



Quality Specialist Training in the Context of Technical Regulation System Formation

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New Tasks of Quality Specialists Training in the Context of Technical Regulation System Formation

Introduction

Today quality is considered as the most important factor forming company competitiveness and its success motivation. It is quality of products, labour and skilled staff. However, the unbalance of existing educational services and requirements for quality and content of education on the part of labour market is characteristic of modern Russian education. Educational programs hardly ever satisfy actual needs of enterprises. Employers say that the major problem is a lack of specialists that are capable of completing the tasks of technical quality and safety regulation of products in accordance to the Russian membership of Customs Union, Common Free Market Zone and World Trade Organization.

Materials and Methods

In Russia, the requirements for the quality and labour content of employees in a particular professional field are contained in professional standards. This multifunctional regulatory document that establishes requirements for the content and working conditions, qualifications and competencies of workers required to perform certain activities on different qualification levels [1,2]. Professional standards for product quality control inspectors are approved by the Ministry of Labour of Russia in 2014. Three categories of generalized employment functions performed by specialists in this field [3]:

- Quality control at all stages of the production process;
- Work activity management on quality control in the division;
- Work activity management to improve the quality of products.

To perform these functions a range of knowledge and skills are required. So, for the work activity management on the development and implementation of new methods and means of technical control a specialist must know:

- Regulatory and methodical documents providing the issues of product quality;
- Regulatory and methodical documents regulating quality management system in an organization;
- Regulatory and methodical documents providing the issues of requirements for materials, semi-finished products, bought-in products and finished products;
- Regulatory and methodical documents providing the issues of storage materials, semi-finished products, bought-in products and finished products;
- Statistical methods of quality control.

In addition, a specialist must be able to:

- Analyze regulatory documents;
- Apply the methods of system analysis for the preparation and support conclusions about the state of the quality control system.

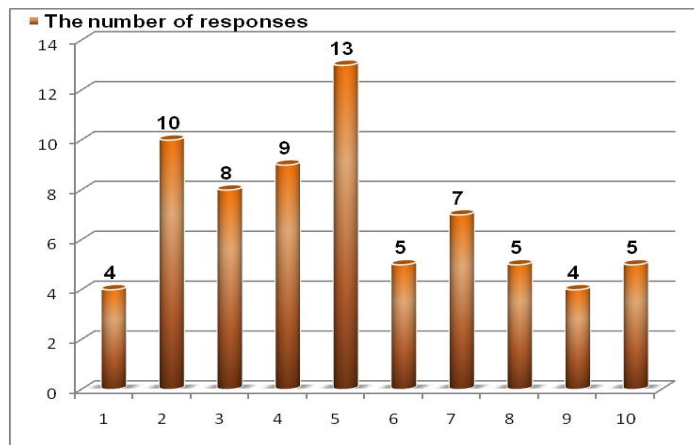
Obviously, these requirements must be transformed into the ones for training results in professional education. It is not a coincidence that one of the main indicators of the departments and the university work as a whole is demand for graduates, employers' satisfaction with the knowledge and skills of young professionals, and graduates satisfaction with education received and employment.

What are the requirements that employers put forward? What qualities do they mark as important? To answer these and other questions we have conducted a number of surveys [4], where the respondents were:

- KNRTU graduates with more than 5 years of successful practice;
- professors of KNRTU;
- representatives of the petrochemical and chemical industry in the city of Kazan, a total of 16 organizations.

Research Results

Data processing is presented in figures 1 and 2. Figure 1 shows the weaknesses of quality specialists training from employers' point of view. Employers noted weak orientation of graduates for employment and a low level of general knowledge, and, the most alarming thing is unsatisfactory practical training. Therefore, any work experience (even different types of practices) with positive feedback and recommendations is a doubtless advantage when applying for a job.



- 1-low level of theoretical knowledge,
- 2-weak orientation for employment,
- 3-inflated self-concept,
- 4- low level of modern economic and legal knowledge,
- 5- weak practical training,
- 6- low level of foreign language knowledge,
- 7-inability to the self-criticism,
- 8-inability to make decisions on his own,
- 9-noncompliance of ethics and organizational culture,
- 10-lack of independence in learning

Figure 1
The Weaknesses of Specialist Training from the Employers' Point of View

Questioning the graduates also confirmed that a lack of necessary skills is the primary difficulty when applying for a job. Graduates assessed the importance of five key elements (close to the competencies in these areas of training) and the degree of mastery on a 5-point scale (Figure 2) for the professional activities.

This is, in particular:

- basic knowledge in various fields;
- knowledge in the field of quality (the mastery of tools and technologies, regulatory documents);
- communication skills (knowledge of languages, ways of interacting with others and remote events and people; teamwork skills, knowledge of various social roles);
- organizational skills (teamwork skills, leadership);
- the ability of self-organization and self-management (the mastery of knowing, the ability to criticism and self-criticism, adaptation, and emotional self-regulation).

The level of professional competencies development is marked as sufficient. Self-organization and organizational skills were identified as important but underdeveloped ones.

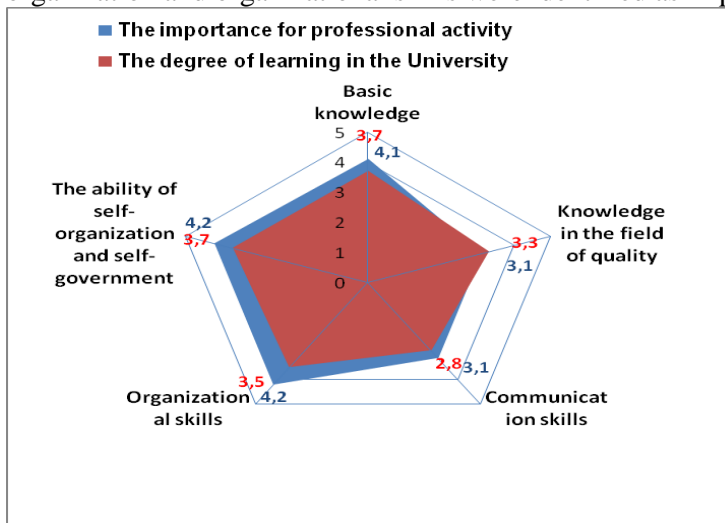


Figure 2.

The importance of the competencies in these areas of training and the degree of their mastery in university (assessment of graduates)

Discussion

Obviously, the competence model of the position of "quality engineer" (employers' requirements) is not a competence model of the graduates in this specialty. Firstly, a number of knowledge cannot be acquired in high school - they are predetermined by the industry and enterprise distinctiveness; secondly, competence is related to the experience of successful activity, during which skills are accumulated and developed. The path from the theoretical foundations of knowledge to the mastery in practice is not close, and in modern conditions of the technical regulation system formation the promotion is associated with a number of problems (Table 1) [4].

Table 1.

Problems of Quality Assurance in Higher Education when Training Specialists

№	Issues	The General Description of Problem Field
1	Regulatory framework of specialist training in High Educational Institution	<ul style="list-style-type: none"> • incomplete process of developing educational standards; • legal and regulatory framework of Russian higher education is not enough focused on solving the problems of quality specialists training at all levels of the organization and management of higher education.
2	Sources of forming and updating content of educational programs	<ul style="list-style-type: none"> • Reduction of scientific research in universities; • insufficiently developed mechanisms for the use of the Internet; • a high percentage of outdated educational and scientific literature in universities.
3	Divergence in theoretical basics and practical aspects in the context of transition period	<ul style="list-style-type: none"> • prolonged transition period to improve the regulatory framework in connection with the adoption of the Federal Law No.184-FZ dd. 27 of December, 2002 "On Technical Regulation", as a consequence, the use of an outdated regulatory framework;

	<ul style="list-style-type: none"> • formal relationship specialist companies in the organization and conduct of the practice of students.
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In addition, Russia's WTO accession required the observance of the Agreement on Technical Barriers to Trade. Its basic principle is to ensure an appropriate balance between risk, which may result in noncompliant products and the costs to society associated with carrying out mandatory certification [5].

The Federal Law "On Technical Regulation" was passed to solve these problems in Russia, which has a new model of technical regulation aimed primarily at its harmonization with international principles. Collaboration on standards and harmonization of national and international standards are opening up new opportunities for the development of international trade and economic cooperation. However, the personnel problem reduces the development of standardization in Russia, limits participation of a wide range of entrepreneurs in this process. Other countries faced this problem, therefore publications on technical regulation for practitioners and teachers began to create abroad. [6]

A modern qualified specialist has to have a clear idea of interrelation between technical regulations and standards, be able to find the standard or regulation necessary for their work, know the difference between national, interstate and international standards, be competent in terms of correlation confirmation and estimation, tests administration and quality management as well as accreditation, control and supervision [7]. Understanding the fact that it is impossible to expand into a new market and keep the old one without such specialists led to the creation of a position "Technical Regulation Specialist", who has the following duties:

- participation in work to protect the interests of the organization during scheduled and unscheduled inspections of products by public authorities, preparation of documents, organization of internal and external examination of the products, if necessary, at the request of governmental authorities, coordination with foreign experts and quality departments on technical regulation, and other services ;
- realization of declaring conformity of output products and representing the organization in systems of product certification and organizations operating in the field of certification, registration and testing of products;
- knowledge about government rules and regulations in the field of import and products circulation regulation including the possible and planned changes in legislation;
- advising and interacting with various parts of the organization on the treatment and sale of products on the Russian market, the market of the Customs Union and abroad.

All this is impossible without knowledge of the technical regulation basics in the Customs Union, national standardization in Russia and countries of the WTO.

Conclusions

What solution can be offered to enterprises, whose experts finished high schools many years ago and face with a lack of knowledge in this ever-changing field?

The Institute of Additional Professional Education was created in Kazan National Research Technological University for solving these problems. With participation of the Institute in the university, the continuous educational cycle is realized now. It includes preparation, professional development and professional retraining of management and key

personnel in the branches of economy and professors for the purpose of their professional growth and improvement of graduate students' quality.

For instance, the program called "Research and Academics Cluster of Kazan National Research Technological University for 2012-2014" and developed by the authors of the paper was accepted in the university. The main task is to modernize the professional education system in order to meet the challenges of Human Resourcing and innovative development of the petrochemical complex of the Tatarstan Republic [8]. KNRTU offers various programs of advanced training for management and key personnel that get an idea of the wide range of quality management aspects [9].

Minor degree program called "The Russian System of Technical Regulation in the context of the Common Economic Space Formation in the Customs Union and World Trade Organization" is of special interest. The aim of this Program is to consider existing and future regulatory aspects of technical regulation, and the scope of the Law "On Technical Regulation". This program allows you to get comprehensive knowledge on the organization and administration of technical regulation, control its individual elements and their relationships; functioning the system of technical regulation in the post-Soviet space and its prospects as an instrument of interstate integration; conformity assessment, accreditation, technical regulation mechanisms in the Customs Union and WTO.

The Program consists of blocks, each of which will allow students to learn the basics of technical regulation and to trace its development trends. The program provides for implementation of practical work, allowing students to solidify their knowledge in practice and then use them in their professional activities.

This program contains the section "Technical Regulation and the World Trade Organization" which helps to explain how to use technical regulations and standards, and how different countries use unrated regulatory methods of international economic activity within the World Trade Organization. Moreover, the WTO Agreement on technical barriers, sanitary and phytosanitary measures in trade is considered in detail. Such a program can be useful for the enterprises which have a desire to expand into the international markets, as well as those who are faced with increased competition in the domestic market due to the opening of the Russian market after Russia's WTO accession.

Expected Results

Thus, the creation of technical regulation and standardization system balanced with the international and regional (European) ones and innovative technologies are the key factors of Russian economy competitiveness. All this is impossible without qualified employees constantly enhancing their knowledge. Training programs developed by the authors are aimed at improving the existing competencies and (or) development of the new ones required for professional activities, performing job functions and improving professional skills. It is important that when developing training programs, requests of enterprises that the Institute of Additional Professional Education has already cooperated with for many years were taken into account.

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