

# Gaming Technologies in Professional Education



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**Abstract:** *The specificity of modern higher education is the organization of the learning process, as close as possible to the real professional conditions of future graduates, which is based on the actual achievements of science and practice, including various pedagogical technologies. The paper presents gaming technologies as one of the most effective in the process of organizing successful training of students in higher education. The purpose of the article is to consider the possibilities of formation of competencies of future teachers of vocational training. The paper presents the experience of the implementation of game technologies of training of students of higher educational institutions in the field of training "Vocational training (by industry)". The requirements for conducting business games taking into account the specifics of "Labor law" and "Civil law" are disclosed. The structure of games in these disciplines, as well as the functions and process of use, the criteria for assessing the activities of students in the implementation of business games. The use of business games as one of the components of gaming technologies allows improving the process of formation of competencies of future teachers of vocational training.*

**Keywords :** *game technologies, competences, competence approach, higher education institution, professional education, pedagogical technologies, game situation*

## 1. INTRODUCTION

In the process of modernization of Russian vocational education, the main purpose of the training was the training of highly qualified, competitive specialist, appropriate level and profile, with the necessary competencies (Kamenez, 2019). Ensuring the formation of competencies in higher schools is achieved through the use of modern educational technologies (Sedykh, 2019). Since in the formation of the personality of a specialist today a significant role is played by competence and activity approaches that provide a practical orientation of training, among the most effective technologies, we highlight the ones with high potential in the formation of a competent graduate (Smirnova, 2018). The educational process, with the inclusion of gaming technologies, becomes more diverse and attractive for students, it provides a high level of motivation and involvement of students in the gameplay (Smirnova, 2019). The game has ambivalence, a property that allows you to implement both real and conditional behavior (Vaganova, 2019).

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Imaginary in this process are only the conditions in which the student finds himself, and the feelings and attitude to these conditions are real (Ilyashenko, 2019). Thanks to the conventions of gaming relations, the potential of the individual is mobilized and activated, implemented creativity, awakens interest in finding new ways to solve problems with the observance of the established rules (Natalie, 2019). In the classroom, the student is "immersed" in a real situation, modeled for educational purposes (Bulaeva, 2018).

Gaming technologies contain several components: motivational, content-activity, intellectual, communicative, effective and evaluative-prognostic (Ilyashenko, 2019). Gaming technologies are characterized by the following principles: consistency, reproducibility, effectiveness, activity, dynamism, collectivity, feedback, problem-solving, independence (Vaganova, 2018).

Gaming technologies contribute to the activation of thinking; increase motivation and involvement of students in the learning process (Lubov, 2019). The use of gaming technologies in the educational process is quite common; however, they do not lose their relevance and are improved along with the development of science and technology.

Table 1 highlights functions of gaming technologies.

**Table 1**  
**Functions of gaming technologies in the educational process of higher education**

Function	Content
Teaching	Stimulating the development of cognitive activity, the development of professional skills in a playful way
Educational	Formation of evaluative and emotional attitude to future professional activity, formation of interest in the study of disciplines
Social-orienting	Formation of social experience in the process of interaction
Organizational and activity	Development of skills to analyze and select the necessary information from the available volume of material
Developmental	Development of emotional, intellectual components of the future graduate
Stimulating	Assistance in organization of positive interaction of participants during the game
Communicative	Development of professional communication skills, mutual respect, mutual understanding and interaction
Reflexive	Assessment of the formation of their skills; self-assessment of the results achieved

Games are a means of formation of many professionally significant qualities of the student's personality (practical and diagnostic thinking, intuition, improvisation, observation, resourcefulness, reflection) and activation of their activity in the educational process (Bicheva, 2017).

The using of games in training, contributing to the formation of professional skills, should be considered as an ordered and task-structured set of actions,



# Gaming Technologies in Professional Education

operations and procedures, providing a diagnosed and guaranteed result in changing conditions (Garina, 2017).

## II. LITERATURE REVIEW

Gaming technologies are part of pedagogical technologies. This is an extensive group of methods of organizing the pedagogical process in the form of various pedagogical games. The research of this issue is devoted to the work of many scientists: V. p. Bepalko, M. V. Klarin, M. M. Levina, O. p. Okolelov, V. V. Serikov, N. F. Talyzina. Pedagogical game, in contrast to the usual, has a clearly defined result, so the game is systematized for a specific purpose. The essence of gaming technologies is considered in the works of O. S. Anisimov, A. A. Verbitsky, A. M. Knyazev.

Business games are part of gaming technology, one of the main components. The choice of the game as a productive element of learning is due to some factors. In essence, the game is typical for active systems only. The game is always a movement and development both in terms of material and in terms of ideal (movement of thought). Man has a natural need for play. Simulation activity, genetically inherent in man, increases in proportion to the growth of consciousness (Bulaeva, 2018). That is to say, the game is an organic element of human development, which allows you to actively develop from an early age, so it is perceived by man as a natural factor (Chaikina, 2018).

Training game is a specially crafted model of a real workflow, which simulates professional activities and is directed on the formation of necessary competencies (Bulaeva, 2018). However, in the game, in contrast to the simulation, more elaborate procedures, rules and conditions. Gaming technologies are among the most complex and require some training from students and teachers (Abramova, 2018). According to the research of J. Carson's learning game is a situation analysis that incorporates feedback and time factor. Performance is a fundamental feature of the game. Its results are an objective assessment of learning outcomes (Potashnik, 2018). The effectiveness of game training is correlated with the emerging competencies of students (Arhipova, 2018).

Role-playing games make a person act in a certain way; build his behavior within his own role in the game. The advantage of role-playing games is to activate students' intellectual activity (Nikonova, 2019). Intellectual activity is a property of personality that reflects the procedural interaction of cognitive and motivational components in their unity (Nikonova, 2019). Intellectual activity is provided by motivation, which is the complex mechanism of correlation of personal external and internal factors of behavior, which determines the origin, direction, and ways of implementation of specific forms of activity (Markova, 2019). During the game, motivation and intellectual activity are awakened by its active nature (Kuznetsov, 2018).

The appeal to game learning as a means of formation and development of professional competences is explained by the fact that it helps the student to acquire General professional and special knowledge (Markova, 2018).

Games allow you actively to comprehend the actions and operations involved in the teaching activities (Myalkina, 2018). Games create conditions for the implementation of the contextual approach in vocational training, forming professional motivation and readiness for future activities,

allow implementing a person-oriented approach and personifying vocational training.

The content of the business game includes the subject of the game, the script, the role, the rules, and the evaluation system. The authors identify several classifications of business games: for the simulated object (managerial and functional); on the activity of interaction (interactive and non-interactive); design (simple and complex); by the uniqueness result achievement (rigid and nonrigid). Also, the games are divided into focus (educational, research, experimental); the form of interaction of participants (with interaction through various types of communication or no interaction, when members of one group cannot influence the results and behaviors of another group); the methods of processing and transmission of information; on the dynamics of the simulated situations (self-developing, regulated and arbitrary time, where time depends on the complexity of the game); by the final product (material or abstract result).

## III. METHODOLOGY

The paper analyzed the process of implementation of game technologies of training of students of higher educational institutions in the specialty "Vocational training (by industry)", profile "Law and law enforcement". We studied three groups of second-year students of 25 people. Students participated in business games in the disciplines of "Civil law" and "Labor law". We reviewed the holistic process of the games, including its preparation. Features inherent in gaming technologies contribute to the better formation of conditions for future professional activity. Future teachers of vocational training in future activities need skills in the use of various technologies, including gaming. During the game, they master these technologies and will be able to use them in their professional activities. Conducting business games in the educational process of higher school helps to increase the level of formation of students' competencies.

## IV. ANALYSIS AND DISCUSSION

Capabilities of game technologies in the development of future graduates are wide enough: identify and consider in detail a large number of problems for any subject; learning takes place in the frames of the activity approach, that is, learning "by doing"; the organization of social interaction and implementation of training to engage in constructive dialogue on a professional level; promotes a more active participation of students in the learning process; the availability of meaningful and multi-faceted feedback; the formation of value orientations and attitudes of professional activities; manifestation of all qualities of personality, including its individual characteristics. The structure of the game is represented by several components: roles; gaming action, acting as implementation roles; games use objects that replace the real stuff; the real relations between the parties; plot (content). As we said above, the implementation of gaming technologies is one of the most complex processes in education, so you need the necessary training.

In the planning and conducting games and game classes, it is important to take several basic requirements.

The planning game is to exercise after reading the main lectures of the course (accounting for the theoretical training of students); to conduct the business game, you must allocate sufficient amount of time (depending on the goals, objectives and themes); before the game, students need time for preparation; the teacher must develop rules on which to base the game and to be followed by its members, a system of fines for failure to comply with the established rules.

The rules reflect the characteristics of real processes. The teacher develops a scenario of the game, acting as a basic element of the game procedures, reflecting the principles of problematical, of joint activities. Scenario – a description of the game in verbal or graphical form to explain the nature and sequence of activities of the participants. Here are the main stages of the game. The scenario contains a description of the situation. The teacher must also choose the situation of game interaction. Under the situation is taken to understand the set of circumstances and relationships that create a particular situation. The nature of situations can be different, which can affect the development of events. To create learning situation that can trigger student activism, the teacher must have a clear understanding of the structure of such a situation. Game situations can be used already at the initial stages of training. For example, it can be simple situational simulation games related to situations of professional communication. Gradually, these situations become more complicated and move into the sphere of more complex situations of future professional activity. The student must try to pass the situation "through himself", that is, that the situation acquires a personal character. It should be noted that in a real-life situation, the direction and nature of the human reaction are predetermined, in educational conditions; the reaction of the student must be programmed by the teacher. It can be different. The natural situation and the reaction to it are not repeated, it is unique every time, and the educational speech situation can be played repeatedly. For students studying in the field of training "Vocational training (by industry)" in the classroom in the disciplines of "Civil law" and "Labor law", various business games are used. For second-year students, their conduct is arranged as follows. At the first stage, preliminary training of students is carried out (theoretical development of educational material, independent work on the recommended literature, justification of the topic, informing the participants about the conditions of the game by the teacher. The next stage is characterized by independent work of subgroups, distribution of roles. The problem, the main aspects and the proposed ways to solve it are discussed. Next, students collect and allocate the necessary information from all available material on a given topic. The next stage consists of discussing the results, clarifying, supplementing or refuting the actions of the participants. Students put forward various solutions to the problem. At the final stage, the analysis of the business game and summing up, as well as reflection is carried out by students.

In higher education, the business game can act as final control. For example, a business game on the discipline "Civil law" on the topic "Trial on the case of termination of ownership" is held in small groups of 5-7 people.

The game aims to check the formation of knowledge and skills of students in the discipline.

Preparatory stage: week. The story: a real fact, the real situation is. To prepare a civil case, all students are involved to agree on the scenario and the composition of the persons

participating in the game. In this process, specific roles are established (judge, Prosecutor, representative, specialist, plaintiff, and defendant). The business game is conducted in accordance with the plot of the civil case. Participants must prepare and submit a statement of claim, make a decision on the initiation of the case and its preparation for trial, make the necessary procedural actions under the guidance of the teacher. The statement of claim is prepared by the "plaintiff" and presented to the "court", objections to the claim are presented by the "defendant" and "representative" on his part. All actions performed by students are carried out in accordance with the civil code of the Russian Federation. During the lesson, the teacher can take a short break, during which the work of students is discussed.

The business game ends with a ruling on the case. At the final stage, the work of each student is discussed; the positive aspects and moments that require improvements are highlighted. Students conduct self-assessment of work, reflection.

I. Table 2 highlights the criteria by which the evaluation of the gaming activities of students.

**Table 2**  
**Evaluation criteria of students' gaming activity**

Criterion	Content
Effectiveness of decisions made by students	Compliance with deadlines, the use of recommended methods and techniques, novelty and originality of the decision
Intergroup interaction	Speed of decision-making, reasonableness, assistance to other groups
Interaction within a group	Взаимопонимание и доверие между участниками одной группы
Personal qualities of participants	Honesty, initiative, independence, diligence, ability to show organizational qualities

An assessment provides and control of decisions made by students from the position of norms and requirements established by the teacher and the organic deployment of gaming activities according to plan.

Also, the business game in higher education was held on the discipline "Labor law" on the topic "Labor relations".

The goal of the game: consolidation of theoretical material on discipline. The plot of the game: between employees and employers there was a conflict, the labor legislation is designed to facilitate the resolution of conflict situations between employees and employers. It is necessary to resolve the conflict based on of compliance with labor law and taking into account the interests of the parties. The participants are: the head of the enterprise, the employee, the labor collective, the commission on labor disputes, and the conciliation commission. Students distribute roles, study material on the topic, and prepare arguments, using the provisions of the Labor Code of the Russian Federation. The business game ends with the announcement of the results of the conflict resolution. At the final stage, students together with the teacher analyze the past game and identify its pros and cons, the need to fill gaps in knowledge, conduct reflection.



Estimation criteria of students' participation in the business game are: the quality of protection of its own position (the ability to convincingly express their thoughts, to take the opposite point of view, to answer the questions of opponents); the accuracy of the rules; the activity during the activity; use of credible relevant sources of information, the active operation of the provisions of the Code; degree of organization; the degree of independence of judgment; their practical significance.

Evaluation functions can be performed by teachers and public student voting, as well as by students selected for the group of experts. Summarizing and detailed game analysis: an overall assessment of the game; strengths and weaknesses; causes of emergence; self-esteem participants performed tasks; analysis and evaluation of experts of students.

The role of the teacher in the process of preparing students for the game is shifted to the side of the Advisory, so students are forming the skills of independence, responsibility for the work performed. The game promotes students' self-organization. Students learn to select the necessary information from a large amount of material, evaluate their own activities, conduct reflection, highlight and correct mistakes. During the game, students learn to interact in a team, argumentatively build their evidence position, based on real facts, listen to the opinion of the opponent, which helps to form communication skills.

The use of business games in the educational process allows you to combine theoretical and practical training, to gain experience in activities as close as possible to the real professional and form the necessary competencies.

### V. CONCLUSION

We have considered the process of using the institution of higher education gaming technology and identified its features: the presence of well-defined outcome; the creation of conditions close to the professional; the need for programming students' reaction by the teacher in the gaming environment, individual roles, and the variability of action. Educational game, which is an integral part of gaming technologies, serves as a means of developing creative thinking, including professional; imitation of specific objects and processes; imitation activities of managers and professionals, workers and consumers; the achievement of gaming and educational purposes; it is the implementation of the rules and engagement within their roles.

We analyzed the process of implementation of business games in the educational process of higher education on the example of training students enrolled in the direction of "Vocational training (by industry)." Thanks to business games, the formation of competencies is more effective, because the game immerses the student in the conditions that allow students to join the resolution of problems that may arise in the real workflow.

Due to the use of gaming technologies in the educational process, the preparation of students for professional activities is improved; the level of competence formation is increased.

### REFERENCES

1. Kamenez, N., Vaganova, O., Smirnova, Z., Kutepova, L., Vinokurova, I. Development of content of educational programs of additional education for professor-teaching composition in organization of

- educational services of training with disability (2019) AMAZONIA INVESTIGA Vol. 8 Núm. 18: 267-278.
2. Sedykh, EP; Zafir, LN; Vaganova, OI; Smirnova, ZV; Bulayeva, MN Use of training technology in the preparation of students of engineering specialties (2019) AMAZONIA INVESTIGA Vol. 8 Núm. 18: 461-470.
3. Smirnova, ZV; Kamenez, NV; Vaganova, OI; Kutepova, LI; Vezetiu, EV The experience of using the webinar in the preparation of engineering specialists (2019) AMAZONIA INVESTIGA Vol. 8 Núm. 18: 279-287.
4. Smirnova Zhanna V., Mukhina, M.V., Kutepova, L.I., Kutepov, M.M., Vaganova, O.I. Organization of the research activities of service majors trainees (2018). *Advances in Intelligent Systems and Computing*, 622, pp. 187-193.
5. Ilyashenko, LK; Markova, SM; Mironov, AG; Vaganova, OI; Smirnova, ZV Educational environment as a development resource for the learning process (2019) AMAZONIA INVESTIGA Vol. 8 Núm. 18: 303-312.
6. Ilyashenko, LK; Gladkova, MN; Kutepov, MM; Vaganova, OI; Smirnova, ZV Development of communicative competencies of students in the context of blended learning (2019) AMAZONIA INVESTIGA Vol. 8 Núm. 18: 313-322.
7. Vaganova, O. I., Smirnova, Zh. V., Markova, S. M., Chaikina, Zh. V., & Bulaeva, M. N. (2019). Organization of partnerships for additional educational services on the example of the interaction of the educational institution with the health and cultural centre. *Perspektivy nauki i obrazovania – Perspectives of Science and Education*, 39 (3), 500-514. doi: 10.32744/pse.2019.3.38
8. Vaganova O.I., Ilyashenko L.K. The main directions of implementation technologies of student-centered education in high school. *Vestnik of Minin University*. 2018. vol. 6, no. 3. p.2 DOI: 10.26795 / 2307-1281-2018-6-3-2 (in Russian).
9. Natalie V. Kamenez, Zhanna V. Smirnova, Olga I. Vaganova, Natalia V. Bystrova and Julia M. Tsarapkina, Development of Instructing Techniques in Professional Training, *International Journal of Mechanical Engineering and Technology*, 10(02), 2019, pp. 899–907
10. Lubov K. Ilyashenko, Zhanna V. Smirnova, Olga I. Vaganova, Elena A. Chelnokova and Svetlana N. Kaznacheeva, Methods of Conducting Practical Training on the Subject "Power Sources for Welding", *International Journal of Mechanical Engineering and Technology*, 10(02), 2019, pp. 908–917
11. Bulaeva M.N., Vaganova O.I., Gladkova M.N. Activity technologies in a professional educational institution. *Baltic Humanitarian Journal*. 2018. t. 7. no. 3 (24). pp. 167-170. <https://elibrary.ru/item.asp?id=36237878> (in Russian).
12. Bicheva I.B., Filatova O.M. Formation of the teacher-leader in the educational process of the university. *Vestnik of Minin University* (2017) no. 3(20); pp. 5. <https://doi.org/10.26795/2307-1281-2017-3-5> (in Russian).
13. Bulaeva M.N., Vaganova O.I., Gladkova M.N. Activity technologies in a professional educational institution. *Baltic Humanitarian Journal*. 2018. t. 7. no. 3 (24). pp. 167-170. <https://elibrary.ru/item.asp?id=36237878> (in Russian).
14. Bulaeva M.N., Vaganova O.I., Koldina M.L., Lapshova A.V., Khizhnyi A.V. Preparation of bachelors of professional training using MOODLE. Popkova E.G. (ed.) *The Impact of Information on Modern Humans*. Springer, 2018. Vol. 622, pp. 406-411. [https://doi.org/10.1007/978-3-319-75383-6\\_52](https://doi.org/10.1007/978-3-319-75383-6_52).
15. Chaikina Z.V., Shevchenko S.M., Mukhina M.V., Katkova O.V., Kutepova L.I. Electronic testing as a tool for optimizing the process of control over the results of educational training activities. Popkova E.G. (ed.) *The Impact of Information on Modern Humans*. Springer, 2018. Vol. 622, pp. 194-200. [https://doi.org/10.1007/978-3-319-75383-6\\_25](https://doi.org/10.1007/978-3-319-75383-6_25)
16. Garina, E.; Kuznetsov, V.; Yashin, S.; et al. Management of Industrial Enterprise in Crisis with the Use of Incompany Reserve . Overcoming uncertainty of institutional environment as a tool of global crisis management: Conference on Overcoming Uncertainty of Institutional Environment as a Tool of Global Crisis Management Location: Athens, GREECE Date: APR, 2017. Book Series: Contributions to Economics. 2017. Pages: 549-555.
17. Abramova N.S., Vaganova O.I., Kutepova L.I. Development of educational and methodological support in the context of the implementation of information and communication technologies. *Baltic Humanitarian Journal*. 2018. t. 7. no. 2 (23). pp. 181-184. <https://elibrary.ru/item.asp?id=35327269> (in Russian).

18. Potashnik, Y.S., Garina, E.P., Romanovskaya, E.V., Garin, A.P. & Tsymbalov, S.D. Determining the value of own investment capital of industrial enterprises (2018) *Advances in Intelligent Systems and Computing*, 622, pp. 170-178.
19. Prokhorova M.P., Semchenko A.A. Involving of trainees-future teachers of professional training in project activities in the discipline. *Vestnik of Minin University*. 2018. vol. 6, no. 2. p. 6. DOI: 10.26795/2307-1281-2018-6-2-6.
20. Arkhipova, M.V., Belova, E.E., Gavrikova, Y.A., Lyulyaeva, N.A., Shapiro, E.D. Blended learning in teaching EFL to different age groups (2018) *Advances in Intelligent Systems and Computing*, 622, pp. 380-386. DOI: 10.1007/978-3-319-75383-6\_49.
21. Nikonova, NP; Vaganova, OI; Smirnova, ZV; Chelnokova, EA; Kutepov, MM Methodological support in partnerships with the institution of additional education and teachers (2019) *International journal of applied exercise physiology*. 2019, Vol. 8 (2.1) pp. 339-346.
22. Nikonova, NP; Vaganova, OI; Smirnova, ZV; Bystrova, NV; Markova, SM Providing partnerships and promotion of additional educational services (2019) *International journal of applied exercise physiology*. 2019, Vol. 8 (2.1) pp. 347-355.
23. Markova, SM; Zhanfir, LN; Vaganova, OI; Smirnova, ZV; Tsyplakova, SA Department of educational process in conditions of implementation of interactive training of future engineers (2019) *AMAZONIA INVESTIGA* Vol. 8 Núm. 18: 450-460
24. Kuznetsov, V.P., Romanovskaya, E.V., Egorova, A.O., Andryashina, N.S., Kozlova, E.P. Approaches to developing a new product in the car building industry (2018) *Advances in Intelligent Systems and Computing*, 622, pp. 494-501.
25. Markova S.M., Narcosiev A.K. Professional education of vocational school students. *Vestnik of Minin University*. 2018. Vol. 6, no. 3. P.3. DOI: 10.26795/2307-1281-2018-6-3-3.
26. Myalkina E.V., Sedhyh E.P., Zhitkova V.A., Vaskina V.A., Isaykov O.I. University resource center as an element of social development of the region. *Vestnik of Minin University*. 2018. Vol. 6, no. 3. P. 1. DOI: 10.26795/2307-1281-2018-6-3-1.

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