



## TYPES OF GAMES USED IN THE ORGANIZATION OF THE EDUCATIONAL PROCESS AND FEATURES OF GAMIFICATION

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**Sherzodjon Avazjonovich Ruzaliev**

**Lecturer, Fergana State University, Uzbekistan**

### ABSTRACT

The article explores information on the issues of improving the effectiveness of the educational process in teaching Information Technology in education. A theoretical analysis has been carried out that the technology of gamification is effective in the formation and development of professional qualifications of an individual. When teaching fan lap using gamification in the educational process, the issues of developing their cognitive activity are presented in order to develop future professional qualifications in students.

### KEYWORDS

Mechanics, statics, players, motivation, agent, continuing education, digital technology, person, gamer, computer game, didactic problem, diversification, consensus principle, synergistic, ICT.

### INTRODUCTION

In the context of digital technology, the main focus is on educational activities in the form of computer games, with the help of gamification to students. With the help of gamers, the teacher should direct students to the process of active cognition.

With the help of gamification, digital technologies open up the possibility of giving students a lot of knowledge. As a result of the statement of the educational material presented, the purpose of the topic, its main content and questions posed by the teacher should be understandable to students. Only



when the new topic is carried out on the basis of gamers (games), with the active participation of all students, does the interest in the topic under study increase in them. Yan Amos Komensky, in his

### RESEARCH MATERIALS AND METHODOLOGY

“The great didactics”, commented on the fundamental issue of didactics: “the Alpha and omegas of our didactics consist of the less teaching of the teacher, the search for and the opening of the learner's much learning path” [4, 234].

The current stage in the development of the world's higher education system makes qualitatively new requirements for the content and methodology, increasing its effectiveness. In particular, within the framework of the Bologna Process, Research on the problem of ensuring the variability of active and interactive forms of teaching, the development of digital competence of students on the basis of a competency approach is relevant. The Sorbonne declaration (Sorbonne Declaration), education for all (Yeducation for all (EFA)), Millennium Development Goals (Millennium Development Goals (MDGs)), World Education Forum (World Education Forum) and Lisbon conventions are instrumental in determining the direction of training qualified creative personnel based on a competency approach.

It is known that in traditional education, students receive knowledge on the basis of ready-made instructions, listening to the orderly information provided by the teacher. Students become ordinary listeners, observers of the educational process, engaging in activities such as memorizing information written by the teacher in the process of such reproductive education, giving an example by analogy, repeating what they hear.

It is important to ensure interdisciplinary involvement in the teaching of the Information Technology course

in education at the Higher Education System. In the process of higher education, digital technologies, in particular, the use of gamification technologies to motivate students to think independently, are seen as being able to ensure the improvement of the knowledge system, in which they develop creativity. The formation of the qualities of creativity in students is at this point, one of the important factors in the development of students' abilities to master knowledge perfectly and is the teaching of independent thinking.

In teaching methodology, the most popular types of gamers today are: Arena, AnyLogic, SIMSCRIPT, SLAM, SIMAN, AweSim, GPSS.

The rapid development of digital technologies requires the widespread use of information and communication technologies, the improvement of knowledge, skills and skills of learners by applying them to the educational process, and the introduction of the latest achievements of Science and technology into the educational process. There is also a need to use didactic forms of new content, to practice educational tools in an innovative description, to expand the range of motivational and cognitive interest in learners. This necessitates the establishment of gamification technologies designed to absorb academic knowledge in the educational process.

Working with inform lap in students, formation of competency in the subject of “Information Technology in education”, substantiating the connection of this course of study with other subject from a scientific point of view, the emphasis is also on strengthening the theoretical, practical and methodological foundations of teaching science.

In the organization of the educational process in our country, great attention is paid to the application of advanced pedagogical methods and technologies,



multimedia presentations, the deep study of advanced foreign experiences, the re-development of new curricula and programs for designing the educational process in new content, and on this basis, the implementation of significant tasks in teaching Informatics is becoming important.

One of the main features of the pedagogical process in the higher education system is determined by its digitization.

When teaching Information Technology in education, the focus is on educational activities in the form of a computer game and on the formation of skills and competencies for a full perception of educational material, better assimilation and understanding of theoretical material using assignments, examples, and the student's ability to apply theory to practice.

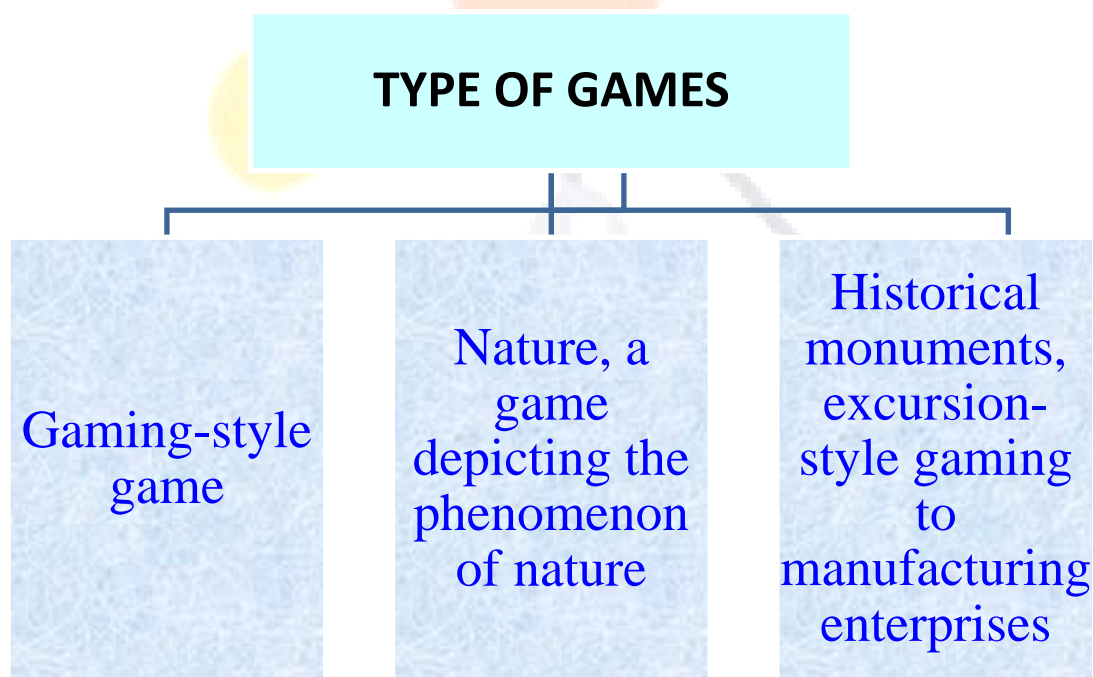
The development of the future professional qualifications of students in the teaching of information technology in education with the help of

gamification is a regular, developing, process activity according to the nature of the educational and cognitive situation. To ensure the success of this pedagogical process, the will, awareness, activity of teachers and students is important.

### RESEARCH RESULTS AND DISCUSSION

The formation and development of professional qualifications of a person is a didactic problem and is a continuous process carried out in the educational process. Accordingly, it was determined on the basis of theoretical analysis that gamification is effective in teaching information technology in education.

One of the main tasks of the individual approach in the methodological Organization of didactic processes on the basis of gamification technologies is the gradual development of the professional skills of Informatics teachers. Also, setting individual goals for the teacher and the stages of achieving them will cause them to successfully organize their activities.





In the era of our research, testing new technology in enriching the methodology of teaching Information Technology in education was determined based on the object of research. Dynamics of gamification applied in the educational process-the use of scenarios that require the attention and response of a student in real time;

mechanics-from scenario elements characteristic of the game, for example, virtual rewards, statuses, bonuses, virtual goods;

statics-creating a common gaming experience that helps with emotional communication;

social interaction is a wide range of techniques that provide inter-user interaction typical of games.

Terms used in the gamification program:

Players (player) - consumers (consumers-participants in the educational process) and potential consumers;

motivation is the creation of incentives for actions, reactions. actions ( ) are the reactions required by the user;

skill levels ( skill levels) - stratification of users by achievement levels (e.g., an ordinary player or consumer can reach a leader level among other players;

Among the game components used in the gamification are observed: scoring, difficulty and skill level, achievements, leader tables, achievement panels, virtual currencies, competitions between participants, rewards.

agency-based modeling is a relatively new (1990-2000) direction in simulation modeling, used to study decentralized systems, whose dynamics are not defined by global rules and laws (as in other modeling paradigms), but rather, they are the result of individual group members ' activities under global rules and laws.

The goal of agent-based models is to get an idea of these global rules, the overall behavior of the system, based on assumptions about individual rules, the personal behavior of its individual active objects, and the interaction of these objects in the system.

An Agent is a certain person with activity, autonomous behavior, who can make decisions according to a certain set of rules, interact with the environment, as well as independently change.

The modeling system maintains at least one list of simulation events.

One-way fast event-based simulations have only one current event. Whereas multi-wire simulation systems and simulation systems that support interval events may have the ability to address several current issues. In both cases, there are serious problems with synchronization between existing events.

Random number generators. Depending on how events are formed and the main characteristics of the queues, discrete-event models are divided into deterministic and Scholastic types: the time in which events occur, the service life, the number of customers entering the queue per unit of time. Scholastic discrete event models differ from Monte Carlo models in time hours.

Basic information collected in discrete event modeling systems:

- Average resource occupancy (availability)
- Average number of customers in the queue
- Average waiting time in line
- Termination condition
- The termination condition may be:
- Occurrence of a fixed event (e.g. 10-minute queue waiting time
- Passing certain cycles on the simulation system clock





Discrete event modeling systems, for the most part, fulfill the role of electronic libraries for Problem-Oriented Programming Languages or high-level languages. The most famous of these are: Arena, Ayn Logi, SIMSRIPT, SLAM, SIMAN, AweSim, GPSS.

Training models can be developed using System Dynamics. This situation is especially applied in the development of population dynamics, in environmental disorders and in the spread of epidemics this style was founded in the 1950s by Jay Forrester [3].

In contrast to the analytical solution of differential equations, which results in formulas that clearly show which parameters affect the modeled system and how these parameters are related to each other, the simulation results in a set of numbers that do not allow for correlation between the parameters.

Sometimes simulation serves to obtain partial numerical solutions to a problem based on analytical solutions or constructed using numerical methods [3].

From the analyzes it turns out that it can be seen that the gamification used in the organization of the educational process is aimed at attracting users and consumers. The appearance of such a gamification is manifested as SMART training. Today, SMART education is widely used in world education, creating an intellectual educational environment. This technology is characterized by such characteristics as adaptation to changing conditions; self-development and self-control; effective achievement of the result. This term allows you to reflect at the level of the concepts of the next stage of social or technological development. Interestingly, there are several logical chains of using new smart technologies:

Changes in technological orders (fourth to fifth and sixth, etc.k. SMART - smart education using artificial intelligence will prevail here [3]);

Changes in technology range from Web 2.0 to WEB 3.0 to cloud technologies in research related to electronic and distance education [3];

Intellectual generation change, i.e. "X – Y-Z", the later ones (Generation Z) are those that view the use of smart technology and the use of ICT as natural, recognizing that it is one of the necessary methods in the learning process.

A.A. Melnichenko conducted research on smart education, noting that it has the following areas[2]: SMART education as an intellectual environment;

SMART is a new type, a new approach to education, which allows you to achieve high results or with effective methods;

In the teaching of Information Technology in education, geymification serves as the composition of teachers (as infrastructure); a new type, a new approach to education, high results; the development of the human personality in the conditions of the formation of competencies.

Gamification is a holistic system-one that manifests itself in interaction with the environment, serves to immediately respond to a system or process, changes in the external environment.

Thus, the teaching of Information Technology in education with the help of gamification in the process of Higher Education System has its own characteristics. As a result of mastering the educational material, conclusions are drawn about the creativity, resourcefulness, perception, circle of thinking of the student through the analysis of visual weapons, drawings, written written work, exercises performed by students.

## CONCLUSION



Thus, as a result of our research, a number of literature and scientific sources were analyzed. From the analyzes, it can be seen that the issue of teaching Informatics and information technology to students with the help of gamification has not found a full-fledged solution. In the context of digital technologies, especially in our country today, the formation of digital higher education system indicates that it is among the issues that are being studied as a feedback in the era of globalization. Students can achieve high performance in teaching using gamification.

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