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GAMIFICATION IN EDUCATION

Abstract. The rapid advancement of technologies and the growing amount of information exchange provide new approaches to improving educational processes through various methods. Gamification becomes one of those effective practices and stimulations to increase motivation and engagement of learners in the educational environment. Given the importance of education in contemporary academics and culture, this article examines how gamification is being used in the learning process and provides a more precise picture of the results achieved so far and how they were achieved.

Keywords: Gamification, Game-based Learning, Education, E-learning, game mechanics, game dynamics, game design.

Introduction

It's a proven fact that a country's development crucially depends on human resources. As it is known, education is responsible for shaping a person; thus, the educational system plays an important role in building a foundation for the nation's prosperity. With the higher literacy rate, there is a reduced percentage of unemployment. To build a strong educational system, there should be effective pedagogical methods, involving the rapidly advancing social networks and technologies which have become an everyday routine of human life. With the emergence of new blogs, services, social networking platforms and websites they are being frequently used for knowledge purposes nowadays. Similarly, back to the early 2000s, computer adaptive games were used for learning second languages at some schools [1].

But now with the development of high technologies such as the Internet, embedded systems (IOT), mobile gadgets, education is evolving even faster. With the massive use of high technology, people are beginning to search more effective methods and tools for more effective teaching of both children and adults. One of these methods is the gamification of educational processes. Gamification is described by scientists in a variety of ways. But they all share the same opinion that gamification is a non-game process in which elements of a game nature are included. These game elements include the scoring system, leaderboards, in-game gifts, interesting stories, and others. They are used to increase the motivation, engagement and quality of student learning, not only in the educational environment, but also in other areas of life. The use of gamification in the educational sector is gaining popularity, gradually proving its effectiveness. As a result, many educators, educational institutions and even large companies are incorporating elements of gamification into their learning processes. The structure and design of games allows of implementing elements of gamification within the learning method, and of an intuitive interpretation of the mechanics of game processes.

Definitions

According to Kapp [2] gamification is “the use of game theory, graphics and game-based mechanics to encourage learning, inspire action, involve users and solve problems”.

Gamification is the use of game thinking, approaches, and elements in a non-game sense. In both formal and casual settings, using game mechanics increases inspiration and understanding, in other words gamification is the application of game elements and game thinking in non-game practices. In gamification, games have some distinct significant characteristics such as:

- Users are employees or customers (for businesses), students (for educational institutions);

- users complete and advance challenges/tasks against specified objectives;
- points are earned as a result of performing tasks;
- users pass through levels based on the points earned;
- the granted awards function as incentives for completing actions;
- users are ranked according to their accomplishments.

Game dynamics and game mechanics

Games that are entertaining include enjoyable experiences, and it appears that, far from waning, interest in recreational games is still increasing. Fitocracy, Runkeeper, Nike+, Zombies, Run! and other computer-assisted gamified services help to structure, endorse, and motivate fitness practices [3].

It's also been proposed that commercial game players improve their problem-solving and reading abilities, and that successful commercial games embody good learning values by allowing gamers to participate effectively and reflectively while playing [4].

The game economy



Figure 1 - The game economy

The agents, items, components, and their relationships in the game are referred to as the game mechanics. They describe the game as a rule-based structure that specifies what is present, how it functions, and how players can communicate with the game environment. Game dynamics is the emergent behavior that occurs as the mechanics are used in a game, and aesthetics are the players' emotional responses to the game play [5].

Points, ranks, medals, trophies, virtual items, leader boards, and virtual gifts are all well-known game mechanics. Rewards, rank, competition, self-expression, and others are game dynamics components, according to Schonfeld. He depicts 47 different game dynamics elements [6].

Gamification in education

An effective education environment can encourage contact with students and teachers, reciprocity, fast feedback, collaboration among students, constructive learning strategies, time on mission, appreciation for diversity, communication of high expectations and students' different learning styles [7].

The key goal of education is to increase student performance, productivity, commitment, happiness, and inspiration. The use of game mechanics and gamification will help accomplish these goals.

Education management is a crucial component of the model which helps students to be inspired, happy, effective, and efficient. The model shown in Figure 2 includes the following key elements: management, game dynamics, critical factors, development phases, user experience elements, game mechanics, gamification elements, and their impact on students.

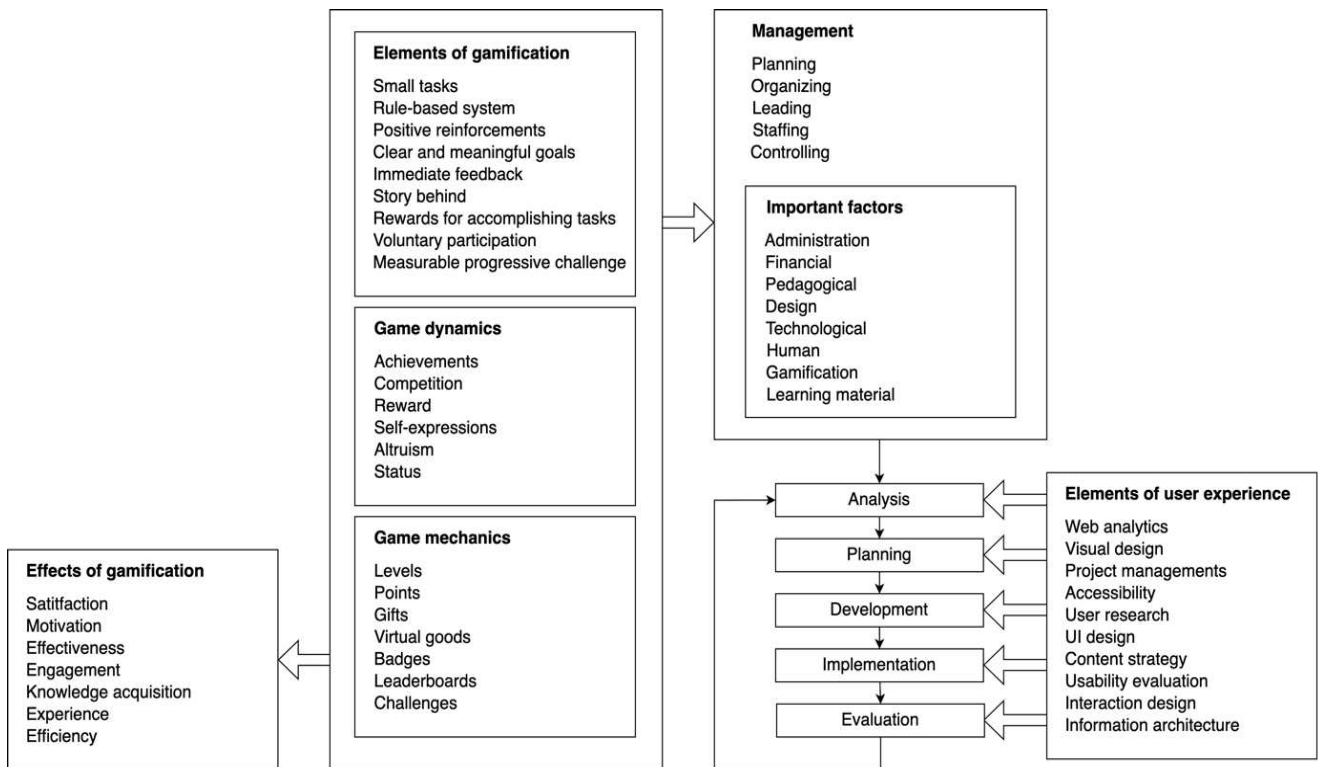


Figure 2 - The model of gamification in education

Impact of instructional content on learning outcomes

The lack of high-quality learning resources along with gamification would not improve learning outcomes. Gamifying the education would not aid in success, if the material of education does not assist students in learning [8]. This statement serves as a useful note for academics. High-quality instructional material is needed regardless of technological or pedagogical advances. Student learning experiences may be significantly influenced by attitudes and behaviors. While the constructs (e.g., innate motivation) can differ across contexts, evidence of significant relationships between student attitudes and behaviors and student learning outcomes has been found in the educational literature [9]. Students who put in more cognitive effort, spend more time on task, and have a constructive outlook toward a subject can theoretically see better results [10].

Conclusion

The results of this study confirm the hypothesis that gamification is gaining momentum in education, especially among the younger generation as it helps to motivate and involve students in learning.

This study also shows that gamification is not a panacea for everything, and it should be used only when necessary.

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Білім беру саласындағы геймификация

Аңдатпа. Технологияның қарқынды дамуы және ақпарат алмасудың өсіп келе жатқан көлемі әртүрлі әдістер арқылы білім беру процестерін жақсартуға жаңа мүмкіндіктер ашады. Геймификация оқушылардың білім беру ортасына деген ынтасы мен белсенділігін арттыратын тиімді тәжірибелер мен ынталандырулардың біріне айналуға. Қазіргі ғалымдар мен мәдени топтар үшін білімнің маңыздылығын ескере отырып, бұл мақала геймификацияның оқу процесінде қолданылатыны жайында зерттейді және басқа еңбектерде жазылған нәтижелер мен оларға қол жеткізілгені туралы нақты түсінік береді.

Түйінді сөздер: геймификация, ойын арқылы білім беру, білім беру саласы, электронды оқыту, ойын механикасы, ойын динамикасы, ойын дизайны.

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Геймификация в образовании

Аннотация. Быстрое развитие технологий и растущий объем обмена информацией открывает новые возможности для улучшения образовательных процессов с помощью различных методов. Геймификация становится одной из эффективных практик и стимулом, которые повышают мотивацию учащихся и их вовлеченность в образовательную среду. В этой работе исследуется, как геймификация используется в процессе обучения, дается более точное представление о результатах, зафиксированных в статьях, и о том, как они были достигнуты.

Ключевые слова: геймификация, игровое обучение, образование, электронное обучение, игровая механика, игровая динамика, игровой дизайн.

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