MODEL INNOVATIVE COMPONENTS DESIGNING ACTIVITY OF AGRICULTURAL ENGINEERS

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Under the state program of regeneration and innovative development of the village tasked to ensure the effective functioning of the agro-industrial complex (AIC). It can be solved by the improvement and development of different organizational forms of innovation, technical re-equipment of production, development and introduction of new crop varieties, highly productive breeds of livestock and poultry, high-performance systems and machines, energy and environmentally sound technologies in agricultural production. Under these conditions, significantly increases the role of agricultural engineers, as implementer and initiator of innovative processes in the agricultural sector to ensure productive activity in the context of new forms of management, improve product quality and reduce labor and energy costs, ensuring cost-effective production technologies.

Often the terms of instructional design, implemented in a technical college, graduate output only to the level of professional acting within the regulatory requirements. Mastery of design activity at the level of implementation of innovations is mainly spontaneously, on the basis of postgraduate professional experience, which seriously hampers the development of the industry.

Thus, there is a contradiction between the demands of modern production to the level of competence of the expert in the field of design activity, the ability to act in terms of innovative development of agribusiness and agro-technical level of training of the university, between the level of competence of the designing of the agricultural technical college graduate and imperfection of the technology of its formation and development in the period of study.

These contradictions determine the pedagogical problem, which is that in the context of higher technical education is necessary to prepare specialists able to solve professional problems of innovative character.

The purpose of research - identifying the nature, structure and content of the designing of additional competencies (innovative component design activity), its inclusion in the training for agricultural engineers, as well as the study and development of methods of forming this competence.

Materials and methods of research. Consider the basis for constructing a model of innovative component design activity.

Historical and cultural analysis of the works design methodology allowed us to formulate the essence of engineering design as a process of scientific development needed to create even non-existent object design description at a certain sign language of the inverse image of the object corresponding to a set of requirements. This description is realized by converting the original data, a careful and thorough research, develop conceptual solutions based on the analysis of technical information, repeated simulation, optimization specified characteristics of the object, multiple comparisons with the design goals, eliminate incorrect description of the primary and bring to a detailed solution. Develop project decision is really effective if characterized by minimal cost (from the producer and consumer) and the maximum efficiency performing prescribed functions in specific conditions for inclusion in the environment. Thus, we can say that modern engineering design supports complex multi-step process, with its inherent characteristics, technology, results and criteria.

The results of research. Character development depends on the level of design engineering design. Thus, A. Polovinkin highlights in the design of the development, as the binding of a particular technical and technological solutions to new conditions, and proper design, as detailed study of new technical ideas implemented in an object. V. Mushtaev highlights in the design level, providing a change of an existing object, and level ensuring the creation of a new one.

Obviously, the goals, means and expertise of the impact on the quality and results of design in accordance with the following levels: base (model design),

transitional (Modification design), innovation (introduction of innovations) and creativity (creation of a new one). Analysis of the literature allowed us to systematize the characteristics of modern design levels in the agricultural sector (see table). In addition to the creative, for the development of which requires a fundamentally different system of coordinates.

The basic level of engineering design model can be represented in the design, when it binding types of technical solutions to other specified conditions. Here the design is applied character due to the action as part of the solution of algorithmic problems by parametric calculations. Design technology in this case is to analyze the conditions, identifying differences in the parameters of the solution, calculation, assessment solutions for compliance.

But within the framework of standard design may need to go to change the individual elements of technical and technological object (locally modifying the design), or when the whole justified the change object (system-modifying level). This requires not only an analysis of subsystems, but also of the whole system in the framework of a qualitatively different technologies, including parametric calculations in addition to the system logical methods, as well as evaluating the solution for system-defined criteria.

Activities on the innovation level covers the rationale and implementation of innovation. Here, the character design system, integrative. Design methods include both logical and heuristic. The result corresponds with the relevant requirements of the development of production and infrastructure.

Higher level - we do not consider the creative due to the fact that the demand for its establishment is not institutional, but only desirable.

In the context of implementation of the program of innovative development of the Republic of Belarus of Agricultural Engineers require solving the problem of quality and quick realization of innovation, which should be solved at the design stage. This task is divided into a number of subtasks design, which can be called metazadachami. These include: ensuring compatibility with existing innovate technological infrastructure of production; ensuring relevance to innovate

requirements of profitability, safety, ergonomics; preparedness personnel to work in innovative environments.

Analyzing the activity of an engineer in the conditions of implementation of innovation, V. Vzyatyshev shows that in this case significantly increases analytical and predictive component activities as you want to track information on the technical and technological innovations, to simulate the behavior of the object, identify risks. Indeed, in these conditions is required to provide an assessment of innovation and predict the conditions of its inclusion in the existing practices of production, ie, engineers need analytical and reflective component of competence.

Showing the mechanism of design activity in the implementation of the project system modifications A. Dobryakov points to the need to analyze the conditions for the inclusion of a modified element to the existing technical and technological object, the ability to choose the most effective embodiment of the upgraded facility to calculate its characteristics and to determine the conditions of its operation. This group defines a generalized skills reconstructive component of a competent engineer.

An important step in implementing innovation is the organization of its technical support that is provided by the organizational component of competence.

Thus, for the implementation of tasks in the design process of innovative character is required to own an innovative component of planning activity, by which we mean the totality of knowledge, skills and personal qualities that enable high quality, the optimum time to ensure the implementation of innovations within the current production problems.

To clarify the structure of innovative design activity component method was used interviews with experts who have experience in the implementation of innovations in the structure of agriculture.

The structure of innovative component design activity includes the following competencies:

• analytical and reflective competence, provides estimates and forecasts; its content is:

• the ability to search for information about technical and technological innovations in the domain design using ICT;

• the ability to simulate the behavior of the embedded object design using CAD;

• ability to assess the efficiency, safety, ergonomics implemented innovation;

• reconstructive competence, providing the design object adaptation to current conditions; its content is:

• diagnostics compliance innovations relevant technical and technological conditions in the workplace;

• the ability to choose the best embodiment of innovation;

• the ability to complement the design documentation guidelines and instructions on operating conditions innovation;

• organizatsionnayakompetentsiya providing optimal timing and quality of the implementation of innovation; its content is:

• ability to organize training of personnel;

• ability to conduct warranty support the implementation and operation of innovation.

Technique of formation of organizational and innovative competence should include the following organizational and pedagogical conditions: appropriate technology instructional design technology engineering design that implements the innovative nature of the problem; inclusion of students in the situation of variable design; organization of educational environment for the active position of the future engineer.

Summary

Changing socio-economic conditions require strengthening the innovation component in the preparation of modern agricultural engineer and therefore revise the content of training. In the training for agricultural engineers in the design process must be enabled innovative component design activity as an additional competence, by which we mean the totality of knowledge, skills and personal qualities that allow to implement the introduction of innovations within the relevant applications. The

structure of innovative component design activity includes analytical and reflective, reconstructive and organizational competence. Formation of innovative component design activity in preparation for the engineering design will provide the level of training, ability to act in terms of innovative development of agribusiness.