

Formation of general professional competencies of students in the occupational safety sector

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Abstract. The staff schedule includes 8.8 thousand positions of forestry workers, and the average number of employees is 6.8 thousand people. There is a steady shortage of labor resources. The situation is typical for all enterprises of the industry of the Ural Federal District. A large number of vacancies in this field is associated with a complex of problems that have accumulated in forestry and require solutions. It is known that the average wage of workers employed in forestry is lower than the wages of workers in all economy sectors in the constituent entities of the Russian Federation. In recent years, there has been a decrease in interest in this type of activity, a decline in the prestige of forestry professions, and as a result, an insufficient professional level of management personnel is recorded. The training of students in the training program "Forestry", the profile "Forestry" involves the formation of general professional competencies that will help "to create and maintain safe conditions for the implementation of production processes." In connection with the transition to the new FSES 3++, and the changes made to the curricula for the life safety discipline, it is necessary to find new ways and approaches to the formation of general professional competencies of students. Practices, and especially industrial ones, have a close connection between theoretical and practical training. We propose to gradually implement the development of skills and abilities of the GPC-3 through practice to form competencies fixed by the life safety discipline.

1 Introduction

The training of students in the training program "Forestry", the profile "Forestry" involves the formation of general professional competencies that will help "to create and maintain safe conditions for the implementation of production processes" [1]. The Federal State standard defines that "the objects of professional activity of graduates are: labor relations and technological processes in the field of use, security, protection, reproduction of forests, afforestation, and forest management" [2].

2 Materials and methods

The regulatory documents "On Education in the Russian Federation" dated December 29, 2012 No. 273-FZ and amended Federal Law No. 403 dated December 2, 2019, as well as

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Order No. 885/390 "Regulations on Practical training of students" and others define the requirements for the organization and procedure for conducting educational and industrial practices. Within the framework of these documents, the university has developed local regulations of the educational institution - the Regulation on the practical training of students, approved by the Academic Council of the University on September 23, 2020 Protocol No. 2 [3,4, 5]. The practice of students of higher education (universities) is a constituent element of the basic educational program of higher professional education. The goals, objectives, and scope of practice are determined by the Federal State Educational Standard, and currently still considering the requirements of professional standards.

Labor assignments in forestry are traditionally associated with increased risks: employees may be in the area of application of various technical systems, including production and technological equipment, vehicles, hand tools. In addition, they may be affected by chemicals that have oral, irritating, catheteresis, or other effects. Foresters actively interact with biological world objects: plants, insects, and animals. This often causes negative effects, and sometimes tragic consequences [6]. We need to add to this a temperature regime that reaches abnormal indicators at certain periods of the season, cross-country, steep terrain, precipitation in the form of rain or snow, wind gusts, etc.

Based on official data, the area of land covered by forest plantations on the territory of the Ural Federal District is 115237.4 thousand hectares, including 1849 thousand hectares of specially protected natural territories, 466 thousand hectares of urban forests, 112090 thousand hectares of forest lands. According to experts, the wooded area of the district is 38.2 percent.

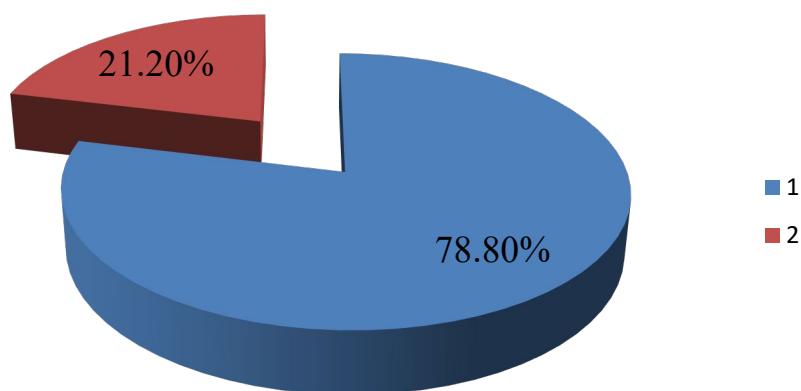


Fig. 1. Forest Fund of the Ural Federal District

The area of the diagram shows that 78.8% of the area or 88394.2 thousand hectares of forest is occupied by operational forests, 21.2% of the area of about 23695.8 thousand hectares are protected forests. Reserve forests on the territory of the Ural Federal District have not been allocated.

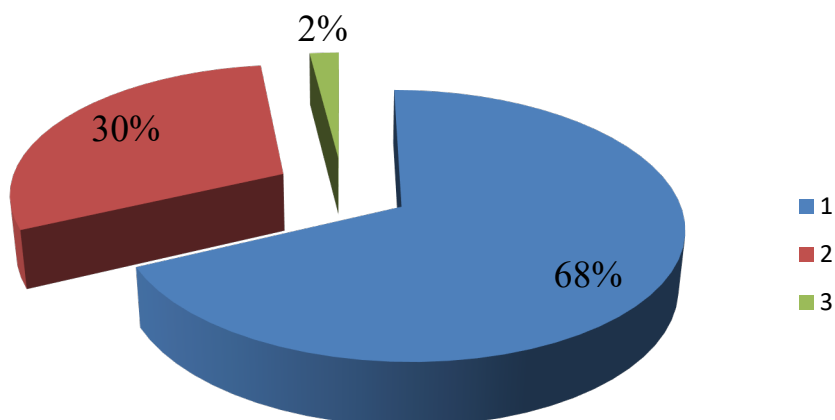


Fig. 2. Sprout species

The diagram shows that the predominant species are coniferous plantations, occupying 45648.2 thousand hectares, or 68% of the forested area. Soft-wooded broadleaved species grow on an area of 20355.2 thousand hectares, 30% and only 2% are hard-wooded broadleaved species. 57% of the total reserve is estimated as ripe and overgrown forest stands, the average reserve of forests located on forest fund lands is 116 m³ per 1 hectare.

In accordance with the current version of the Forest Code [7] and regulatory legal acts approved by the authorized executive authorities of the Russian Federation, employees of forest complex facilities can carry out harvesting of wood and oleoresin, harvesting and collecting non-wood forest resources, as well as food forest resources and collecting medicinal plants.

The current regulations and forestry regulations [8] allow carrying out research and educational activities, in terms of the subsoil study, exploration and extraction of minerals. It is possible to develop and implement projects related to the construction of artificial water bodies and hydraulic structures.

The costs of all forestry activities of the Ural Federal District amounted to 6.6 billion rubles (59 rubles per 1 hectare of forest land), of which subventions from the federal budget - 2.8 billion rubles, funds of the subjects of the Russian Federation - 2.5 billion rubles, funds of tenants - 0.7 billion rubles, funds from other sources - 0.6 billion rubles [9].

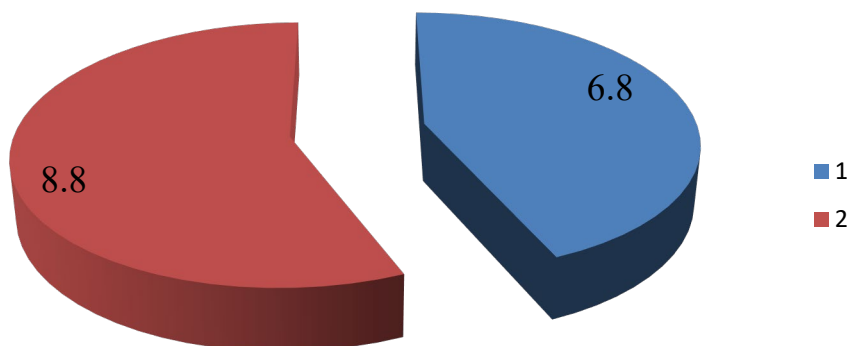


Fig. 3. Human resources

The staff schedule includes 8.8 thousand positions of forestry workers, and the average number of employees is 6.8 thousand people. There is a steady shortage of labor resources. To date, several dozen jobs are vacant at the forest complex objects of the city of Tyumen, Tobolsk, Ishim. The situation is typical for all enterprises of the industry of the Ural Federal District.

Table 1. The balance of labor supply and demand in the context of the main types of economic activity for 2018-2025.

Name of the main types of economic activity	Year	Need, people	Number of graduates, people	Labor force demand and supply balance ("-" need, "+" excess)
Agriculture, forestry, hunting, fishing and fish farming	2018	851	1025	174
	2019	1109	1134	25
	2020	2910	1341	-1569
	2021	2234	1719	-515
	2022	216	1483	1267
	2023	512	1483	971
	2024	100	1554	1454
	2025	578	1573	995

The table provides information describing the situation on the labor market in agriculture, forestry, and hunting, as well as in the field of fishing and fish farming in the Tyumen region. These data demonstrate a fairly stable dynamics of the need of economic objects for qualitatively trained personnel [10]. In the near future, the planned number of graduates exceeds the required number of employees in the industry, but it is worth noting that a fairly high percentage of students do not plan to associate further work with their chosen major. In addition, the situation at these enterprises and in the economy as a whole may change, and the need for labor resources will be adjusted.

A large number of vacancies in this field is associated with a complex of problems that have accumulated in forestry and require a balanced, effective solution. It is known that the

average wage of workers employed in forestry is lower than the wages of workers in all economy sectors in the constituent entities of the Russian Federation. In recent years, there has been a decrease in interest in this type of activity, a decline in the prestige of forestry professions, and, as a result, an insufficient professional level of managerial personnel at all levels, ranging from district forestry departments, ending with the heads of forest complex facilities, has been recorded. To overcome the current situation, first of all, changes in existing regulatory documents are needed, which will eliminate restrictions that prevent the implementation of the continuity of forest professions in the families of forestry workers, contribute to the development of state support measures for young specialists of the forestry complex. It is appropriate to note that a fairly large number of vacancies are registered among engineering personnel. In this situation, it is necessary to create conditions for a better formation of general professional competencies of students, who in the future will be able to conclude employment agreements and work in the chosen major.

3 Results and Discussions

The educational program structure is divided into three blocks:

- Block 1 – disciplines (modules);
- Block 2 – practices;
- Block 3 – state final certification.

According to the blocks, the volume of the training program is determined in credit points (c.p), for example, at least 30 are recommended for practical training in bachelor's degree.

In accordance with the Federal State Educational Standard, the educational program establishes the following types of educational practices: introductory practice, technological (design and technological) practice, and production practice: - technological (design and technological) practice. An educational organization has the right, in accordance with paragraph 2.6 of the FSES HE, to determine additional types of practices [1]. The university has established additional types of educational and industrial practice: educational practice - technological practice and industrial practice - pre-graduate practice. With the curricula, the organization sets the volumes of practices of each type and assigns them to mandatory and/or variable parts (the variable part is formed by the educational organization by the participants of educational relations). Practices related to the mandatory part of educational programs are responsible for the GPC development (general professional competencies), and the variable part for the PC (professional competencies). The university for practical training concludes an agreement on the practical training of students between an educational organization and an institution (organization, enterprise), regardless of the organizational and legal forms of activity. The activity of an enterprise or organization should be carried out according to the educational program profile [11, 12]. The profile of the organization is determined in accordance with the OKVED (Russian National Classifier of Types of Economic Activity), based on an extract from the Unified State Register of Legal Entities.

The place of practical training of students is determined by the order of the university. For the Forestry major, the following enterprises were selected as the basic enterprises of the Tyumen region: the branch of the FDI VNIILM "Siberian LOS", the SBI TR "Tyumen Base of aviation and ground protection of Forests", "STACK" LLC, the Tyumen branch of the FSBI "Roslesinfor" and structural divisions of the SAU of the Northern Trans-Urals.

Practical training of students is aimed at fulfilling certain functional responsibilities related to professional activity and at forming, consolidating, developing skills and competencies corresponding to the educational program profile. Educational practices are assigned - GPC-4; GPC-5[1]; and production PC-1; PC- [PT, MPAP]. In connection with the transition to the new FSES 3++, the curricula for the discipline of life safety have been changed and there has been a reduction in the volume of hours.

Considering the above, as well as the situation that develops in the educational process: a decrease in the number of classroom hours, the exclusion of calculation-graphic and coursework on Life Safety from the curriculum, it is necessary to find new ways and approaches to the formation of general professional competencies of students.

Practices, and especially industrial ones, have a close connection with theoretical and practical training. We propose to gradually implement the development of skills and abilities of the GPC-3 through practice to form competencies fixed by the life safety discipline [1,11,12]. At the training practices, to form a conceptual apparatus and master the list of developed local documents in the field of labor protection and civil defense at enterprises. Industrial practice is considered not only as a means of forming professional skills, developing cognitive and creative activity of students, mastering their level of professional orientation and training, but also as a way of forming professional competencies. We believe that to diagnose the general level of training of specialists, it is also advisable to form GPC-3. The system of practices currently being implemented, in our opinion, does not always give students the connection of theoretical knowledge on the Life Safety with specific tasks that relate to safety requirements at work (especially when performing the labor functions of an industry specialist).

4 Conclusions

To implement this proposal, it is necessary:

- to assign GPC-3 to the practices;
- before the start of all practices, to organize a joint meeting of the teacher responsible for the practice and the leading teacher in the Life Safety discipline in this major, where they explain to students the purpose, objectives of the practice, objects of research, give individual assignments, and explain the content of reports, which must necessarily include questions on occupational safety (safety of production (technological) processes);
- after the end of the internship, it is especially advisable to hold a conference at which students present and defend reports on practices.

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