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USE OF MODERN INFORMATION AND COMMUNICATION TECHNOLOGIES IN THE PROCESS OF PREPARATION OF FUTURE BACHELORS OF MOTOR TRANSPORT

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Abstract

The importance of application of modern information technologies in the educational process of training future bachelors of road transport is outlined. It has been found that the use of computer tools makes the learning process more technological and effective. The focus is on the introduction of elements of computer-aided design in the educational process.

Key words: **future bachelors of road transport; professional training; information technologies; educational process; competencies; computer tools.**

ВИКОРИСТАННЯ СУЧАСНИХ ІНФОРМАЦІЙНО-КОМУНІКАЦІЙНИХ ТЕХНОЛОГІЙ В ПРОЦЕСІ ПІДГОТОВКИ МАЙБУТНІХ БАКАЛАВРІВ АВТОМОБІЛЬНОГО ТРАНСПОРТУ

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Окреслено важливість застосування в освітньому процесі підготовки майбутніх бакалаврів автомобільного транспорту сучасних інформаційних технологій. Встановлено, що застосування комп'ютерних засобів робить процес навчання технологічнішим і результативнішим. Зосереджено увагу на впровадженні в освітній процес елементів системи автоматизованого проектування.

Ключові слова: майбутні бакалаври автомобільного транспорту; професійна підготовка; інформаційні технології; освітній процес; компетентності; комп'ютерні засоби.

Formulation of the problem. Socio-economic changes in modern Ukrainian society make new demands on the quality of training, the content of their pedagogical activities, which affects the formation of their professional competencies. The problem of increasing the level of professional competence of the future teacher, able to think creatively, model the educational process, be a generator and implementer of ideas, implement new technologies in the process of teaching and education is relevant in modern conditions. This is due, firstly, to the fact that a professionally competent teacher has a positive effect on the formation of a creative student, secondly, can achieve better results in their activities, and thirdly, realize their creative potential. This problem is fixed in the state national program "Education", which emphasizes that one of the main ways to reform education is the need to "prepare a new generation of teachers, improve their professional and cultural level." Professional competence is an integral characteristic of business and personal qualities of a specialist, which reflects not only the level of knowledge, skills, experience sufficient to achieve the goals of professional activity, but also the socio-moral position of the individual. The existing domestic and foreign experience in the development of pedagogical thought testifies to the

urgency of the need to develop theoretical foundations and practical ways of forming the professional competence of future teachers, in particular the professional training of specialists in the field of transport.

The preparation of future bachelors of road transport in a pedagogical institution of higher education is a complex process, the ultimate goal of which is the formation of a set of special knowledge, skills and abilities that ensure the successful implementation of professional activities. Therefore, the urgent task of higher education is the development and use of the latest advances in science, technology and engineering in creating an improved material and subject environment in the life and work of every person not only in production and everyday life, but also in education.

Analysis of recent research. Various aspects of professional training of future bachelors of road transport were considered in the works of many scientists in educational institutions: M. Dyachenko, I. Kankovsky, O. Kyrychuk, S. Kucherenko, K. Platonov, P. Yagupov and others.

The analysis of the existing works showed that the issues of preparation of future bachelors of road transport have not been properly reflected and require additional study. In the presented research we will consider the problem of preparation of future bachelors of motor transport for professional activity on the basis of modern information and communication technologies.

The purpose of the article is the peculiarities of substantiation of preparation of future bachelors of motor transport for professional activity by means of modern information and communication technologies.

Presenting main material. The main features of the formation of qualified teachers are mastering the methodology of psychological and pedagogical, career guidance, general technical and special education. The curriculum and qualification characteristics, at each stage of professional training, define a set of psychological and pedagogical, social, general technical and special disciplines, which in conjunction form professional skills, develop creative thinking of students, and are a theoretical and practical basis for further training. future bachelors of road transport.

From the goals and objectives of training future bachelors of road transport at Ternopil National Pedagogical University named after Volodymyr Hnatyuk 015.38 Professional education (Transport), we focused on the didactic complex, on the basis of which generalized professional knowledge and skills were formed.

The didactic complex includes: standard curriculum and programs (educational, working); teaching aids; methodical instructions for carrying out laboratory and practical employments; system of methods, means and forms of organization of educational and

cognitive activities of interrelation of disciplines of professional and practical training; electronic educational and methodical complexes, which contain lectures, algorithms for laboratory and practical classes, test tasks for current and final control, tasks for individual and independent work, a list of questions for self-preparation and self-control, etc. [1].

Our research has determined that these opportunities of the didactic complex provide the formation of skills to integrate educational material; transfer of knowledge and skills from one subject to another; duplication (repetition) of some topics of educational material; increasing students' interest in the material being studied; generalization and systematization of disparate knowledge obtained during the study of related subjects.

Ternopil National Pedagogical University named after Volodymyr Hnatyuk at the Faculty of Engineering and Pedagogy embodies the training of future bachelors of road transport, which allows, along with the disclosure of the general specifics of the specialty, to gradually specify and detail knowledge by mastering information and communication technologies.

Today, training in pedagogical free economic education is impossible without mastering the skills of using information and communication technologies, including computer. There are such conditions when a student must learn to see possible options for the use of computer technology in their professional activities. Learning such a "vision" is a difficult task and requires proper training of faculty, modern hardware and software. In this direction, the study of a number of disciplines that are closely related to each other and formed in such a way as to help students in the educational process.

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One of the main components of CAD is computer graphics, which is determined by a set of technical, software and language means of communication between students and computers at the level of visual perception during the execution of geometric constructions and solving various problems. The main task of computer graphics is not only the image of individual objects, but also their design and selection of the best option with predefined criteria, which is impossible in the process of using conventional (manual) modeling. Using Universal Application Packages (SPPs), you can create, save, and process models and their images using computer technology.

Understanding visual methods of creating three-dimensional bodies forms in future bachelors of road transport basic knowledge of effective methods of modeling, which allow you to create models of complex parts and structures.

One of the ways to increase the efficiency of teaching disciplines of professional and practical training is pedagogically verified use of information and communication technologies in combination with a system of psychological and pedagogical means of intensifying educational activities. The use of computer tools involves the acquisition of future bachelors of road transport psychological and pedagogical knowledge, skills in the use of teaching methods, application software, ie the use of modern information and communication technologies, access to which is provided by the educational institution. The use of computer tools allows students to focus on the essence of the studied phenomena, construction of simulation models [5], interpretation of the results obtained with the help of computers, save time on the construction of graphics, etc.

Current trends in the design of machines and systems suggest that in order to succeed, future bachelors of road transport must be equally well versed in the object, process, design system; in the apparatus of processing and analysis of input and output information about the object, process, system, external environment; in mathematical modeling, ie in the formulation and formalization of the problem, which consists in the ability to process the technical problem from the problem-content to the language of mathematical schemes and models and further into special software; in methods of finding the optimal solution; in the corresponding software of computer-aided design systems (dialog systems, data banks, knowledge bases, etc.); in free possession of computer equipment [6].

Since the study of the subject area by future bachelors of road transport forms their practical competencies, there is a certain performance by students of the role of engineer. This allows not only to significantly intensify the educational process, but also to increase the theoretical level and practical significance of learning outcomes at the Pedagogical

University. In addition, obtaining knowledge in the subject area by engineering methods is not only effective, but also aims to use them to obtain professional knowledge of training specialists in various problem areas.

According to the current curricula of the specialty 015.38 Vocational Education (Transport) provides for the study of the course "Computer Graphics". This course provides students with the graphic editor KOMPAS (Computer Automated Systems).

The study of the discipline is based on knowledge of school courses in mathematics, labor training and drawing, which contributes to the successful mastering of disciplines of professional and practical training of curricula of the engineering and pedagogical faculty. This is of exceptional importance in the preparation of future bachelors of road transport for practical work in educational institutions of the system of professional (vocational) education and self-education.

Figure 1 shows the model of training future bachelors of road transport on the basis of modern information and communication technologies.

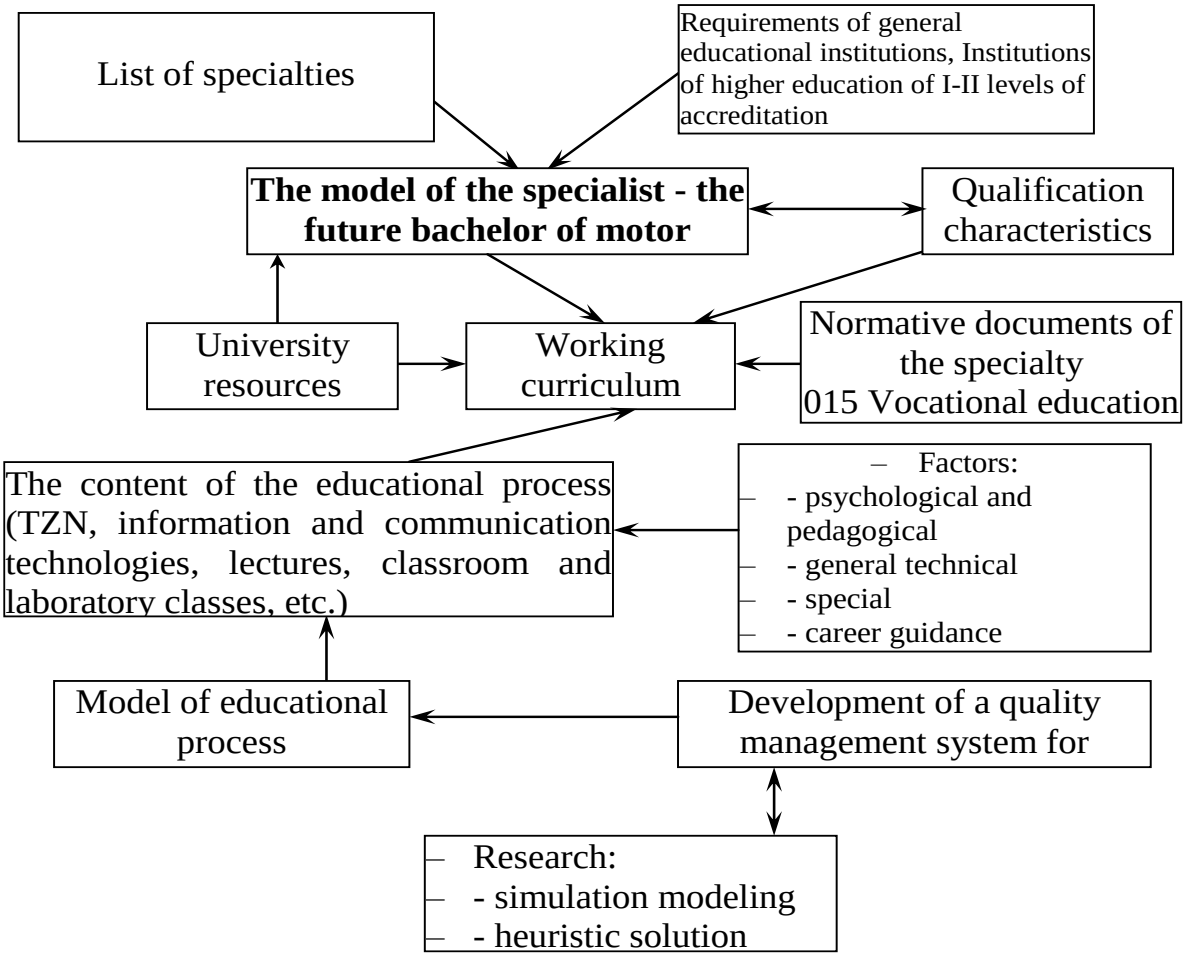

Figure 1. Model of preparation of future bachelors of motor transport for professional activity

An essential factor in developing the model is taking into account the current regulations on vocational education. It provides selection and structuring of the content of educational material of professional training of future bachelors of motor transport, designing of modular programs of disciplines of professional and practical training according to curricula and development of methodical support.

Of great importance in the formation of professionalism of students are disciplines that ensure the formation of professional competencies of students, including information. Therefore, the curricula for future bachelors of road transport provide for the study of a number of subjects aimed at ensuring their information and communication readiness, namely: "Educational learning technologies", "TZN", "Computer graphics", "Computer information technologies in education " etc.

In view of this, in the pedagogical professional activity of future bachelors of road transport, computer tools are used as a tool for design, technological, organizational, managerial and research activities, as well as a means of learning.

Despite significant advances in this area, computer training of students needs to be radically revised based on modern educational requirements. First of all, students must acquire knowledge of computer literacy at the level of personal computer (PC) users. The program of study should be compulsory for all students, begin with the first year and include the study of the structure of computers, operating systems and shells (Norton Comander, Windows, etc.). Further development of computer literacy should involve the use in the educational process of training future bachelors of road transport applied training programs in various fields.

The training of future bachelors in road transport with the introduction of information and communication technologies should not be limited to the study of only one specific discipline. Thus, in the process of studying such subjects as "Technical Mechanics", "Machine Parts", "Automated Design in Mechanical Engineering", etc., you can use the software package WinMachine, editor for mathematical calculations MathCAD, visual modeling environment MathLAB, which allow describe the computational algorithm in conventional mathematical expressions (calculate linear, quadratic equations, systems of equations, calculate integrals, matrices, find derivatives, build two- and three-dimensional graphs of dependences, etc.) and immediately obtain the results of laboratory calculations.

By combining application software packages, students can create a holistic view of the capabilities of the computer as a means of automating the educational process. Students

should use a PC not only in the educational process, but also in scientific activities - to write term papers, master's theses, etc.

The use of computer tools increases the cognitive interest of future professionals in the educational material, expands the possibilities of purposeful orderly formation, deepening and expanding the theoretical knowledge of students, makes the learning process more technological and effective. The use of computer technology in the educational process makes it possible to systematically consider different ways of building models, production and technological processes, increase their number, diversify the content, expand the possibilities of generalization of computer concepts. Note that the use of applied software allows the teacher to significantly implement such general didactic principles of learning as conscious performance of educational tasks, clarity, accessibility, consistency, differentiation and individualization of the educational process.

We are convinced that regardless of the specific structure of computer disciplines at different levels of their study (vocational school, college), it is necessary to ensure the continuity of future specialists mastering the basic ideas of modern CAD on increasingly complex educational material. First of all, these are the ideas of elementaryness, principles of conservation, symmetry. The growing tendency towards integration in modern society puts forward the idea of the unity of the scientific picture of the world, where computer competencies play a leading role.

Given this, the use of information and communication technologies in the educational process allows the teacher during classes to focus on stimulating the processes of self-development, self-realization and self-education of students. The effectiveness of the lesson is increased due to the fact that all of them (students) are fully involved in the work. And this can be achieved only with the judicious use of computer tools.

Conclusions and prospects for further research. Based on the analysis of programs, qualification characteristics, curricula and the presented model of preparation of the future bachelor of motor transport, we believe that the existing training system needs a radical overhaul. Such changes should be aimed at achieving one goal - to prepare an intellectual specialist who meets modern requirements. Therefore, the quality of training of qualified bachelors of road transport is a prerequisite that has a significant impact on the further development of education in our country.

Prospects for further exploration are the development of a system for preparing future bachelors of road transport for professional activities, taking into account current trends in society.

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