

The Role and Place of Information and Communication Technologies in the Formation of Professional Competencies of Higher Education

Tetiana Shabelnyk^{1*}, Nataliia Rotanova², Oksana Diachenko³, Maryna Netroba⁴, Liudmyla Tonkykh⁵, Olena Tsilmak⁶

*¹Department of Mathematical Methods and System Analysis, Mariupol State University, Mariupol, Ukraine

²Department of Mathematical Methods and System Analysis, Mariupol State University, Mariupol, Ukraine

³Department of Mathematical Methods and System Analysis, Mariupol State University, Mariupol, Ukraine

⁴Pedagogy and Education Department, Mariupol State University, Mariupol, Ukraine

⁵Department of Natural Sciences and Humanities, Azov Marine Institute of the National University "Odessa Marine Academy", Mariupol, Ukraine

⁶Department of Psychology, National University «Odessa Law Academy», Odessa, Ukraine

Corresponding Author: Tetiana Shabelnyk

E-mail: tetianazanfirova@gmail.com

ABSTRACT

The article discusses the concept of a student's ICC, which is considered as the most important characteristic of professional competence, which includes a combination of the following components: motivational-value (orientation of the student's personality to the development of his ICC in future professional activity); technological (complex of skills and abilities of ICC-activity); cognitive (a system of knowledge of modern technologies of future professional activity); is defined, that pedagogical support for the formation of ICC of future specialists is an individualization of the learning process of students, due to their personal and professional needs and the specifics of a regional university, providing the necessary conditions for the implementation of this process.

Keywords: Information Technology; Professional Competence; Students; Communication Technologies

Correspondence:

Tetiana Shabelnyk

Department of Mathematical Methods and System Analysis, Mariupol State University, Mariupol, Ukraine

Email: tetianazanfirova@gmail.com

INTRODUCTION

The changing needs of society for highly qualified specialists also requires changes in the approach to their training. In these conditions, it is necessary to search for adequate conditions to ensure the effectiveness of training engineering personnel. The main goal of engineering education is to train specialists with a high level of professional qualifications, competence in their chosen business and a complex of personal qualities that are relevant in modern conditions of informatization of professional activities, representing social significance and value need for a young person entering working life. Under the influence of the informatization process, a new situation is taking shape in society and the education system requires the training of a future engineer capable of working in the changed conditions. Therefore, the professional activity of a future engineer presupposes the need not only to have a high level of professional competence, but also to be creative in solving various situations, to organize their activities on an innovative basis [7-9, 14]. Informatization of engineering education is considered in the context of using information technologies as a means of teaching, ICC - as a priority component of professional competence. The use of computer technologies in the field of production not only opens up a wide scope for the creativity of engineers, expands its possibilities in solving professional problems, but also puts forward qualitatively new requirements for the training of future engineers in terms of developing their information and communication competence. The

professionalism of a future specialist-engineer is a synthesis of competencies, including subject-methodological, psychological-pedagogical, technical, information-communication and computer components [10-14].

MAIN TEXT

Based on these professional tasks, general cultural, general professional and professional competencies have been formulated.

The content of engineering activities is constantly becoming more complex, which requires not only the systematic development of professional competencies, but also the improvement of the disciplines of the information cycle, which are responsible for the formation of ICC of future specialists. In the works of many researchers devoted to engineering education, T.A. Nedelyaeva, G.N. Nekrasova, M.N. Tolstyakova, G.F. Tretyakova, V.E. Shukshinova et al., It is noted that the rapid development of information technology, new high-tech production requires adapted specialists with broad knowledge, capable of switching from one type of activity to another, with extensive information and communication skills and abilities.

Considering this process in the context of using information technology as a means of teaching, scientists (A.A. Abdukadyrov, B.Z. Turaev [10], O.G. Smolyaninova [13, 14]) believe that the educational process should be directed first in total, to create the following conditions. Are common:

- material and technical provision and software equipment, which provides the choice of technology, tools and computer technology in the organization of the educational process; □ regular professional development of teaching staff and university specialists in the development and use of ICC in the educational process;
- educational and methodological support of modular and Internet learning technologies.

Private:

- conditions for self-education and professional self-development of students in the field of ICC.
- creation of conditions for prospecting and research activities of future engineers, ensuring the study of software models of computational and information processes associated with the functioning of objects of professional activity.

Specific:

- ensuring the conditions for design and engineering activities.
- creation of conditions for production and technological activities (production and undergraduate practices).

Further, the most important factors include:

introduction of methods and forms of organizing the educational process, allowing the future engineer to show interest in the active use of opportunities during training. Based on the specifics of the engineering professional activity, along with the system-activity and competence-based approaches, we also distinguish a personality-oriented approach and a regional one. World experience shows that the first place comes to understanding higher education as a social institution that creates conditions and contributes to the development of the individual in accordance with individual needs, inclinations, aspirations, including in the aspect of professional activity. The ideas of the humanization of education are fully reflected in the personality-oriented approach. This approach was studied in the works of E.B. Bondarevskaya, E. Ya. Belskaya, B.M. Bim-Bada, E.Yu. Valitova, V.V. Gulyakina, M.S. Zavyalova, B.C. Ledneva, I. Ya. Lerner, A.V. Petrovsky, V.V. Serikov, V.A. Slastenina, T.V. Solovyova, M.N. Kholodnaya, E.N. Shiyanova and others. With a personality-oriented approach to the definition of the essence of the content of education, the absolute value is not knowledge alienated from the personality, but the person himself. This approach provides the freedom to choose the content of education in order to meet the educational, spiritual, cultural and vital needs of the individual, the formation of his individuality and the possibility of self-realization in the cultural and educational space. Personally, oriented education is based on the following principles: - the priority of individuality, self-worth of the student as an active carrier of subject experience is recognized.

- the learner does not become but is initially a subject of cognition.

- when designing the professional educational process, the subject experience (experience of life and self-realization, acquired earlier in the course of communication, activity, cognition, observation, etc.) of each student should be taken into account.

- development involves internal changes in the personality: in her psyche, consciousness, values, needs, etc. (T.D. Rogacheva, L.M. Potapova). The integral result of development is the emergence of the trainee's qualities of a self-organizing subject of educational and other types of activity: awareness, ability to choose, activity,

independence, resistance to negative influences, professional mobility.

Based on the essential characteristics of personality-oriented professional education, G.V. Mukhametzyanov and F.Sh. Mukhametzyanov, its main features are distinguished:

- the main objective.

- development of the student's personality.

- the personality acts as a system-forming factor in the organization of the entire educational process.

- teachers and students are full subjects of education.

- the leading motives of education, its value are self-development and self-realization of all subjects of learning.

- the formation of solid knowledge, skills and abilities becomes a condition for ensuring the competence of the individual.

- full competence of the student is ensured by including his subjective experience in the learning process [17-20].

The personality-oriented approach is interconnected with the individually creative approach, which is also based on taking into account the originality and characteristics of the individual, his creative potential. Thus, student-centered learning is viewed as an innovative pedagogical activity to create optimal conditions for students to develop their abilities and strive for self-realization.

The personality of the student in such a system is the goal of the educational system. Therefore, the system should play the role of a computer intelligent tutor, take into account the individual parameters of users, set a personal learning pace, form individual educational trajectories, provide self-diagnostics and mutual diagnostics of students, interactive interaction between students and teachers, carry out regular monitoring of all components of the educational environment, etc. At the present stage of development of society, profound changes in the world and in the country necessitate new guidelines for education. Our country has a wide variety of conditions for national, regional, cultural, spiritual, historical development. These factors provide for the creation of conditions for the development of educational systems in accordance with the socio-economic, cultural and educational needs of the regions.

In a multiethnic society, a completely new approach to the content of education is required, it must fully represent the wealth of common human culture, which cannot be without reliance on ethnic traditional culture., his customs, social norms of behavior, spiritual values, which will contribute to "ensuring the integration of the individual into the system of national and world culture" [25-29]. The main task of the regional education system is the implementation of the social order of the region for the training of in-demand personnel capable of ensuring the socio-economic, scientific and technical, cultural and spiritual development of the region. At the same time, due to the heterogeneity of socio-economic and cultural development and the insufficient effectiveness of the information policy of the state, the problem of information inequality in the country is actualized. In solving this problem, an important place is given to universities that build the educational process in accordance with regional characteristics. Analysis of scientific works (E.A. Barakhsanova, A.I. Golikov, A.A. Grigorieva, D.A. Danilov, A.D. Nikolaeva, N.D. Neustroev, A.D. Semenova, A.V. Mordovskaya and others) shows that in the development of educational programs for the

preparation of future specialists for professional activity, the following must be taken into account:

- first, the initial level of computer literacy of first year students.
- secondly, the possibility of implementing the tasks in the educational environment.
- thirdly, the features of the education system and lifestyle.

The main task of the education system is the implementation of the social order of the region for the training of in-demand personnel capable of ensuring the socio-economic, scientific and technical, cultural and spiritual development of the region.

The driving forces of the functioning of this system are the contradictions between the development of global processes of standardization in education and the specifics of the regionalization of the educational space, between the requirements of the modern social situation in the regions and the insufficient development of regional aspects of training future specialists. Personality, according to Vygotsky's definition, is an integral mental system that performs certain functions, first of all, it is the creative development of social experience and the inclusion of a person in the system of social relations. This provision served as the basic basis for our study, since the formation of ICC of future engineers is possible only if their communicative personal qualities are formed. The influence of individual-typological characteristics of students on the success of educational activities was considered by such authors as E.A. Boyko, E.A. Golubeva, A.V. Zaporozhets, E.P. Ilyin, V.T. Kozlova, N.S. Leites and others. The individual characteristics of students and their role in educational activities were studied by B.G. Ananiev, N.V. Kuzmina, I.M. Slobodchikov and others.

Based on the foregoing, let us single out the features: - actualization of the problem of information inequality.

- low level of computer literacy among freshmen. Therefore, it is necessary to emphasize the important role of pedagogical support of the above process. The success of the professional development of a future engineer is largely determined by the effectiveness of his adaptation to the university educational process, reflecting the modern scale of man-made human activity with its inherent information technologies, with a characteristic increase in the role of the personality-oriented component in engineering education. As noted by M.P. Lapchik, the technological function of pedagogical support for the formation of students' readiness for creative self-realization in the conditions of informatization of the educational space and the educational learning environment is to provide them with the necessary conditions and means for the implementation of this process. This is teaching students the skills and abilities of using a computer, information and communication technologies and software (including multimedia) in the process of educational and cognitive activities and in their life. Thus, we highlight the following features of the pedagogical support of the process of forming the ICC of future engineers:

- updating the potential of the educational process through the introduction of interactive teaching methods, conditioned by the requirements of professional activity [1-5, 19-24];
- activation of practice-oriented project training, in particular design and engineering activities related to the functioning of objects of professional activity.

- an individual approach due to the specifics of the regional university (low level of computer literacy among freshmen, bilingual education).

So, the features of the process of teaching future engineers that we have identified in modern conditions allowed us to develop a model for the formation of ICC students on the basis of pedagogical support.

It should be noted that, like any competence, ICC is dynamic, i.e. constantly developing and changing personality traits through:

- self-renewal, the emergence of new forms and ways of meeting the information needs of subjects, adapting ICC to the changing conditions generated by the creative initiative of the individual, the logic of ICC development in a particular field of activity;
- self-development, complication of the ICC itself.
- deepening the specialization of individual elements and the level of their interconnection and interaction with each other.

CONCLUSION

Thus, the development of the information society, which qualitatively changes the living conditions and professional activity of a person, has actualized the problem of preparing future specialists for new conditions on the basis of the formation of their information and communication competence;

- ICC of a future engineer is considered by us as the most important characteristic of professional competence, which includes a combination of the following components:

- motivational value (orientation of the student's personality to the development of his ICC in future professional activities).

- technological (complex of ICC skills and abilities);
- cognitive (knowledge system of modern technologies of engineering activity).

the basis of the modern educational system is educational information resources, teaching aids and educational process management tools. Its tasks include the formation of a qualitatively new level of ensuring the educational process based on interactivity and distance. Thus, the pedagogical formation of the ICC of future engineers presupposes the individualization of students' training, conditioned by their personal and professional needs and interests, and the provision of the necessary conditions and means for the implementation of this process.

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