UDC [377:3:331.4]:004

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THE STAGES OF THE FORMATION OF PROFESSIONAL PREPAREDNESS OF PROSPECTIVE SAFETY ENGINEERS TO USE INFORMATION TECHNOLOGIES

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The Stages of the Formation of Professional Preparedness of Prospective Safety Engineers to Use Information Technologies

The article is dedicated to the stages of prospective occupational safety engineers' professional readiness for applying the information technologies in their professional sphere. There is proposed the special course "Information technologies in occupational safety management", which will systematize the knowledge purchased by the professionals before. This special course is aimed at improving the training of future engineers' in the field of labor.

In this article the question of influence of modern information technologies on readiness of the future engineers for professional activity is considered. Pedagogical conditions under which the formation of readiness can be effective. Finally, a concrete example of the implementation of a training course on discipline "Computer Science" in CEPU (Simferopol).

Optimally combining innovative technology with traditional technologies training, we can improve the professional competence of a specialist, which allows being competitive in the labor market.

In the training of future engineers lack of interactivity. We offer a special course "Information technology in occupational safety management", which is improve the training of future professionals skills today.

Key words: readiness, occupational safety engineers, information technologies.

An important part of modern production in Ukraine is safety work conditions, and this part requires new Information technologies (IT) which would enable safety, automation of complex multifaceted activities of specialists in life safety area. There is a need in communication technology to ensure safety, which would allow specialists to get protection in time, and to receive complete, accurate, systematized information for effective decision-making within their professional duties.

The aim of the article is to examine the stages of professional preparedness of work safety future engineers to use IT in their professional activity.

Analysis of subjects programs showed that in the content of the subject training methods of professional development activities based on IT there was a slight amount of didactic units presented. Our analysis showed that, first, small amount of subjects allows students to learn specifics of their future professional activity, and second, in the structure of educational process there are virtually no situations of educational and professional nature that would allow students to determine their place in profession. Importance of computer science and information technologies does not exceed 5 % of total time, and at special and common special disciplines usage of IT is not provided. This indicates that today the share of teaching time that is given to prepare future work safety engineer to use IT in his activity, cannot be sufficient [3].

According to the current educational standard of preparing work safety engineers by profession coded 6.010104 there are two “informational” subjects: “Computers and Computer Graphics” and “Computer Science and Engineering” [3]. These disciplines have the potential to enrich their relevant content that offers great opportunities to prepare students for the implementation of safety management process in the enterprise.

The process of training students in the use of IT in professional activities can not be implemented without extensive use of IT at all levels of the educational system of both universities and academies, and also in non-educational system. Preparation in general and in IT area in particular, is realized under conditions of university educational information environment, which we define as a set of conditions for implementation of active information interaction between teachers, students and subject areas of information resources. This interaction includes funds generated from IT and oriented on operation of these resources, and also implementation of investigational, experimental, research and other activities of students. The basis of creation of such environment builds following principles:

- openness – the university is implemented as an open informational environment which improves constantly. You also need to implement the principle of

open access to informational potential of educational purposes;

- integration – involves the use of medium components by means of links arranged between them and the possibility of the optimal selection of educational resources, a choice of activities among universities;

- interactive character of information exchange undertaken in the information educational environment in the course of using informational potential of educational purposes, offers searching, selection, application, communication, information sharing and collaboration based on the IT tools and sources of distributed information resource of educational purposes.

We defined the role and place of computer science in the experimental work as providing disciplines, along with the study of the theoretical aspects of computer science, systematic and informative world view, with the general information of the structure and functioning of the autonomic system. Then we developed plan of specific actions for each discipline to prepare students in the test aspect, namely, a system of tasks focused on the formation of future professionals in the relevant tender. We should note that the system of tasks corresponds to the three highlighted blocks of training emphasis. Inclusion in the content of subjects which tell about professional education regulations on the use of IT during professional activity will allow introducing variety of ways and means of carrying out professional activities in the study area to future specialists in work safety area. Experience shows that the use of system tasks in preparing future professionals provide efficiency, cyclicity and complexity of the learning process of students. Thus there is a gradual inclusion of students in activities on reproducing, interpreting and modernizing levels through presentation tasks with gradually increasing difficulty, which in turn ensures promotion of future specialist from lower to higher level of his readiness.

At the planning stage we had also built a vertical system of future professionals training. In order to ensure continuous and focused management of future specialists' training and coordinate the activities of various departments in the investigated aspect we collaborated with teachers who train students in different disciplines cycles. Thus, at the conclusion of a survey conducted among teachers in aspects of the problem, we

discussed the issues included in the focus of interest of this study revealed the potential opportunities that exist within the various cycles of disciplines at all levels of training in engineering and technology faculty RHEI “CEPU” (Simferopol). It is possible to orient teachers to pay more attention on training students in the investigated aspect of vocational education.

Let’s analyze in detail the stages of preparation of future specialists.

The first stage is a preparatory one and it is the same as the first and second years of future specialists’ training. At this stage, the initial rate of formation of students’ interest is manifested and awareness of the need to perform professional activities using IT. There is also inclusion of students in the process of learning the basic theoretical knowledge of the methodology and techniques of IT usage, acquaintance with basic professional conceptual foundation and categorical apparatus of the investigated problem. At the preparatory stage in the study of subjects of general humanitarian and social and economic cycles, we paid attention to issues, the meaning of which is partially included in the unit of general investigational type of training. These disciplines contribute to the formation of interest in the study of the problem. During the further study prerequisites are being created for future professionals to master the knowledge and skills to perform professional activities with the use of IT.

Let’s illustrate this by describing the lesson in the discipline called “Computer Science and Engineering” on the subject of Informatics. One of the objectives of lectures was to deliver to the students the fact that professional culture is an integral part of the basic culture of the individual; the task activity is to prepare young people for life in the new environment, which entail the need to engage in professional activities using IT. Seminar on this topic has been dedicated to the research of expert systems. Thus, computer literacy, rationality, frugality, and other professionally significant qualities of personality have been the subject of organized discussions aiming to identify and prove their importance and significance, or commonness, nothingness, and low value.

Great value at this stage of the investigated type of students' preparation has discipline called "Psychology of work", as it in addition to knowledge of the basic ideas and theories provides students' acquaintance with the essence of such concepts as "health", "conceptual framework of the psychology of work", "planning and modeling career". Future specialists learn to differentiate these concepts. Within this discipline there are real opportunities for joint planning and organization of teachers and students of occupational education, including the field of IT. Thus, future specialists are aware of the professional culture of a place in the structure of the purposes of education, know its contents; they are introduced to IT and interactive methods that can be used in carrying out professional activities.

In collaboration with faculty teachers of the university in the first stage of the investigated type of training there were informative, analytical, constructive and predictive tasks given to students that contribute to the formation of skills to highlight the problems that stand in the field of vocational education, the collection and interpretation of educational material for the investigated problem and others. These tasks and objectives ensure continuity and consistency in planning, forecasting, and the organization of the students in the aspect of professional education we have studied.

The second phase of training is called basic and it is within the fourth and fifth year of training future professionals in the university. It is the most vibrant and intense content in terms of training students to use IT in their professional activities. This is due to the peculiarities of the curriculum, and the availability of theoretical training of students in aspects of the problem. At this stage there are issues discussed which are included in the general theoretical and methodological units of investigated type of training students as well as part of problems of practical action block. There is a specification of previously obtained theoretical and methodological knowledge in the study of teaching and special disciplines, familiarity with the structure, nature and functions of work safety engineer, including the use of IT in their professional activities. There is also a proper understanding and application by students of different ways and methods of performing control using IT; previous experience with

the investigated problem is analyzed, the conditions for the formation of ability to enter reflexive stance are created. First of all, there should be noted potential abilities to prepare students with the studied problems in existing courses of general and special subjects. Thus, during the study of the course "Industrial hygiene and work health" students are expanding the range of theoretical knowledge needed to implement health and safety in the workplace. During the study of the course called "Safety management in the enterprise" students are introduced to the organization of the Department of Labor in the enterprise. While future specialists explore teaching subjects there occurs mastering system which requires professional knowledge and skills. Students carry out the transfer of previously acquired theoretical knowledge to practice, learn the possibilities of work safety using IT. While discussing the various aspects of training students as part of the teaching disciplines we oriented teachers to:

1) enriching the content of professional practice material used by students;

2) usage of developed tasks due to which students' work in the studied issue was planned, organized and supervised.

The tasks that we set at this stage allowed activating cognitive activity of students to develop their initiative and independence, to organize knowledge in aspects of the problem. The greatest attention at this stage was given to solving diagnostic and reflexive problems. This is due to the necessity of encouraging students to regular self-esteem and active self-updating of their search and cognitive activities. It is based on self-assessment upcoming that expert seeks to enhance his knowledge, ability to work with the studied type of professional activity.

At this stage we consider it necessary to hold the course "Information technology in work safety management" for the students of the investigated problem of management using IT, which will allow future professionals to organize knowledge gained before.

The introduction of this special course allows to analyze the quality and standard of the existing students' training in the test aspect of higher education, as well as predict future personal and professional development of students for the investigated type of preparation, update and integrate the knowledge and skills of

students to implement management using IT to provide the necessary adjustments to practice. This special course is aimed at improving the professional training of specialists in the field of labor.

We believe that in preparing future work safety engineers there is a lack of interactivity. Therefore, teachers are able to offer a special course called “Information technology in work safety management” that will improve the training of future professionals in today's environment.

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Умєрова Л. Д.

Етапи формування професійної готовності майбутніх інженерів з охорони праці до застосування інформаційних технологій

Зміст та структура готовності майбутніх інженерів з охорони праці до застосування інформаційних технологій у професійній діяльності.

У статті розглядаються етапи формування професійної готовності майбутніх інженерів з охорони праці до застосування інформаційних технологій у професійній діяльності. Запропоновано спецкурс „Інформаційні технології в управлінні охороною праці", який дозволить систематизувати майбутнім фахівцям придбані раніше знання.

Ключові слова: готовність, інженер з охорони праці, інформаційні технології.

Умерова Л. Д.

Этапы формирования профессиональной готовности будущих инженеров по охране труда к применению информационных технологий

Содержание и структура готовности будущих инженеров по охране труда к использованию информационных технологий в профессиональной деятельности.

В статье рассматриваются этапы формирования профессиональной готовности будущих инженеров по охране труда к применению информационных технологий в профессиональной деятельности. Предложен спецкурс „Информационные технологии в управлении охраной труда", который позволит систематизировать будущим специалистам приобретенные ранее знания.

Ключевые слова: готовность, инженер по охране труда, информационные технологии.

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The article came to Editorial Board on 09.04.2013
Passed for printing on 26.04.2013