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The role of digital teaching methods in the training of transport industry specialists

The article deals with the use of digital learning technologies in the training of transport professionals. Digital learning is a new activity. The multilevel structure of higher professional education in the country and the systematic integration of the University into the international education system, the problems of University management in accordance with modern requirements require new approaches. At the new stage of development of modernity, the education system must comply with the new economic policy of society, social and intellectual level. In this regard, the goals, content of education and methods of its training require improvement, study and solution of the problems of organization, regulation of the training system. In order to adapt future transport specialists to modern requirements, the structure and content of the training courses «Automated control systems in transport», «Freight» are highlighted. The authors considered the didactic goals and objectives of the educational process, in their solution appropriate approaches to the educational work of the teacher and cognitive activity of students in the educational process are proposed. The analysis of methods was carried out in accordance with the requirements of the theory of training on compliance of the content of training methods and terms of training time. Thus, the cognitive activity of students increases, creativity develops.

Keywords: digitalization, education, transport specialists, educational process, innovative technologies, methods and techniques, development of discipline, practical training, electronic textbook, skills, personality.

Today, digitalization is being implemented in various industries. Digital systems are also used in education. The idea of digital transformation can be called a global trend, as knowledge can be obtained at a distance from anywhere in the world. Digital technologies play an important role in the economic development of many countries. The transition to the digital system is defined as the basis of competitiveness, and training — a single set of pedagogical methods and techniques to improve the ability of students to learn.

Digital technologies have led to the formation of a new information ecosystem with completely new parameters. Scarcity of information has been replaced by its accessibility to all, the functions of information control have been redistributed, machines have provided more and more opportunities, and the ways people interact with these machines, information and with each other have undergone significant changes [1].

In his Message, the Head of the state noted: «we must develop new industries created with the use of digital technologies. This is an important complex task. The country needs to develop such promising industries as 3D printing, online trading, mobile banking, digital services used in health care, education and others. These industries have already changed the structure of the economies of developed countries and gave a new quality to traditional industries. Digitalization is a tool that is not intended to become the leading country in Kazakhstan. And the goal is to be competitive, to increase growth, production», he said. In general, digitalization in the long term is to create conditions for the transition of the economy of Kazakhstan to a fundamentally new trajectory of development, ensuring the creation of a digital economy of the future [2].

At present, digitalization is a strategic development priority in many countries. According to the forecasts of the world's leading experts, by 2020 a quarter of the world economy will be digital and the introduction of technologies of digitalization of the economy, allowing to interact effectively with the state, business and society, will become a large-scale and dynamic process. The Law of the Republic of Kazakhstan «On education» states: «The main task of the education system is to create the necessary conditions for education aimed at the formation and professional development of the individual on the basis of national and civil values and achievements of practice, the introduction of new learning technologies, digitalization of education, access to the international global communication network» [3]. In this regard, the task of today's teacher is to develop not only knowledge, skills, but also perception, thinking, imagination, feelings, will, that is, a versatile, free, creative, independent, competitive personality.

The head of state in his Message to the people of Kazakhstan noted: «We must ensure that the quality of education throughout the country has been put forward at the level of international standards. It is necessary to develop the practice of online training, to provide a system of special audiences of natural science profile». The Ministry of education and science has done a lot of work on computerization of education, their connection to the Internet and telephony. The achievement of digitalization is clear evidence.

The effectiveness and quality of digital learning largely depends on the effective organization of the learning process and the quality of the materials used. The use of innovative technologies will improve the quality of education, as well as broaden the horizons of knowledge and information exchange. Teachers should serve as a «guide» to the information society. Here, along with the improvement of basic education, an important role is played by professional development in the field of scientific and technical disciplines that provide training of highly qualified and experienced specialists in the field of Informatization [4].

Digitalization has great prospects. This is the result of digitalization and distance learning, interviews with teleconferences online. The use of new innovative technologies in integrated lessons leads to the development of creative, intellectual abilities of students, the formation of skills of using their knowledge in life.

For transport, specialists in order to adapt future specialists to the changing requirements of time and independent search. In the curriculum of the Department of transport and vocational training of Ye.A. Buketov Karaganda State University taught specialized discipline of «Automated systems of transport management», «Grooveline». The purpose of studying these disciplines is to teach students a competent economic assessment of technical, technological and organizational measures in the field of improvement of freight transport. As a result of the study of disciplines, the student must have an idea: about the transportation process; about the management of cargo and commercial works; about the transportation of goods by road and rail; about the legal basis of transport, the formation of tariffs, new methods of freight forwarding services; about the transportation of goods in mixed, international traffic; be able to organize cargo and commercial work on the latest technologies; automated control systems (ACS) and mechanization and automation of loading and unloading operations, the ability to use computer technology in ACS; to be able to improve technical means, to ensure traffic safety, to observe the environment in the transport of various goods, especially in the transport of dangerous, heavy and bulk cargo; calculation of the necessary fleets of containers and cars; determination of freight charges for the transport of goods; scheduling; exploring ways of filling of transportation documents on practical training. In this regard, a number of priority projects are currently being implemented within the framework of digitalization in railway transport. Therefore, we offer students in practical classes, during classes on independent work of students under the guidance of a teacher, the implementation of these projects in practice using innovative technologies in accordance with the theme.

Pedagogical process at the University forms a complex, multifaceted system of relations. Educational and pedagogical communication of the teacher and the student, and interpersonal communication of students with each other, as the environment in which the student enters the University, is a source that feeds and develops the personality of the student, his self-awareness in the process of joint activity and communication [5].

Currently, it is important to improve the practice of students using new learning technologies in the educational process, as well as the training of qualified transport specialists in accordance with modern requirements. Therefore, during the lesson the teacher can cover several stages with the use of innovative technologies: stage I: study; stage II: development; stage III: implementation; stage IV: development. In the development of the discipline «Cargo» students get acquainted with the types of goods at the first stage on the topics discussed in the content of the discipline; the second stage involves the way visual verification and record condition of cars and cargo under carriage movement control of compliance with total load, improve working conditions and enhance personal safety of the staff, to inspect the wagons; the third stage involves ways of realization of positions through the automated system of commercial inspection trains and cars, interactive whiteboard, digital project, allowing you to visually monitor and record all the cars and products; the fourth stage provides the problems of improving the quality of commercial inspection of wagons, cargo and containers, improving the safety of trains, as well as improving the working conditions and personal safety of workers associated with the implementation of operations for the commercial inspection of trains and wagons; increasing the capacity of the station. Thus, the scheme of commercial inspection of trains and cars with the automated system is made by students on practical occupations, i.e. defines ways of formation of the scheme reflected in Figure [6].

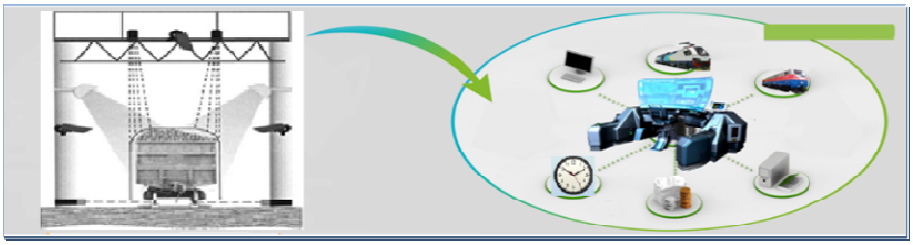

Figure. Scheme of commercial inspection of trains and wagons with automated system

Methods and techniques of teaching the subject are offered as follows:

1. General provisions of the technology of humanization of education (A. Amonashvili). The purpose and importance of this technology: the education of the student citizen, the formation and development of their cognitive power, the warmth of the heart and soul of students, moral education.

2. General provisions technology debate (K. Popper). The purpose of this technology is the development of language personality, i.e. the technology increases the creative activity of students. Also form in them research, search qualities.

3. Education technology reference signs (diagrams, signals) (V.F. Shatalov). Purpose: formation of knowledge, skills, training of all students, acceleration of training. Constant repetition, block training, the use of supports, voluntary training, a combination of training and education.

4. Technology problem-based learning. To create a problem in the educational material that interested the student. By solving this, students actively take knowledge.

5. Technology of developing training. The development of personality and its abilities, learning in this technology. Providing work on the development of all students.

6. Information technology training. Purpose: preparing students for the information society. Electronic textbooks, interactive whiteboard, Internet materials.

7. Technology of critical thinking development. This technology awakens the interest of students, shows meaning and corrects during reflection. During classes, the student, analyzing what is used to, weighs under what conditions it should be used, reviews and makes changes.

8. Interactive learning technology is the education of citizens who are able to act independently, teach students cohesion, listen to the opinion of another, make joint decisions. Students learn to work in different circles. This technology covers a wide range of relationships.

9. Technology of professional orientation. Inclusion in the curriculum of topics in accordance with educational programs. Bringing the need for practical application of this knowledge.

In the process of studying these methods and techniques between individuals developed cognitive relations, all its subjects enter into relations. Individual work of each student and the development of his personality is carried out in the communication and interaction of people with each other. Therefore, the use of several types of interactive learning technology profile subjects, in particular:

– application of the form of work in pairs when fixing a new lesson. It teaches students to ask and answer questions on their own;

– brokerage movement is beneficial to students when submitting coursework, as students move throughout the audience and gather information on this topic;

– the interior, which is called «hold your position», has advantages. First of all, any definition or situational questions are read, then the student visits the Board (poster) divided into «Yes» or «No», writes his decisions and explains these chosen answers, his positions. Under what legislation the decision is made and explains its correctness. That is, I believe that this is the most necessary experience for future transport specialists.

One of the main problems at the present stage is to achieve a high level of efficiency of education, upbringing in the process of education. The use of electronic textbooks in the digitalization of education will not only increase the cognitive activity of students, but also to work creatively in the formation of logical thinking. Still does not meet modern requirements in the field of education only what the teacher said or the use of textbooks. Therefore, in the modern society of digitalization it is impossible to move forward without using electronic textbooks.

The student knows and knows the environment through all the senses, but their perception is diverse. The main channels of receiving information are: perception, vision and sensation. 90 % of the information

received from the environment is received through the visual system, 9 % — through the auditory system, only 1 % — through the senses. The visual system is well developed among the types of memory. If the education provided by the research of teachers-psychologists, does not meet the internal needs of the student, in the learning process there are difficulties. The quality of the student's knowledge, on the one hand, depends on the skill of the teacher and the effective use of new technologies, on another — on the equipment of the material and technical base of the University. The student must have the knowledge gained by the University, be able to use it in their future lives. Therefore, classes in the above disciplines are equipped with the necessary electronic textbooks, interactive whiteboards and multimedia classrooms.

The main feature of today is that on the way of improvement in the educational process the most advanced techniques are sought, educational institutions work on different educational programs. Including the use of electronic textbook for students:

– improving of the quality of teaching by providing students with accurate and complete information about learning materials. Improving the quality of training, inculcation of skills of conscious assimilation of educational material;

– improving of the effectiveness of learning by bringing abstract educational materials to the precision;

– increasement of the importance of educational material, gaining of time, improving of memory. Getting of a memory effect, repetition through association leads to a deep assimilation of educational material;

– the teacher and the student facilitate the work, exchange views, increase communication.

Currently, the developed electronic textbooks should take into account the following conditions:

– take into account that the electronic textbook developed for a particular discipline, corresponds to the standard program of the discipline, should be clear and concise on the subject;

– basic materials containing lecture notes on topics and sections where electronic textbooks are studied;

– additional materials for laboratory and practical tasks;

– reference materials, contains a bibliography relating to the material;

– test containing questions of intermediate and final control;

– the content of the list of references in the preparation of the material.

To study the discipline «Automated control systems in transport» the student must use an electronic textbook.

Using the electronic textbook, students can:

– correct and easily understand passing materials;

– self-train and self-control at all stages of work;

– carefully perform the work and pass the teacher in the form of files;

– endlessly repeat obscure topics;

– use textbooks in the classroom and choose tasks at an independent level of the student;

– search for the necessary materials.

Teachers and students can work independently using the electronic printed textbook, developed using the capabilities of innovative technologies. The use of this electronic textbook helps to increase students' interest in classes, self-development of topics without specifying the teacher and preliminary preparation for practical work. When using an electronic textbook user interface in the form of graphic design and a dialog box increases the interest of students to use the textbook. On the example of the projects of the train control Center, which within the framework of the digitalization program in the railway industry will be presented the topics covered by the discipline «Automated control systems in transport», we will acquaint students with electronic textbooks.

The field of application of the electronic textbook is very wide: the electronic educational system is very effective for distance learning, for independent search, for students who have a desire for general knowledge. Thus, deepening the development of innovative technologies facilitates the work of the teacher, improving the quality of education. I use electronic textbooks in my class. This is a very effective aspect: materials, tables and drawings, animation scenes, movies, reference dictionary, didactic materials that consolidate the student's knowledge. Test questions of each section, independent work of each task helps the student in the control of knowledge and self-search of the student.

With the use of the electronic textbook:

– the effectiveness of the use of the lesson of technical means necessary materials;

– development of innovative technologies by the teacher;

– students' interest in the subject;

– the level of knowledge, skills, depth of knowledge;

– types of inspections, evaluation;

– increasement of the possibility of acquiring practical skills.

As a result, when using an electronic textbook there is a sharp increase in students' interest in lectures. The use of electronic textbooks for high-quality education of the young generation in accordance with modern requirements can be considered as a type of new learning technology. In addition, the use of electronic materials in the classroom students expand previously acquired knowledge and perform independent practical tasks. Each student should be familiar with the necessary materials on the chosen topic, be able to work with tables and drawings. With the help of an electronic textbook you can listen to various images, video clips, sound.

The introduction of innovative approaches to the educational process in accordance with the new needs of society requires non-standard search and creative work of the teacher. The main task of teachers is mastering new innovative technologies focusing on learning outcomes. Therefore, depending on the abilities of the student it is necessary to strive to master modern digital education, which provides education, education of its independence, sophistication, creativity. Since in accordance with the state educational standard, the organization of the educational process imposes on the introduction of new pedagogical technologies, innovative control and measuring devices to control the knowledge of students. The new pedagogical technology of teaching is the humanization of learning, the formation of a comprehensive personality, able to self-develop and educate, empathize with the modern personality. Along with improving the quality of professional education, students have the opportunity to be critical of themselves, focusing on their abilities and self-development. It also increases cognitive activity and develops creative abilities of students. Introduction of digitalization of education, informatization, development of education. The teacher opens a clear and effective way to the study of personality, knowledge and achievement of learning goals. Competence knowledge that meets the cultural, social, economic needs of society, able to withstand global competition, use theoretical knowledge in any situation in their practice. Digital learning is a new activity. Digitalization is aimed at the development of educational activities, deepening the essence of subjects, improving the professional skills of the teacher, the introduction of other new technologies, the use and conduct of creative work. The use of such technologies-first of all, the winner is the teacher, i.e. helps to effectively organize the classroom, increases the student's interest to the subject, and secondly, will benefit the student, as his knowledge on the subject expands [7]. Thus, the existing teaching methods will be changed in terms of new learning technologies; the quality of knowledge will increase. We are constantly working on new educational technologies to find effective ways to work. The purpose is the use of modern pedagogical technologies to increase students' interest in the lesson and motivation to learn, the formation of conditions for creative cooperation and the child's personality.

One of the tasks set for the educational sphere is the continuous improvement of teaching methods and techniques and the development of modern pedagogical technologies. In addition, it is necessary to coordinate domestic production within the framework of global modernization and digitalization. «Digitalization» is the key to success, forming a competitive economy. For this purpose, the society faces the task of implementing 10 directions in The President's Message «New opportunities for development in the conditions of the Fourth industrial revolution». If you really implement the objectives of the 4 directions of the program «Digital Kazakhstan», Kazakhstan will have more chances to enter the top thirty. Only then Kazakhstan, following the leader of countries with developed economies, consumes new achievements in the information sphere.

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А.М. Затынейко, М.Ж. Киздарбекова, Д.Қ. Бәкей

Көлік саласы мамандарын даярлауда цифрлы оқыту әдістерінің рөлі

Мақалада көлік мамандарын даярлауда цифрлы оқыту технологиясын қолдану сұрақтары қарастырылған. Цифрлық оқыту — іскерліктің жаңа түрі. Еліміздегі жоғары кәсіби білім берудің көпдеңгейлі құрылымы және жоғарғы оқу орнының халықаралық білім беру жүйесіне жоспарлы интеграциялануы, жоғарғы оқу орнын қазіргі заманның талаптарына сай басқару мәселелері жаңа тәсілдерді талап етеді. Заманның жаңа даму сатысында білім беру жүйесі қоғамның жаңа экономикалық саясатына, әлеуметтік және интеллектуалдық деңгейіне сай келуі тиіс. Осыған орай білімнің мақсаты, мазмұны және оны оқыту тәсілдері қайта жетілдіру, оқу жүйесін реттеу, ұйымдастыру мәселелері зерттеліп, өз шешімін табуды қажет етеді. Болашақ көлік мамандарын заман талабына бейімдеу мақсатында авторлар «Көліктегі автоматтандырылған басқару жүйелері», «Жүктану» оқу курстарының құрылымы мен мазмұнын ерекшелеген. Сондай-ақ оқу үдерісінің дидактикалық мақсаттар мен міндеттерін қарастырған, оларды шешу кезінде оқу үдерісінде оқытушының оқу жұмысы мен білім алушылардың танымдық қызметінің сәйкес тәсілдерін ұсынған. Әдістерді талдау оқыту мазмұнының әдістеріне, оқу уақытының мерзіміне сәйкестігі туралы оқыту теориясына қойылатын талаптарға сәйкес жүргізілді. Осылайша, білім алушылардың танымдық белсенділігі артып, шығармашылық қабілеті дамиды.

Кілт сөздер: цифрландыру, білім беру, көлік мамандары, оқу үдерісі, инновациялық технологиялар, әдіс-тәсілдер, пәнді меңгеру, тәжірибелік сабақтар, электронды оқулық, дағды, тұлға.

А.М. Затынейко, М.Ж. Киздарбекова, Д.К. Бакей

Роль цифровых методов обучения в подготовке специалистов транспортной отрасли

В статье рассмотрены вопросы применения цифровых технологий обучения в подготовке специалистов транспортного профиля. Цифровое обучение — это новый вид деятельности. Многоуровневая структура высшего профессионального образования в стране и планомерная интеграция вуза в международную систему образования, проблемы управления вузом в соответствии с современными требованиями требуют новых подходов. На новом этапе развития современности система образования должна соответствовать новой экономической политике общества, социальному и интеллектуальному уровню. В этой связи цели, содержание образования и способы его обучения требуют совершенствования, изучения и решения проблем организации, регулирования системы обучения. В целях адаптации будущих специалистов транспорта к современным требованиям выделены структура и содержание учебных курсов «Автоматизированные системы управления на транспорте», «Грузоведение». Авторами рассмотрены дидактические цели и задачи учебного процесса, а также предложены соответствующие подходы к учебной работе преподавателя при мотивации познавательной деятельности обучающихся в учебном процессе. Анализ методов был проведен в соответствии с требованиями, предъявляемыми к теории обучения о соответствии содержания обучения и срокам учебного времени. Вследствии чего увеличивается познавательная активность обучающихся, развиваются творческие способности.

Ключевые слова: цифровизация, образование, транспортные специалисты, учебный процесс, инновационные технологии, методы и приемы, освоение дисциплины, практические занятия, электронный учебник, навыки, личность.

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