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IMITATION GAME AS A TRAINING TOOL OF OCCUPATIONAL SAFETY REQUIREMENTS

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Abstract

The modern level of development of the psychological and pedagogical science presupposes their integration into the educational area of "life safety". Humanization of technical education makes it possible to expand the possibilities of using modern pedagogical technologies in the process of teaching for Master's degree in the "Management of Technosphere Safety" specialization. Respectively, this paper is primarily aimed to substantiate the effectiveness of imitation games in occupational safety Master's training. In the course of the research the following objectives were focused: the approaches to occupational safety Master's training, the possibilities of using simulation for teaching labour safety requirements; the analysis of results gained while teaching labour protection requirements with the help of imitation games. The study results have led to the conclusion that imitation games increase the effectiveness of teaching labour protection requirements and motivate future Masters to look further into this field of research. The possibility to simulate a real working environment during the training game allows a future labour protection specialist to immerse himself in professional activities, try to fulfil the competency of managers at different levels in the occupational safety department, study related legislation, and understand how the labour protection management system functions at an enterprise. For graduates, the use of imitation games as a method of teaching labour safety requirements is a means of obtaining initial experience in production activities. Acquaintance with the work of the occupational safety department during the game facilitates the process of adaptation of a beginner specialist to the workplace.

Keywords: Labor safety, labor safety training, business game, technosphere safety

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1. Introduction

Currently, the educational area of "life safety" is developing primarily at the methodological level. At the same time, the key trend is to involve various humanitarian and social sciences into the practice of life safety education (Abdul Aziz & Osman, 2019). In particular it has recently become promising to consider safety problems in connection with the psychological and pedagogical sciences. New scientific directions have also appeared, such as psychology of safety, and a number of appropriate pedagogical studies have been made to reveal how to be more effective and forward-looking in teaching the labor protection at the existing level of methodological capabilities (Abakumova et al., 2021; Fedyanin & Davidenko, 2000; Grinerud et al., 2021).

The issue of researching safety problems at the ideological level is also quite acute, which is associated not only with the formation of knowledge, skills, experience and competency, but also with the students' awareness of their attitude to the outside world, the ability to function in this outside world and resist the negative. Now this aspect is in active pedagogical development and includes concepts such as life safety culture, safe behavior personality type, and so on (Schedrovitskiy, 1993).

2. Problem Statement

An outstanding trend in the educational process on labour protection is the creation of the safe type of personality concept - this is about a person who is able to function in his environment, using secure ways of self-realization and at the same time showing the necessary motivational attitude, volitional qualities and intelligence (Kulchitskiy, 2007).

Another distinctive feature of the approach to the implementation of educational view towards "Life Safety" is working out the correct motivational component that will ensure the safety of the individual. While in the 2000s it was supposed to consider human safety itself as the most important basic key competence and the ultimate goal of all learning processes that are related to occupational safety.

Methodological trends suggest solving a number of issues related to the methodology, personnel management and the outlining of substantive aspects of the concept of teaching life safety, in the first place, and labour protection, respectively.

3. Research Questions

What should be considered at this stage of the scientific development?

1.Continuity of university, pre-university and postgraduate educational programs (Li et al., 2020).

2.Mechanisms for the formation of students' knowledge, abilities, skills and competency at the adequate scientific level and with the proper motivation (Valeeva & Karimova, 2014).

3.Need to reinforce the scientific validity of the facts revealed in the courses for "Life Safety".

4.Practice oriented nature of education, which is based on the humanistic paradigm, on the humanistic approach, because, first of all, in the courses for "Life Safety" the subject is always the person himself (Sevastyanov et al., 2020).

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One of the practical aspects which involves the introduction of the humanitarian science into labor protection education is to draw upon the latest achievements in pedagogy and psychology while training students who will subsequently train workers in occupational safety (Rodrigues et al., 2018).

4. Purpose of the Study

Respectively, this paper is primarily aimed to substantiate the effectiveness of imitation games in occupational safety Master's training. In the course of the research the following objectives were focused: the approaches to occupational safety Master's training, the possibilities of using simulation for teaching labor safety requirements; the analysis of results gained while teaching labor protection requirements with the help of imitation games.

5. Research Methods

The methods of analysis, observation, description of pedagogical experience and pedagogical experiment were all used for this study.

Modern pedagogical technologies implemented during the course of occupational safety training give positive results associated with an increase in interest towards education and the professional activity. These technologies are used at the Kalashnikov Izhevsk State Technical University in the process of training future Masters in the "Technosphere Safety Management" specialization (Asset et al., 2015; Aura et al., 2021; Nancy et al., 2020).

The post-graduate tuition process implies a systematic experience in introducing the modern pedagogical technologies to the Master's Degree training in labor protection.

The science of human life safety is integrative in nature and therefore, turning to the worldview based approach in the field of technosphere safety pedagogy, during the educational process we have the opportunity to create some game models and simulate existing labor protection procedures in the course of practical and educational activities which actually happens in the process of teaching future Masters.

Analysis of methodological literature on labor protection training allows us to introduce a number of technological changes in the tuition activity, which will cause the organization of the educational process to become more effective and, consequently, more interesting and desirable by students (Grinerud et al., 2021).

In the educational process, we include real situational simulation related to the establishment of labor protection at production sites.

6. Findings

In the course of teaching the "Enterprise Economy Management" as an academic subject we have developed and used imitation games, which continue throughout the educational process. During the semester, students get acquainted with a concept of occupational safety management structure functioning at the real facility, and they have the opportunity to distinguish each stage of the labor protection organization and participate in this process in different simulated working situations and in different roles.

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In this case, we are meaning not only games, since game activity is fundamental at an earlier age, here we aim at imitation modeling, that is, a kind of a situation simulator developing decision-making skills and involving any students in the plot and role creation, controlling the methods of decision-making and, respectively, generating involvement in project tasks that are associated with future professional functionality.

Imitation modeling creates a simplified model of reality, provides our students with the opportunity to function in it and always contains elements of competition. In a simulated game reality one can achieve certain results and this environment functions according to certain rules.

The rules of a game reality functioning might be:

- Ability to work individually or in groups.
- Ability to set certain standards or function within the existing standards, as in our particular game of labor protection.
- Ability to choose the best course of action: alone or as a team.
- Ability to create and reproduce certain situations that happen in real life and resolve them.

This is simulation modeling. It gives a sufficiently high efficiency for skill and competency shaping, but it is not effective for studying concepts, facts and generalizations, for retaining specific information in memory.

As game simulators are superior in efficiency to other teaching methods, especially lectures, so using them is advisable to form any kind of experience and imitate real professional activity.

In addition, a number of studies suggest that imitation modelling and real-life professional activities simulators have a greater impact on those students who show low and average academic performance than on those who are more capable of learning. Thus, game imitational simulators perform the function of a certain alignment - those students, who are not able to perceive the lecture material by 100%, participate in the game and increase their learning results without feeling dissatisfied with the learning process, feel more successful (Kulchitskiy, 2007).

In general, studies show that any educational games used as a teaching method do not improve the results of educational activity tremendously, they only make the educational process more diverse and contribute to the perception of the material to the same extent as traditional teaching methods.

Therefore, it seems very logical and expedient to use imitation game modeling during the educational process, as it does not cancel the results of traditional education, but expands the possibilities for creative expressions of the future Masters.

Game simulators allow to more deeply understand and remember the algorithms of professional activity, study the related legislation and put the gained knowledge into practice. Systematic use of game methods makes it possible to form students' ability to solve problem cases and to search for an ambiguous solution to any important practical tasks, therefore, in the process of studying for Master's Degree, it is advisable to use imitation games, one of which we will describe below.

The simulation game for Master’s Degree students is based on the international program "Vision Zero", which was introduced in the Russian Federation around 2017-2018. This program offers one of the ways to ensure a safe working environment in the production companies. Long term, it is expected to help in achieving zero injury cases. However, in order to implement this program into working process, it is

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necessary to study it thoroughly, i.e. to form a concept and modus operandi within the framework of this program. The program consists of golden rules, the fulfilment of which helps the labor protection specialist to work as efficiently as possible in his field.

How is it used? There is a scale of three colors (red, yellow, green). If it is red, urgent action is required; if yellow - there is something to work on; if green - everything is being executed excellently.

There are 7 blocks of actions that need to be applied. In progress, each section is marked with a specific color upon fulfilment. Thus, each process is analyzed, appropriate forms are filled in, and a certain algorithm for solving a problem is developed. Students eagerly participate in this activity, since it is as close as possible to the conditions of analytical work within the framework of production. They also learn to determine and eliminate shortcomings in the labor protection system, acting within the structure of this program. The stages of the program defined in the form of the "golden" rules will be described below.

The first "golden" rule of the program is to become a leader and show commitment to its principles, i.e. managers should be an example for employees in everything, including compliance with labor safety procedures.

At this stage, based on psychological testing, an understanding is formed, primarily among the students themselves, to what extent each of them is able to be a leader and show leadership qualities.

Despite the simplicity of this rule, it is the most problematic one.

The first rule states that occupational safety issues should come first in the production environment. This seems quite obvious, but most often it turns out that during staff briefings labor protection issues are the last items on the list and sometimes managers do not bring them up.

The presence of this problem form the goal to discuss issues related to labor protection and labor safety among the first at all meetings.

The person who is in charge of the occupational safety at the workplace is also responsible for bringing these issues to the fore at the meetings. If this happens all the time, then the first "golden" rule fits into the framework and starts working.

At businesses which use this system, labor safety problems are always first to be solved at meetings. In the course of the simulation game, the students take turns in playing the role of the head of the labor protection department, proposing their concepts, questions that need to be reviewed during the briefings, explaining why they need to be considered in the first place.

Thus, by analyzing students' speeches, tutor is able to evaluate how the algorithmization of the objective is carried out and what stages are used to achieve the goals. At this part of the game future Masters are being taught to accomplish the following steps:

- Preparing information on the potential negative consequences of the negligence towards occupational safety issues.
- Composing, one a time, a model of the briefing procedure, during which the issues of labor safety are to be discussed. This should be done before moving to other questions.
- Proving your point's validity to top management and improving your communication skills in organizing meetings with the company's administration.

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- Conducting a simulated meeting with the executive person, explaining the existing risks, convincing to take appropriate measures based upon the information that was processed during the implementation of the first two steps of the algorithm.

The second “golden” rule of the program is to effectively identify hazards and control existing risks.

Students’ task at this stage is to identify threats in a given type of production and propose measures to reduce them. Mitigation measures ensure the sustainability of the organization and guarantee the effective functioning of the labor protection service.

Paradoxically, many businesses lack a documented risk assessment procedure. Therefore, it is necessary to compose local documents and regulations in order to formalize threat evaluation. This increases the efficiency of the occupational safety department.

The third "golden" rule of the program is to set clear goals and develop ready-to-use instructions, create an effective occupational safety and health management system (OSHMS) and reduce injuries that may happen during the production process (Kulchitskiy, 2007).

To achieve this, it is crucial to set firm timing for reaching the required goals. Accordingly, in the course of the game, students try to master a comprehensive goal-setting, design complex programs addressing the issues of reducing industrial traumas. They also review existing OSHMS that are already in use and propose corrections, or try to improve the system in order to reduce the number of workplace injury cases.

The fourth "golden" rule of the program is to organize an occupational safety and health structure at the company.

When developing an OSHMS, the employer must take into account the Order of the Ministry of Labor of Russia dated August 19th, 2016 No. 438n. This is a standard OSHMS clause. Each business must create its own OSHMS based on this regulation.

Besides, when appointing managers of any rank, the employer should consider the information about the particular person’s compliance or non-compliance with occupational safety and health rules. Therefore, only employees with a positive labor safety record should be appointed to managerial positions.

Accordingly, in the course of the simulation game, future Masters continue to study OSHMS of businesses and construct job descriptions that indicate how managers of different ranks should comply with the procedures of labor safety. Subsequently, these developments are discussed, an accounting mechanism is formulated, the employee's potential in this area is determined, and this algorithm can be implemented in real production scheme.

The fifth "golden" rule of the program: ensure occupational safety and health in workplaces with machinery and tools.

The primary idea is that production facilities should be safe and have minimal impact on the health of the workers. The right strategies in this area can reduce labor injuries and illnesses.

In the course of the game, students propose technical measures in order to eliminate the potentially harmful process and replace it with a less dangerous one. There may be different options that they come up with and provide. Future Masters strive to minimize the effect of unfavorable factors on employees’ health.

With the labor protection professionals, whose roles are performed by the students, additional training is conducted with the goal to provide specialists with the ability to adjust safety of labor during the

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procurement of equipment, goods and services that are purchased for the work process. At this tuition, trainees demonstrate their understanding of how to take into account safety issues at the preparatory stages of production.

The sixth “golden” rule of the program requires to improve qualifications and develop professional skills.

Every employer needs to invest a certain amount of money in occupational safety and health system. At this stage, the students draw up safety briefing programs for different types of industries. This is an extremely rewarding task, since in the long term it is one of the aspects of the professional activity that they will have to perform.

The seventh (and the last) “golden” rule of the program: personnel must be motivated to comply with labor safety rules. Employees of any enterprise should be involved in the process of labor protection and should receive remuneration for this.

It is necessary to use human resources, consult with the staff during the risk assessment and work instruction development. As the game plays out, the students design some interactive activities that are aimed at promoting labor protection (Dhillon, 1986; Hattie, 2008; Smolkin, 1991).

For example, they collect data for information days, during which employees of an enterprise can acquire experience and knowledge on labor safety. The materials that are generated during this stage can be used in the course of teaching for Bachelor’s Degree in the same field and in real practice of production work as well by the Masters themselves in employment.

7. Conclusion

Imitation game methods need to be adjusted for different industries by the respective specialists. This will motivate Masters to look into refining simulation cases for specific workplaces. In the process of implementing the imitation game activity, a whole program was created which can be introduced with certain corrections into the real production cycle, as the project was supervised by a very experienced professor, an expert practitioner (Bae et al., 2021). Thus, the students acquired the skills necessary to work in labor protection departments, being familiar with all-European practice and experience. This is what makes the imitation game so valuable.

Based on the results of all the “golden” rules elaboration, in the course of the simulation game one can obtain a set of problems of a particular enterprise, which operation’s example was based on as the game was progressing (Maslen, 2019). In relation to these issues the plan was developed that can be executed within a specifically scheduled time frame. The identified difficulties were classified according to the criteria of importance and urgency (Vignoli et al., 2021). As a result of ranking made by the students, a plan for achieving set goals was compiled.

In the future, it is possible to establish interactive game practice in the field of analysis of the labor protection requirements implementation by employees of any business (Nykänen et al., 2020). This activity should be aimed at creating a set of competency models for the personnel. This grouping will display competencies for specific positions, as well as their required level to successfully accomplish the functionality of a certain position. Matrices of the staff’s competencies can be put together, which will

indicate the levels of their development and behavioural indicators. The use of game learning technologies is consistently highly appreciated by both the employers and labor protection specialists.

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