GAMES DYNAMICS: CHARACTERISTIC OF COMPONENTS AND
PECULIARITIES OF THEIR USE IN THE PROCESS OF THE
CREATION OF DIGITAL GAMES BY THE TUTOR AND STUDENTS

Abstract. The paper presents gamification of the learning process in higher education as a means
of forming various competencies in students through the possibilities open by digital technologies.
It also contains a brief description of the components of game dynamics as part of their outline
created by teachers and students.

Keywords: gamification, game dynamics, digitalization, game dynamics components.

Introduction. Digitalization of almost all spheres of human life poses new
challenges for the educational system: effective use of these technologies for
educational purposes; enriching educational content with new high-quality data;
increasing the level of motivation and cognitive activity of students; improving their
practical skills in real, not virtual reality.

The solution of these problems is associated with the search and
implementation of new technologies and techniques of learning process that can
increase its productivity, ensure a balance between classical and digital forms of
education, and also raise interest among students.

In the context of digitalization of education, issues related to the digital
competence of students and teachers are becoming especially important. A sufficient
level of its formation makes it possible to quickly adapt to the needs of society, as
well as to respond to its challenges.

An effective way to develop this competence among teachers and students is
introducing gamification into the educational process, which has a positive impact
on the organization of the learning process in higher education and creates conditions for expanding the range of other competencies [5; 6]. Usually gamification is viewed as the use of game design elements in the non-game context [2] with the aim of gaining experience by players that can be reproduced in real situations.

The dynamics of the game is an element of game design. It represents the conceptual level of the game and includes an emphasis on aspects related to the formation of meaningful content and its interpretation by the participants; manipulative techniques that affect the consciousness of players and determine the choice of a particular model of their behavior in each specific game case.

**The aim** is to provide a brief description of the components of game dynamics as part of game design when teachers and students create digital games.

**Methods.** The research piece is based on the analysis of psychological and pedagogical literature and synthesis of data obtained in order to create a comprehensive view of the components of game dynamics.

**Results.** The dynamics of the game is determined by the following psychological components: motivation of the participants due to the presence of needs [8]; the influence of triggers [3]; entering the state of the flow [1]. It is also due to a certain level of the participants' abilities, which are necessary to perform a game action. A significant role in its development is provided by the ability to use resources that improve / worsen the course of the game [3; 4].

Based on the analysis of sources [1-11], it is possible to determine the following features of listed components of the dynamics of the game.

The issue of maintaining motivation for the learning process has always been acute for pedagogy and psychology. Motivation as a means that encourages a person to action has been studied in various aspects: in the context of digitalization of educational content, the BJ model of behavior is relevant; Fogg (BJ) [3], who considers A. Maslow's theory of motivation [7], in relation to the gamification process.

According to this model [3], the physiological level of needs is not considered in the context of gamification, since a person does not satisfy his physiological needs
during the game. Other needs that determine a person's motivation to use new generation games can be interpreted in the following way:

− security – the game recreates an environment where participants feel protected from any threats from the outside world;

− social needs – communication and attention from other participants in game action;

− the need for respect and recognition – the importance of the player and his experience for achieving teamwork goals in the process of solving the tasks set by the game (for example, the accumulation of points / points / badges by team members to win);

− creative needs – cognition and discovery of new ways to achieve goals and objectives set by the game;

− aesthetic needs – game design, environment, comfort, feelings of joy from success, harmony of the inner state with the outside world;

− spiritual needs – a person's comprehension of himself, his requests, correspondence of steps taken to the obtained game results.

Both internal and external motivation are aimed at maintaining the process of the game [10]. Researchers do not draw a clear line between these two types of motivation in the process of play activity, since one type can be supported and determined through the other due to the nature of the act of play. These specific features are enjoyment, lack of coercion and relaxation.

Extrinsic motivation in the gamification process aims to encourage certain actions. These actions are supported by the assignment of points, by badges, and other awards during individual and team work [9].

Intrinsic motivation is determined by the needs of the person [8] and leads to a number of conscious actions on his part when performing specific tasks in the context of the game.

Naturally, it is possible to increase intrinsic motivation through awards, however, this effect can be of a short-term nature [11].

Abilities are equally important components of game dynamics. They underlie human actions and determine their success. Expanding the range of abilities in play
can be achieved through education and training with the involvement of extrinsic motivation in the form of rewards.

Strengthening internal motivation in the process of developing abilities is possible by dividing complex materials used in the game into smaller components.

The effects of triggers, as an element of the dynamics of the game, are based on the inclusion of the emotions of the participants. When immersed in a game, emotions are quite vivid because we are in anticipation of pleasure that we can get from the act of being included in it. If the game does not bring us pleasure, we have the opportunity to move on to another game, because this type of activity is casual, based on our choice and desire.

During the game, triggers start the process due to many desires of a person, which is often not realized by him in the real world: the desire to be a winner, a leader, to acquire status, to overcome rivalry, to make a discovery, etc.

The mechanism of its action in the game is quite simple: to encourage the participants to take immediate action. According to studies [3], triggers can be conditionally divided into three groups: for those students who have abilities, but no motivation (weak, not expressed motivation) - "spark"; for students with pronounced motivation, but insufficient abilities to perform actions - “facilitator”; for those with pronounced abilities and motivation - "reminder signal".

Entering the state of flow, which characterizes all spheres of human activity, is the next element of the dynamics of the game. A flow is generally viewed as a deep immersion of a person in the issue that needs to be resolved [1].

There is no flow state when the task is too easy or too difficult for an individual. Thus, the balance between the person’s skills and the complexity of the task assigned to him determines this state, which is characterized by feelings of lightness, delight, satisfaction, harmony, and the achievement of the desired.

Among the main features of the stream that can be determined in the process of immersion in the gaming environment are the following:

- clear perception of goals;
- awareness of differences between the proposed rules of the game and
possible expectations;
− forecasting events that can be probable in nature under conditions of uncertainty;
− focus on the game and complete immersion in this type of activity;
− loss of control over time, that is, its distorted perception;
− the balance between the complexity of tasks set by the game and the level of participant's abilities;
− quick feedback allowing you to change your behaviour;
− the player's sense of control over the situation in which he follows accepted rules;
− a comfortable feeling of oneself in the process of playing activity, which does not cause any harm to others.

The ability to use resources that improve/worsen the course of the game is another component of the dynamics of the game. The simplicity of solving the tasks set in the game is ensured by the presence of three groups of resources: mental and physical; behavioural, cultural, and social norms; temporary and financial [4].

**Conclusions**

1. Gamification of certain topics of educational courses and disciplines is one of the trends in modern education.

2. The psychological component of gamification, which is clearly traced in the dynamics of the game by involving the player in the state of the flow through various groups of triggers and the inclusion of needs, motivation, memory, attention, thinking, imagination, increases the enthusiasm for the content of the game and leads to stronger memorizations of educational information by students.

3. Using different types of resources helps to enhance the effect of gamification.

4. Development and creation of training courses with elements of gamification both on the part of teachers and on the part of students is a resource that is aimed at increasing their level of digital literacy and contributing to the improvement of digital competence.
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