

REFERENCES

1. Crawley, E.F. et al. The education of future aeronautical engineers: Conceiving, designing, implementing and operating [Electronic resource]. *Journal of Science Education and Technology*, 2008, vol. 17, iss. 2, pp. 138–151. DOI: 10.1007/s10956-008-9088-4.
2. Edstrum, K., Kolmos, A. PBL and CDIO: Complementary models for engineering education development. *European Journal of Engineering Education*, 2014, vol. 39, iss. 5, pp. 539–555.
3. Lunev, A. et al. Competency-based models of learning for engineers: a comparison. *European Journal of Engineering Education*, 2013, vol. 38, iss. 5, pp. 543–555.
4. Woollacott, L.C. Validating the CDIO syllabus for engineering education using the taxonomy of engineering competencies. *European Journal of Engineering Education*, 2009, vol. 34, iss. 6, pp. 545–559.
5. Padfield, G.D. Flight handling qualities. A problem-based-learning module for final year aerospace engineering students [Electronic resource]. *Aeronautical Journal*, 2006, vol. 110, iss. 1104, pp. 73–84. DOI: 10.1017/S0001924000001020
6. Wang, Y. et al. Institute-industry interoperation model: An industry-oriented engineering education strategy in China. *Asia Pacific Education Review*, 2011, vol. 12, iss. 4, pp. 665–674.
7. Gafurova, N.V., Osipova S.I. Metallurgicheskoe obrazovanie na osnove ideologii CDIO [Metallurgical Education in CDIO Ideology]. *Vysshee obrazovanie v Rossii [Higher Education in Russia]*, 2013, no. 12, pp. 137–139. (In Russ., abstr. in Engl.)
8. Chuchalin, A.I. Modernizatsiya bakalavriata v oblasti tekhniki i tekhnologii s uchetom mezhdunarodnykh standartov inzhenerenogo obrazovaniya [Modernization of Baccalaureate in Engineering and Technology Considering the International Standards of Engineering Education]. *Vysshee obrazovanie v Rossii [Higher Education in Russia]*, 2011, no. 10, pp. 20–29.
9. Yakovlev, A.N. et al. Institute of high technology physics experience in masters of engineering and doctoral training: the platform for cooperation with Russian and international companies in the domain of material science and physics of high-energy systems. *Russian Physics Journal*, 2012, vol. 55, no. 11-3, pp. 261–263.
10. Zamyatina, O.M., Mozgaleva, P.I. Uovershenstvovanie programmy elitnoi tekhnicheskoi podgotovki: kompetentnostno-orientirovaniy podkhod [Improvement of a Program of Elite Technical Training: Competence-Oriented Approach]. *Innovatsii v obrazovanii [Innovation in Education]*, 2013, no. 10, pp. 36–45. (In Russ., abstr. in Engl.)
11. Mineva, O.K. et al. Realizatsiya strategii razvitiya universiteta na osnove postroeniya strategicheskoi karty [The University Development Strategy on the Basis of Creating the Strategic Map]. *Vestnik Saratov State Technical University*, 2013, vol. 1, no. 1 (69), pp. 297–304. (In Russ., abstr. in Engl.)
12. Treshchev, A.M., Sergeeva, O.A. Vsemirnaya initsiativa CDIO kak kontekst professional'nogo obrazovaniya [Elektronnyi resurs] [The Worldwide CDIO Initiative as Context of Professional Education]. *Sovremennye problem nauki i obrazovaniya [Topical Issues of Science and Education]*, 2012, no. 4. Available at URL: <https://www.science-education.ru/pdf/2012/4/82.pdf>, (Accessed 29.11.2017). (In Russ., abstr. in Engl.)
13. Chuchalin, A.I. Modernization of Engineering Education Based on CDIO Standards. *Engineering Education*, 2014, no. 16, pp. 14–27.
14. Kuptasthien, N. et al. Integrated Curriculum Development in Industrial Engineering Program Using CDIO Framework. *Engineering Education*, 2014, no. 16, pp. 28–35.
15. Podlesny, S.A., Kozlov, A.V. CDIO: Objectives and Means of Achievement. *Engineering Education*, 2014, no. 16, pp. 8–13.

## On the Influence of the Bologna Process on Development of Higher Education in Russia

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Received: 22.03.2017 / Accepted: 04.09.2017 / Published online: 31.12.2017

### Abstract

Among the educational community there is a common opinion of the negative impact of the Bologna process on the national higher education. In the context of FESTFU we can say that the transition to the two-tiered system of education has substantially changed educational and scientific activities of universities. Regulatory framework was developed for ensuring educational and research activities in the terms of the Bologna process. It includes updating teachers' activity, developing their educational and teaching culture, preparing them to effectively use the modern technologies in training and allowing them to bring educational process to a new level.

**Key words:** educational program, credit-modular system, competence, two-tiered education, teaching material, training.

As is known, in 2011 the Bologna Convention was firmly established in Russia. It had to provide convertibility of Russian diplomas and students'/teachers' academic mobility [2]. Russia's inclusion into European educational zone was suggested to give a strong impetus to integration in national higher education and improve the quality of educational services. This issue is nowadays particularly topical, as the intensive development and engineering innovations continuously change the conditions and quality of professional activity causing specialists to acquire new methods and types of professional skills and competencies as well as regularly improve their qualifications [7].

Strictly speaking, education transition to the Bologna process implies implementation of the four fundamental provisions defining future structure of higher education. It is, first of all, **two-tiered education** (Bachelor, Master) [2]. One can say that the problem was solved by all Russian universities, as there were several Bachelor graduations.

However, up to now there are intensive debates among the university communities about the shift from Specialist degree to Bachelor degree training [3].

As I know from my experience as a member of State Examination Board, the difference between a bachelor and a specialist is much more than an additional academic year. Over the last study year as a specialist, the students additionally acquire nearly 50 % of competencies. Meanwhile, I remember the conference (2012), where two professors had a face-to-face argument about Bachelor degree. One of them said that a Bachelor is a half-educated specialist, so employers do not know how to treat it. The other professor argued that at our stores the commodities are produced by those half-trained bachelors from aboard (before import substitution period). So, not only study time matters here, but also smart management of production-oriented educational process.

It should be mentioned that teaching staff is aware of the Bologna process rather superficially, in an ordinary university



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teacher's opinion it is just two-level training system introduced instead of Specialist degree course [2]. This results in debates about necessity of changes, because everything was fine in the past and specialists were trained better than bachelors. It should be noted that in the past everything was not fine, and the higher education system had long needed to be fundamentally transformed [7].

Besides, there is a Master course, which includes an additional year as compared to Specialist course. So, Master students can be trained for all they wish. For example, one can train them for research, project, or other types of work necessary for industry. Perhaps, lack of teachers' knowledge in other work but research does not allow effective Master training for industry [6].

In Russia students do a Master course mainly to acquire specialized knowledge in practice areas, but not to do research [5]. Meanwhile, in the market-oriented countries Master courses have a function of training elite personnel, whose activity contributes to scientific-technological and social-economic progress. Hence, high-tech production development, i.e. the goal of European education in Russia, is not achieved again [8].

One more sensitive issue, which is beyond teachers' comprehension, is whether graduate departments will be in the university structure or they will be abolished as institutional units of research school [2]. In fact, when shifting from the linear principle of curriculum development to the branched one there is no division of departments into graduate and supporting (supplementary) ones. Due to the changes in "specialist's ideology" there are the changes in both education content and essence of a teacher's job [4]. However, it does not mean a complete elimination of this unit from university structure, as departments become not only resource-educational centers, but also research centers. At the moment a department is a club where all teachers speak the same language and about the same professional topics. A student at the department has to be satisfied with profile training. In case of absence of such an

opportunity a student does not know how to satisfy his/her curiosity.

The second statement is **credits**. In this case we are dealing with principal changes in academic process planning [2]. In fact, a set of credits largely becomes a sole prerogative of a student, as he/she develops his/her own educational trajectory becoming a key and interested person in this system, who is fully responsible for all losses and gains of his/her education. It is those careless students who will be spoken of as not managing to plan their educational trajectory [8].

It is known that in Europe there is a long-standing need for students' individual trajectory. It was suggested that students would be given a chance to acquire those professional competencies that they consider to be valuable for themselves [5]. It allowed them to choose subject and teachers independently, and if they wished – to study at different European universities. Under the condition of global labour market the diploma recognized in different countries became more and more relevant, for this purpose the European community has reviewed the education system and developed a unified qualification of university graduates.

The criticism of Russian educational community is focused on **competence-based approach**. In European version this approach is considered in tight connection with **credit-modular system** of knowledge assessment [3]. Such a combination allows for individualization of student's educational trajectory that meets the contemporary challenges of global labour market.

The European education system provides student's individual educational trajectory, which meets current challenges of global labour market. The analysis of professional activity of the Russian university teaching staff, including Far Eastern State Technical Fisheries University, has shown that we still have dominating education system based on "knowledge - abilities - skills" model that exhausted its potentials of both content and teaching methods [8, 10]. Its alternative is competence-based approach, while all versions of the given approach developed

in many universities over several years have not resulted in crucial improvement of education yet [6]. It is conditioned by the fact that for implementation of competence-based approach one needs to focus not only on future graduate's practical activity, but also definite competence-based **models of professional activity description**. Moreover, those methods require appropriate **methods of their development** [2]. The attempts to introduce the approach with insignificant corrections of existing forms and methods in university training developed on the basis of "knowledge - abilities - skills" model have not led to any quality changes in education and, therefore, do not actually increase the level of students' training [8].

To break the vicious circle, one needs to further enhancement of education content and methods, a shift to activity-based training giving a graduate opportunity to receive qualification demanded in the labour market not only at present but also in the short-term perspective [7]. Yet, effective implementation of modern educational standards is possible only if teaching staff acquires new competencies.

To implement the competence approach, it is necessary to further improve the content and methods of professional training, shift to activity-based learning making possible for a graduate not only to get qualification demanded in the labour market at present, but also in the short-term perspective, an actual certification of his/her competence and commitment for integration into production sphere [5].

It is known that **credit-modular system** of education quality assessment in its block-modular form was developed in Europe as a result of an urgent need in students' individual educational trajectory [2]. This phenomenon is not very typical for the Russian universities, which is explained by the lack of positive dynamics in demand for specialists having extended range of innovative competencies [4]. In the country the situation with graduate employment is deteriorating, as they mostly work in the spheres not related to their profiles [9]. It is mainly conditioned

by the lack of extensive innovative activity in the production sphere, therefore, some authors argue that modernization of higher education following the Western European example did not make much sense from the very beginning, except for Russian graduate employment abroad [6].

The third statement is **mobility of both students and teachers**. It is suggested to stimulate doing additional courses at foreign universities. However, this useful action requires financial support for both students and teachers. Unfortunately, teaching staff and students are not native speakers; therefore, one can hardly speak about their mobility. As for exchange of teaching materials among the Russian universities one observes some intensification of the exchange, as all teaching materials are to be posted on the university sites.

In recent years, state policy in the sphere of higher education consists in regular and persistent explanation of measures that the rectors of Russian universities have to take to be competitive in the global education and science market, first of all, raise the quality of their educational programmes [4]. To solve this problem, the teaching staff of most Russian universities is to be taught English of not lower than basic level, so that teachers could be familiar with international scientific achievements and bring their teaching materials in compliance with current requirements. Language proficiency would greatly promote the teaching staff mobility, as one of the key factors impeding teachers' and students' mobility is low level of foreign language, particularly English. At many Russian universities there are no courses taught in English. Introduction of English curricula will not only contribute to mobility and competitiveness of Russian university teachers and students in the European market, but also significantly attract students from abroad, especially from CIS countries.

The fourth statement is **education quality assurance**. The system of university quality management is a combination of management structure, processes and resources necessary for effective quality

policy by its planning, management, and enhancement [2]. The quality policy is the principle document, which defines the goal of quality management system as well as university authority's responsibility for achieving this goal.

At present a university management system is mandatory at all Russian universities, which implies development of university documents in the form of provisions, instructions, methodical guidelines and institutional standards on organization and control of academic process.

The first step in ensuring quality education is a shift to a student's responsibility. In this case a student is to have the right of choosing a teacher. In Russia we can observe a decrease in education quality at all levels. One of the reasons for this decrease is incorrect target-setting in the sphere of state quality policy in Russia.

One more novelty of the Bologna process is credit-modular system of knowledge assessment, which is one of the positive aspects [3]. The credit-modular system of knowledge assessment provides high accuracy and multi-dimension of students' learning outcomes on different subjects. The obvious benefits of the given system include practical elimination of subjectivity between teacher and student. Besides, it encourages developing the condition for students' in-depth study of definite subjects as well as development of their cognitive activity in view of students' individual preferences, interdisciplinary interactions and speciality [9]. Finally, credit-modular approach provides a higher level of students' autonomous work.

Obviously, a student's credit rating can hardly be exciting, let alone creative activity. Yet, a student can see all his/her activity or inactivity, and the final outcome is now not a result of a teacher's occasional or emotional relation to a student, as it is formed as a consequence of student's efforts made during the whole period of studying a subject. The disadvantages of the given knowledge assessment system in the Russian condition include high labour cost that can be

conditioned by current imperfect computer technologies at some universities.

Now let us turn our attention to the changes in **teaching materials** of learning process. The researchers have stated that a characteristic feature of Russian universities regardless of their status is an overall bureaucracy of scientific-educational process, which can be seen in the form of management practice in all spheres of university [1]. In this context, university environment was many times formalized, where different standards, regulations, teachers' and employee's activity assessments were actively introduced. Moreover, all these years there was a total and unnecessary complication in reporting system, methodical resources, certification and other forms of assessment and self-assessment of teachers, students, institutions, and their administration.

Nevertheless, such things occur in nearly all spheres of professional activity of the entire working population in the country. Virtually no activity field can avoid the multi-level top-down control, which, in combination with enormous reporting paperwork, leaves little time to do real, let alone creative work.

This opinion can be only partially agreed with, as bureaucracy is confused with parameter formalization of research-educational process, in particular, development of standards and assessment criteria. The mentality of most university teachers is such that any formalization is treated negatively. In this case it is one of the most important principles of management streamlining and its efficiency improvement and is aimed at objectivity and transparency of control and management [5]. This allows us to reach a new level of teaching materials in academic process [1].

Most teachers are likely to consider this work a useless paperwork. Nevertheless, in this context there are modernization and organization of university structure, changes in logics and content of academic process [3]. Besides, development of university curricula, tests, and other teaching materials based on the FSES standards involves teachers' intensive self-improvement, as a result of

which they develop **general teaching culture**. A substantial amount of teaching documents that is currently developed at universities is an occasional task on introduction of educational standards.

Thus, one can conclude that the transition to the two-tiered education system turns out to be complex and multidimensional, requires a stage-by-stage solution of complicated problems related to all university functions. Extensive work has been undertaken to improve legal and regulatory framework, as the corresponding laws and regulations were

developed to ensure educational and research activity including formation of methodical base in the form of educational standards. Moreover, education modernization in terms of the Bologna process greatly updated teachers' activity, prepared them for effective use of modern educational technologies and allowed a new level of education. At present teaching materials are of such quality that they allow a university to function in the sphere of education, research, and other areas and, hence, to respond adequately to the current challenges.

## REFERENCES

1. Babintsev, B.P. Byurokratizatsiya regional'nogo vuza [Bureaucracy of a regional university]. Vysshee obrazovanie v Rossii [Higher Education in Russia]. 2014. № 2. pp. 30–37.
2. Gretchenko, A.I., Gretchenko, A.A. Bolonskii protsess: integratsiya Rossii v evropeiskoe i mirovoe obrazovatel'noe prostranstvo [The Bologna process: integration of Russia into uropean international education environment]. Moscow: KnoRus, 2013. 430 p.
3. Kim, I.N., Lisenko S.V. Uchebno-metodicheskoe obespechenie obrazovatel'nogo protsessa rybokhozyaistvennogo vuza v formate Bolonskogo protsessa [Training resource in academic process of fishery university in the format of the Bologna process]. Rybnoe khozyaistvo [Fisheries]. 2014. № 4. pp. 19–23.
4. Kim, I.N. Professional'naya deyatel'nost' prepodavatelya rossiiskogo vuza: slozhivshiesya stereotipy i neobkhodimost' peremen [Professional activity of the Russian teacher university: stereotypes and demands for changes]. Vysshee obrazovanie v Rossii [Higher Education in Russia]. 2014. № 4. pp. 39–47.
5. Kupriyanova, L.M. Razvitie kadrovogo potentsiala vysshei shkoly [Development of staff potential in university]. Ekonomika obrazovaniya [Economics of Education]. 2015. № 2. pp. 70–84.
6. Mitrofanova, K.A., Pen'kova, Ye.A. Kompetentnostnyi podkhod v vysshem obrazovanii: podgotovka professorsko-prepodavatel'skogo sostava. Innovatsii v obrazovanii [Innovation in Education]. 2015. № 6. pp. 50–61.
7. Modernizatsiya rossiiskogo obrazovaniya: vyzovy novogo desyatiletia [Modernization of Russian education: challenges of new decade]. Ed. by A.A. Klimov. Moscow: Delo, 2013. 104 p.
8. Rubin, Yu., Kovalenko, A. Predpolagaemye i fakticheskie rezul'taty obucheniya [Forecasted and real results of education]. Kachestvo obrazovaniya [Quality of Education]. 2012. № 2. pp. 40–43.
9. Svistunov, A., Shubin, L., Gribkov, D. Kadrovyi golod kak rezul'tat nekachestvennogo obrazovaniya [Staff shortage as a result of low quality education]. Kachestvo obrazovaniya [Quality of Education]. № 7. P. 56–61.
10. Tikhomirova, Ye. Kakim dolzhno byt' sovremennoe obrazovanie? [What modern education should be?] Kachestvo obrazovaniya [Quality of Education]. 2011. № 7-8. pp. 38–43.