Formation of expert competencies for graduates of the specialty “Commodity science”

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Abstract. The article presents the experience of applying a practice-oriented approach and interaction of educational, expert and supervisory organizations at the training students whose major is “Commodity Science”. The possibility of using the methods of consumer testing of non-food products, the procedure for monitoring the consumer market and digital tools in the educational process is considered.

1. Introduction
Improving the quality of education is one of the urgent problems of the world and Russian community. Currently, when training highly qualified specialists, higher education institutions have to take into account the standards of Federal state educational standards, the requirements of consumers (employers) and the Industry 4.0 technologies. The orientation of educational activities to a practice-oriented approach requires social partnership of the university, the expert, control and supervisory organizations and production structures [1,2].

Creating conditions for ensuring the consumers safety for goods and services are key tasks of state regulation of the national economy, which are widely declared at the government level. The regional structures of Rosstandart and Rospotrebnadzor, the independent expert and public organizations are increasingly trying to influence the consumer market by carrying out expertise and monitoring the quality of goods, identifying products with different levels of safety and utility for consumers [3,4]. In Krasnoyarsk, such a resource is represented by the Prodnadzor project, which is supervised by the State Regional Center for Standardization, Metrology and Testing in the Krasnoyarsk Region, the Republic of Khakassia and the Republic of Tyva (hereinafter referred to as Federal Budgetary Institution Krasnoyarsk CSM).

In this regard, the qualified training of specialists with knowledge in conducting examinations in various fields of activity is of particular importance.

2. Materials and methods
Some experience of applying this approach gained through interactions Krasnoyarsk CSM and the Department of commodity science and expertise of goods at the Siberian Federal University during the implementation of the Prodnadzor project. Within the framework of this project the expert assessments
were carried out (for compliance with the requirements of regulatory documents), laboratory tests (for safety indicators) and consumer testing of various groups of non-food products [3,5].

The purpose of this study is to present the results of the implementation of a practice-oriented approach in the educational process of students of Commodity Science.

3. Results and discussion

The Federal state educational standard in the field of Commodity Science provides for the development of expert competencies in the framework of evaluation, analytical and research activities, such as:

- assessment of compliance of safety, quality of goods and product information with the requirements of regulatory documents;
- diagnostics of consumer product defects and identification of their causes;
- organization and conducting product expertise, conformity assessment procedures;
- conducting research to assess consumer properties, quality, safety, authenticity and competitiveness of products.

Within the framework of practice-oriented training and mutual cooperation with the Krasnoyarsk CSM, the training process is supplemented by consumer testing, market monitoring, and working with the digital environment (figure 1).

Let's describe this experience in more detail.

![Krasnoyarsk CSM - Prodnadzor project](image)

**Figure 1.** Development of expert competencies for graduates of the specialty “Commodity Science”

- Research activity:
  - consumer testing;
  - market monitoring;
  - laboratory research

- Assessment and analytical activities:
  - assessment of goods quality;
  - assessment of commodity information;
  - comparative analysis of the regulatory framework

- Digital environment:
  - electronic portal Roskachestvo;
  - Rospotrebnadzor as information resource on consumer protection;
  - Honest Sign app, Ecolabelquide;
  - RAPEX

The focus in supervisory activities mainly on monitoring product safety indicators, the lag of domestic standards from foreign analogues in terms of requirements and methods for assessing the quality of certain groups of non-food products are prerequisites for the revival of the practice of comparative and consumer testing in Russia.

Comparative testing is successfully used in foreign practice. In addition to laboratory tests, it provides for the use of such methods as consumer survey, experimental sock and tasting [6,7]. It allows informing consumers about the products of best quality and thus ensure the effective use of limited financial resources of the population.
The joint project is aimed at developing and testing methods for assessing the quality of non-food products based on the analysis of typical conditions of use of the product and consumer preferences regarding its properties. And it was tested as part of the rating assessment on the example of light industry goods, household goods, and goods for sports and leisure.

In the process of joint research projects, students use organoleptic, instrumental, expert and sociological methods of commodity examination.

For example, the next skills were worked out:

- quality assessment for compliance with the requirements of regulatory documents;
- assessment of the quality, content and completeness of labeling;
- conducting test purchases of goods as part of the market monitoring procedure;
- identification expertise for detecting assortment and information falsification (leather goods);
- identifying signs of counterfeit products;
- checking the dimensional grid (children's clothing);
- assessing consumer properties and useful effect by testing method (artificial New Year's trees, multicooker, hosiery, figured skates and for playing hockey, children's sleds, toilet paper);
- assessment of the safety of goods (multicooker, artificial New Year's trees, garlands, clothes);
- sensory analysis and tasting evaluation (multicooker);
- metrological supervision over the number of prepackaged goods (household chemicals).

Students get the opportunity to get acquainted with the laboratory facilities and modern research methods.

This experience was later used in the performance of final qualifying works, including in the development of consumer testing methods for different groups of non-food products.

Also, problems were identified, caused by both the updating of standards and the transition to technical regulation, and the general “failures” of the state system of regulation of the domestic market to protect consumer rights and fight against falsification [3]. For instance,

- Lack of a national Russian standard for artificial New Year's trees. This type of product is not subject to mandatory confirmation of compliance and is not subject to the safety requirements of any of the existing Technical Regulations of the Eurasian Economic Union;
- Errors and inconsistencies in terms of terminology, design features, sorting features in the updated and related standards (sewing and knitted goods, protective footwear, uncut sable skins);
- Obsolescence of standards for sports and leisure goods.

In the context of digital economy, the development of research and expert competencies is impossible without the use of digital tools presented in figure 1.

For example, using the information resource on consumer protection, students can get acquainted with information about the participation of Rospotrebnadzor in judicial protection of consumer rights (module “Judicial Practice”), with the results of inspections (module “Inspection Results”). The relevant parts contain information and analytical materials, information about products that do not meet the mandatory requirements. The “Consumer Reference” module contains samples of claims, claims against business entities, consumer memos, answers to frequently asked questions in this area, and other relevant information.

On the electronic portal of Roskachestvo, students track information about the results of research and rating on the example of different groups of non-food products, the black list of dangerous products, and recommendations for choosing a product.

Working with the RAPEX system, they study the experience of the European Union on the operation of the rapid warning system for dangerous products, the structure of identified risks, and the response
measures taken by supervisory authorities [8,9]. Using the Honest Sign app, users can identify counterfeit products, check information about the name and origin of the product, its composition, consumer characteristics, the seller, the availability of a certificate/ declaration of compliance, the current status, and report violations. Using the Ecolabelquide app one can select eco-friendly products.

Trends in the production and consumption of products made of environmental materials, “smart home”, “smart fabrics”, additive technologies, personalization, online shopping require future specialists to have knowledge and skills in the field of:

- technological and consumer consulting;
- project management;
- recycling and lean production;
- integration of design solutions and materials science;
- IT-technologies;
- expertise of intellectual property objects.

4. Conclusions
The results indicate a positive impact of partnership with the Krasnoyarsk CSM on the development of students’ professional competencies in the field of non-food products expertise.

Joint research projects complement the theory and practice of commodity science education with new tools for developing standard product requirements and methodological recommendations for rational product selection.

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