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THEORETICAL AND METHODOLOGICAL BASIS OF MODELING DIDACTIC PROCESSES BASED ON GAMIFICATION TECHNOLOGIES

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ABSTRACT

The article provides information on the issues of teaching advanced pedagogical technologies for students' mastery of educational material in the process of higher education, improving the quality of education in the educational process with the help of gamification, planning the process leading to the set goal, and most importantly, ensuring the expected result.

KEYWORDS

Conjuncture, gamification, online, offline, reproduction, construction, creativity, compilation, reflection, didactic game, infrastructure, variant, person, game, computer game.

INTRODUCTION

In the information and communication age of the 21st century, the sharp increase in the amount of information places special demands on the quality of the information transmitted along with the students' perception of the educational material. From this point of view, improvement of learning information acquisition technologies in the teaching process is one of the issues requiring special attention.

Due to global changes in the world labor market and increasing competition, effective cooperation with mass media in the field of information policy is being established in our country. Using gamification to students in the process of higher education in the context of digital technologies Teaching information technologies in education is considered one of the most relevant, scientific interest-generating

multidisciplinary fields in which many scientific researches are conducted abroad and in our country.

THE MAIN RESULTS AND FINDINGS

On September 23, 2020, the new version of the Law "On Education" was adopted in our country [2]. Based on the successful implementation of the tasks set in it, an educational infrastructure covering all stages of the educational process, fully meeting the requirements of modern innovation, that is, an integrated system of continuous education, was created. This system serves to fundamentally reform the field of education, comprehensive development of education as a single educational-scientific production complex.

The analysis of literature and research shows that the issue of teaching information technologies in education to students with the help of gamification in the conditions of digital technologies in our country has not been fully resolved. The educational process also requires that at every stage it instills this renewed essence, innovative content into the thinking of young people and makes them competitive in the society. At the new stage, tasks such as bringing together all the tasks related to the formation of a well-rounded person, developing the theoretical and practical aspects of this goal, and defining the implementation mechanisms for the higher education system have become relevant.

Effective organization of classes with the help of gamification in the conditions of digital technologies creates a great opportunity to meet the important life achievements of students, to scientifically justify their points of view, and gives effective results in teaching subjects.

In the context of digital technologies, students can use the following software tools with the help of gamification: Moodle, Wordpress, PHP, Turbo Site, Bandicam, Audisity, Movavi Video, Editor Plus, AutoPlay, Media Studio 8, Macromedia Flash and other software.

Teaching information technology in education to students using gamification:

1. To develop, create and use competences of professors and teachers in information technology;
2. Students will be given the opportunity to activate their knowledge, develop their creative abilities and improve their professional competence in the future;
3. With the help of gamification, it is possible to effectively organize studies, to organize online and offline classes based on information technologies during the teaching process;
4. Development of competences for future specialization in students, improvement of information and communication literacy, use of games as a didactic game for educational and educational purposes and development of suggestions based on this;
5. With the help of gamification, which is one of the digital technologies, it serves to develop creative abilities in them, measure their level and develop recommendations based on monitoring, as a basis for developing a set of tasks that guide students to future work activities.

Educational gamification in the context of digital technologies has the following advantages in the reproduction of the subject by students:

 In the performance of construction tasks by students;

 Performing creative tasks in classes, expanding their creative sphere;

When solving situational problems in training;

In the formation of faith in the implementation of the educational purpose of the training session;

When performing a compilation task in self-study in the field of informatics;

In the course of education, performing tasks of analytical description;

It is very effective in evaluating educational results, making diagnostics, and solving scientific problems.

Gamification - in the teaching methodology, develops students' skills in performing creative tasks, helps to pass the topics of educational courses in a high-quality manner.

Gamification is a process that makes it possible for subjects of the educational process to perform several tasks in the field of IT and move to the next stage according to the summary of the results at each stage.

Analyzing scientific sources, literature and dictionaries, we witnessed that the word "game" is used in several meanings.

Game (English: "game" - game):

1) part of some games in the field of sports. For example, there are several games in the game of tennis (Ushakov. Tolkovyy slovar russkogo yazyka Ushakova. 2012);

2) Similar to a Colt revolver, designed to be carried in a pocket, weighing 700-740 g. 22 and 38-caliber six-shot German revolver;

3) the name of the German arms manufacturing company;

4) Heim (Heim) Albert (1849-1937) - Swiss geologist, honorary member of the Moscow Academy (1925). Conducted research on glaciology (glaciers).

Analyzing all descriptions, the term "game" was defined from the author's point of view as follows:

The game is a didactic game designed to increase the efficiency of the educational process, widely used in the field of computer-based IT, methodologically convenient, aimed at accelerating the psychological adaptation of students to future activities and developing reflection, and serves to increase the effectiveness of education.

At the stage of modernization of the educational content, in particular, it is appropriate to apply gamification of information technologies to the didactic process in education.

Therefore, in the process of higher education, in order to expand the conditions and opportunities for effective learning of educational material, the teacher implements the sequence of (theoretical) gamification of education and practical operations through games. Games can be a stand-alone learning program or part of another learning program.

Learning materials are provided to students in various forms with the help of gamification. Oral learning materials rely on natural computer "language" to describe words and sentences according to natural language features. Algorithm in games is given on the basis of a table, it serves to express it in the form of a table and calculation formulas. Algorithm in games is presented in a block diagram - a method that means that the algorithm is presented using forms called "blocks".

The step-by-step logical structure of the educational material is called a logical algorithm. A logical algorithm

serves as the main guide to achieving the goal in studying the educational material, that is, to understanding the content of the material. At the same time, the text structure itself is considered an algorithm. From this point of view, there is a need to study the quality of modern methodical support that directs to professional fields based on quality teaching of academic subjects in higher educational institutions of Pedagogy. Therefore, to adapt specialists to the requirements of the modern and promising labor market, to the innovative educational environment, to new strategies of teaching, to master the parameters related to professional activity of the constantly updated, changing and improving educational information infrastructure base, modeling of didactic processes based on gamification technologies is as follows: creation and implementation within the framework of the system there is a need to:

Continuous monitoring of students' knowledge, skills and qualifications;

organization of monitoring of current, intermediate and final control of students' and masters' knowledge based on information service.

In the studies devoted to the problems of using computer technologies in mastering the educational material (A.M. Matyushkin, I.P. Radchenko), the issues of modernization of lecture, practical, laboratory training of the teacher training process were studied. Foreign scientists: Z. Young, K. Liu studied the problem of using task-based approaches in the teaching process, E.K. Boldin, S.S. Lyapin, I.K. Andronov, R.O. Nikolaeva, I.Ya. Bagush, S.P. Novoselov, N.F. .Galkin (Russia) carried out research on the issues of step-by-step teaching and activities based on obtaining a specific result in mastering the educational material.

Scientists of our republic: A.G. Rasulmuhamedov, U.U. Jumanazarov, O'.Q. Tolipov, N. Gaybullaev, R.Kh. Djuraev, Kh.I. Issues of improving the education system are reflected in Ibragimov's research work. However, it should be noted that special research on the issues of modeling didactic processes based on gamification technologies has not been conducted in the higher education system.

In our opinion, modeling of didactic processes based on gamification technologies is effective when the following pedagogical tasks are performed:

- when the educational content of higher education institutions is improved and the new quality level is fully ensured;
- when the individual-psychological characteristics of students in the field of IT, the level of observation, their thinking and motivational framework are thoroughly studied;
- when creating methodical complexes that provide a variable teaching system in the field of informatics and information-communication for higher education;
- when the presentation of educational materials is optimally presented in accordance with the inclinations of undergraduates, etc. Consequently, during the educational process, the educational activity changes, the type of teaching is embodied as a leading activity, and the educational activity is controlled by it, and later, at a sufficiently high stage of the development of learners, the relationship between the two elements of the activity changes. Many elements of teaching are combined with learning activities and all are transferred to learners, resulting in independent learning.

Education is considered as a special social activity aimed at the young generation's knowledge of the

accumulated wealth of social experience and the organization of their practical activities.

The educational process is the purposeful sequential exchange of educational issues and all elements of education are changes aimed at forming their characteristics as a result of the activity of mastering the content of social experience of learners.

The content of education means the basics of social experience that have undergone pedagogical processing, which should be mastered by students. The study of didactic processes based on gamification technologies represents the modeling of interactions between a teacher and a student using ICT capabilities.

Based on gamification, the students' knowledge acquisition, knowledge as an integral part of the quality of education and its stages depend on the students' academic success and results. According to the theory of I.Ya. Lerner [28] about educational results, the mastery levels of students are defined as follows:

1 - level - familiarity, reflection;

2 - level - application in a familiar situation (according to an example);

Level 3 - use in an unfamiliar situation.

Pedagogical scientist V.P. Bespalko [21] divided the theory of acquisition into the following levels:

1 - level - familiar;

2 - level - reflection;

3 – level - application;

Level 4 - creativity.

In our opinion, the transfer of knowledge to students based on digital technologies is carried out in the following stages:

1 - stage: Knowing - to remember the studied materials, to collect information in the information base to be able to re-explain the educational material;

2nd stage: Acquiring skills and qualifications - being able to apply the learned knowledge in games in familiar situations;

3rd stage: Acquiring competences - being able to apply the learned knowledge and skills in unfamiliar situations: conversation, discussion, question-and-answer, creating official documents, etc;

Level 4: Being competent - the ability to use acquired knowledge, skills and abilities throughout life.

Analyzes in the research process showed that the quality of information technology training in education consists of a complex system of indicators and is determined based on the following parameters:

students' knowledge, skills, qualifications and competencies at the level of qualification requirements, the level of moral and moral development.

From the point of view of higher education didactics, the following characteristics of teaching can be distinguished:

such as alternative and problematic nature of teaching, ease of use of information and communication technologies.

consistency of educational content and forms of educational activities, provision of an atmosphere of mutual dialogue among the participants of the educational process;

such as students' activity, independence, self-development, creative activity, self-evaluation in the educational process.

S.I. In Arkhangelsky's book "Nekotorye novye zadachi vysshey shkoly i trebovaniya k pedagogicheskomu masterstvu" ("Some new tasks of a higher institution and requirements for pedagogical skills") (M., "Znanie", 2011) "Using active tools, forms and methods of education, the educational process puts forward the opinion that increasing the effectiveness of education consists of two interrelated issues: increasing the quality of education and simultaneously reducing time consumption" [p. 19, 54].

A.A. Abdukadirov in his work "Teoriya i praktika intensifikatsii podgotovki uchiteley fiziko-matematicheskikh disiplin" (T., "Fan", 1991) stated: "The majority of the teacher's study time is aimed at providing information, and a small part is aimed at determining the level of mastery of the educational material" [18] . Therefore, the lack of feedback has a negative impact on the teacher's ability to properly organize the educational process.

Based on the results of the analysis, it was found that in the conditions of digital technologies, the following shortcomings are mainly encountered in acquiring knowledge with the help of gamification for students and teaching the course of information technologies in education:

Lack of sufficient material and technical base and non-use of modern computer devices in teaching the information technology course in education;

Non-availability of high-speed Internet connection;

allocating too little time to pass new material and, as a result, not taking into account the educational needs of students, not spending enough time on activation;

leaving students to their own devices even for a short time, waiting for the answer to the presentation on the board, leaving the students unsupervised while checking homework, etc.;

giving homework without making rules or conclusions on the subject;

pass new material to students at a fast pace (not allowing to understand, write briefly) or, on the contrary, very slowly, etc.

In spite of the fact that advanced pedagogical technologies are introduced in order to improve the quality of education in the educational process, to plan the process leading to the set goal, and most importantly, to ensure the expected result, in the process of higher education, for students to master the educational material, the organization of distance education today creates the need for effective use of digital technologies..

Higher education didactics and information technologies in education are emphasized in the teaching methodology, the quality of teaching depends first of all on the scientific methodological training of the teacher. In this, the principle of awareness in didactics is of great importance. Designing the training algorithmically, briefly summarizing each item; ensure logical connection when moving from one part of training to another; to describe the text in a problematic and emotional way; using speech opportunities, examples, concrete evidence and comparisons; skillful management of students' cognitive activity, etc.

When teaching the information technology course in education, it is necessary to organize various virtual laboratories and use types of gamification in order for

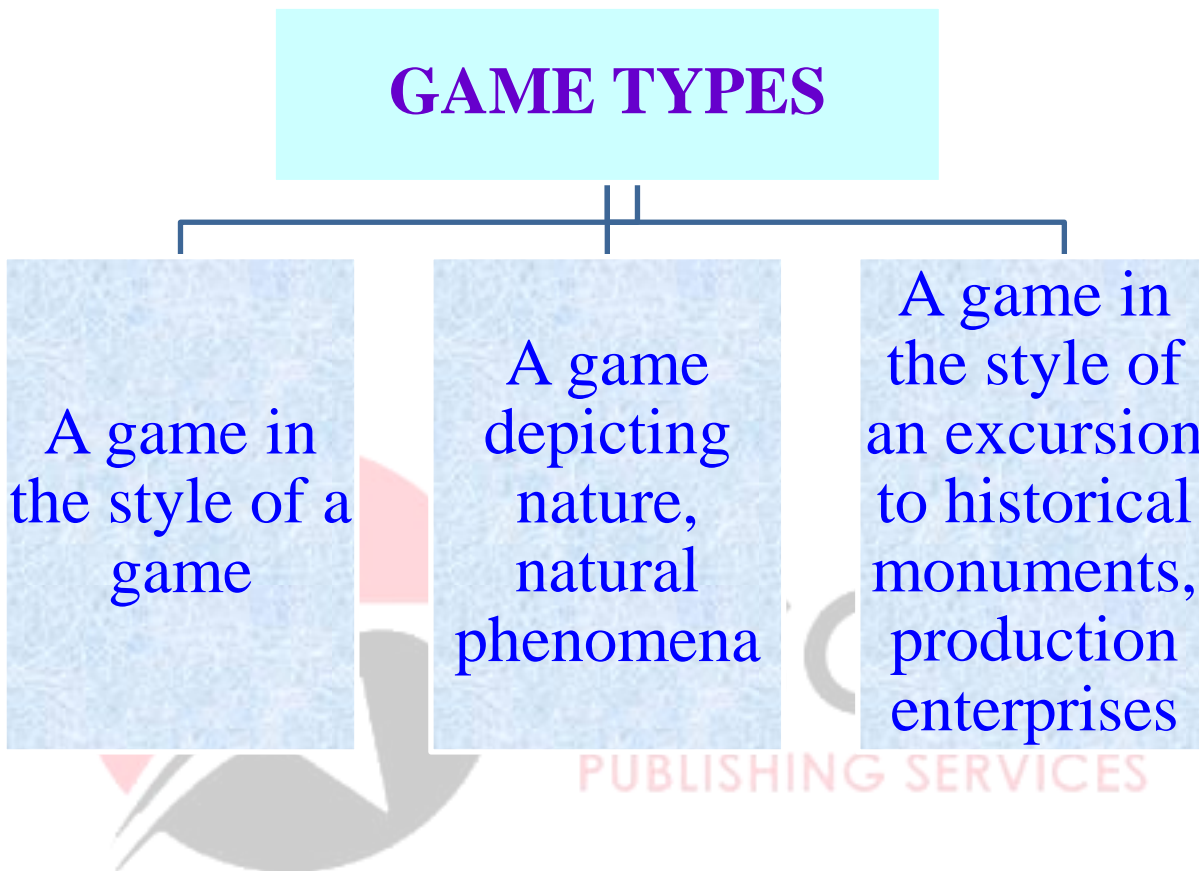students to obtain full information on the dynamics of movement (Fig. 1).

Figure 1. Types of games used in the organization of the educational process

With the help of the game, the teacher should direct students to the process of active learning.

In the context of digital technologies, the main attention is paid to educational activities in the form of computer games with the help of gamification.

With the help of gamification, digital technologies open up opportunities for students to learn a lot. As a result of the description of the presented educational material, the purpose of the subject, its main content and the questions asked by the teacher should be understandable to the students. Only when a new subject is conducted on the basis of games, with the active participation of all students, their interest in the subject will increase. In this regard, Jan Amos Comenius commented on the main issue of didactics in his work "The Great Didactics": "...the alpha and omega of our didactics is to teach less for the teacher and to search for and open the way for the learner to learn more" [p. 26,234].

It is known that in traditional education, students receive knowledge based on ready-made instructions by listening to structured information presented by the teacher. In the process of reproductive education, students engage in activities such as memorizing the information written by the teacher, giving analogies, repeating what they heard from the teacher, and become ordinary observers and listeners of the educational process.

It is important to ensure interdisciplinarity in the teaching of the Information Technology in Education course at HEIs. In the process of higher education, digital technologies, in particular, gamification, encourage students to think independently, develop their creativity, and are considered to be able to improve the knowledge system. At this point, one of the important factors in the development of students' ability to master knowledge is the formation of creative qualities in students, teaching them to think independently.

Today, the most popular types of games in the teaching methodology of information technologies in education are: Arena, AnyLogic, SIMSCRIPT, SLAM, SIMAN, AweSim, GPSS.

The principles of education mainly consist of systematic, scientific, conscious, instructional, individual approach, consistency of knowledge. Using the principles of gamification in the following order increases the effectiveness of education: motivation and interaction of learning subjects, participation and enjoyment. From a psychological point of view, gamification produces the hormone of relaxation by enjoying victory, praise and rewards. Gamification encourages people to solve complex problems, engage in sports, lead a healthy lifestyle, and protect nature.

Gamification is not a fixed idea, but a mobile system designed to take new knowledge to the next level. In Japanese corporations, employees who make unsuccessful attempts to solve the company's problem are never fired, on the contrary, they consider that an employee who has already gained experience will not make mistakes. World-leading corporations such as Microsoft, Nike, American Express, and Samsung are focusing on the use of gamification in the educational process. There are several examples of this. Nike Corporation has turned regular running into a real quest. The corporation has produced a digital program that calculates calories burned, heart rate, distance walked and other features.

By adding a competitive edge to the program to become a better runner, the company gave customers more motivation to train and buy Nike sneakers. Or, the Marriott hotel chain engages employees through expressive search. People go through various levels of familiarization with the company, take tests, interviews, as if they were playing a computer game. Whoever gets to the top level gets a 100% job in a prestigious company, or a free stay in one of those hotels. A Utah company regularly conducts a Star Tsars-style game for its employees to collect information on management. For 2 months, the employees will be "divided" into the Dark Side and Republican clans, and the managers will have to "sell products" in a certain amount. Deloitte Leadership Academy rewards users for distance learning - points and bonuses are awarded for each course taken. This incentive system has encouraged more than 20,000 managers to train at the Academy. The Element Bar Company invites brand users to assemble their own bars using a variety of ingredients and select them from the company's website.

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Gifts are invented to initiate sales. To participate, you need to register and complete a short questionnaire. Within 5 days, the company can increase the awareness of the product and increase the efficiency of sales activities. Therefore, the main principle of gamification is to provide an opportunity to receive constant, measurable feedback from the user, which provides the ability to dynamically adjust the user's behavior and, as a result, quickly master all the functions of the program.

Gamification is the application of methods typical of computer games in various situations for application software and websites in order to attract users and consumers, increase their activity in solving practical problems, using products and services. Therefore, these principles are also implemented where certain relationships already exist, that is, in educational processes. Gamification is important at its core (Figure 3):
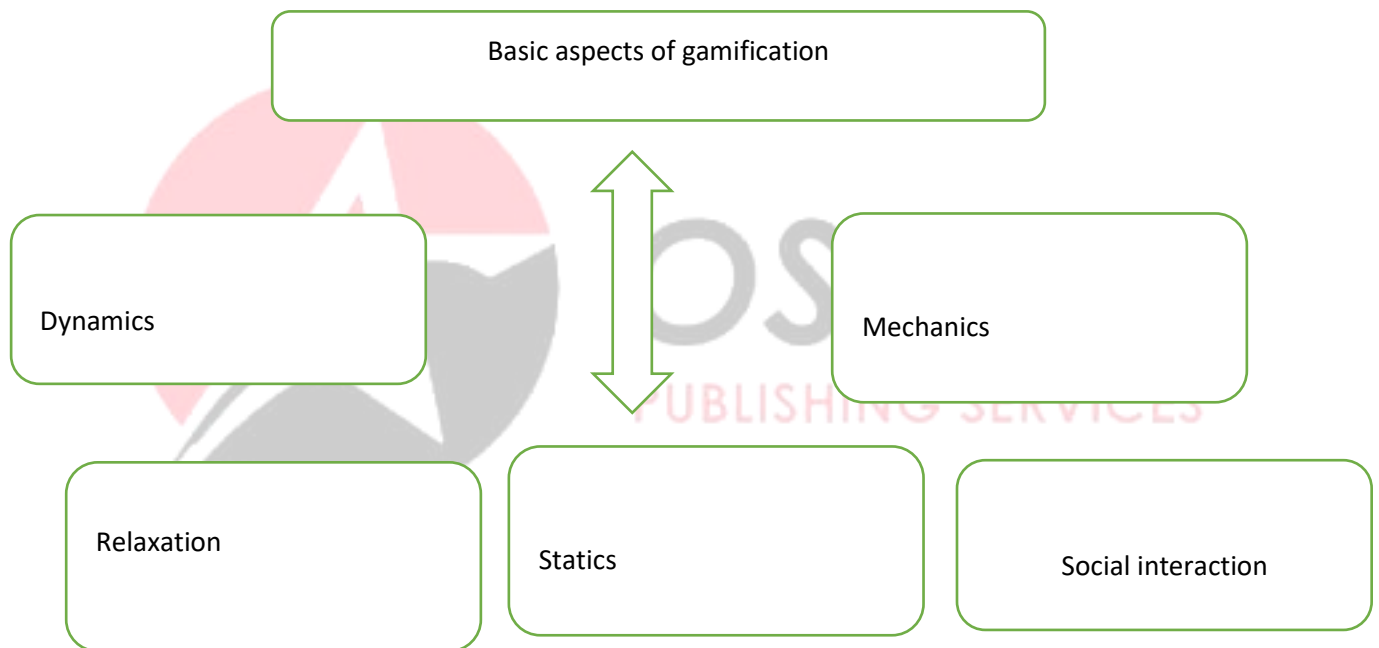

Figure 3. Specific aspects of gamification used in the educational process

CONCLUSION

Thus, in teaching information technologies in education with the help of gamification, in order to develop future professional skills of students, to develop their cognitive activity, to form skills for working with additional literature, to develop skills and competencies in using modern educational technologies, computers, the Internet, EAR

opportunities; develop skills and abilities to sort, analyze, compare important ideas in the presented educational material; increases the efficiency of the lesson, serves to create motivation for the studied subject through gamification.

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