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**EDUCATIONAL GAME AS A TECHNOLOGY OF
PROFESSIONAL ACTIVITY MODELLING**

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Abstract

The current stage of education development is characterized by the formation of new terms of training and its quality requirements. Effectiveness and impact on professional education is associated with the level of training in practice. Therefore, education is focused on the development of activity, initiative and independence of the student's individuality. Educational game allows students to be included in practical implementation through the professional activity modelling. Game training gives an opportunity to demonstrate personal individuality and personal resources in the context of professional development.

The problem of this study aims to determine the characteristics of educational game's impact on the assimilation of educational material that is required for professional activity modelling.

The aim of this study was experimental testing of the educational game technology in the modelling of students' professional activity.

The results of this study showed the effectiveness of using educational games in professional activity modelling and professional pedagogical realization of students. Qualitative analysis of the obtained data allowed to assert that students formed a positive attitude towards their future profession and commitment to the practical application of pedagogical skills.

Consequently, the learning technology in the process of games' activity is given as an integrated method of professional activity modelling of modern pedagogical specialists and personality's professional development.

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Keywords: Educational technology, educational game, professional activity modeling, student's individuality.



1. Introduction

The relevance of the problem stated in this paper is related to the use of educational game in professional activity modelling of Russian students. The transformation of modern society affects the sphere of higher professional education. This process particularly involves the problem of future teachers' training.

The current stage of education development is characterized by the formation of new terms of training and its quality requirements. Students should not only reproduce knowledge, but also become a subject of comprehension; they have to be focused on continuous self-development and self-education. Effectiveness and impact on professional education is associated with the level of training in practice. Therefore, education is focused on the development of activity, initiative and independence of the student's individuality.

Educational game today is used as a method and technology of professional activity modelling in educational process. The learning technology in process of play activity is given as an integrated method of professional activity modelling of modern pedagogical specialists and personality's professional development. Thus, the relevance and significance of these studies is connected with the question about effectiveness of educational game in professional activity modelling.

2. Problem Statement

Educational game is a complex and useful tool that is able to increase motivation and activate information learning process by practice in essential skills. The essence of educational game its design, forms are considered in different psychological and pedagogical works (Verbitsky 1987, 2011; Panfilova, 2008). A game is regarded as "a set of rule-guided, goal-directed activities that have no real-world consequences" (Shin et al., 2006). The educational game is a form of personal activity recreating certain practical situations and activity system in learning process. There are three main types of educational games used in education: business games, role-playing games, organizational and activity games (Gushchin, 2012).

In addition, game is represented as an innovative technical component in educational process. Teachers and university professors introduce virtual games, technological developments, and electronic applications in professional reality modelling (Garris et al. 2002; Ma et al., 2011; Nash, Shaffer, 2011; Baek, (Ed.), 2013). Games as form of interactive learning methods "focused on greater interaction with the students, not only teachers, but also with each other, and the dominance of activity of students in the learning process" (Fakhrutdinova, Nurkhamitov, 2016).

Games as form of active learning techniques are included in simulation methods of educational process in high schools (Mukhina, 2013). The effectiveness of educational game depends on how well it is designed; psychological and personal characteristics of the participants are also taken into account. The application of gaming techniques is the key in training of specialists in various professional fields (Adikaeva, 2011; Ezrokh, 2014; Fominykh et al., 2016).

In comparison with other methods for teaching and learning, educational game illustrates different advantages (Vasilenko, 2014):

-integration of knowledges regarding future profession;

- well-created game can be used as an effective training tool for students over many years;
- students can be supported in mastering their professional activities and acquiring knowledge without teacher's direct intervention or assistance;
- the training with games can prevent real mistakes in future professional activities;
- the game process of learning can be successfully combined with research aims;
- game coordinates individual priorities in the group choice of solution and its implementation;
- student is part of a team in games;
- games allow students to try out new forms and rules, standards and techniques of profession and testing them.

According to professional activity modelling, educational game has the following features (Saigushev et al., 2008):

- 1) game is considered as one of the main types of human activity, along with work and study;
- 2) game involves activity modelling of future teachers;
- 3) student plays a variety of behavioural patterns of future profession in its development and dynamics;
- 4) game gives an opportunity to establish business and social relationships, student can find different solutions for specific problems;
- 5) game is the most acceptable form of self-analysis and self-organization.

Thus, game training gives an opportunity to demonstrate personal individuality and personal resources in the context of professional development. Despite the fact that pedagogy and psychology have many issues about this problem, there is an objective need for research of validity of playing support in educational process.

3. Research Questions

The main research question of this study is: What are the characteristics of educational game's effect on the assimilation of educational material that is required for professional activity modelling?

4. Purpose of the Study

The analysis of theoretical and practical activities in the field of the study problem discovered that the issue of professional-pedagogical activity modelling of students with the use of educational games is still poorly comprehended. The purpose of present study was determined by this fact.

Thus, the aim of this study was experimental testing of the educational game technology in the modelling of students' professional activity.

5. Research Methods

According to the purpose of this study the theoretical and empirical methods have been selected. The following methods were used: analysis of different investigations about the problem of this study; interview method; participant observation and experimental modelling of the pedagogical professional activity by means of educational games; methods of mathematical statistics.

To achieve the goal of the present study the following diagnostic methods were used:

- 1) A methodology «Studying motivation of students of pedagogical high school» of Pakulina, Ket'ko, (2010). This test gives an opportunity to understand the motivation for professional activity and attitudes towards teaching profession in students. The technique allows distinguishing three groups of motives in the external and internal learning motivation: admission to university, actually operating professional motives and their dominance, specification of learning motivation development level. The total score of internal learning motivation is equal to 75 points. The total score of external learning motivation is equal to 105 points.
- 2) Participant observation and assessment of student's practical solution of pedagogical tasks in the process of the experiment. The following indicators were involved in the observation: students are able to demonstrate professional knowledge; students demonstrate readiness to analyze practical tasks from the pedagogical point of view; students demonstrate activity and initiative in solving of practical problems; students demonstrate readiness to work in a team. Each indicator is scored from 1 to 3. A rating of 3 is given when indicator receives the highest level of demonstration. A rating of 2 is given when indicator receives the middle level of demonstration. A rating of 1 is given when indicator receives the low level of demonstration.
- 3) Interview method of evaluation of satisfaction in educational process. Students were asked to answer questions positively or negatively about practical classes with or without games.

This study was conducted in three stages:

At the first stage theoretical and methodological approaches were analyzed; the aims of research, methods were also designed.

At the second stage an empirical research was conducted on the basis of four students' groups of Institute of psychology and education in Kazan Federal University.

The study involved 104 participants: first-year students were divided into two experimental groups. Group № 1 consisted of 56 students (future teachers); students of this group were placed in the conditions of professional activity modelling by means of different educational games. Group № 2 consisted of 48 students (future teachers); they were placed in the conditions of professional activity modelling without educational games. At this stage

At the third stage the experimental research was completed, obtained data and practical results were generalized and summed up.

6. Findings

On the diagnostic phase of the experiment, the motivation of students was detected. Results of the method are presented in Table 01. Analysis of the obtained data shows that both groups have external learning motivation. Two groups have the average group mean values in external learning motivation and low group mean values in internal learning motivation. Extrinsic learning motivation includes external motives for entering the university, narrow cognitive and irrelevant professional motives. This type of

motivation causes students' stress in the process of educational activity. The reasons of this motivation do not relate to the process of learning activities.

Next, assessment of student's practical solution of pedagogical tasks was identified (Table 02). The results indicate that most of the values are low in both groups.

In accordance with the obtained data, a program of educational games was developed. The program included the following types of games: brainstorming games for groups, discussion games, situational role-playing, and creativity games. The purpose of their use is the development of professional skills, creativity and ability to apply professional knowledge.

Table 01. The level of learning motivation

Internal Learning Motivation		External Learning Motivation	
group№1	group№2	group№1	group№2
Group mean values		Group mean values	
29.25	27.97	64.8	58.06
High level (number of subjects %)		High level (number of subjects %)	
10.7%	16.7%	33.9%	33.3%
Average level (number of subjects %)		Average level (number of subjects %)	
35.7%	35.4%	33.9%	35.4%
Low level (number of subjects %)		Low level (number of subjects %)	
53.6%	47.9%	32.2%	31.3%

Table 02. Indicators of observation

Ability to demonstrate professional knowledge		Readiness to analyse practical tasks from the pedagogical point of view		Activity and initiative in practical problems solving		Readiness to work in a team	
Group mean values							
group№1	group№2	group№1	group№2	group№1	group№2	group№1	group№2
1.73	1.97	1.66	1.77	1.51	1.7	2.17	2.41

At the control phase of experiment, the same diagnostic procedures as at the ascertaining stage took place. Control phase had the main study purpose to determine educational game's impact on professional activity modelling.

The differences in internal and external were checked using the Fisher test. The data indicate no significant difference between results in second group.

Significant difference was found in internal motivation in the first group after experiment. The difference in internal learning motivation of group №1 is valid as $\varphi^* \text{emp} > \varphi^* \text{cr}$ ($\varphi^* \text{emp} = 2.44$) with $p = 0.01$. A high level of internal learning motivation was found in 28.57% of subjects. Internal learning motivation is closely related to future professional success. Internal motivation includes intrinsic motivation to become a teacher, broad cognitive and relevant professional motives. Student with internal motivation has the following features:

- interest in the profession, positive attitude to intellectual satisfaction, self-realization, self-improvement;
- activity and independence in educational process;
- a preference for complexity in learning (student prefers tasks of optimal difficulty and challenging tasks);
- high cognitive flexibility in learning activities;
- creative problem solving;
- optimal adaptation to the academic system of education.

The results of observation were checked using the Student's t-test. The data indicate no significant difference between results in second group.

Significant difference was found in two indicators of the first group after experiment. The differences between the mean values of ability to demonstrate professional knowledge are valid as $t_{emp} > t_{cr}$ ($t_{emp} = 6.5$) with $p = 0.01$; the differences between the mean values of activity and initiative in practical problems solving are valid as $t_{emp} > t_{cr}$ ($t_{emp} = 3.87$) with $p = 0.05$.

Also, after the experiment, students were asked to answer questions positively or negatively about practical classes. Students of the first group evaluated the lessons with educational game. Students of the second group evaluated the lessons without educational games (Figure 01).

The differences in attitudes between two groups were checked using the Fisher test. The data indicate no significant difference between results in groups; it is valid as $\varphi^*_{emp} > \varphi^*_{cr}$ ($\varphi^*_{emp} = 3.08$) with $p = 0.01$.

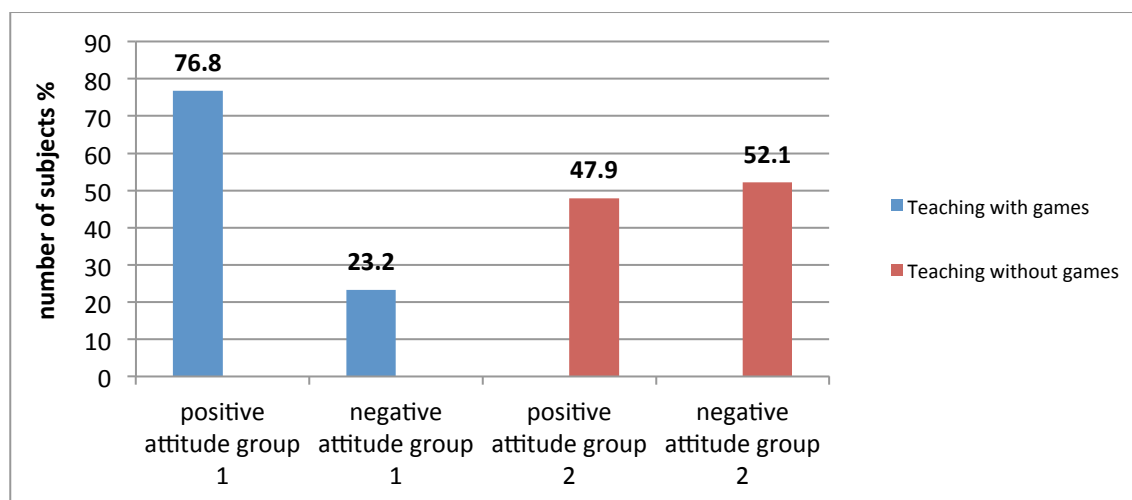


Figure 01. Evaluation of satisfaction of students in educational process

7. Conclusion

The results of this study showed the effectiveness of using educational games in professional activity modeling and professional pedagogical realization of students:

- 1) Educational games increase intrinsic motives of cognitive activities and learning process.
- 2) Educational games give to students an opportunity to demonstrate their professional knowledge.

- 3) Educational games increase activity and initiative of students in practical problems solving.
- 4) Students of the first group are highly satisfied with use educational game-based learning.
- 5) Students of the second group are poorly satisfied without use educational game-based learning.

Qualitative analysis of the obtained data allowed to assert that students formed a positive attitude towards their future profession and commitment to the practical application of pedagogical skills.

Consequently, the learning technology in the process of games' activity is given as an integrated method of professional activity modeling of modern pedagogical specialists and personality's professional development.

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