The method of the business game in the training of specialists for the automotive industry

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Abstract. The use of business games in the educational process is one of the highly effective forms used for active learning. During the business games, the professional competencies of the participants are improved by solving practical problems. The working conditions of modern transport technology engineers provide for the adoption of management decisions in a short time with minimal time to think about the situation. Therefore, their actions should be brought to the level of automatism. Within the framework of the business game, it becomes possible to consider various alternative solutions to practical professional problems. And this, in turn, creates prerequisites for the formation of various professional competencies among trainees. The use of a competence-based approach in the process of training engineers for the transport industry makes it possible to prepare specialists capable of independent professional improvement and able to apply in practical professional activity the knowledge, skills and abilities acquired in the course of training. The need for psychological and social competence among engineers of the transport industry is predetermined by the great influence of the human factor in the transport industry.

1 Introduction

The modern development of motor transport is characterized by an increase in the complexity of technological processes and a decrease in the share of manual labor. The drivers of vehicles have a huge responsibility for the transported people and goods, as well as traffic safety. This requires the personnel engaged in road transport to constantly exert physical, mental and mental strength, accuracy and speed of actions, high coordination of movements and increased concentration of attention during the performance of their professional duties.

According to [1], the complexity of the work of vehicle drivers requires them to be able to work in an extreme situation, sociability and stress tolerance.

According to [2], the production activity of road transport workers largely depends on the influence of the human factor, which in turn depends on psychophysiological and psychophysical training.

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According to [3], two parallel types of activity are inherent in the work of drivers of modern vehicles: driving a vehicle and monitoring the operation of this vehicle.

According to [4], flight work places increased demands on the motor, visual and auditory systems of the driver of the car.

At high speeds of modern motor transport, the driver must assess the situation in a short period of time, comprehend it and make the right decision by performing a certain motor act.

The level of information saturation while driving a vehicle leads to an increase in the emotional stress of drivers. The constantly changing external environment is usually accompanied by a shortage of time for decision-making, so the actions of drivers should be well coordinated and accompanied by motor acts brought to automatism.

According to [5], a significant number of mistakes made by the driver when driving a vehicle is closely correlated with his psychophysiological state.

According to the errors of drivers when driving a vehicle are associated with (Figure 1):

- Self-doubt
- Poor preparation for the traffic situation
- Poor general psychophysiological condition
- Overwork
- Slowness of reaction

Fig. 1. Reasons for drivers' mistakes when driving a vehicle.

According to [6], the increased psychophysiological load of the driver is affected by:
1. Age of the driver.
2. Speed of movement.
3. The intensity of the traffic flow.
4. Vibrations.
5. The condition of the road surface.
6. Driver fatigue level.
7. Type of nervous system of the driver.

According to [7], high speeds of road transport and requirements for the quality of transport services and the safety of road transport place increased demands on drivers. In this regard, the reduction of the influence of the human factor on transport services can be achieved by more careful selection of personnel involved in the transportation of a motor transport company.

According to [8], the correlation of machine capability and human abilities can significantly improve the quality of management. In the joint implementation of the control functions of the machine and the person, both the person and the machine perform their part of the work, taking into account their functional capabilities. The effectiveness of the
functioning of the "Machine-Man" system depends on how well the features peculiar to the machine and the person are taken into account.

According to [9] professionally important psychophysiological qualities of the driver are (Figure 2):

![Diagram of professionally important psychophysiological qualities of the driver]

Fig. 2. Professionally important psychophysiological qualities of the driver.

According to [10], among the main loads of drivers in the process of driving a vehicle, the main loads are those associated with attentional and sensory-preceptive processes.

In our opinion, ensuring the safety of the motor transport industry can be achieved by removing from driving vehicles persons who do not have the appropriate psychological data, as unable to ensure the effective functioning of the transport industry.

The personnel of motor transport enterprises largely depends on the engineers of motor transport enterprises, since it is the engineer of the motor transport enterprise who is the direct supervisor of the drivers of the motor transport enterprise at the motor transport enterprise.

Current trends in the development of transport technologies determine the availability of competencies for transport technology engineers, taking into account innovations and international standards in this area.

According to [11], a transport technology engineer should have the following competencies:

1) Professional competencies (team work, communication);
2) Technical competencies (data processing, mathematical analysis, modeling);
3) Engineering competencies (critical thinking, design, system integration);
4) Forecasting and business competencies (operational planning and management, cost accounting).
5) Be able to make quick decisions in non-standard and standard situations
According to [12], a modern employer requires an engineer of transport technologies to be able to make managerial decisions promptly, solve non-standard professional problems and be able to navigate in difficult situations.

According to [13], a transport technology engineer who is competitive in a highly competitive market should not only have the necessary professional skills and knowledge, but also have an innovative style of thinking, be able to create a comfortable moral and psychological climate in the workplace.

According to [14], the competence approach is focused not on obtaining individual skills, abilities and knowledge, but on a person's willingness and ability to work productively and effectively in solving various professional problems. With a competence-based approach, it is important not to "build up" knowledge, but to acquire the ability to apply this knowledge to solve practical problems.

According to [15], the competence-based approach in training specialists for the transport industry allows:

1) To prepare an engineer capable of self-improvement and professional self-education.
2) The competence approach combines the skill, intellectual and emotional components of education.
3) To determine as a criterion of the quality of education the ability to use it in practical professional activity.

In our opinion, a modern specialist in the transport industry needs to have psychological and social competence (Figure 3):

![Social and psychological competence](image)

**Fig. 3.** The reasons for the need for a modern specialist in the transport industry to have social and psychological competence.

According to [16], the process of designing human activity is based on the research of higher human mental functions: memory, perception and imaginative thinking, due to the fact that they are the means of activity and psychological tools of a person, such means include human skills, experience and knowledge.

Taking into account these means, human activity is determined, as well as the process of human decision-making.

### 2 Materials and methods

Within the framework of this study, we used an analytical research method. This made it possible to study the problems raised in this work in their development and unity. Taking
into account the objectives and goals of the study, a functional-structural method of scientific research was used. This allowed us to study some problems related to the use of the business game method in the training of specialists for the automotive industry.

3 Results

In our opinion, when training specialists for the modern motor transport industry, the method of business games should be used more, since it allows you to simulate production activities and contributes to the improvement and formation of professional competencies.

The process of forming professional competencies is also facilitated by training on simulators and solving production problems. Professional-oriented business games should be based on modeling of production situations.

The use of such models in the educational process makes it possible, based on the analysis of possible events, to study possible variants of emergency situations and ways out of these situations.

The method of business games allows you to study the occurrence of various abnormal and regular situations in the learning process, and analyzing them directly during the course of the business game.

Thus, models of various production situations provide an opportunity for various options for which events can develop and they contain the information required for decision-making.

Repeated analysis of these situations within the framework of the educational process provides prerequisites for the formation of students' competence.

While simulation models provide a theoretical basis for professional activity, a business game simulates a management process.

In our opinion, the use of not only business games focused on professional activity in the framework of training specialists for the automotive industry deserves attention, but it is also advisable to use business games focused on improving the creative abilities of trainees.

Business games, as a method of active learning, contributes to the formation of students' practical skills in obtaining, analyzing and using educational information to solve practical professional problems, stimulates active practical and mental activity within the framework of the educational process.

The possibility of implementing a business game scenario on simulators allows you to bring the learning process closer to production activities.

Able to improve some of their indicators compared to those that were at the time of switching to distance learning.

4 Discussion

The business game is a highly effective form used for active learning. In the process of the business game, the competencies of the participants are improved by solving practical professional tasks. In the practical activities of transport technology engineers, it is necessary to make responsible decisions in a short time, with minimal time to assess and reflect on the current situation. Therefore, the algorithms of their actions must be worked out to full automatism.

The business game allows you to consider alternative solutions to practical problems, as well as simulate their application.

The use of business games in the learning process makes it possible to include professional content in the training material and to form professional competencies, as well as professional experience and value attitudes and orientations that are characteristic of a professional.
5 Conclusion

The use of a competence-based approach in the training of engineers for the transport industry makes it possible to prepare specialists capable of professional improvement and able to apply the skills, knowledge and skills acquired in the course of training in practical professional activity.

The need for psychological and social competence among engineers of the transport industry is due to the great influence of the human factor in the transport industry.

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