

On the main approaches to creating conditions for training personnel with higher education on an interdisciplinary basis

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Abstract. The paper reviews the regulatory issues in the field of higher education as related to the improvement of personnel training quality based on enhancing the classification of professional educational programs in the Russian Federation. The features of the current state of higher education in Russia, the problems and possible prospects for transformations in this area, as well as the main stages of fulfilling the task of transforming the higher education professional educational programs are discussed. The liberalization of federal state educational standards of higher education and the increased independence of higher education institutions during the development of educational programs taking into account professional standards indicate the need to create an updated classification system for the Russian education. The classification system being developed should become a common one for all types of professional educational programs, including professional training programs and additional professional programs. The paper proposes new approaches to the system structure and basic classification levels of the List of specialties and areas of training, as to the establishment of the conditions for training personnel with higher education on an interdisciplinary basis, taking into account the common subject content of professional activities and providing the conditions for the existence of enlarged groups of specialties and areas of training.

1 Introduction

The issues of improving the quality of training of specialists with higher education in the Russian Federation are periodically reviewed in the context of updating the lists of higher education specialties and areas of training (hereinafter referred to as the Lists of Specialties). The lists belong to the primary documents that determine the structure of staff training for the labor market and directly influence the improvement of main professional educational programs. The task of updating these lists is caused by their incomplete compliance with the current qualifications system in Russia, one of the most important elements of which is the National Qualifications Framework of the Russian Federation [1].

Currently, the registry of the Russian Ministry of Labor and Social Protection [2] includes more than 2,000 professional standards, reflecting the view of professional communities and employers concerning the existing occupational and qualification structure of employment in the labor market. However, for certain specialties and areas of training, there are no professional standards present in the registry, and, what is more, the development is not even

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planned for some of them. This can be treated as a sign of the fact that the corresponding specialties/training areas are outdated and need to be excluded from the mentioned lists.

At the same time, there are professional standards relevant to the industries, which have no corresponding specialties and areas of training in the lists. Thus, they should be included in the lists and their development should be arranged accordingly. Therefore, it is reasonable that the President of the Russian Federation Vladimir V. Putin dedicated part of his annual Address to the Federal Assembly of April 21, 2021, to the social policy and economics issues. The head of the state noted that there are all the necessary conditions for the implementation of goals aimed at breakthrough development within the education system: "... For this, our country has a reliable potential created during the previous years in ... science, education, industry ..." [3]. The analysis of the social and economic development of the country confirms the conclusions made by the President. This became possible partially thanks to the implementation of national projects as a set of mechanisms and tools to improve the quality of public administration, which enabled to ensure the achievement of socially significant results in the field of social policy and education.

An evident example of this is the "Education" National Project, designed for 6 years, which was adopted on December 24, 2018 [4]. Currently, this project includes 10 federal projects. Two main goals have been approved in the project data sheet and stated as follows: the first one is to ensure the global competitiveness of the Russian education and the entry of the Russian Federation into the top 10 countries in the world in terms of the quality of general education; the second one is the upbringing of harmoniously developed and socially responsible individuals on the basis of the spiritual and moral values of the peoples of Russia, their historical, national, and cultural traditions. In accordance with the urgent need to implement the strategic development goals set by the head of our state and documented within the framework of the ongoing "Education" National Project, the main direction has been determined in terms of achieving a new high-quality level of engineering personnel training, which is associated with the necessity for the Russian education to enter the world market and ensure significant economic growth of the country.

In this regard, the task of improving the quality of training for specialists with a higher education in the field of engineering, which primarily implies aligning the internal personnel training rules with the international requirements, has become a priority not only for public administration bodies, but also for the entire scientific and pedagogical community of the country. It was then reasonably reflected by the Instruction of the President of Russia stated as follows: "... Ensure revising the list of higher education specialties and areas of preparation, as well as the nomenclature of scientific specialties for which academic degrees are awarded. Take measures to enlarge them, create conditions for training personnel with higher education and conducting scientific research on an interdisciplinary basis.

Take into account the need to preserve the peculiarities of training personnel according to specialist's programs for certain sectors of the economy" [5]. Therefore, the key task in transforming and updating the current Lists of Specialties is to prepare sound conceptual and methodological approaches and establish correlations between qualifications in the higher education system (in accordance with the Federal State Educational Standards of Higher Education) and qualifications that are obvious for the labor market (in accordance with professional standards).

2 Analysis of the state of educational programs classification and the prospects for the transformation of the existing lists of higher education specialties and areas of training

Before proceeding to the substantiation of the need for transformation of the existing higher education Lists of Specialties, it is advisable to review the conditions, under which the current

classification system was created in Russia, and its current state. The analysis shows that the current higher education Lists of Specialties were introduced by orders of the Russian Federation Ministry of Science and Higher Education No. 1061 dated September 12, 2013 “On the approval of the lists of specialties and areas of training of higher education” (as amended and supplemented) and No. 1060 (as of September 28, 2020) “On the approval of the lists of specialties and areas of training of higher education applied in the implementation of higher education programs, containing information constituting a state secret or official information of limited distribution”. We would like to draw attention to the fact that the composition of the list items in this edition was identical to that of the 2009 edition. During the lists development, a different classification system, consisting of 57 enlarged groups (instead of the 29 previously existing groups), including a certain set of specialties and areas of training (hereinafter referred to as the Enlarged Groups) was taken as the basis. This model was structurally close to the then-current International Standard Classification of Education (ISCED-2011 version), which provided for 25 combined groups, containing educational fields. The version currently applied is ISCED 2013, providing for 29 directions, which include the available specialties.

The distribution of specialties (areas of training) into groups historically developed back in the years of the Soviet Union. This is how all lists and classifiers were created, including those for higher professional education. It is worth noting that such large groups were formed exclusively based on their belonging to an industry. Such economy-relevant statistics as the admission of applicants and the graduation of specialists from educational institutions, which, by the way, also mainly belonged to an industry sector, were formed accordingly by sectoral groups. This made it possible to compare them with population employment indicators and, consequently, to assess the staffing needs of each of the industries, etc. More detailed information was provided per professional groups (into which the enlarged groups were subdivided). These data were used to make decisions on the adjustment of student admission and training state plans, as well as on the implementation of the educational process, the organization of training for new professions and study areas, etc.

The current coding structure does not meet the modern requirements and does not comply with the international practice. Nowadays, a more effective system for coding educational programs is considered to be the one that includes two parallel directions: the first direction is the classification of educational programs per fields of professional activities, and the second one is per levels and types of education. So, while the ISCED-2011 version applied a three-level hierarchical subsystem of horizontal classification, including “Extensive fields”, “Narrow fields”, “Detailed fields”, the ISCED-2013 version already uses the “educational and professional training fields” concept, within which the “scientific area”, “direction”, and “specialty” levels are defined [6]. In addition, as a well-known expert in the field of classification system of educational programs Sazonov B.A. mentions, the proposed coding system for the existing lists “. . . contains only one level of classification—“enlarged groups”, which has proven itself inapplicable for the presentation of statistical data: who would be interested to know the total number of specialists being trained for “geodesy and oil and gas business activities” without the possibility to provide the specific numbers for the constituent professional areas.

Only two capabilities remained for the educational statistics: to present the aggregate statistical data for the educational system levels in general or to provide them separately for each of more than 1,200 directions of training, specialties and professions, and this is exactly what we see in the modern Russian reference books containing educational statistics” [7]. This largely explains the reason why instead of a single list of higher education specialties and areas of training in the Russian Federation, there are currently 11 uncoordinated lists developed for individual levels of higher education, which actually doubles the total number of areas of training and specialties. Such an increase in the number and volume of the lists is related to

the creation of a simplified coding system for educational programs. The simplification idea was not to create a separate description of the coding system, but to assign a code to each area of training possible for implementation immediately in the list. As a result, the same training area name, for example, “Mechanical Engineering”, appears not in one, but in three lists (for bachelor’s, master’s, and postgraduate programs), and each time with a new code (15.03.01, 15.04.01, 15.06.01). Thus, an attempt to create a simplified coding system has led to the “multiplication” of lists and the total number of areas of training in them. It should be noted that the current Lists combine the traditions of national education and are already harmonized with the following systems: the International Standard Classification of Education (ISCED-2013) adopted by UNESCO and the International Classification of Science and Technology (FOS-2007) effective in the OECD (Organization for Economic Cooperation and Development) countries.

3 The proposed structure and basic classification levels of the new List of specialties and areas of training of higher education

In our opinion, the current legislation in the field of education in Russia, in general, provides the necessary quality of professional personnel training; still the existing set of regulatory documents may well become the basis for the transformation and revision of the Lists of specialties and areas of training of higher education. While working on the implementation of the presidential instructions related to the development of the concept for consolidating the Lists of Specialties, the Ministry of Education and Science of Russia, the Coordination Councils for the fields of education, Federal educational and methodological associations, as well as the entire pedagogical community and training customers (employers) will have to solve a number of additional tasks: to analyze and clarify the correspondence tables between the lists of federal state educational standards of higher education (hereinafter referred to as Federal Standards) and professional standards, as well as to align the corresponding lists with the professional standards registry of the Ministry of Labor and Social Protection of Russia; to make decisions on the introduction of new areas of training and specialties, taking into account the increased technological level of modern production; to exclude the items not demanded by the labor market and the educational service customers from the Lists of Specialties; to develop a unified system of classification and coding of main professional education programs for all levels of education, which would include additional professional training, retraining, and advanced training programs; to assign codes to transformed lists of training areas and specialties, using the developed classification system; and to obtain approval for the updated lists.

In addition, the analysis of the nomenclature of qualifications included in the Ministry of Labor and Social Protection registry reveals their incompliance with the qualifications, which are assigned to the graduates of educational institutions in accordance with the approved Lists of specialties and areas of training of higher education, making them opaque for the labor market and raising a question of what labor functions the university graduates are trained to perform [8]. At the same time, the leading organizations, which are the customers of training in our country (employers), are beginning to understand more precisely what kind of specialists they need, and are increasingly expressing their views on this issue. In this regard, the existing conditions have indeed predetermined the emerging need for the transformation of the current higher education Lists of Specialties.

The fulfillment of these tasks is facilitated by the fact that the current higher education Lists of Specialties and International Classifiers contain three levels. Besides, the multiplicity of lists can be eliminated by abandoning the above-mentioned simplified coding system. The List of Specialties should not contain any repeating names of specialties and areas of

training. Thus, the number of items in the list will be reduced by almost half (by 38%) and, most importantly, the continuity of the main educational programs throughout the levels of higher education will be evident. Therefore, the structure of the new list draft should retain three levels of classification, namely: field of education—Enlarged Group—area of training (specialty). It is advisable to conduct the coding of educational programs per the levels of higher education not in the List of Specialties, but in the All-Russian Classifier of Education Specialties. It should be noted that the International Classifiers ISCED and FOS are uniform for all levels of higher education, which enabled to make them concise and define the continuity of educational programs throughout the corresponding levels of higher education. For clarity, let us compare the main indicators of the current lists and the proposed innovations:

1. The current state in the field of classifying higher education specialties and areas of training: there are 11 uncoordinated lists; within the lists, a code is assigned to each area of training/specialty possible for implementation (for higher education, there are 456 area/specialties in 56 Enlarged Groups); the lists correspond to the traditions of national education and are consistent with the International Standard Classification of Education (ISCED-2013) and the International Classification of Science and Technology (FOS-2007); the current lists of areas of training and international classifications are composed of three levels.

2. A single list of higher education specialties and areas of training, which will ensure the following: preservation of the three-level classification; a new structure with the “field of education—Enlarged Group—area of training (specialty)” format; the classifier is the same for all higher education levels, making it more concise (for higher education, there will be 284 items in 56 Enlarged Groups, meaning a total reduction by 38%); the coding of educational programs per levels of higher education will be carried out in the All-Russian Classifier of Education Specialties; maintaining consistency with the International Standard Classification of Education (ISCED-2013) and the International Classification of Science and Technology (FOS-2007).

At the same time, it is necessary to take into account that various proposals for the consideration of other classifiers and lists that can be applied as a basis may arise in the process of expert discussion. For instance, these could be the International Classifier ISCED-2013 or the Order of the Ministry of Labor of Russia No. 667n dated September 29, 2014, which undoubtedly need to be considered when developing the new List of Specialties. Still, none of them can be taken as the only basis, since they were created to solve other specific tasks. Moreover, the ISCED-2013 classifier is intended only for the collection of statistical data for UNESCO and is used in countries with very different levels of economic and educational development. However, at the same time, it is not focused on its application for the education systems and economies of the leading countries around the world. Therefore, it is very important that while forming the new List of Specialties, the Ministry of Education and Science of the Russian Federation should adopt a “soft” version of its alignment with ISCED-2013, taking into account the national needs of training personnel for our economy. As an example, it could be mentioned that “Information and communication technologies” are named as a separate area of education (science), which contains only three areas of training as follows: “Computer usage”, “Database creation”, and “Software development”. It is obvious that our system of training personnel in the field of computer science, information technology, information security, and management of engineering systems possesses generally recognized global leadership, and it must be preserved and developed to meet new challenges. Computer science cannot be separated from mathematics forming its foundations, and information technology and management of engineering systems should not be removed from the engineering field of training. Moreover, the recommendations for the application of ISCED 2013 explicitly state that it can be applied at the national level “in those countries that have not yet developed their own standard classification of educational fields”, meaning the third world

countries. Moreover, they further state that “those wishing to apply this classification within their country will need to adjust certain groups of areas for them to match better the scope and/or range of training areas in accordance with their national needs” [6].

4 Creation of the conditions for training personnel with higher education on an interdisciplinary basis

It should be noted that if a single List for the entire higher education is formed and the system of coding and accounting of educational programs is changed, then this will become the basis for the further development of interdisciplinary educational programs, including within the framework of implementing educational programs in a network format. It is related to the fact that even now the Federal State Educational Standard of Higher Education 3++ and the current lists of areas of training (specialties) allow universities to implement any interdisciplinary educational programs within the framework of independently established training profiles and specializations. At the same time, it is advisable to assign the functions of collecting and systematizing information on the profiles (specializations) to the Federal Education and Methodology Associations or to the Coordination Councils for the fields of education. At the same time, this really supports the implementation of the “2+ system” as follows: the possibility of organizing a unified training for students within a common Enlarged Group at a university during the first two years of studies and providing the students with the right to choose the area of training (specialty) upon completing their second year; a single list of admission examinations (USE); uniform requirements for the training performance conditions and professional “core” (uniform general professional competencies and their achievement indicators); a flexible mechanism for choosing educational paths.

At the same time, in order to implement the requirements for preserving the peculiarities of training personnel under the specialist’s programs, which is especially important in the engineering field of education, one should take into account such an important issue raised by the employers as the lack of university graduates trained particularly under the specialist’s programs. Such highly demanded training is limited by the current Lists of specialties and areas of training of higher education. The number of engineering specialist’s areas of training in the Lists is many times lower than the number of training areas under bachelor’s programs. Currently, it is the Lists that determine the possible paths for obtaining higher education in specific engineering areas. When they were formed in 2013, there was a strict requirement that specialties and areas of training could not have a common basis or a common name. As time has shown, this requirement has led to an unreasonable limitation of the possibilities to meet the needs of the economy sectors in personnel with appropriate qualifications.

The introduction of a unified list of higher education specialties and areas of training will allow to: ensure the development of interdisciplinary educational programs, including within the framework of implementing educational programs in a network format; introduce training under specialist’s programs for an arbitrary training area within the framework of the Enlarged Group if such training is necessary; eliminate the strict requirement for the mandatory separation of specialty and area of training within a common basis and a common name; ensure the unification of personnel training during the first two years of studies within an individual Enlarged Group, including the unification of bachelor’s and specialist’s programs. Thus, the development of a unified classification List of specialties and areas of training of higher education, which is based on an interdisciplinary nature of training, support of the network forms of primary educational programs organization, implementation of the “2+ system”; provision of a flexible educational paths mechanism, and assurance of the possibility of introducing a specialist’s program in any area of training along with the unification of the first two years of studies, makes it possible to further harmonize the contents of the

fourth generation Federal State Educational Standard concept. In this regard, for the more effective implementation of training and the development of a new List, it is advisable to update the composition of the enlarged groups of specialties and areas of training, which, in turn, requires the formation of criteria defining the need for individual Enlarged Groups. This is necessary to make the process of forming the List an objective one. The existence of separate enlarged groups will allow to: ensure the possibility of organizing unified training for students within an individual Enlarged Group during their first two years of studies and providing the students with the right to choose the area of training (specialty) upon completing their second year; use of a single list of admission examinations; and develop uniform requirements for the training performance conditions and professional “core” (uniform general professional competencies and their achievement indicators).

References

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