History of Gamification and Its Role in the Educational Process

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Abstract

This article tells about the history of gamification of education, its current state and the practice of introducing game elements into education in different countries of the world. The experience of scientists from the USA, Sweden, Russia and Canada on the use of gamification in the lesson is analyzed. It also discusses the issues of gamification of education, the results of this process and its use as an educational innovation, describes the versatile potential of gamification, as well as programs and platforms that use partially or fully the elements of gamification in the process of creating educational resources.

Keywords: *Gamification; History; Game Creation; Game; Game Technologies*

Introduction

In the rapidly developing modern world, it is necessary to be able to meet the challenges of the time. The transition to a competency-based approach sets the educational system the task of using modern educational technologies to form the required competencies. One such educational technology is the gamification of education, which is widely used around the world in leading international educational institutions. Therefore, it is important to study, develop and apply this approach in the context of Uzbek education. According to well-known researchers, the use of gamification in education has a positive effect on the motivation of students, which ultimately increases their learning outcomes.

And as a consequence, the task of the school in this direction is to master such a tool as gamification to improve the quality of teaching first-graders. In this article, we describe the psychological, didactic and methodological potential of gamification in teaching primary school students, and consider some of the tools that allow the creation of e-learning resources using game elements.

Literature Review

Basic and partial concepts of the game are considered in the works of D.G. Mead, N.D. Ushinsky, L.S. Vygotsky, H. Hoagland, J. Collarits, C. Gross, G. Spencer, F. Boytendijk, E.L. Pokrovsky, F. Schiller, F. Frebel, K. Buhler, M. Lazors, G.P. Shchedrovitsky. Modern approaches to the concept of

"play" are considered in the works of E. Berne, I. Huizing, A. Leontiev, D. Elkonin, I. Kohn, S. Shmakov, P. Ershov.

Analysis and approaches to the creation and development of games are found in the works of T. Fullerton, Jesse Schell, Jane McGonigal, Brands Brathwaite, Raf Koster, Steve Pig, Katie Salen, Eric Zimmerman, Scott Rogers, Ernes Adams, Chris Bateman, Richard Boom, David Freeman, Chris Crawford, Richard Bartle, David Perry, David Parlett, Donald Norman.

The works of T.E. Pakhomova, I. Kuryleva, L.P. Varenina, Eric Klopfer, Eli Carr-Chellman, Donald Clark, Michael Barber, Lee Sheldon, Kevin Werbach, Joel Lee and Jessica Hammer.

Despite the experience accumulated in recent years all over the world, the contradiction has intensified: between the need to create a methodology for the gamification of education in the realities of modern education, in particular, within the framework of the implementation of the primary education program, and the need for theoretical elaboration and substantiation of the conditions for its creation.

Materials and Methods

In the course of the research, the following were carried out: the study of domestic and foreign literature on the selected topic, subject area, a comparative analysis of the methods of gamification of academic disciplines in the context of the implementation of the primary education program.

Discussion

History of Gamification

In search of approaches to improve performance, the term gamification has recently become very popular in many areas of life. But its appearance is connected with the desire to increase sales and it happened a long time ago. About a century ago, Cracker Jack began putting surprise toys in every box. After that, many companies began to use games, toys and other entertainment to increase sales. But this phenomenon is somewhat different from what is understood today by the term "gamification". It first appears in 1980 when Richard Bartle, a renowned game developer and researcher from the University of Essex in England, was brought in to develop a project called MUD1. MUD1 was the first multiplayer domain, but rather a multiplayer "dungeon". In essence, this was the first large-scale game for a large number of people. But it looked a little like a game. It was a text-based system on the university's computer network. It was MUD1 that first gave people the opportunity to enter a shared virtual world, becoming the inspiration for games like Second Life and World of Warcraft. Bartle's role in this project was to develop a collaboration platform and gamify it, turning work into a game. But even then this did not mean at all what is now being put into the concept of gami cation.

Today's understanding of gamification is based on two types of development. The first was a student study of video game-based learning, when Tom Malone, who currently works at MIT's Sloan School of Business, began developing the first video games. He was able to show that children can learn through video games. Following him, a number of developers have conducted similar and more in-depth studies. One of them is James Paul of Arizona State University. He has written books that even mass-market, commercial and entertainment games such as the Tomb Raider series can contain powerful, built-in learning mechanisms that are explored in serious human learning studies. The second type of development that defines today's concept of gamification is the "Serious Games" movement. The Serious Games program was created in 2002 by Ben Sawyer and David Reetsky and brought together private, academic and military communities who used fully functional games to teach and create various non-game simulations.

Gamification, as it is now understood, was first used in 2003, when English developer and designer Nick Pelling set up the consulting firm Conundra to promote gamification in the consumer goods industry. He wanted to bring playful elements to the hardware. The idea was unsuccessful and the company shut down pretty quickly, but the idea was voiced that game mechanisms and concepts could be applied to consumer products and other situations. In 2005, the Bunch Ball company was founded. In 2007, she launched a product that actually turned out to be the first gamification platform. Due to the fact that the term was not yet widely used, it was not called that, but it was the first platform to include such game mechanics as scoring for the business purposes of the company (Werbach, 2016).

Gamification Concept

According to Kevin Werbach, an associate professor at the Wharton School of Business at the University of Pennsylvania, who teaches an open course on gamification for the Coursera online education project, gamification is the use of game elements and game-making technologies in a non-game context. Thus, he distinguishes three components of this definition, firstly, these are the elements of the game, secondly, the technologies for creating games or, in other words, game design, and thirdly, the non-game context. Game elements are a set of tools that create a feeling of the game, usually they include: points, levels, badges, ratings, avatars, awards, missions - but they are not limited to that. Game technology is what organizes and structures all the elements of a game and requires the practical skills of a game designer. By non-play context, he understands an activity that is not play for the sake of the play itself or just to get pleasure from it. Such activities, the goals of which are outside the game. For example, getting a job, achieving company goals, or training. By doing this, you can play, moving towards the intended goal, which is outside the scope of the game.

Werbach gives four reasons why it is worth doing gamification. The first is that gamification is now an emerging business practice. There are many examples of the use of gamification by companies, especially large ones. The second, in his opinion the most significant, is that games have the "power" of attractiveness, they can capture players. Third, gamification teaches us something from other areas of knowledge. A group of authors led by Sebastian Detering, an influential German researcher, looks at it using pairwise comparison to explain what gamification is and how it relates to other concepts.

On one axis is the difference between whole games or artifacts and partial games or parts of games. On the other, there is the difference between spontaneous play and organized play. Organized play has rules, structure, and leads to victory or defeat. And there is spontaneous play: like fun, pure improvisation, energy release. In their work, the authors use these axes to create four different quadrants. The quadrant, where the pure game and the whole artifacts are located, is a toy. When you play with something and it is an object, it is called a toy. And if you play, but you do not have a coherent idea, the authors call it a project of the game, that is, a kind of sketch of the game. It's about creating something playful, fun. But there is no structure, rules, achievements, etc. In the upper left quadrant there is an organized game at the intersection with a solid artifact, what falls into it is a game as such. And this is where Kevin Werbach places serious games. Because serious games are full-fledged games designed for non-gaming use. And this feature distinguishes them from gamification, which is located in the upper right quadrant.

Examples of Gamification in Education

The number of educational services that use gamification in their process is increasing every year. It is used by schools, colleges, universities and other educational institutions around the world. For example, in his book – "The Multiplayer classroom" the author Lee Sheldon talks about his experience of creating a course in an educational institution in the image of a multiplayer game, which became very

successful and showed its viability in the form of good student performance and their interest (Gamification in education, 2012).

In her book, Lee Sheldon highlights student grading as a key aspect of course gamification. He will highlight the main theses: the existence of a point system; at the beginning of training, each student starts training with zero points; each assignment, test or any other work is evaluated for a certain number of points. In Lee Sheldon's system, the student ceases to be afraid to make mistakes and will focus solely on learning. This is due to the fact that he knows that he is on an equal footing with other classmates, regardless of his abilities, he can make mistakes as many times as he wants, but he understands that every point earned will lead him to success.

Another positive factor of this training format, Sheldon believes, is teamwork. Often, students in the class work alone, and this also happens with homework, which the student must complete independently. The results of such work are far from always positive, because the student becomes uninteresting to do this. Computer games, on the other hand, teach team interaction. In his opinion, education in schools and universities should be the same, then students will be more motivated and involved in the process of studying the material. If we talk about gamification of the entire online learning process, then you can find different approaches. One of them is the introduction of elements of gamification into the learning management system. Another approach is the parallel gamification of the learning management system and the learning system itself (Possibilities of using gamification in online education, 2014).

Below is a list of well-known services and communities that use gamification for education:

• World of Classcraft (WoC) is a classroom-based game designed to solve the schoolchildren's dilemma: choosing between classroom and computer games. World of Classcraft is similar to traditional MMORPG games like World of Warcraft: when students successfully complete a task (for example, answer a question correctly or help their classmates), they receive experience points and can level up their character, as well as receive special ability. In WoC, monsters are homework, boss battles are quizzes and tests, and the classroom is a space for play that adds motivation to students, the desire to learn and become the "highest-level warrior" in the class (5 best materials…, 2013);

• MinecraftEdu - Minecraft is an online simulator in which players can create whatever they want from blocks, and interact with other players in the open world. MinecraftEdu is a community of educators who use Minecraft in teaching. To date, the game has entered the curriculum of nearly 1000 schools in the United States and one school in Sweden (5 best materials…, 2013);

• Code School – courses on teaching programming (Code school platform, 2021);

• Motion Math Games – mobile games in mathematics (Service Motion math games, 2021);

• Zombie-Based Learning (5 best materials…, 2013) – training using the theme of zombies and game elements to build a training course. Proposed by school teacher David Hunter, who teaches geography to his students, the traditional textbook has been replaced with zombie graphics and the lessons contain game elements;

• Mathletics - a program for schools aimed at attracting children to mathematics through games and competitions (Platform Mathletics, 2021);
• LinguaLeo.ru is an interesting and effective way to learn English (Lingualeo Online Education Server, 2021);

• Foldit is a puzzle-solving online game developed by the Center for Game Science at the University of Washington. The essence of the game is protein folding (The Science Behind Foldit, 2021);

• Radix is an educational game created with teachers at the Massachusetts Institute of Technology (Radix educational game created with teachers, 2021).

Conclusion

1. As a result of studying materials from foreign and domestic literature, it was revealed that Kevin Werbach, Sebastian Detering, Jesse Schell, Eric Klopfer, Donald Clark, Michael Barber, Lee Sheldon, in their turn, our compatriots such as L.S. Vygotsky, D.B. Elkonin, V.V. Davydov, G.P. Shchedrovitsky, Andrey Komissarov contributed to the study of the use of gaming technologies in teaching.

2. The approaches of foreign authors are more pragmatic in the application of gamification, aimed at extracting a positive effect, which is associated with the very appearance of gamification, and only recently has its transition to education been observed. Its application is not limited to school and preschool education, but is also used in the university environment.

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