

Problems and Prospects of Modernization of Higher Education Based on the Implementation of Professional Standards in the Field of Information Technology

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Abstract. One of the important factors in the implementation of professional standards is the creation of an educational information environment in an educational institution. In modern conditions of development, higher education is given tasks that are determined by the needs of personnel specialists in the field of information technology. The solution of these problems is directly related to the ability to make the labor market more transparent for workers and employers. The article reveals the problems that arise in organizations in connection with the implementation of the rules regarding professional standards. As a rule, first of all, university teachers are puzzled by the search for ways to form in the educational process the most optimal conditions for the implementation of professional standards with a mandatory set of competencies. The positive and negative aspects of the implementation of professional standards for employers and workers are also given. A small analysis of the readiness of Russian companies to apply professional standards in practice is given.

1. Introduction

More recently, articles on professional standards have appeared in the labor code. Since the concept of professional standards has recently entered the modern vocabulary, not everyone knows and understands why they are needed. It should be noted that professional standards differ from qualification characteristics. The question of how mandatory is the application of professional standards and, therefore, their implementation in the educational process is also important.

Professional standards are documents of a new type, which are the most complete, and most importantly, relevant information. This information contains the qualifications required to perform specific types of professional activities. They have been developing standards since the mid 90s of the last century. The most interesting thing is that the initiators of this process were large employers and business communities. They did not wait for public authorities and developed professional standards, the content of which represented the required level of qualification of employees. The use of these standards was hampered by the fact that when they were written, various methods, approaches, and also layouts of documents were used. Although it should be noted that for all its shortcomings and inconveniences, the document made it possible to take into account very quickly all the changes taking place in the relevant industry. At the same time, the field of information technology will not be an exception. Being a new branch of personnel potential training, it represents a competitive advantage of the regions in the field of training professional professionals. This requires the introduction of innovative teaching

methods, subject to the active interaction of higher education, representing qualified personnel, employers and public authorities on the labor market.

2. Relevance, statement of the problem

The modern, rapidly developing branch of information technology worldwide is experiencing a shortage of qualified specialists. The Higher School faces new challenges, since in addition to general and special knowledge, employers today expect certain professional skills from young specialists [1]. The existing need for technical personnel, as well as the problem of personnel shortages at enterprises, determines the need for changes in the polytechnical education system in order to train highly qualified specialists in information and technical fields for various industries [2].

In recent years, in Russia, the training of specialists in the field of information technology (IT) is crucial for the development of the country. It determines the key factors of such areas as automation, robotics, development at the enterprises of the military-industrial complex, space research, traffic control and others [3]. Personnel formation is focused on the creation, implementation of modern information systems, software and hardware of computer technology and more. At the same time, the planning of the educational process, based on the current requirements of the information industry, should be carried out in accordance with regulatory legal documents regulating the educational process, in particular, federal state educational standards. A clear understanding of the actions and concepts that are important for coordination is necessary: the educational standard, the professional standard, and the system of professional qualifications.

A new generation of students comes to study at universities. They consider outdated traditional methods of teaching - "teacher - student" and "student - book", especially its paper version [4]. When organizing the educational process, it is necessary to take into account that modern students are confident users of the global network, which allows them to quickly find the necessary information and navigate it well. It should be remembered that informatization of education involves the education of professionals who must have a high information culture, a certain system of values and analytical abilities.

3. Interaction of the business community and education as the basis of professional standards

The issues of interaction between business and education abroad began to be sharply discussed at the end of the 90s of the last century. For example, in 1999, the United States proposed an advanced technology education project to train information technologists for the 21st century with the goal of increasing the pool of skilled information technology (IT) workers for Ohio and the whole country. The basis of the project consisted of four components: Articulation agreements between partner institutions, the development of courses and curricula, the development of the faculty, and industrial cooperation / internship opportunities for students. In developing courses and training programs at all levels, the IT competency profile developed by the Ohio Information Technology Task Force as well as national qualification standards and industry certification for specific suppliers were used as guidance. The training of teachers for the project was carried out through a series of summer institutes and seminars [5].

The most active interaction is observed in the IT industry, as leaders in this field quickly realized how valuable relations with universities could be for their own corporate strategy and long-term growth [6, 7, 8]. Vásquez Bernal and other researchers point to the need to develop university-business-state relations, which are the three main players in the development of technological innovation and production [9].

The issues of training highly qualified personnel, the interaction of business and higher education, professional orientation of students are relevant in all countries of the world: Latin America [10], China [11], Korea [12], Brazil [13] and other countries.

In Russia, the level of innovation is one of the lowest in the world. One of the reasons for this situation is the lack of transparent procedures for cooperation between companies and universities as

sources of intellectual production. For example, Fomina I. and Makolski M. proposed a model of business partnership between educational institutions and high-tech companies [14].

For the Russian economy, improving the quality of labor resources is one of the priorities. To solve it, a national system of competencies and qualifications is being created in our country. Professional standards are an important part of a single national qualifications framework. They can provide interaction between employers and professional education in order to improve the quality of training and their competitiveness [15]. The use of professional standards in Russia for employers has become mandatory since July 1, 2016. According to the Labor Code of the Russian Federation, the qualification of an employee determines the level of knowledge, skills, professional skills and work experience of an employee, and the professional standard as a characteristic of qualifications necessary for an employee to carry out a certain type of professional activity. This document also defines the procedure for the development and approval of professional standards established by the Government of the Russian Federation taking into account the opinion of the Russian tripartite commission for the regulation of social and labor relations.

Professional standards are the basis for the formation of job descriptions of employees, they will also reveal the specific labor functions of the employee, take into account the ranking by the level of complexity and responsibility of the work performed by the specialist. Each labor function should be realized in the performance of specific labor functions, for which it will be necessary to apply the acquired skills and knowledge.

Thus, professional standards include a comprehensive description of the requirements for a specialist, taking into account modern competencies in combination with the requirements for knowledge, skills and professional skills. In addition, the standard indicates job titles, educational requirements and conditions for admission to work. This makes standards the main elements that link the field of higher education and the labor market.

When implementing professional standards, the aim is to improve the quality of professional growth of the employee. The diploma that a graduate receives, as a rule, indicates only that a person received certain knowledge and skills when listening to lecture courses in the learning process. After a while, he must confirm his qualifications and this is a prerequisite for assessing the competitiveness of an employee in the labor market. In practice, so far the application of a professional standard is reduced to the development of educational programs. Moreover, the development of programs is in accordance with the requirements of regional labor markets. Universities are trying in every possible way to expand the content of interdisciplinary courses, to increase the number of practices in the professional module.

4. Problems and prospects of introducing professional standards

The emergence of new information production technologies leads to a change in the content of higher education with constantly changing employers' requirements for graduates. In this regard, educational institutions have to adjust sets of old professional competencies and develop new ones in the training of specialists. New training programs, in turn, require the introduction of new disciplines. This has a strong impact on the training system in connection with an increase in practical training. A larger number of practices will allow the training of sought-after specialists who are ready for competitiveness in the labor market. But this is becoming one of the problems of training human resources. The number of theoretical hours required has to be reduced, and employers are not always ready to take students to practice without the necessary basic knowledge. The enterprises are not ready to engage in personnel training, they are waiting for a ready-made professional who is able to understand any problem and be able to solve it [16].

To improve the quality of education of a graduate in higher education, full harmonization of regulatory documents that determine the content and structure of educational programs is necessary so that the educational space becomes unified in the training of personnel.

To form the necessary professional competencies for graduates that reflect the specifics of the diploma received, it is also necessary to introduce a new list of professional disciplines in educational

programs. These should be disciplines reflecting the basic requirements of employers for future personnel specialists. Since the information environment and information technologies are changing and improving very quickly, the requirements for the educational process will have to be changed dynamically.

The material and technical support of the educational process also plays a significant role in introducing new requirements for students according to new standards. Information technology, when organizing educational and educational processes, should not lag behind the quality of mechanisms that a graduate will encounter at the enterprise. To ensure a good hardware and software base, additional funding is needed for graduating departments, especially those involved in training personnel in the field of information technology. Enterprises are of great help in this matter. Having given tomorrow graduates the opportunity to work with the technologies of a particular enterprise, the employer prepares for itself the personnel potential with the necessary work requirements.

The high-quality implementation of professional standards requires high-quality teaching at universities. The teaching staff has the main role in preparing a top-level specialist in demand on the labor market. The central figure in education, which implements the program in the learning process, participates in the formation of competencies, has been and remains a teacher. It is he who creates the future competitive specialist, helps him become a person, ready for self-knowledge and self-development. For this, special attention should be paid to the self-education of engineering and teaching staff. A comprehensive solution to this problem should take into account the attitude of the state and society towards the teacher, his social status and his pay. The state should give guarantees of a decent life and provide adequate conditions for the implementation of educational activities. This will increase the influx of young teachers with work experience. In addition, one of the factors for advanced training of university teachers is the holding of collective forms of work among university employees, in particular, methodological, scientific and practical conferences, seminars, internships at enterprises, etc. The modern use of the information environment and information technology changes the role of the teacher in the learning process [17]. The student becomes an active subject in the learning process, and the teacher is given the role of a consultant, a knowledge carrier. The level of psychological and pedagogical preparedness of the teacher helps him organize the educational process and adjust it in such a way as to convey the necessary knowledge to the future specialist, taking into account professional standards of information orientation.

5. Conclusion

I would like to note the old truth: an educated person differs from an uneducated person in that he continues to consider his education insufficient. Therefore, when solving the problems of implementing professional standards, one should focus on training a specialist who is able to make independent decisions, act wisely, and effectively use his knowledge in the ever-changing world of information technology. This is only possible for established personalities who are adapted to the dynamically developing labor market.

The need to use and implement professional standards is recognized in many countries. Russia is at the beginning of the process of training specialists so that they can as quickly as possible begin to fulfill their professional duties after receiving a diploma. Future graduates should be confident in the relevance of the direction they choose. Therefore, it is necessary to develop a system of measures for the interaction of employers and higher education. At the same time, business leaders should be interested in conducting training and internships at their facilities. Promises to future specialists to provide good work and organize their working time should not be unfounded. All this should be supported by a good financial and wage base.

Universities should take into account that the traditional training of specialists, focused on the formation of knowledge, skills in the subject area, is increasingly lagging behind modern requirements. The basis of education should be not so much academic disciplines as methods of thinking and activity. It is necessary not only to release a specialist who has received high-level training, but also to include him already at the stage of training in the development of new technologies, adapt to the condi-

tions of a specific production environment, make him the conductor of new solutions, successfully performing the functions of a specialist in the manufacturing, industrial and agricultural sectors [18].

In conclusion, it is worth saying that to meet the needs of highly qualified specialists in the field of information technology, it is possible on the basis of the integrated use of all the possibilities of higher, secondary and additional professional education [19]. Combining all these forms, it is possible to build a unified system of training based on the continuity of the educational process and satisfy a wide range of requirements made by consumers, both in content and in qualification [20]. Effective implementation of professional standards in the “life” requires more active use of strategic partnerships between universities and industrial enterprises [21], the introduction of new forms and models of training [22], the joint design of educational programs, targeted training of specialists at the request of companies, the participation of business in endowment university funds, attracting qualified workers to implement educational programs [23], as well as conduct professional adaptation of university graduates in the conditions of digital transfer Formations of the economy [24].

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