

The Problems of Engineering Universities' Adoption to the Two-Level Education System

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Educational system of the Russian Federation has been reformed over the recent years. Accession of Russia to Bologna process has obliged all university to adopt the two-level bachelor-master system. The given paper deals with the key problems of university adoption to the new educational system by the example of students' training in speciality «Agricultural engineering» and «Thermal engineering» in Ogarev Mordovian State University

Key words: bachelor's student, master's student, speciality, specialist's degree program, competencies.

According to the Russian Federation Legislation of 24.10.2007 №232-FL it is mandatory for all universities to adopt such levels of higher education as «bachelor-master». In this case the current system of engineers-specialists' full-time education is virtually eliminated. Engineering training is assigned only for some leading universities in specially defined for different reasons specialities. The given draft law was accepted by the State Duma and approved by the Federation Council.

In fact universities have adopted the given system since September, 1, 2011.

Ogarev Mordovian State University was not of exception in this process.

The adoption to the system is sure to have started as early as about ten years ago, all this time the universities of the Russian Federation were gradually preparing for possibility of the new approach in the educational process. Even in 2000, when the educational standards of II generation were introduced into university training, along with the existing specialities some other qualifications were specified for bachelor program. A number

of subdivisions of Mordovian State University (institutes and departments) have started their bachelor and master training since 2005. But this was true mostly for humanitarian and natural-science specialities. Thus, engineering profile training was not realized in the given system.

Undoubtedly, the innovation involved has both its merits and drawbacks. The advantage is certain to be the fact that now at last one can match the obtained degrees in Russian and Europe that has been impossible before. However, there are a lot of problems and challenges in adoption to two-level education which are necessary to solve in the nearest future.

Firstly, this step would result in correction of not only university system but also components of secondary and secondary vocational and technical education.

At present the level of secondary education (to say nothing of secondary vocational education) does not meet the requirements specified by universities for students' admission. Therefore, the system of private lessons and additional



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preparation for different courses is common everywhere. Their main objective is to prepare school leavers for passing Universal State Exam and enrollment into university in such majors as mathematics, physics or chemistry. However, in spite of first year students' left-out the level of senior students' engineering knowledge does not satisfy teachers and final left-out amounts 30% as compared to entrants. It should be noted that engineering students have a rather low level of humanitarian knowledge and are slightly familiar with history and literature. Students' ignorance is of particular concern. That is why the courses in Russian, History are introduced in higher engineering institutions. All these subjects are to be studied at school.

Secondly, when developing new curricula for training engineering students there appeared uncertainty in some professional disciplines. For example, there is a number of profiles in training bachelors students in «Agricultural engineering» that are recommended by the University Education and Methodic Association in agricultural training. Each profile is assigned a list of recommended disciplines, but for some of them there is no such information. On the other hand, even with the list of disciplines the question arises how to make a reasonable choice to provide the proficiency in necessary competencies [1, 2]. This problem can be solved by, for example, developing an educational program taking into account the opinion of future employers. However, in this case there are also a number of problems as the absence of developed legal relations results in the situation when applying for a job favor is given to the graduates with specialist engineering degree. It is considered to meet the production requirements to greater extent than, for example, master graduates obtaining academic-oriented education. In some cases future employer cannot define what graduate is more necessary for him (her) in this or that fields of national economics.

The problem with bachelor graduates is even more urgent. A large number of them without entering master program and getting necessary engineering knowledge cannot be appointed for senior

positions and can apply for low-paid jobs only. Hence, there appears a social problem.

As for master-students' training the situation is as following.

Training master students in «Agricultural engineering» and «Thermal engineering» in Mordovian State University started in 2010. To perform the educational process the master programs were approved, curricula were developed, research themes and content of students' autonomous research work were defined for the whole period of training.

Master students' training as a part of research constituent in «Agricultural engineering» and «Thermal engineering» specialities is rather topical nowadays. As a rule, Master students' research work get further development in post-graduate. Thus, there appears a possibility to increase time so necessary for making experiments, processing the results etc. But at present three years are not enough for completion of research in engineering speciality.

Introduction of III generation educational standards makes possible to train master students prepared for practical activity. The given innovation allows for widening the spectrum of master-graduates' employment. In addition, it should be noted that in recent years in Mordovian Republic the demand for the personnel of such qualification is growing. The support for this fact is numerous inquiries of Saransk leading machine-tool plants managers for specialists capable of working with special programs, competent modeling the engineering operational processes etc.

The important event in the existence of Mordovian State University that will influence significantly the master-students' training in future and assist in solution of a number of problems is assignment of the rank «National Research University» (The RF Government resolution of 20.05.2010 № 812-p). A new status of the university during 2010-2011 has allowed for significant innovation and strengthening the University's material and technical base. Within this period of time two new research laboratories were established for

students' training of «Agricultural engineering» and «Thermal engineering» specialities as well as post-graduates and junior scientists at the general cost of equipment more than 50 mln. rubles. Besides, the research labs were arranged for making investigations in natural-scientific and fundamental fields (physics, biology etc.). To implement the developed technologies in Mordovian State University in 2010, five small innovative enterprises (SIE) were established, two of which are engaged in master-students' training in specialities mentioned above. In future it is also planned to develop university in the given status up to 2019 inclusively.

All these permit for efficient development of research and practical (SIE operation) constituents in master-students' training in mentioned specialities.

The development program of Mordovian State University within the «National Research» status allows for elaboration of own educational programs that permits adaptation of educational process to the conditions of definite region of Russia and eliminate partially all stated drawbacks in two-level training system.

Of not less importance in removing shortcomings of engineering training including two-level training is recommendation suggested by rectors of Russian and European leading universities at the International Scientific-Practical Seminar held in Czech Technical University (Prague). The main idea of the recommendations consists in the following: convergence of universities and industries, improvement in fundamental training in engineering universities, teachers' and students' academic mobility etc.

Nevertheless, analyzing the experience in engineers', bachelors', masters' training as well as candidates and doctors of science in both Mordovian State University and other universities of Russia one can make a conclusion that adoption to the two-level educational system is likely to occur during a longer period. In this case it is possible to use foreign and domestic experiences such as establishment of specialized engineering training centers for bachelor-graduates, arrangement of additional training courses etc. It will permit keeping positive experience stored in Russia, at the same time approaching to the international level of education [3].

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