

# Biological Education: Keeping up with the Times and Prospects of Development

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**Abstract**—Building a unified educational space allows students to choose and build their own career. In connection with the adoption of the Bologna system there was a modernization of the education system in Russian Universities.

The article highlights the features of the development, formation and construction of the system of biological education in Belgorod State National Research University. The experience of the teaching staff in ensuring the quality of biological education is summarized. The system of continuous education is an important integrator of science and production.

**Keywords**—unified educational space, Bologna process, modernization of education, practice-oriented training, biological education

## I. INTRODUCTION

The construction of a single world educational space is dictated by modern socio-economic and technological conditions of human development. The integration of educational processes in major European countries, dictated by the Bologna agreement, has had a significant impact on the modernization of education in the Russian Federation. The specificity of national higher education does not allow to transfer mechanically into it all the principles that have developed in Western Europe. It presupposes the preservation of the unique Russian cultural potential regardless of the degree of "inclusion" into the system of the European educational space, striving for unification [1].

During the past 10-15 years, the process of education at the universities of the Russian Federation, including biological education, has undergone significant changes. Previously, the system of organization of training and forms of its control corresponded to the classical (lectures, seminars, colloquiums, laboratory or practical work, tests, oral questioning and examination) with an assessment based on a five-point system. However, with the entry of the Russian system of higher education into the modern world educational space, they have changed significantly. The reform of all parts of the previously existing Soviet education system - from the school level to the University, was aimed at finding and introducing into the higher education system new approaches to professional training, including biological

direction. The modernization of the national system of higher education was carried out through the introduction of the principles and mechanisms of the Bologna system with the introduction of a module-rating system of training and assessment of the level of knowledge [1].

The smooth integration of Russian higher education into a single educational space is facilitated by some important conditions for the implementation of this transition. An important component is the organization of the process carried out by the state support of students in obtaining qualitative higher education. The state's interest in highly qualified Russian specialists allows students to receive information, legal and financial support for the implementation of the educational process. The improvement of the quality of fundamental education requires the development of its content side on the basis of the dual principle of "learning through research".

The processes of world globalization have contributed to the creation of a single educational space for students of all countries. Already today it allows each student to form independently a trajectory of the training, to correct and realize it taking into account his personal interest, level of knowledge and potential opportunities within his future professional specialization. An important aspect of this process is the fact that this was facilitated by the establishment of close ties between higher educational institutions, research organizations and industrial enterprises as well as the use of the innovative potential of the universities, and the participation of business and government in the learning processes at the regional and municipal levels [2].

## II. EXPERIMENTAL

The article presents a brief literary review of the modernization of Russian education in 2000-2014. The analysis of modernization of the system of higher education and its inclusion into the single world educational space is carried out. The experience of development, formation and features of biological education system construction is summarized in Belgorod State National Research University.

### III. RESULTS AND DISCUSSION

However, Russia's active entry into the Bologna process is impossible without the revision of the educational policy, including the field of teaching foreign languages. This involves the solution of two important tasks: providing opportunities for students to study in a foreign language in partner universities and providing opportunities for foreign students to study in their home University [3]. Any modern University tries to solve these problems.

The need to create a single educational space not only within the country but also in the international level is an urgent condition for the development of Belgorod State University. International cooperation and educational programs with partner Universities is possible with carrying out the main indications: increasing the quality of education, mobility of students, teachers, researchers, the diversity and flexibility of educational programs and technologies of their implementation, taking into account national traditions, autonomy and academic freedoms of the universities [1].

Currently, the category of "quality", confidently and firmly was established in the field of higher education with a certain meaning. This concept includes certain features characterizing the essence of the object and its distinctive features which differ it from other objects [4]. Accordingly, the quality of higher education assumes a special approach to education as a socio-pedagogical process, and therefore is considered as a set of characteristics of this process: the implementation of its objectives and goals, the combination of traditional and innovative methods and technologies. A necessary condition for improving the quality of education is considered to be the creation of such conditions that will allow achieving stable dynamics of positive results [5].

The current requirements to the formation of the structure and content of the basic educational programs and curricula of the universities, the choice of basic and variable disciplines, industrial and educational practices, ways and methods of teaching should be directly connected with the understanding of the essence of specialists' professional activity. The real needs of society and the state in specialists of a certain direction and profile of training, which directly depend on the level of development of scientific, industrial and agro-industrial potential of the region are very significant [6].

In modern society, sometimes the circumstances are such that the top managers of organizations and enterprises are skeptical to new staff and do not always trust the diploma of higher education. The document is a very conditional indicator of the theoretical knowledge of the student. It should be noted that the assessments in the diploma does not fully reflect the ability, experience, degree of diligence and desire to work according to the specialty. In addition to general and special knowledge, an interested employer is looking for responsible and promising employees, so certain professional skills –the ability to use a computer, knowledge of foreign languages, the ability to work in a team, effectively represent themselves and the results of their work are also required [7]. The main claim to education on the part of the employer is the isolation of knowledge received by the students from practice.

Contrary to the prevailing view that students themselves can engage in self-education after graduation, we argue that self-education of students, teachers, scientists and even employers involved in the educational process, can not be considered in isolation. After all, only the active interaction of all these participants of the educational process can rouse the flame of a new idea, research, development or a whole area of activity. And if the technologies of stimulating process of self-education in students are applied methodically competently, it is possible to draw attention of employers to the organization and stimulation of process of self-education of the employees.

Belgorod State National Research University (NRU "BelSU") is the center of the currently emerging and existing scientific- educational and scientific-industrial complexes.

The Department of Biology, as a structural unit of the University, successfully implements the tasks of ensuring the output of Russian educational institutions to the world level, providing training of specialists of all levels – Bachelor (06.03.01 Biology, Biochemistry and Molecular Biology) and Master (06.04.01 Biology, Master's programs Ecology, Human and Animal Physiology, Biological resources, Biochemistry and Molecular Biology, Pharmacology; postgraduate studies in the direction of 06.06.01 Biological Sciences: 35.06.01 Agriculture, selection and seed production of agricultural plants, 06.06.01 Biological Sciences-Ecology (in industry) and Physiology).

According to the methodology of students' training in higher educational institution (Bachelor, Master and Postgraduate), the content of the educational process should correspond to the quality and formation of general, educational and professional competencies in future specialists – knowledge, skills and willingness to perform research and professional work in accordance with their qualifications and the needs of society, regardless of their citizenship and nationality.

With the development of informational technology education various programs to test students are rapidly included to education. The use of a score-rating system in higher education is the use of a well-developed system of evaluation according to several parameters, with a large number of answers and variants. For the purpose of automation of educational process and independence of an assessment of the student from subjectivity of the teacher transition to system of computer check of knowledge of students which is an integral part of educational process and the obligatory admission to test or examination is carried out. We believe that such an assessment system corresponds to the provision of high quality training of highly qualified employees using modular training technology. The system is used as a knowledge assessment and control system for full-time, part-time and distance learning students. Similar systems are used in other Russian universities [8].

The Department of Biology of the Institute of Pharmacy, Chemistry and Biology implements new courses of practice-oriented training, provides informational technologization of the learning process; development and implementation of general educational programs on a multicultural basis, attracting of practitioners working at enterprises and complexes of the region. For the implementation of high-quality higher education in the biological direction, students

of the biological specialty have the opportunity to train at partner universities in educational programs, as well as they have the opportunity to participate in scientific competitions, projects and internships directly at the enterprises.

Every year, at the planning stage of production research and pre-graduate practice of students, a number of activities aimed at active participation in the educational process of leading specialists of companies interested in new biological personnel, interaction with partners, involvement of biologists-practitioners, meetings with graduates of different years are developed.

The involvement of leading experts - representatives of employers to conduct practical work, master classes, lectures, development of specific individual tasks for students, contact target training, coordination of joint topics of research and final qualifying works on the tasks of enterprises and potential employers are carried out.

For the purpose of further employment of graduates, the Department of Biology organizes the following activities:

- attracting of leading specialists - representatives of employers to participate in the work of the State Certifying Commission as chairmen and members;
- preparation and making cooperation agreements with leading companies of the city and region;
- conclusion of contracts on sending the students to practical training in order to obtain primary professional qualities directly at work in accordance with the current requirements of the labor market.

The international academic exchange of students, graduate students and teachers, the implementation of foreign internships and professional development of the teaching staff; organization and conduct of joint research, exchange of scientific information, pedagogical technologies; joint publication of scientific articles; lectures and seminars with the participation of specialists from other countries facilitate the development of international integration of education, science and industry at the Department of Biology.

The teaching staff of the Department, teaching and support staff, students of all levels and forms of education regularly participate in various competitions and projects. Working out of subject courses in Russian, the formation of full-text educational and methodical complexes with detailed methodological comments, lectures and step-by-step guides to laboratory and practical work is carried out. For each course there is a fund of evaluation tools, there are test materials in each block of disciplines that can be used by students on their own to check the assimilation of the material and to do the subsequent correction of knowledge,

either for the current thematic control in the classroom or final certification at the test or exam. It is planned to work courses in English as a basis for future joint programs which create opportunities for international students to study in Russia.

#### IV. CONCLUSION

Thus it should be recognized that the activity of the teaching staff of the Department of Biology today is aimed at training competitive professionals. The research and teaching staff constantly monitors the situation on the labor market, studies the experience of other educational institutions, participates in exhibitions, creates, maintains and appreciates partnerships with various enterprises, research centers, schools, institutions and organizations. The interaction of our University with partners is aimed at training professionally competent, competitive and enterprising professionals with general and professional culture, capable of self-development and self-realization, adapted to the conditions of the modern labor market.

Students of all levels of education (undergraduate, graduate, postgraduate) have the opportunity to undergo production and research practices directly in organizations, industrial enterprises and schools. This system of continuing education is an important area of integration of education, science and industry

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