Improvement in the Learning Environment through Gamification of the Educational Process

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ABSTRACT

At the present time, the issues of gamification, including those, affecting the creation of favorable learning environment, draw more and more focused attention of many foreign and Russian scholars that conditions the relevance of the research. The purpose of the article is to represent the results of the study on the influence of gamification on improvement of the learning environment and its effectiveness. To identify the nature of views on the creation of favorable, safe learning environment by means of the implementation of the game technologies in the education of the students, there has been developed a methodology of sociological research, based on the general scientific methods, research and experimental events. Sociological methods (overt observation, questionnaires: interviewing, questioning), statistical methods, comparison methods, content analysis, visual and systematic analysis have been actively implemented. As part of the study it was found out that the existing system of motivation of educational and research activities of students in RSSU is estimated insufficiently high. Herewith, obtained experimental data point out that gamification enables to create the conditions for students' motivation for a long time, turning their training into educational and interesting game, contributes to the refinement of students' adoption of learning material and reduces the level of stress while waiting for the evaluation of their skills and knowledge, changes the behavior of the students, promotes the formation of new habits. The statement that in the course of the study student receives positive emotions, feeling alert and alive has served as the basis for the gamification implementation.

Introduction

Urgency of the problem

The effectiveness of any educational organization activity depends on many factors. One of the most important is learning environment. In order to achieve

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favorable, safe educational norms there should be a clear vision on what this concept involves. Learning environment is understood as the circumstance, wherein the educational process runs under the impact of objective factors that influence the trainee and determine his intellectual and physical capabilities of new experience perception, as well as health and attitude towards learning. The main factors include: social, economic, technical, organizational, natural and natural and common.

Gamification (from the English "gamification") - is the concept of applying game principles and mechanics in non-gaming activities, particularly in education. High hopes are laid on gamification in the field of creation of favorable learning environment and promotion of healthy mode of life. Gamification of educational process can be simultaneously attributed to the social, organizational, natural and economic factors, as all of these factors to a greater or lesser extent can be reformatted through the game. In addition, gamification enables to resolve the contradiction between the imposed by the socio-economic situation requirements to young specialists, conditioned by the need to find innovation in the work, and actually received professional skills, knowledge and arts of modern graduates (Frolova, 2014, p. 56).

A wide range of foreign and Russian researchers have been involved in the study of questions of creation of favorable employment terms, the uprise of the stuff needs for the highly professional, productive work. Back in the last century V. Waterson (1946), A.H. Maslow (1954), M. L. Maehr (1974), A.V. Feigenbaum (1994), A.K. Gastev (1929), V.A. Yadov (1982), L. Trofimova (1996) were engaged in various aspects of improving working conditions.

Literature Review

Gamification has been studied and implemented since ancient times in the training of military experts in ancient China - Sun Tzu, in Russia - A.V. Suvorov, M.I. Dragomirov, A.A. Svechin, G.S. Isserson and many others. It is easy to recall the famous "Science of Victory" of A.V. Suvorov and his motto: "Train hard, fight easy."

In business and staff training gamification has been implemented later. Nowadays, the issues of gamification, including those, affecting the creation of comfortable learning environment attract more and more foreign and domestic scholars. In the focus of their interest are modern methods of the behavioral therapy for fragmentary gamification of activity (Hall, 2004); technologies of laying the gamification into philosophy, consciousness of people of different age (Retyunskikh, 2003); playing methods of canvassing of customers (Popov, 2006); the problem of training and recruitment of generation "Y" (Nemkov, 2013); complex attraction of the game in the business processes (Zickermann & Lynder, 2014); game thinking in marketing, innovation and motivation of employees, the prospects of learning and use in the labor process of "millenials" who have over-dependence on the game (Werbach & Hunter, 2015). There poses a separate question of gamification of educational process in universities, the creation of favorable learning environment, getting professional knowledge, skills. This aspect has started to raise mainly in the 21st century. A number of scientists review the effectiveness of such method of gamification in education as a gameshtorming (Gray, Brown & Macanufo, 2012); elements of coaching in the training of personnel (Chulanova, 2012; Zaitseva et al, 2015; Olkhovaya, 2016);

for the raising of efficiency of educational process Fuzzy-approach for the composition of various training scenarios is applied (Hovakimyan, Sargsyan & Ziroyan, 2014; Vinogradova et al, 2016); gamification of educational establishment during the grading (Vinichenko et al, 2016; Kirillov et al, 2015), gaming technologies in the creation and advance of students' time-management; coping with stress in the professional life (Barck-Holst et al, 2015; Zaitseva et al, 2016); the use of computer technology (Veretehina, 2015). Moreover, in the field of education there is a search for standardization of the moral aspects, including gamification. Taking into account the advantages of gamification in the learning process, Russian State Social University (RSSU) conducted the experiment to identify the nature of the gamification effect on the learning environment.

Materials and Methods

To reveal the character of the views on the creation of favorable and safe learning environment through the introduction of game mechanics into the students' training, general scientific methods, research and experimental activities on the basis of methods of cconfrontation, comparison, content analysis, visual and system analysis. Visual and system analysis made it possible to reduce the data on the groups under research to its components and identify the nature of the views of students on the learning environment during the entire survey period, and synthesis - to combine them into a coherent whole. Sociological methods (observation, questionnaires: interviewing) were used to reveal the attitude towards social phenomena, associated with the problem of creating a favorable and safe learning conditions. Statistical approach was implied to analyze the obtained data in order to justify the conclusions on the occurrence and solution of the problem of creating favorable and safe learning environment. The method of observation was also implemented.

While conducting the survey it was assumed that gamification represents another content, which contributes to the fact that in the course of study the student gets positive emotions, feeling alert and alive. In the course of the survey various game mechanics and activities were used.

One of the simplest practicing methodics of gamification is the application of the principle of gradual rate of information, the main point of which lies in the dividing of complex tasks into simpler and smaller. It should be combined with the principle of gradual complication. The involvement of students is based on simple tasks, and then it is necessary to use a gradual complication, which allows the student to feel the onward movement and progress. The sense of progress can give indulge the student, forcing him to keep playing and learning more. For certain tasks, or for obtaining the satisfactory results the students were given virtual rewards.

Brain-ring - the main task of the game mechanics is to go ahead of the contender in finding the right answer. Students can compete both individually and timing up in a few commands. In the game "What? Where? When? " students' team compete at the same time not simultaneously with all the teams, but only with one of the them. "Jeopardy" aims not at team cooperation and logic, but erudition and specific knowledge of the students.

Scholastic debate involves public discussion of a matter of argument on the report, made by one of the students that induces to active cognitive activity of trainees, develops initiative and creativity, the ability to promote their beliefs.

During the class it is required to simulate problematic situations gradually by presenting of the challenges or to state the problem issues. Such workshops should involve free exchange of views. Each student has the right to ask the speaker to express an alternative opinion.

Discussion with the division of the group on the opposing teams includes a discussion of a certain matter or problem by dividing the training group on the like-minded teams. The approaches to division into opposing teams and their number may be different. To our opinion, the most acceptable and useful for carrying out is a division of the group at the opposing teams in the matter of workshop. Each team is offered to prepare a joint reply to the raised in the course of the training problematic questions and their ground. In advance teacher gives each issue to a rapporteur and those, responsible for the issues, discussed in the class. Herewith, representatives from other team serve as their opponents. The more issues under consideration are in the question, the more completely the matter will be discussed.

During the workshop with dividing the groups in the opposing teams it is recommended to place the trainees so that they are able to see the counter team in front of them while discussing the issues rose. For the discussion to run on track, the tutor is recommended by asking additional questions, joining one or another opinion of the teams, expressing their opinion to guide the scientific debate of the students to the direction that will ensure the achievement of the goals of the class. At the beginning of the discussion it is reasonable to give an opportunity to speak out for early chosen "expert" group.

Analysis of practical situations is a method, linked with the review of practical situations (case method). The main purpose of this method is to inoculate to the trainees the skills of analysis of the information, structuring, development of abilities to identify the key problems and generate alternative solutions, evaluate them and find the optimal solution, to work out the program of action. At the core of the reviewing of practical situations lies a group discussion in which students play active role, a leader directs and controls their work.

Technology of case-method (case study) offers students to comprehend and analyze the real life situation. It forms information field, provides its activation, organization of information communications, bringing into contact, completion of the field with information and use of information that accumulates in it. This interactive teaching method is gaining the positive attitude of the students, as they take it as a game.

Case method allows the participants of the training to discover the work experience of their and other organizations (the content of specific situations), to develop analytical skills, decision-making skills and experience in tactic and strategy development. For the quality use of this method the students are required to have a certain level of theoretical knowledge and professionalism. To the point, case method, implemented in the management training is a long known analytical lesson in Russia that was originated in the Imperial Nikolay Academy of Czarist-era and was comprehensively developed in the middle of the last century in the military Academy n a. M.V. Frunze.

Simulation exercise (basket method) - at the bottom of this method lies the imitation of common situations, encountered in the working process. During the workshop a student serves as an official body, who is placed under specific duty -

review of reports, letters, faxes, the adoption of certain actions. In such a way, a trainee receives some information about the official that he plays. Simulation exercises can include the visits of different people, impromptu meetings, telephone calls.

Business simulation - interactive form of class holding, which involves the reconstruction of content and social area of professional activities. In the course of its holding the participants perform the modeling of systems of relations, specific to one or another type of practical training. As means of modeling of different conditions of professional activities, aspects of social interaction and human activity, business simulation serves as a method of search for the new ways for its performance.

Business-simulation includes a wide range of active learning methods, such as discussion, brainstorming, action according to the instructions, case analyses, etc. The learning process in the business-simulation is getting close to the real practical activity of managers and specialists that is achieved by usage of real models of socio-economic relations.

The control stage of conducted research aimed to identify the results of improvement in the learning environment. The third and fourth-year training groups for the direction "Human Resources Management" were engaged into the study on the view on the gamification influence on the improvement of the learning environment and its effectivness.100% coverage of the groups was assumed. However, insignificant proportion of students (3-5%) was not included to the research group for various reasons (illness, participation in competitions, other objective reasons). The sample compiled 142 students.

Results

In the course of the study on the gamification influence on the improvement of the learning environment and its effectiveness it was found that the existing system of motivation of educational and research activities of RSSU students estimated not very high (Fig. 1). A very high proportion of respondents, rated it as unsatisfactory (10%), at the same time, only 7% of the students rates it as excellent. The number of "good" and "satisfactory" grades equitable (respectively 45% and 38%).

Figure 1. Distribution of respondents' answers to the question: "How do you appraise the system of motivation of educational and research activity of students in RSSU?" (in % of respondents)

A large majority of respondents (89%) believe that game technics can increase students' interest to learning and improve learning environment (Figure 2). And only 8% believe in the opposite.
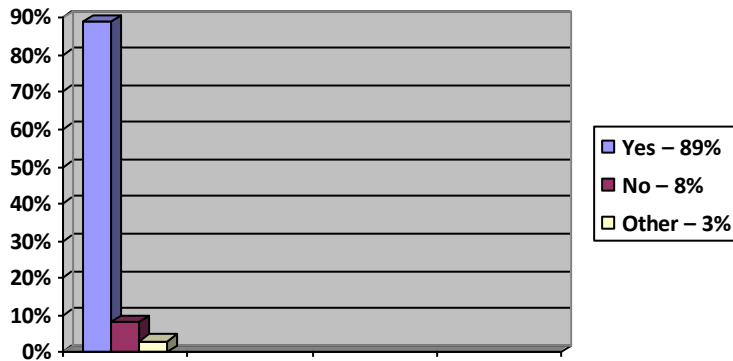

Figure 2. Distribution of respondent' answers to the question: "How do you consider, may the game technics increase students' interest to learning and improve the learning environment?" (in% of respondents)

In the rating of the characteristics that attract a modern student the first places are occupied by: excitement (competitive nature), freedom of choice and acknowledgment of the achievements (Figure 3.). Less important factors are lack of consequences, virtual space and the victory.
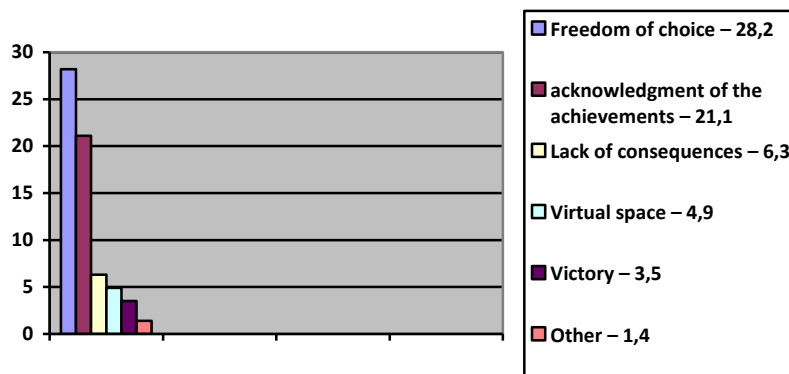

Figure 3. Distribution of respondents' answers to the question: "What are the characteristics of games, attracting a modern student?" (in% of respondents)

According to the results of the study, differences in the preferences of game tools that can help to improve the module-rating system at RSSU are very significant (Fig. 4). However, the leading characteristics are awards 38,8%, points (23,2%) and rating of achievements (21,8%).
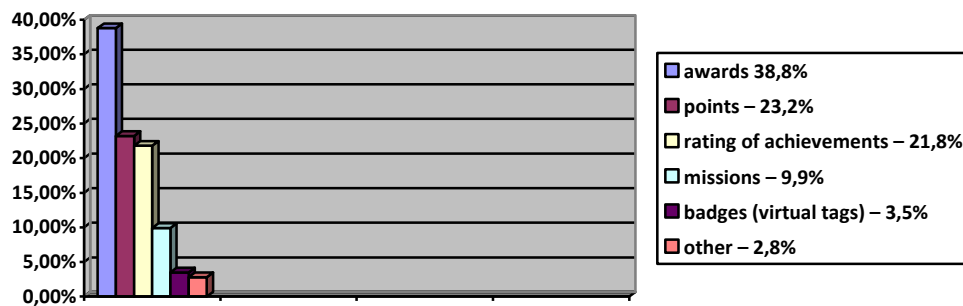
Figure 4. Distribution of respondents' answers to the question: "What kind of game mechanics will help to improve the module-rating system at RSSU?" (in% of respondents)

The vast majority of students claims that the concepts of "game" and "study" are compatible (Fig. 5)

Figure 5. Distribution of respondents' answers to the question: "Are the concepts co of «game "and" study "compatible?" (in % of respondents)

The data of the undertaken study indicated that, according to the students, in the course of the classes a variety of game types will be effective (Fig. 6), but quests are the leaders.
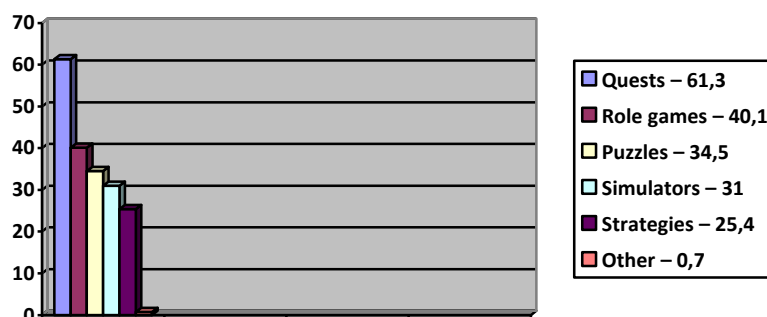

Figure 6. Distribution of respondents' answers to the question: "What kind of games will be effective in the course of the classes?" (in% of respondents)

Among the forms of game-playing that will be more interesting, computer technologies stand out (Figure 7).
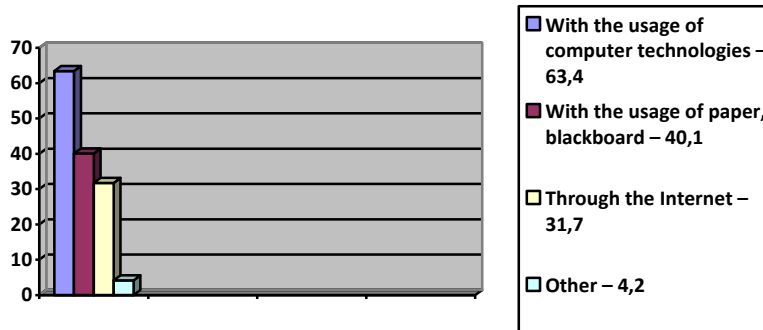

Figure 7. Distribution of respondents' answers to the question: "What forms of game-playing will be more interesting" (in% of respondents)

According to the students, almost all of the popular TV-shows can be taken as a basis for the development of gamificaton of learning sessions, but the main attention was drawn by the game, "Who Wants to be a Millionaire?" (Figure 8).
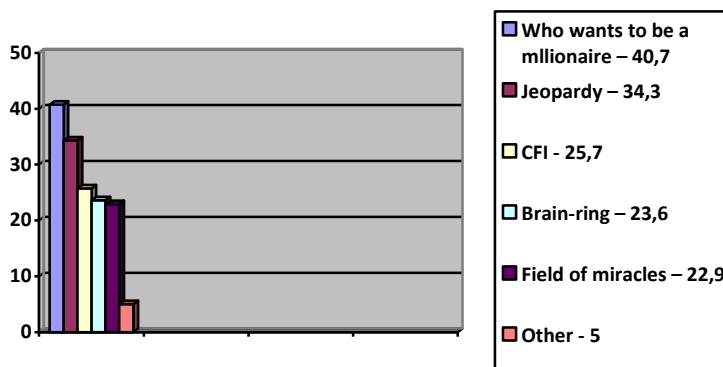

Figure 8. Distribution of respondents' answers to the question: "Which of the listed TV shows can be taken as a basis for the development of gamification of learning sessions?" (in% of respondents)

For the effective implementation of gamification into educational activity of students, according to the respondents, the following factors are important: more creative teaching staff, the availability at the University the system of electronic communications (corporate network) with the personal account for students and tutors, the presence of gamification tools, the will of the administration and students' participation in the development of activities (Figure 9).
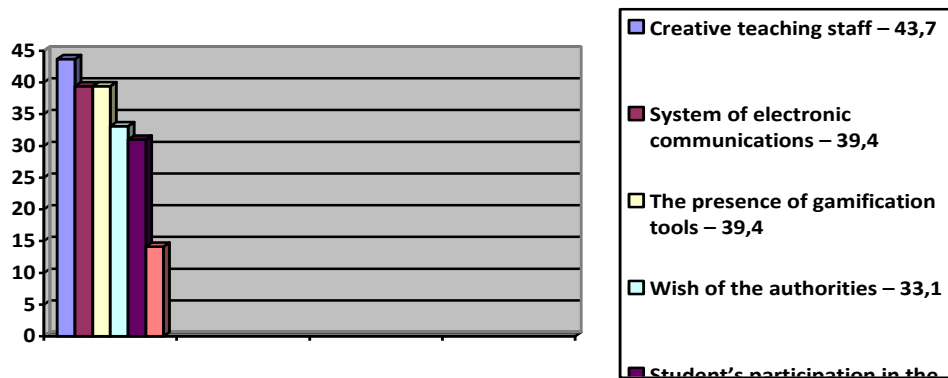
Figure 9. Distribution of respondents' answers to the question: "What is necessary for the effective implementation of gamification in the learning activity of the student?" (in% of respondents)

Most of all, students are interested in obtaining professional knowledge and skills during the games, held in the course of the study (Figure 10).
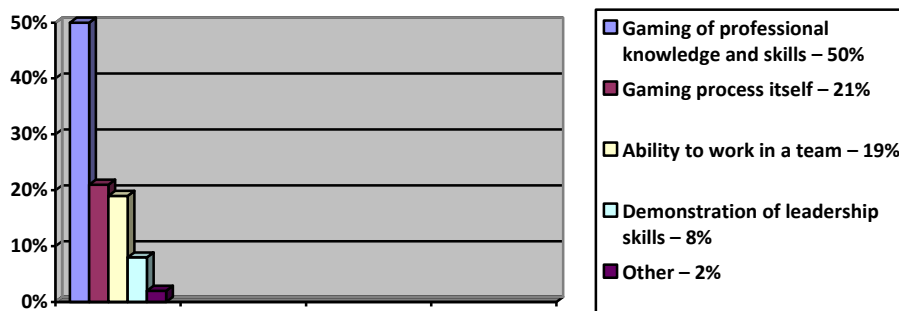

Figure 10. Distribution of respondents' answers to the question: "What are you most interested in the games, held in the course of the study?" (in % of respondents)

The main part of the respondents considers it to be important that the games subject coincides with the problems and situations, occurring in the future professional activity (Figure 11).

Figure 11. Distribution of respondents' answers to the question: "Is it important for you that the games subject coincides with the problems and situations, occurring in the future professional activity " (in % of respondents)

At the same time, according to a survey, conducted in the course of the study, not all of the students wish to participate in the development of gaming activities (Figure 12). Only 23% of respondents want to participate in the elaboration of gaming activities.

Figure 12. Distribution of respondents' answers to the question: "Do you have a desire to participate in the development of gaming activities?" (in % of respondents)

Most of the students found it difficult to answer the question: "Is it important for you to gain the skills of the introduction of elements or system of gamification within the organization where you will work," (Figure 13). At the same time, 41% of respondents answered affirmatively.
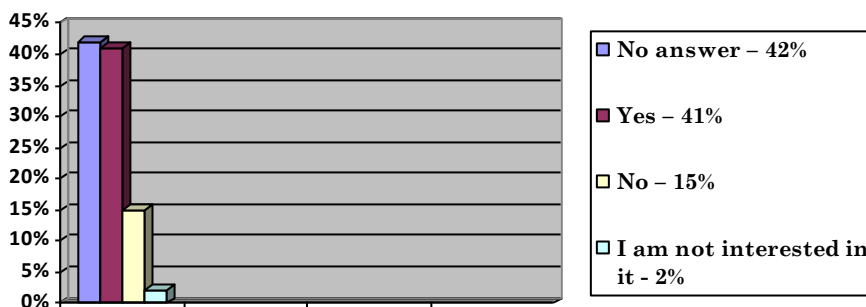

Figure 13. Distribution of respondents' answers to the question: "Is it important for you to gain the skills of the introduction of elements or system of gamification within the organization where you will work?" (In% of respondents)

Only 15% of the respondents are ready to continue the development of a game situation in their daily lives after the classes (Figure 14). The majority (67%) will act as the occasion requires.
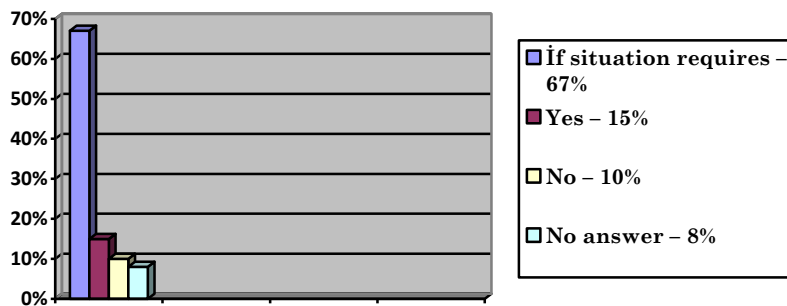
Figure 14. Distribution of respondents' answers to the question: "Will you continue the development of a game situation in their daily lives after the classes?" (In% of respondents)

67% of the respondents are sure that the implementation of gaming technologies of training at the university will improve the learning environment and the quality of training (Figure 15).
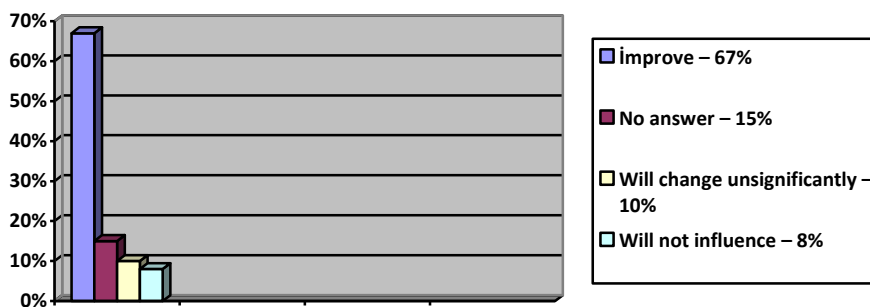

Figure 15. Distribution of respondents' answers to the question: "Will the implementation of gaming technologies improve the learning environment and the quality of training?" (In% of respondents)

According to the majority of students, dividing into teams in the course of the game and after the workshop will create a spirit of competitiveness and will strengthen the relationship in the training group (Figure 16). Nevertheless, 10.6% of respondents expressed concern that it would complicate the relationship between the students.

Figure 16. Distribution of respondents' answers to the question: "What forms of game-playing will be more interesting?" (In% of respondents)

47% of surveyed students believe that the use of game technics in the course of students' learning will simplify the preparation and carrying out of training for tutors (Figure 17). Although 44% of respondents make sure of the opposite.
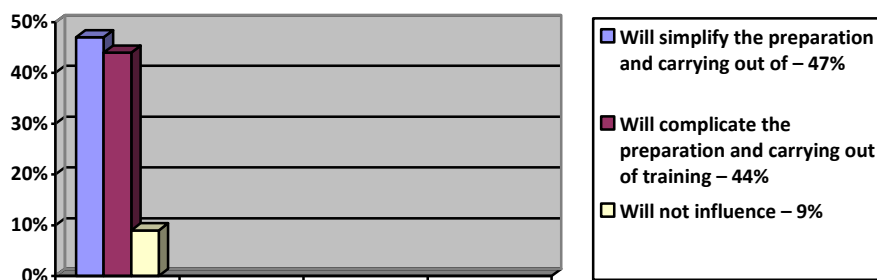
Figure 17. Distribution of respondents' answers to the question: "How the use of gaming techniques in the course of training of students will influence the work of the professor ?" (In% of respondents)

Almost two-thirds of the respondents sure that the use of gaming techniques may facilitate the evaluation of knowledge of students in class (Figure 18).
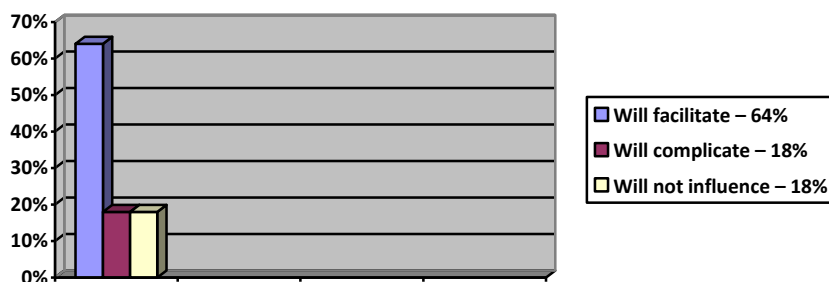
Figure 18. Distribution of respondents' answers to the question: "How will the use of game mechanics affect the order of evaluation of knowledge of students in class ?" (In% of respondents)

Discussions

A part of the students in making the assessment of learning environment through the application of gamification (23%) expressed the opinion that in the course of the study they had almost never encountered came across game technologies, but wanted them to be used in the educational process. At the same time, comparing gamification with classical forms of acquiring knowledge and examining by standard procedures, the students pointed out the advantages of game mechanics in the great interest in the professional problems and ways of solving them, less boring workshops, in-depth and systematic study of specific professional situations during of the game, getting of role experience in key posts, including leading positions. Implementation of game mechanics will enhance the class attendance (47%).

A separate place in the achievement of favorable learning environment is occupied by the issue of displacement of the definite part of the study in the university to independent acquiring of knowledge under the guidance of a tutor. It includes full or partialusage of mentoring techniques, coaching, budding, etc. Such form of training, practiced in the Management Department of Russian State Social University was positively assessed by 67% of the respondents. Filing in it the game methods, teachers create favorable, safe learning environment with substantial savings of time on frequent moving to the location of the training classes in the lecture halls of the University fund. During the implementation of the gamification, there is such an environment, being created in the university, which increases the will of the students for independent acquiring of knowledge, professional skills and abilities in close interaction with the lecturer.

The idea of uniting the students and tutors in the adaptation of role-playing became an important positive aspect in improving the learning environment. This will enable students to loosen up and more actively participate in their formative stage as an expert in the chosen field of working practice.

Certain concerns, adversely affecting the learning environment were caused by the high labor intensity of the elaboration and implementation of game mechanics by teachers in the educational process. With the existing educational, methodical load, for academic it will be difficult to come over to the game forms of training. Another aspect - the complexity of students' adoption of very these forms of classes holding. A range of respondents made assumptions to try out in a test mode supposed gaming technics within several training groups and only after a positive evaluation of the experiment to adopt them widely in the educational process.

During the students' sociological survey, it was found out that gamification would improve the quality of students' adoption of educational material and reduce the level of stress while waiting for evaluation of their knowledge and skills at the desk studies and practical lessons on the subject studied by the teacher and students from the training group.

Reduction in the frequency of stress would have a positive effect on the health of the students and help to improve the learning environment. Thus, the

introduction of gamification would perform as a part of the reform of the learning condition.

Conclusion

According to the research, gamification can help to create favourable and safe learning environment, ensuring a high involvement of all participants of the educational process, significantly reducing the impact of adverse factors. Even feeling unwell, sick student may remain in the game himself or as a part of the group, effectively participating in the modern digital games on professional topic by switching attention, the concentration of forces to achieve the playing result, fulfillment of set tasks. Participating in the game remotely, using computer technologies, student secures other participants of game training against the risk to be contracted. At the same time, after recovery this trainee may already in presence take part in the game training on the next stage.

Traditional training methods, not applying the gamification, create an information resource, but they are not able hold the attention of the students for a long time. Gamification allows to create conditions of students' motivation for a long time, turning their training into educational and interesting game. The game awakes the interest in the students, creates favorable learning environment and keeps up the motivation to step up the next level, get another award and accomplish a task.

Gamification, changing the behavior of students, contributes to the formation of new habits. It can be modernization of the educational space, aimed at improvement of the attitude of students towards learning, inculcation of healthy lifestyle, formation of budgeting skills and other. New habits of students give the intended effect: creation of more effective education system. Gamificated educational system develops in the students the need for personal enhancment, allows to acquire and continuously upgrade not only professional, but also super-professional competences, increases the efficiency of pedagogical and educational process at the University.

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Disclosure statement

No potential conflict of interest was reported by the authors.

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