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Implementation of Educational Process by Means of Project-Based and Dual Training

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***Abstract* – The paper provides information on the results of the implementation of the project of a cluster of continuous technological education, implemented by K.G. Razumovsky Moscow State University of Technologies and Management (MSUTM) together with an Industrial Partner.**

Keywords – training system, dual training, project-based training, higher education, cluster

I. INTRODUCTION

Now in the period of escalation of global geopolitical, economic, and cultural competition, the problem of providing the Russian economy and its industrial sector with highly qualified personnel is of the highest priority.

The training system must clearly meet the needs of the region's labor market that allows trained employers be more competitive, mobile, efficient and to settle in organizations of different profiles.

The current system of higher professional education in Russia, in essence, remains almost a copy of the Soviet. Despite the fact that in previous years this system had the efficiency of a high level, now it requires a revision of a number of principles. It is necessary for its adaptation to modern economic realities.

One of the most difficult problems is the correspondence of the content and structure of personnel training to the demand in the labor market. Also it should be noted that the deficiency of the highly professionally personnel is one of the problem that impedes the growth of business and the development of regions. Very important aspect for the practice training of students is the possibility to train in the conditions of the real industrial production with modern equipment.

The system of dual training allows solving the abovementioned problems. Dual-training can be considered as a national-private partnership in the field of training of highly qualified personnel.

Within the framework of this system, large and small industrial enterprises enter into partnership agreements with professional educational organizations and provide places for students to do practical work. These enterprises also invest in the renewal of equipment of the universities, and in return receive more highly qualified personnel, at that adapted specifically for work in a particular enterprise. Training in real conditions reduces costs and timeframe for adaptation of the future employee. The introduction of practice-oriented training allows to use the staff of a professional educational organization more effective, especially in planning laboratory-practical and theoretical modules. The costs of training are proportionally distributed between regional governments and business [2, 3].

II. ABOUT DUAL TRAINING (INTRODUCTION)

Dual training is a type of vocational education in which the practical part of training takes place at enterprises (at work), and the theoretical part is based on the educational organization (universities, colleges, etc).

The dual training has long been internationally recognized.

Dual training involves the joint financing of training programs for a specific workplace by commercial enterprises and regional governments. Commercial enterprises are interested in qualified personnel, and regional governments. Commercial enterprises are interested in qualified personnel, and region are interested in developing the economy and raising the standard of living in the region.

The goal of the dual training is the development of technical and professional education by creating a highly efficient, competitive system of training and retraining of personnel. This is the most common and recognized form of training, which combines theoretical training in an educational institution and industrial training in an enterprise [4].

The experience of using dual training has shown the following advantages of this system compared to the traditional:

- The dual training eliminates the main disadvantage of traditional forms and teaching methods – the discontinuity between theory and practice;
- in dual training laid the impact on the personality of the specialist, the creation of a new psychology of the future employee;
- dual training creates a high motivation for learning and acquiring skills in work;
- educational institution that cooperates with the customer takes into account the requirements for future professionals in the course of training.
- For the first time, dual education was introduced in Germany. Today this experience is considered a model for the entire European Union. Dual education in Germany includes a developed institution of mentoring, characterized by the active participation of enterprises in training. This training model has a strict legal framework in the country [1, 6]. Thanks to state certification and control, training in all the federal states of Germany is carried out according to common standard methods guaranteeing the equally high quality of professional education and skills. Therefore, each graduate of a professional school has equal chances to find a job in any federal state of Germany or to enter a specialized institute or university. If you have the ability and desire, the road for further self-improvement, that is, for admission to university or advanced training, is open to all. It should be noted that due to the dual education in Germany, it is possible to maintain youth unemployment at a very low level - less than 9 percent.

Dual training is an excellent opportunity for an enterprise to train personnel taking into account the own peculiarities. As part of the training programs, maximum compliance with the organization's needs is achieved. In addition, the company saves money on search and selection of personnel, their retraining and adaptation.

The introduction of dual education has a positive effect on the reputation of companies, their image on the labor market. For small companies that are unable to organize their own workshops, inter-production training centers are being established with the support of chambers of commerce and industry. In general, dual education is designed to promote the development of self-reliance and painless adaptation of young professionals in adult life. Programs are designed in such a way that already during the training they begin to receive wages. Dual education provides a smooth entry into the production process, eliminates various stresses associated with a lack of experience and theoretical knowledge.

The government, introducing dual training, effectively solves the problem of training qualified personnel. In Germany, for example, the burden of training lies mainly in enterprises. According to statistics, companies spend more than 40 billion euros annually on staff development. This amount exceeds the cost of maintaining universities. The main function of the government is to coordinate the legislative framework.

Currently, dual training operates in more than 60 countries, among them are – Germany, England, USA, South Korea.

The Russian Federation is also working on the development of dual training. One of the first examples of using the dual training in Russia was created in the Kaluga region. In September 2010, «Volkswagen Group Rus» launched a dual training program in the field of mechatronics. It was focused on training workers and technologists for a car factory. Similar projects became widespread in the Republic of Tatarstan, the Sverdlovsk region and other regions of Russia. In 2013, through the efforts of the Autonomous Non-Profit Organization «Agency for Strategic Initiatives», all these initiatives acquired the status of a federal pilot project. The participants of the project for the development, implementation and distribution of models of the dual training were 13 subjects of the Russian Federation: the Republic of Tatarstan, Krasnoyarsk, Perm, Belgorod, Volgograd, Kaluga, Moscow, Nizhny Novgorod, Samara, Sverdlovsk, Tambov, Ulyanovsk, Yaroslavl Regions. All of them are characterized by a diversified economy, rich natural resources, and a developed transport infrastructure, most of them are favorably located in close proximity to major megalopolises. The main tasks of the project were the development, implementation and distribution in the pilot regions of the dual training system, the development of modern models and formats for networking of educational organizations and enterprises in the training of personnel and encouraging the participation of employers in financing professional training programs. [5, 7].

The Continuing Technological Education Cluster (Cluster) Project was created at the K.G. Razumovsky Moscow State University of Technologies and Management (MSUTM) together with an Industrial Partner.

Today, MSUTM has the status of a leading Russian university for the training of specialists for enterprises of the food and processing industry. The university responds to the new challenges of the time and sets as its goal the introduction of dual training in order to grow specialists demanded in the labor market.

This Cluster was created to implement measures for the development of personnel policy and is based on the Federal Law of the Russian Federation of December 31, 2014 «On Industrial Policy in the Russian Federation", as well as on the Federal Law of June 28, 2014 «On strategic planning in the Russian Federation».

The Roadmap of the Cluster was developed. MSUTM, 3 colleagues and 5 schools entered the experimental platform of the Cluster. 20 students from MSUTM training on the Program «Foods of animal origin» were chosen for dual training.

Our industrial partner is a large agricultural holding with a full production cycle. It was established in 2005 and now is one of the leaders in the meat industry in Russia. The company's advantage is vertical integration, which connects all these stages of the agricultural production from growing grain to producing finished products and guaranteeing product quality at all stages. Our industrial partner develops and produces healthy food products. Taking into account the growing demand for semi-finished products, the industrial partner is expanding the range of finished products from pork and poultry meat. One of the main tasks of the industrial partner is to grow specialists who will be in demand by the modern high-tech production. In this regard, the holding considers that it is very important to build a system of continuing professional education from schools to employers, to reveal all facets of the profession and to show how the industry of the holding is high-tech and interesting.

Dual training is conducted according to the system – 70 % of the practice, 30 % – of the theory. The experimental group works together with the creative team and learns to develop projects. Project activity is a new educational technology, as a result of which students' cognitive activity increases. In project activities, a search for interactive forms and ways of interacting with students is needed, in which students themselves can put forward ideas, actualize knowledge and experience. Project activity encourages students to creative initiative, to a meaningful search for innovative educational technologies, along with classical forms, methods and means. For this purpose, various design works are carried out in practice.

The main goal of our Industrial Partner is the development of basic and additional educational programs for professional colleges; programs for leisure work with children and teens (children's technology parks, youth innovation creativity centers, co-working centers); major training programs implemented by universities; advanced training and retraining programs; cooperation with professional communities in the interests of an industrial partner (organization of community events, including professional contests and competitions).

The policy of our industrial partner in the development of clusters of continuous technological education for enterprises of the meat processing industry is realized as follows:

- support of research and educational projects implemented under the development programs of educational clusters;
- subsidies and other forms of support for specialized organizations of educational clusters;
- development of proposals for the government, aimed at supporting participants of educational clusters;
- linking educational cluster development programs with activities and roadmaps of the national technology initiative (NTI);
- support for access of educational cluster members to the necessary statistical and marketing information necessary for the implementation of joint projects.
- support of international activities of participants in educational clusters and experience sharing activities;
- support of cooperation between participants of educational clusters;
- linking educational clusters development programs with strategic planning documents of the Russian Federation (strategies of industries, regions, federal districts, municipalities);
- ensuring the priority of including the activities of educational cluster programs in the development activities of the industrial partner.

The activity of the industrial partner in the field of support and development of clusters of continuous technological education for enterprises of the meat processing industry is based on the following elements:

- Holding of joint events, projects and programs for the development of participants in educational clusters ;
- Management of educational clusters and development of specialized organizations;
- Support for projects of participants in educational clusters.

Also it should be noted that the introduction of dual training in Russia has limitations. In particular, dual training cannot be extended to the training of specialists for the public sector. The limits of using the dual model should be clearly defined and should not be extended to areas where the implementation of the principles of dual training is impossible. Dual training has not yet received proper consolidation in the Russian educational legislation. The experience of the pilot project participants was made up in the form of methodological recommendations, regulations on the organization of in-service training, cooperation agreements, the network form of organizing educational programs, etc. [7]

III. CONCLUSION

Based on the information provided, it can be argued that the main substantive concept of dual training is based on strengthening the practical orientation in the training of specialists through the symbiotic correlation of educational and production processes. This significantly increases the possibility of professional mobility of graduates of educational institutions.

However, the implementation of dual training should focus on changes in the organization of educational activities, the need for adequate integration and competent alternation of theory and practice.

These principles formed the basis of the Russian experience of dual training between MSUTM and industrial partners, which was a positive experience in the training of highly qualified specialists demanded in modern market economy by meat industry enterprises.

With the aim of improving dual training, the university expands the boundaries and develops new projects together

with the V. Gorbatov Federal Scientific Center for Food Systems of Russian Academy of Sciences. The creation of an academic association in cooperation with leading scientific-research institutes of the Russian Academy of Sciences in order to train highly qualified specialists for scientific research is relevant in this area.

The creation of the cluster allows the introduction of the project method of training in our university. University graduates perform comprehensive graduate qualification thesis in the form of a developed business plan and in conjunction with business structures and enterprises, which helps them to be realized as start-up entrepreneurs or to find a good job. Project-based training as a whole allows improving the quality of education with a focus on a specific employer, strengthening communication with business partners, and engaging students in scientific and business activities. Also project-based training makes it possible to commercialize entrepreneurial initiatives, to train students for involvement in modern production, to ensure the introduction of advanced technologies in real conditions.

Dual training contributes to the fulfillment of the desire of young people, aimed at obtaining education that is harmoniously combined with the modern requirements of the economy, which will provide educated and competent personnel.

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