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## THE USE OF GRAPH SIMULATION TO ENHANCE LEARNING OF STUDENTS

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### Abstract

The article discusses the application of simulation techniques in teaching students of social-humanitarian disciplines. The use of graph models allows compact and informative enough to represent the structure of the system (professional situation) and greatly facilitate its analysis, allows you to "show" the structure and subordination of the functional elements of the system.

**Keywords:** quality learning, graph models, social teacher.

The main objective of higher education is to improve the quality of training of future specialists. Indicators of the quality of vocational higher education represent a relevance of the knowledge and the readiness of graduates for independent creative activity in solving specific professional problems. The specialist training requires the development of his imagination, creativity, the ability to create. Traditional teaching, which includes such teaching methods as lectures, workshops and seminars, laboratory courses, graduate works, is commonly used in teaching students because of its historical testing and gives some results. But, as in our time there is a significant increase in the flow of information, new technologies related to the development of computer technology appear, traditional methods fail to adequately use all this in the learning process. There is a need to develop new approaches to learning, which in combination with the traditional let to form, develop and consolidate professional skills.

One of the active learning methods is a method of modeling. This method is a specially arranged, mutually activity of

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the teacher and student, in which the theoretical knowledge translated into a practical context. The method is based on constructing by a student the model (simulation) of situations of his professional activity. The researchers found that human memory retains about 10% of what he heard, 50% of what he saw and 90% of what the person done by himself. "Technology training - a set of forms, methods, techniques and means of transmission of social experience, as well as the technical equipment of this process" [3]. Technology training with elements of simulation contribute to the development of thinking, form students' skills of intellectual activity, it allows you to "show" the composition and hierarchy of functional elements to achieve the goal.

Principles of simulation of activity both teachers and students based on graph models are being developed in recent years. Graph theory provides the tools for qualitative assessment and forecast of the characteristics of the state (situation) of the analyzed system [1, 2, 5]. The usage of the graph model allows to represent objects and processes in the visual form, which is easy for understanding and analyzing.

The course about the usage of simulation techniques in professional activities was read for students enrolled in specialty "Social Teacher". As the test work of this course the students should describe the problems addressed in their graduate work, using the elements of the graph simulation. The method of constructing the model should be chosen among network model or cause and effect diagram (Ishikawa diagram). As a result, the students more clearly understood the problem addressed in their graduate work, saw further prospects of solving the problem and realized that mathematics is not only possible to understand, but also possible to apply with the interest.

Thus, the main advantage of using the elements of graph theory for modeling systems (professional situations) is the ability to graphically see the structure of the system, and then determine the optimum logical connections between its elements. We list a number of typical problems considered by future social teachers:

1. The formalization and construction of a general structural model of the object at different levels of complexity.
2. The analysis of the resulting model, the determination of its structural units (subsystems) (figure 1).
3. The study of the structure of levels of hierarchical systems: the number of levels, the number of cross-level and within leveled links (figure 2).
4. Analysis of the functioning of the system, search for the optimal structure to determine its stability.

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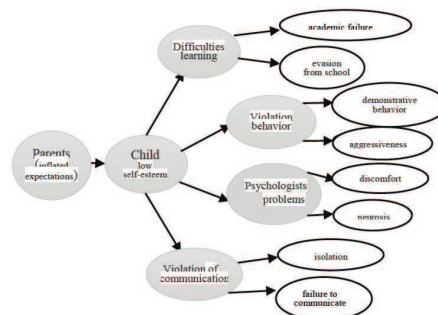


Fig.1. Diagram, revealing the effects of high aspirations of parents to the child

The issue of integration of academic, scientific and professional activities of students is solved when using simulation in training. The student from the object of study becomes the subject of study. The described above methods allow the use of elements of the theory of graphs for simultaneous solution of several important problems of education. With their help the students gain new knowledge, develop cognitive and creative abilities of the individual, acquire skills of independent work, self-organization, develop imagination and creativity [4]. All this greatly improves the quality of education.

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