UDC: 378.147:004

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ВИКОРИСТАННЯ ГЕЙМІФІКАЦІЇ В ОСВІТІ

Анотація. Стаття розглядає феномен гейміфікації в освіті, який викликає значний інтерес серед науковців та практиків завдяки своєму потенціалу для покращення навчального процесу та його результатів. В огляді згадуються ключові дослідники, такі як Карл Капп, Юхо Хамарі та Себастьян Детердінг, а також інші вчені, що вивчають вплив гейміфікації на мотивацію, залученість та успішність студентів.

Попри зростаючу популярність використання гейміфікації в освіті, аналіз іноземних публікацій виявляє брак розроблених методик та практичних рекомендацій щодо організації навчального процесу з її застосуванням.

У статті представлено огляд історії розвитку гейміфікації, починаючи з початку XX століття та охоплюючи ключові події, терміни та визначення, що сформували сучасне розуміння цього поняття в контексті освіти та навчання. Переглядаються історичні передумови виникнення гейміфікації, її розвиток та основні підходи до реалізації в навчальному середовищі. Розглядаються різні підходи до використання ігрових елементів для підвищення ефективності навчання та залучення студентів.

У статті представлено огляд досліджень провідних вчених у цій галузі та окреслено переваги гейміфікованого навчання — покращення критичного мислення, колаборації, цифрової грамотності та позитивного ставлення до навчання.

Розглядаються етапи впровадження гейміфікації у навчальний процес, та елементи гри. У статті зазначається, що ефективне застосування гейміфікації у навчанні, викладанні та підготовці може значно підвищити мотивацію студентів, що призведе до концентрації уваги студентів та задоволення. Але ефективне впровадження гейміфікації в електронне навчання потребує добре розробленої стратегії, яка починається з глибокого аналізу існуючого середовища і доступного програмного забезпечення. Тому у статті представлені основні етапи цієї стратегії. Представлені також елементи гри, які будуть частиною програми гейміфікації на початковому етапі планування.

Ключові слова: гейміфікація, елементи гейміфікації, етапи гейміфікації, електронне навчання.

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USE OF GAMIFICATION IN EDUCATION

Abstract. The article examines the phenomenon of gamification in education, which has garnered significant interest among scientists and practitioners due to its potential to enhance the learning process and its outcomes. The review mentions key researchers such as Karl Kapp, Juho Hamari, and Sebastian Deterding, as well as other scholars who study the impact of gamification on students motivation, engagement, and academic performance.

Despite the increasing popularity of using gamification in education, an analysis of foreign publications reveals a lack of developed methodologies and practical recommendations for organizing the learning process with its application.

The article presents an overview of the history of gamification's development, starting from the beginning of the 20th century and encompassing key events, terms, and definitions that have shaped the modern understanding of this concept in the context of education and training. It reviews the historical prerequisites for the emergence of gamification, its evolution, and the main approaches to its implementation in the learning environment. Various approaches to using game elements to enhance learning effectiveness and student engagement are examined.

The article presents a review of research by leading scientists in this field and outlines the benefits of gamified learning—improved critical thinking, collaboration, digital literacy, and a positive attitude towards learning.

The article examines the stages of implementing gamification in the learning process, as well as game elements. It notes that the effective application of gamification in learning, teaching, and training can significantly increase student motivation, leading to improved focus and satisfaction. [1] However, the effective implementation of gamification in e-learning requires a well-developed strategy that begins with a thorough analysis of the existing environment and available software. Therefore, the article presents the main stages of this strategy. Game elements that will be part of the gamification program at the initial planning stage are also presented.

Keywords: gamification, gamification elements, gamification stages, e-learning.

Problem Setting. In the modern educational space, the integration of gaming technologies is becoming increasingly relevant because of their ability to increase the involvement of applicants for higher education, motivation and learning efficiency. Traditional teaching methods often attract the attention of higher

education applicants with difficulty, especially at a time when digital media and interactivecontent dominate.

One of the key advantages of using games in education is its ability to stimulate active learning. In contrast to passive learning methods, play-based learning encourages applicants for higher education to actively participate in problem solving, decision making and critical thinking. The games create a rich environment in which applicants for higher education can experiment, make mistakes and receive immediate feedback, which is important for effective skill development.

Moreover, gaming technologies promote personalized learning. Adaptive educational platforms based on artificial intelligence can adapt content to the individual needs of higher education applicants, ensuring their progress at their own pace. This is particularly beneficial in such groups where applicants have different levels of learning knowledge.

Another significant aspect of gaming in education is its potential to develop essential skills, such as collaboration, communication, creativity, and digital literacy. Multiplayer and team-based games encourage cooperation and teamwork, helping applicants develop interpersonal skills that are crucial for their future careers. Furthermore, educational games make learning more enjoyable and reduce anxiety associated with complex subjects. The use of gamification in education has become increasingly relevant in today's learning environments due to its potential to significantly enhance applicants engagement, motivation, and learning outcomes.

This approach is quite new and not studied enough, so the study of gamification methods for the development of learning systems is relevant.

Analysis of the latest studies and publications. Gamification in education has garnered significant interest from various stakeholders who recognize its potential to enhance learning experiences and outcomes. A wide range of scientists and researchers have been involved in the topic of gamification**.** Karl Kapp, a prominent scholar and author on gamification, particularly in learning and instruction, has written extensively on the theoretical underpinnings and practical applications of gamification in educational settings. A leading researcher in the field of gamification, with numerous publications on its definition, applications, and effects, including in education, is Juho Hamari.

Contributing significantly to the academic understanding of gamification's relevance to education through his work on its definition and design principles is Sebastian Deterding.

Numerous researchers worldwide, such as Yu-kai Chou, Monica Cornetti, Rob Alvarez, Gabe Zichermann, Michelle Schwartz, Christo Dichev and others are actively studying the impact of gamification on student motivation, engagement, and learning outcomes across various disciplines, they describe the main driving forces behind motivation in gamification, study the definitions and core principles of gamification that are also applicable to education, the frameworks and influences of gamification in the educational context, the application of gamification and game-based learning in education and corporate training, and are involved in the

development and implementation of gamified solutions for learning and development.

Although the use of gamification in education is becoming increasingly popular, a review of foreign publications confirms lack of developed methods for the implementation of this educational technology, few practical recommendations on how to organize the learning process.

This article aims to examine the benefits and challenges of using gamification in educational settings.

Presentation of the main material. The history of gamification spans several decades and encompasses various approaches and concepts.

To improve the efficiency and skills of scouts in 1908, organizations within the scout movement introduced a system of special badges. Scouts could earn these badges by participating in various activities and events designed to enhance their proficiency in different areas [1].

Mr. Charles Conrad's 1973 book, "The Game of Work," proposed that work could be made enjoyable by applying game-like principles. This approach, the book argued, had the power to engage employees, leading to increased productivity and greater job satisfaction for numerous individuals in both management and non-management.

The year 1982 marked a turning point for gamification as it garnered academic recognition on a global scale, evidenced by symposiums, seminars, and workshops focused on its diverse applications [7].

As the year 2000 neared, game developers increasingly embraced gamification principles. By incorporating rewarding elements designed to engage users, they created unique and sensational gaming experiences, marking a pivotal moment in the history of gamification [1].

In 2002, the term "gamification" was introduced by Nick Pelling, a British software engineer considered the "father of gamification." His experience in computer games and game-like interface design for electronics like ATMs and mobile phones led him to name this emerging concept.

In 2008, Bret Terrill provided the first documented use of the term "gamification" in a blog article. Terrill's intention was to promote gamification by highlighting its ability to boost user engagement and motivation in the creation of gamified applications [4].

The 2017 World Government Summit brought together around 100 gamification advocates to explore the significance and ideas driving gamification. Their aim was to understand how to utilize gamification as a software tool and apply its principles across different design areas. Discussions also introduced and documented the future intersection of education and gamification [2].

Gamification has garnered considerable attention within education and training. The practice of incorporating game-like features to improve training content and methodologies is termed learning gamification or training gamification. This strategy has gained traction as a method for revamping conventional training practices and is seeing increasing adoption in higher education [1].

In education, gamification means incorporating game design elements and engaging experiences into learning activities. The goal is to motivate students by applying game mechanics like points, leaderboards, and medals, alongside structural components such as users, tasks, levels, and progress indicators. More broadly, gamification uses game-based thinking and aesthetics to engage students, drive action, facilitate learning, and address challenges [3].

Gamification's ability to capture students attention makes it a compelling tool for education. By integrating game elements into training content and methods, gamification aims to cultivate students potential and provide positive reinforcement that enhances their performance. It's crucial to understand that gamification isn't about simply playing games in the class; rather, it involves strategically incorporating specific game elements into existing educational programs. As an educational design process, not a teaching method itself, gamification leverages game elements to enhance how students learn from the core educational content.

Therefore, gamification in training involves applying these engaging elements within a learning environment. When implemented effectively in learning, teaching, and training, gamification can significantly boost student interest and motivation, leading to increased concentration and enjoyment. This proactive engagement helps students improve their learning processes, overcome psychological obstacles, and ultimately learn more efficiently [10].

Thus, gamification of learning is the process of applying gaming elements to modify training content and methodology, to help develop student potential and provide positive encouragement to boost their performance level [10].

Effectively implementing gamification in e-learning necessitates a well-developed strategy that begins with an in-depth analysis of the existing environment and available software. The core steps of this strategy are:

1. Determination of learners' characteristics.

For teachers implementing new learning approaches, understanding their students' characteristics (profiles) is a fundamental first step in determining the appropriateness of new tools and techniques. Key considerations include students' predisposition to interact with the learning material and engage in competitive learning events.

Teachers must also establish and keep in mind the skills students need to achieve the learning objectives. Tasks that are either too easy or too demanding can negatively impact student motivation and learning outcomes. Teachers should recognize that students' motivation to participate in training is shaped by the learning environment and the perceived consequences of their achievements.

2. Defining clear and specific learning goals.

Learning objectives need to be specific and clearly defined. They provide the fundamental purpose for education, ensuring that all activities, including gamification, have a clear direction. These goals dictate the educational content and activities that will be part of the learning process and drive the selection of relevant game mechanics and techniques to reach them.

3. Creating Interactive, multimedia-rich educational content and tailored ativities.

To maximize the impact of gamification, educational content must be interactive, engaging, and include diverse multimedia. Training activities should be developed with the learning objectives in mind and allow students to practice.

4. Incorporating game mechanics to enhance learning.

The fundamental element of gamification involves introducing tasks that learners must perform. Completing these tasks results in earning points, advancing to higher levels, and receiving awards, all with the purpose of meeting predetermined learning objectives. The specific game elements used in training are determined by the learning objectives (the knowledge and skills targeted by the tasks). Activities requiring independent student work often yield individual rewards such as badges. In contrast, activities that necessitate interaction among learners introduce a social dimension to the training, making students feel part of a larger learning community, with results often being public through mechanisms like leaderboards [9].

A foundational understanding of gamification's elements is vital for anyone looking to use it successfully. Recognizing these components enables practitioners to strategically employ them to reach target outcomes, such as desired behaviors, and to customize gamification for specific goals and audiences [6].

In the initial planning phase, the lecturer decides which game elements will be part of the gamification application. These elements are:

1) the user that appears as the user here is the student himself. Games played by students are a form of teacher-designed form that comes from an app or a learning management system (LMS);

2) assignments are instructions that students must perform. For example, one form of assignment is a question that students must answer;

3) a grade is a value a student gives for completing an assigned task or correctly answering a question asked. As noted by Schwartz, this is a form of appreciation for students, and points can be awarded for completing assignments or levels. It can be used as in-game currency to exchange for unlocked content;

4) levels are the level of each completed challenge/task. The higher the level/stage, the more complex the task becomes. For better classification, the levels/stages are divided into easy, medium, and challenging levels/stages;

5) badges are rewards for achievement in a learning activity, such as getting the highest score at each level or the highest score in a learning activity. With this badge hopefully, it will trigger student achievement in learning activities. The more medals you get, the more you can be said to be a scholar and get the recognition of your friends;

6) a leader board is a ranked list of students with the highest scores. This ranked list motivates students to do their assignments better;

7) the progress bar is a graph of the progress of all students based on the results of their completed tasks. The chart shows students who can consistently complete and vice versa. Through this progress bar, instructors can see the progress of students' abilities [8].

According to Kapp, the principal components for the gamification of standard learning content encompass stories, challenges, curiosity, characters, interactivity, feedback, and the opportunity for mistakes. They underscore the value of narrative, referencing research that demonstrates enhanced retention of factual information and terminology when integrated within a story compared to their presentation as a series of isolated points [3].

However, some applications may give different results. For example, rating tables and badges can undermine students' innate impulse, reduce their satisfaction, hinder their progress, or cause resentment against the perceived fairness of a system that is marked by equality. If students perceive elements of the game as unnecessary, then the gamification can be harmful. Moreover, if the emphasis is on mistakes or negative students' moods, then only that the training session will be enjoyable, it will not increase its effectiveness. Eventually, students will become uninterested if game design does not follow fundamental best practices [11].

Despite the potential issues that gamification can cause in the learning process, a well-thought-out and skillful integration of gamification can have a significant and effective impact on the educational process. Gamification offers significant benefits in education, notably by increasing student participation and motivation through heightened engagement in learning activities. Research indicates that it improves learning outcomes, leading to better comprehension, increased knowledge retention, and enhanced problem-solving skills. By leveraging students' inherent motivation and providing external rewards for progress, gamified learning experiences effectively boost motivation. Moreover, incorporating gamified elements can encourage student collaboration, teamwork, and social interaction, which in turn strengthens their communication and cooperative skills. This approach also fosters more positive attitudes and feelings towards learning, resulting in greater satisfaction and enjoyment. The gamification technique is a modern strategy that effectively captivates consumers and optimizes the learning experience for students [5,6].

Conclusions. Gamification has gained significant traction in education, becoming a valuable and widely appreciated approach that effectively motivates a broad range of learners to engage with gamified applications and positively influence their learning experiences. Gamification transforms learning into a fun and interactive experience by incorporating game elements like points, badges, leaderboards, and challenges. This taps into students' innate drive for competition, achievement, and recognition, making them more motivated and actively engaged in the learning process. Consequently, gamification can significantly improve knowledge retention through repetition, problem-solving, and immediate feedback inherent in game-based learning. Furthermore, it enhances critical thinking, collaboration, and communication skills. The immediate feedback provided by games allows students to understand their strengths and weaknesses, enabling them to adjust their learning strategies for better performance. By encouraging active participation in problem-solving, decision-making, and goal achievement, gamification moves students beyond passive information reception. Gamified

systems offer adaptability to individual learning styles and paces, allowing students to personalize their learning paths, challenges, and rewards. Ultimately, gamification makes learning more enjoyable, reducing anxiety and fostering positive emotions towards the educational experience.

When students are having fun, they are more likely to be engaged, motivated, and open to learning. Gamification can help students develop essential 21st-century skills, such as: problem-solving, critical thinking, collaboration, creativity, digital literacy.

By incorporating game elements into education, teachers can create a more engaging, effective, and enjoyable learning experience for students, leading to improved learning outcomes and the development of essential skills.

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