popularity of gamification and artificial intelligence (AI), the study of medical English is taking on new, more interactive forms. These innovations help students not only improve their

language skills but also develop critical thinking, which is necessary for the effective use of language in clinical practice.

Gamification in Education

Gamification, or the use of game elements in the educational process, has long been established as an effective method for motivating students. It includes elements such as points, levels, badges, and competitions, which stimulate active participation and increase interest in learning. In the context of learning medical English, gamification helps create a dynamic environment where students can learn through play.

Educational platforms implement various forms of gamification to enhance the effectiveness of learning medical English. For example, they offer students the opportunity to participate in interactive quizzes and simulations where learners must diagnose virtual patients using medical terminology in English. These simulations require students to apply their knowledge in conditions close to real clinical situations, which helps strengthen their understanding and confidence in using the language.

The application of gamification allows students to learn terms such as "anaplastic carcinoma," "idiopathic thrombocytopenic purpura," and "acquired immunodeficiency syndrome" through repetitive gaming tasks, making learning less stressful and more enjoyable. These game elements support active learning as students strive to earn points and achievements while progressing through levels of complexity.

Moreover, gamification fosters critical thinking and analytical skills by encouraging students to make informed decisions and use medical English in the process of diagnosis and treatment. For instance, in gaming scenarios, students may face the challenge of choosing between several possible diagnoses based on a patient's symptoms, which enhances their analysis and decision-making skills.

As a result, this approach not only improves language proficiency but also contributes to the development of communication skills essential for working in the medical field, where clarity and precision of language are key factors for successful practice. Gamification enables future doctors and medical specialists to master complex terminology and build confidence in communicating in English, which is an important component of their professional training.

Artificial Intelligence in Education

Artificial intelligence opens new opportunities for personalized learning and the adaptation of educational programs to meet the individual needs of students. In medical education, AI enables the creation of a more effective and targeted learning environment that takes into account the unique requirements of each learner. By using AI, educational platforms can analyze each student's progress, evaluating factors such as the speed of material acquisition, language proficiency level, and preferred learning methods. Based on this data, AI can offer tasks that match the student's level and interests, thus creating a more individualized approach to learning.

For example, AI can monitor which topics pose the greatest challenges for a student and offer additional materials or exercises to help master them. If a student struggles with certain terminology, such as "hypertrophic cardiomyopathy" or "interstitial pneumonia," AI can provide specialized modules that include explanations, usage examples, and contextual exercises. This allows students to study medical

English more effectively, focusing on aspects that require more time and effort, thereby significantly increasing learning efficiency.

Moreover, AI can be used to develop interactive chatbots that act as virtual tutors, helping students practice medical terminology and improve their communication skills in English. These chatbots can simulate real clinical situations, ask questions, and provide feedback in real-time. For example, a student can interact with a chatbot to discuss symptoms and possible diagnoses of a virtual patient, enhancing skills in medical interviewing and consultation.

Thanks to the use of machine learning and natural language processing, chatbots can adapt to the communication style and knowledge level of the student, providing personalized recommendations and correcting errors. This creates a safe and controlled learning environment where students can practice their skills without fear of making mistakes, which enhances confidence and readiness for real professional challenges.

The integration of artificial intelligence into the process of learning medical English not only optimizes education but also prepares students for the effective application of the language in clinical practice, ensuring a high level of preparedness and adaptability in the rapidly changing world of medicine.

Synergy of Gamification and Artificial Intelligence

The combination of gamification and artificial intelligence provides unique opportunities for creating more effective and engaging educational programs, especially in the context of learning medical English. By merging game elements with adaptive AI technologies, it is possible to develop personalized learning pathways that not only maintain student interest but also foster their deep immersion in the subject matter.

With the implementation of gamified platforms, students can participate in interactive "quests," where their task is to solve various medical challenges using the English language. For instance, they might encounter clinical scenarios that require diagnosing and choosing appropriate treatments for virtual patients. This can involve tasks such as interpreting laboratory test results, identifying symptoms, and selecting appropriate medical terminology to describe patient conditions.

AI plays a crucial role in this process by analyzing each student's progress and adjusting the complexity of tasks according to their individual needs. For example, if a student quickly and successfully completes tasks, AI can propose more challenging scenarios involving rare diseases or complex clinical situations. Conversely, if a student struggles, the system can offer additional explanations, hints, or simpler tasks for review and consolidation.

Furthermore, AI provides continuous feedback, helping students become aware of their mistakes and progress. For example, the system can point out incorrectly used terms or suggest alternative approaches to solving a problem. This allows students to independently adjust their learning strategies and achieve better results.

Thus, the integration of gamification and AI into the educational process not only motivates students to learn medical English but also boosts their confidence in applying the language in clinical practice. This approach contributes to the creation of a more interactive and enjoyable learning environment, where education becomes not only beneficial but also an engaging experience.

Advantages and Challenges

While gamification and artificial intelligence open new horizons in education, they also present certain challenges that must be overcome for successful integration. One of the primary issues is incorporating new technologies into existing curricula and ensuring their accessibility for all students, regardless of their technical capabilities and level of preparation. This requires significant resources and time for the development and adaptation of educational materials, as well as training for teachers and students on the effective use of these tools.

The implementation of gamification and AI also raises questions of ethics and data privacy. Since educational platforms collect and analyze large amounts of student data, it is important to ensure the protection of personal information and compliance with regulatory requirements. This includes developing transparent privacy policies and using advanced encryption and data protection methods.

Despite these challenges, the potential of gamification and AI to improve the quality of education is hard to overestimate. These technologies allow for the creation of a more personalized and adaptive approach to learning that takes into account the individual needs of each student. This contributes to a deeper understanding of medical English and makes the learning process more engaging and effective.

Gamification and AI can also encourage students to participate more actively in the learning process, enhancing their motivation and engagement. Game elements make learning fun and interactive, while AI provides the feedback and support necessary for success.

In the future, we can expect further development and implementation of these approaches in educational programs, which will help prepare highly qualified medical professionals ready to face the challenges of the modern world. This will allow educational institutions to prepare students for professional activities more effectively and maintain high educational standards.

Practical Recommendations for Implementing AI and Gamification

1. Define Educational Goals:

- Clearly define the objectives you aim to achieve with AI and gamification. This could include improving language skills, increasing student motivation, or developing critical thinking.

- Ensure that the chosen technologies align with the curriculum and help achieve the set goals.

2. Select Appropriate Platforms and Tools:

- Explore available educational platforms that support gamification and AI. Evaluate their functionality, ease of use, and integration capabilities with existing systems at your institution.

- Popular platforms include Kahoot! and Quizizz for gamification, and adaptive learning systems like DreamBox or Smart Sparrow for AI applications.

3. Adapt Educational Materials:

- Develop or adapt existing educational materials to incorporate game elements and AI capabilities. Use scenarios, quizzes, and simulations to make learning more interactive and engaging.

- Ensure that the materials provide clear instructions and feedback so students can easily navigate the tasks.

4. Personalize Learning:

- Use AI to analyze student progress and tailor content to their individual needs. This may include automatically adjusting task difficulty or providing additional resources for mastering challenging topics.

- Regularly update student performance data and use it to adjust the curriculum.

5. Train Educators:

- Organize workshops and seminars for educators to help them master new technologies and integrate them into their teaching practices.

- Foster the exchange of experiences and best practices among faculty to support the effective use of gamification and AI.

6. Assessment and Feedback:

- Regularly assess the effectiveness of gamification and AI implementation in the learning process. Gather feedback from students and teachers to identify strengths and weaknesses of the methods used.

- Use the collected data to improve educational programs and achieve better learning outcomes.

7. Ethics and Privacy:

- Ensure the protection of student data by adhering to privacy and security standards. Inform students about how their information will be used and how it may impact their learning.

- Develop a data usage policy and ensure its adherence in educational practice.

8. Integration into the Learning Process:

- Gradually integrate elements of gamification and AI into the learning process, starting with pilot projects. This will allow you to evaluate the effectiveness of the methods and adjust approaches as needed.

- Consider combining traditional teaching methods with innovative technologies to achieve the best results.

By following these recommendations, educators can successfully integrate AI and gamification into the learning process, creating a more interactive and personalized educational environment that fosters active learning and the development of necessary skills in students.

Conclusion. Gamification and artificial intelligence are powerful tools for teaching medical English that not only enhance students' language skills but also significantly increase their motivation and engagement in the educational process. These innovations create a more dynamic and interactive learning environment where students can actively apply their knowledge and develop the skills needed for their future professional activities.

The use of game elements in education helps retain students' attention and encourages more active participation. By engaging students in game scenarios such as quests and simulations, gamification makes the process of learning medical terminology more enjoyable and memorable. This allows students not only to master complex terms but also to confidently apply them in the context of clinical practice.

Artificial intelligence, on the other hand, provides a personalized approach to learning by analyzing each student's progress and tailoring assignments to their individual needs. This leads to more effective mastery of the material and allows students to focus on aspects that require additional attention and practice. AI also provides real-time feedback, helping students correct their mistakes and improve their skills.

These technologies open up new possibilities for more efficient and personalized learning, which is an important step in preparing future medical professionals. In the context of globalization and the rapid development of medical science, proficiency in medical English is becoming an integral part of professional competence. Gamification and AI help students not only to master the language but also to develop the critical thinking skills necessary for a successful career in medicine.

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