

IMPROVING THE PROFESSIONAL COMPETENCES OF FUTURE ENGINEERS IN A DIGITAL EDUCATIONAL ENVIRONMENT

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Abstract:

This article defines the tasks of forming and improving the professional competencies of future engineers in a digital educational environment in Uzbekistan and improving the professional competencies of engineers in a digital educational environment in technical higher educational institutions.

Keywords: digital education, professional competence, competence, modular training.

Annotatsiya:

Mazkur maqolada O'zbekistonda raqamli ta'lim muhitida bo'lajak muhan- dislarning kasbiy kompetensiyalarini takomillashtirishni shakllantirish va texnika oliy ta'lim muassasalarida raqamli ta'lim muhitida muhandislarning kasbiy kompetensiyalarini takomillashtirishning vazifalari belgilab berilgan.

Kalit so'zlar: raqamli ta'lim, kasbiy kompetensiya, kompetentlik, modulli o'qitish.

Аннотация:

В данной статье определены задачи формирования и совершенствования профессиональных компетенций будущих инженеров в цифровой образовательной среде Узбекистана, а также совершенствования профессиональных компетенций инженеров в цифровой образовательной среде технических вузов.

Ключевые слова: цифровое образование, профессиональная компетентность, компетентность, модульное обучение.

Currently, digitalization in education has taken a leading position in the world. In this regard, in our republic, too, the Decree of the President of the Republic of Uzbekistan № PF-5847 “On Approval of the Concept for the Development of the Higher Education System of the Republic of Uzbekistan until 2030” was adopted in order to determine the priority areas of systemic reform of higher education, to raise the process of training highly qualified personnel with modern knowledge and high spiritual and moral qualities, independent thinking, to a qualitatively new level, to modernize higher education, and to develop social and economic sectors based on advanced educational technologies [1]. In order to consistently ensure the implementation of the tasks set out in the Concept for the Development of the Higher Education System of the Republic of Uzbekistan until 2030, as well as to expand the independence of higher education institutions, sharply reduce state administrative management in their activities, and thereby form HEIs that train highly qualified personnel who can meet the requirements of the changing labor market, this system was introduced in 35 higher education institutions starting from January 2022, based on the Resolutions of the President of our Republic dated December 24, 2021 “On additional measures to ensure the academic and organizational and managerial independence of state higher education institutions” [2] and “On measures to provide financial independence to state higher education institutions” [3]. The main condition for such development is the modernization of the national education system, aimed at preparing graduates who are able to live and carry out their professional activities in a digital environment, taking into account the requirements for professions and changing value trends. Solving this problem involves increasing the requirements for the qualifications of professors and teachers and their competence in using digital technologies to design and implement the educational process, and at the same time, the high demand for distance learning creates the need to improve the professional competence of future engineers in a digital educational environment in technical higher educational institutions. The socio-economic development of modern Uzbekistan sets new requirements for the training of specialists in various professions, which requires the higher education system to develop standards that meet world standards based on optimizing methods and means to achieve the set goals.

The development of the technical innovation market requires an engineer to be able to effectively carry out his professional activities in a dynamic and high-tech professional environment, which makes the task of modernizing the system of professional engineering education at a new stage urgent.

Research has shown that in modern conditions, the process of training technical specialists at the institute should be organized taking into account the constantly changing tasks of engineering activities and the conditions for its implementation. These changes, as well as the rapid development of the innovation system in our republic, have affected the professional

potential of modern engineering activities and require the higher education system to train specialists with innovative, creative thinking, a high level of technical and sufficient fundamental knowledge in the process of modern scientific and technological progress, who can independently solve research problems and quickly master new technologies for solving professional problems.

Currently, it is not enough to be a graduate with certain professional knowledge, skills and qualifications for the demand in the labor market.

Recently, the issue of the relationship between the concepts of competence and competence has been widely discussed in pedagogical science. Competence (English: “competence” – “ability”) means the effective use of theoretical knowledge in activities, the ability to demonstrate a high level of professional skills, abilities and talents [4].

The concept of competence entered the field of education as a result of psychological research. From a psychological point of view, competence means “how a specialist behaves in unconventional and unexpected situations, enters into dialogue, takes a new approach in relations with opponents, performs ambiguous tasks, uses conflicting information, and has a plan of action in consistently developing and complex processes.

Professional competence is the acquisition by a specialist of the knowledge, skills and qualifications necessary for the implementation of professional activities and their high-level application in practice.

Professional competence implies the mastery of integrative knowledge and actions in each independent area, rather than the acquisition of separate knowledge and qualifications by a specialist. Also, competence requires the constant enrichment of specialist knowledge, the study of new information, the ability to understand important social requirements, the ability to search for new information, process it and apply it in one’s activities.

Competence is the ability to combine knowledge, skills and personal qualities a set of skills necessary for successful activity in a certain field.

A specialist with professional competence consistently enriches his knowledge, assimilates new information, deeply understands the requirements of the era, searches for new knowledge, processes it and effectively uses it in his practical activities. The structural and information analysis of the professional tasks of engineering specialists allows us to identify an invariable component of their professional activities related to the organization of scientific and experimental work, analytical and synthetic processing of professionally important information, the ability to solve practical engineering problems based on the ability to use fundamental knowledge and generalized algorithms of activity in compulsory disciplines. Thus, within the framework of professional training for the study of compulsory subjects, the task of forming and developing basic professional competencies, including the implementation

of practical and theoretical tasks based on the acquisition of knowledge and skills by students in behavioral standards, values and areas of compulsory education, and the acquisition of experience of professional significance, is renewed. Therefore, the organization of training of a modern engineer is a professional should be aimed at the formation of the main professional competencies of the future specialist, which are in development and constant improvement [5]. However, additional research is required on the problem of forming the main professional competencies of a future engineer in distance learning conditions with a sufficient theoretical and methodological development of the issues of using ICT in the educational process. In the context of the transition to a two-stage system, additional research is required in higher educational institutions for the training of engineering personnel from the point of view of substantiating the organizational and methodological foundations of the implementation of this process.

Research and testing experience in the system of higher technical education made it possible to formulate a number of contradictions between:

- the need to develop the competencies of future engineers, among which the main professional competencies serve as the basis for improving the qualifications of a specialist and the development of the process of higher education in the existing system of professional training of engineers
- lack of extensive experience in the use of information and communication technologies in the process of training specialists in various fields and the lack of theoretical and methodological development of the mechanism for introducing a competency-based approach in the training of engineers in distance education.

A theoretical and methodological approach to the formation of professional competencies of engineers in a digital educational environment in technical higher educational institutions is necessary [6].

The process of forming professional competencies of engineers in a digital educational environment in technical higher educational institutions will be more effective in the following cases:

- the conditions and means of implementing a competency-based approach are justified;
 - the educational process is carried out according to the model of organizing the professional training of an engineer, taking into account the specific characteristics of the student's educational and cognitive activity in studying compulsory subjects in distance education;
 - the organization of its implementation in distance education conditions, which provides an integrated approach and coordination of the activities of all subjects of the educational process
- The methodological foundations are determined.

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