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**EDUCATION AND ACCREDITATION IN GEOSCIENCES
ENVIRONMENTAL LEGISLATION, MULTILATERAL
RELATIONS AND FUNDING OPPORTUNITIES**

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PRACTICE-ORIENTED EDUCATION IN UNIVERSITIES: OPPORTUNITIES AND CHALLENGES

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ABSTRACT

Practice-oriented learning is the process of students mastering an educational program in order to develop their practical skills through the implementation of all practical tasks. The basis of practice-oriented learning is the optimal combination of education with applied training. The introduction of a practical-oriented approach to the educational process is determined by the need to search for adequate educational technologies - a set of tools and methods for teaching students to successfully implement the effective development of the competencies stated in the standard.

Competence-based approach is closer to the aims and objectives of well-oriented education, as it defines a turn to strengthening of the practical training of students.

With this approach, learning activity acquires a research and practical-transformative nature. Active participation in the pedagogical process of students is a product of the teacher's activity, therefore, the formation of key competencies is possible with systematic inclusion of students in various types of educational and extracurricular activities. Competences are formed in the process of activity for the future, professional activities. In the practice-oriented educational process, the life experience of the students is applied and a new experience gets formed on the basis of acquired competencies. This experience becomes the basis for the development of students. Thus, the ideal model of the competitive personality of the future specialist is being formed.

Keywords: practice-oriented learning, activities, competence approach, experience, practice

In modern society, the decisive factor is the transition from fundamental knowledge to innovation and the provision of specialist training to specific work. The country has come to a situation when the labor market in abundance was accompanied by a huge number of specialists with higher education, and the economy began to experience a shortage of qualified personnel. Employers need competent specialists for running a

business, innovative managers, without whom commercialization of high technologies is impossible. In the medium term, the number of young people entering the labor market will only grow [1-3].

In general, there is a disproportion between the constantly increasing demand of specialists and the supply on the labor market between the vocational training and modern business. In this situation, there is a need to use learning technologies aimed at the acquisition of skills, practical experience.

At various stages of development of the education system, key methodological approaches to learning were used: the practice; material transfer; analysis of situations; game; imitation; project. These classic approaches to learning have several shortcomings: when training is limited to the development of practical skills, students may receive less amount of the necessary knowledge; when learning is limited by the transfer of ready-made knowledge, they receive education that is detached from the reality of life. To minimize these shortcomings and improve the efficiency of training, new approaches are proposed.

Any educational technology is the implementation of a specific strategy. Practice-oriented learning is the process of students mastering an educational program in order to develop their practical skills through the implementation of real practical tasks. The basis of practice-oriented learning is the optimal combination of education with applied training. The introduction of practical-oriented approach to the educational process is determined by the need to search for adequate educational technologies - a set of tools and methods for teaching students to successfully implement the effective development of the competencies declared in the standard [4-6].

The aim of modern education is to prepare students for self-development and self-management through the development of key professional competencies required by employers, as well as the formation of an understanding of where, how and for which the obtained competencies are applied in practice. The energy of youth is important to direct to the channel of creativity and self-realization [7-8].

The complexity of training personnel in the field of new technologies is that it involves the use of professional training that differs from previous models and at the same time based on the existing variety of forms of education models.

Education cannot be regarded as the practice-oriented without the gaining of experience, the level of which is more accurately determined by the methods of the competence approach. Competence-based approach is closer to the aims and objectives of practice-oriented education, as it defines a turn towards strengthening of practical-professional training of students. With this approach, the formation of adapted skills, experience of active creative activity, emotional and volitional attitudes to the world, other people and oneself, and forming the experience of practical activity through an increase in the production and research and development of students, is taking place. In the competence approach, emphasis is placed on the activity content of education. The main components of learning become actions, operations, correlated with the problem that needs to be resolved. Learning activity acquires research and practice-transformative character.

The competency model of the graduate often represents as a set of expected (desired) results of education, the achievement of which can be demonstrated by the student on one or another stage of mastering the main program or in the form of a package of

competencies that every graduate of this program has to gain. The student should be able, if necessary, to quickly and accurately use the sources of information to resolve these or other problems.

Active participation in the pedagogical process of students is a product of the teacher's activity, therefore, the formation of key competencies is possible if they are systematically included in various types of educational and extracurricular activities. In contrast to traditional education, oriented towards the mastering of knowledge, practical-oriented training is directed towards the acquisition, in addition to knowledge, of skills, habits, and experience of practical activities. In the system of general and professional education, experience gained a new meaning. Experience is an internal condition for the movement of the individual to the goal; it acts as the willingness of the individual to certain actions and operations on the basis of existing knowledge, skills and capabilities. Thus, the traditional triad is complemented by a new educational unit: "Knowledge - Capabilities - Skills - Experience of activity."

In the system of higher education, there are several approaches to practice-oriented learning. Some associate the practice-oriented education with the organization of the student's educational, industrial and undergraduate projects. Others consider as the most effective the introduction of professionally-oriented learning technologies that contribute to the formation of students' qualities of personality that are significant for their future professional activity.

From this point of view, the traditional element of education - the students science - acquires a new meaning and becomes the most important element of university training programs. It is necessary to make the practice really continuous, mainly in the same organization or in the same industry vertical. In the course of educational practice, students acquire the experience of teaching and learning activities of the academic type, where they simulate the actions of specialists, and discuss theoretical issues and problems. In industrial practice, one gains experience in professional activities as an organization specialist (or their assistant). On the pre-diploma practice, there is an integration of impressions on the activities of the organization and its business processes taking place, and proposals aimed at improving the efficiency of production activities are being developed. Such a model of continuous practice is not feasible in the context of a random selection of places of practice. In our opinion, the search for permanent business partners (employers) and the organization of the university department branches may play important role in future professional achievements of students. In this case, the reverse process occurs rather quickly. Employers begin to consider specific students as their personnel reserve and make proposals for improving the content of specific disciplines, and later of working and training programs.

Production and scientific research should be based on the latest, expensive equipment. Therefore, the practical bases should be chosen in accordance with the actual demands of the production and should be provided with all the necessary resources to improve the skills and capabilities of future specialists.

The study of the experience of the organization of professional education shows that the principal in the preparation of a specialist is its practical-oriented nature. This is expressed in a number of features, of which the most important are: the total number of hours allotted for practical education (up to 50% of the time at university); the use of certain (creative) methods in teaching (the method of problem-oriented learning, the

method of projects, etc.); orientation of training to work in a group, team; integration of subjects as a "way of approaching" a learning (classroom) situation to a real, actual one; the way to set a holistic view of future professional activity and its large fragments; practice guidance should be provided by an experienced mentor. For the successful organization of the practice it is necessary to adjust the work programs of the practice. The structure of tasks must be systemic, dynamic. Work tasks must be connected by a single internal logical line.

It is known that in each graduation group there are students who get employed by those organizations where they had their practice. Every employer wants to take a ready-made specialist with necessary experience. Practice is the main "piggy bank" and is aimed at gaining practical experience in the form of professional activity. This ensures that the future specialist is ready to work in a team; the ability to present oneself, gradual immersion in the real professional environment, which contributes to the rapid adaptation of graduates in the workplace and in the professional environment.

We are convinced that building a practical-oriented education requires a new, activity-competence approach. The activity approach is directed to the organization of the learning process of technology-oriented education, where the whole learning process takes on an activity-oriented nature. A competence-based approach is focused on achieving certain results, the acquisition of significant competencies. Mastering competencies is impossible without gaining experience, activities, competencies and activities are inextricably linked. Competences are formed in the process of activity and in the future professional activities. Under these conditions, the learning process acquires a new meaning, it turns into a learning process, i.e. in the process of acquiring knowledge, capabilities, skills and experience in order to achieve professionally and socially significant competencies.

Practice-oriented learning is implemented not only during practice. Formation of professional competencies occurs during the classroom and socially educational work. The beginning of the specialization, the consolidation of the professional interests of students occurs already in the first year. Therefore, the content of practical and laboratory work should be carefully thought out. Laboratory and practical tasks should be directed to the individual search activity of the student. Equipment for the implementation of practical and laboratory work should be as close as possible to the equipment in production.

It is necessary to use technologies and teaching methods that promote the acquisition of professional skills. Today, it is important to create training and production laboratories, business incubators, research and production sites for the implementation of practice-oriented training, in the process of students performing real tasks commissioned by enterprises and organizations. In educational institutions, start-up centers should work to support innovative projects.

It is advisable to attract students to the team to carry out scientific projects of scientific and practical importance. The trainee is introduced into the collective work system, directed to solve the real practical task. Designing the development of the situation, analyzing the data, he gets the opportunity to master the way to perform the relevant work. The group form of the organization of the educational project compels the participants to organize joint activities and enter into working communications, that is, to learn to act in a team.

To improve the efficiency of the learning process and to enrich the educational environment, the developers of modern educational technologies use several teaching methods simultaneously. The use of innovations taking into account the modern level of development of information and communication technologies allows increasing the efficiency of educational programs [6-8].

In this way, the implementation of practice-oriented teaching at the university is directed, firstly, to approach the needs of science and life, and secondly, it allows the creation of conditions for the targeted formation of competitive specialists.

CONCLUSION

The development of applied sciences and high-tech technologies leads to the creation of a new economy - the "knowledge economy". Without losing its solidity, education acquires a new, practical-oriented content.

"Lifelong learning will be one of the key competencies: based on the four basic principles underlying education, learning to live, learning to learn, learning to do and learning to coexist activity-competence approach can be an effective methodology for constructing a practical-oriented approach.

Consequently, this approach allows to significantly improve the effectiveness of training. This is facilitated by the system of selecting the content of the educational material that helps students to assess the value, practical demand of acquired knowledge and skills. In the practice-oriented educational process, the life experience of the students is used, and a new one is also formed on the basis of the acquired competencies. This experience becomes the basis for the development of students. Thus, the ideal model of the competitive personality of the future specialist is being formed.

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PRINCIPLES OF INDUSTRY 4.0 IN TEACHING OF LOGISTICS

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ABSTRACT

College of Logistics is engaged in the research of activities within logistics processes from production support to complete logistics chains. In this context, work is being done on the analysis of logistics processes according to the Industry 4.0 concept. The aim of the paper is to show the application of this approach in the teaching of subjects focused on logistic processes.

In the paper, we want to show an attempt to manufacturing/production logistics "as a service" based on digital twins. (We understand that meaning of service in logistics environment is different.) This approach allows us to use not only classic one pair of the original and the model, but we expect the possibility of extension to multiple digital models (with a common general structure but different parameters) associated with digital sources, the originals of which can be deployed in different locations and can have different parameters. Verification of procedures and results can be done in a simulation environment. This will allow users to verify the accuracy of their own simulated activities as well as communication between individual objects. The principles and design of communication interface is part of the proposed system. The original idea of our approach is based on the CIIRC project.

This topic is step by step being incorporated into new subjects within the ongoing new accreditation process of professionally oriented bachelor and master study programs.

Keywords: Logistics, Industry 4.0, Digital Twins, Education

INTRODUCTION – CONCEPT OF INDUSTRY 4.0

Industry 4.0 brings with it a virtualization of the production process and a real reduction of jobs. The core of the concept is interconnection and communication of all components of partial processes and processes themselves. Internet of Things, Internet of Services and Internet of People (and later Internet of Everything) will allow automation, decentralization of management, product customization, and more. Means of production, machines, equipment, robots, products, as well as people will be virtually represented in the form of so-called software agents – through the physical production process the virtual will take place in the form of communication of machines and people for generating huge amounts of data from sensors and other sources. Virtual representation will allow the