EDUCATION SCIENCE

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DESIGN OF THE HIGHER SCHOOL SPECIAL METHODOLOGY ON THE "ELECTRICAL ENGINEERING"

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Abstract

Creation of the special methodology systems are ensuring specialists training of the concrete profile is considered as main section in common work on improvement of educational process in the flame of scientific elaboration of the special methodology of the educational discipline by means of designing intensive didactic systems. This paper materials cover the designing of intensive didactic system, on the example of "Electrical Engineering" discipline for mechanic-bachelor of "Mechanical Engineering" area.

Keywords: didactic system, intensive learning, didactic task, education means.

Engineers in practice encounter two major types of change, namely, changes in the technological content of engineering knowledge and in the context of professional practice. Both circumstances tend to shorten the productive career lifetimes of engineers and thereby reduce the effectiveness of industry. The first type of change, in knowledge content, is predictable with an observable average period of about a decade in most fields.

High degree of knowledge renewal, inculcation of the new forms of information processing and its keeping, a wide employment of all means of the computer and advanced technology arise necessity of the principle changing in

technology of an engineering work as well as in content, forms and methods of the specialists' training, which wile lead to a new style of its thinking formation [1].

Formation of an aptitude for original and creative decision of the whole total combination of the scientific and production tasks in coming specialist is the main problem of theory and methodic of an intensive education system.

Specialists' training content projecting bases upon the principles of an intensive education system [2].

The main requirement of the principle consists in adaptation of content of the specialists' training and methodic of education to purpose and task of a professional training.

Description of requirement to the uncial and individual reference of students, which satisfy the task of their future training on a subject as a whole, together with didactical purpose and content of training forma didactical task, which must be worked out during a training process.

Every didactical task requires for its optimum solution a certain technology, which is formed by three other elements of a pedagogical qualification of teacher or the technical means of training [3].

Learning as the process of solution of didactic tasks

Didactic task is determined as the situation included in the pedagogical system and requiring transfer of the trainee from uncial condition to the given, necessary tasks of learning.

The number of conditions of didactic task includes information subject to learning of scientific contents and their source, learning tasks and purposes (required final condition of trainees), initial condition of trainees, academic-scientific material basis, and organizational side of learning [4].

The didactic system is considered intense if it provides transfer of the trainee from the initial condition of learning to the condition required by the ore, relevant regularities of the cognitive work, as well as if it is staged ascent of the student upon the given trajectory from ignorance to cognition, from inability to ability, first of all, it is realized as the result of its own effort.

The conception of intensive learning recommends the trajectory that can be presented in the form of nine learning stages. They include the interiorized stage too (transfer of action into internal plan, consciousness) proposed by the psycho-pedagogical institute of MSU named after M.V.Lomonosov (P.Y.Galperin, N.F.Talizina and so on).

As far as passing the stages, the level of assimilation of the learned material increases. Passage from the assimilation level corresponding to the given stage to the level of the next stage is realized through the stages of the didactic system. The mentioned means that each of the learning stage can be put in accordance with the assimilation level achieved on each stage, as well as necessary learning means, methods and forms. If this work is implemented then

knowing the required level of assimilation, it is possible to determine the sequence of the learning stages and aggregate of the stage didactic systems corresponding to it i.e., to realize designing of the entire didactic system [5].

The followings serve as the direct basis for development of intensive special methodology of education (figure 1):

-the ore of intensive learning at higher schools;

-concrete science (sciences) for the purpose of learning on which special methodology is developed;

-data imported from the model of future specialist and allowing to install ideal, special and educational meaning of the given discipline [6];

-all previous practice of learning of the discipline;

-designing and formation of the set of education means adequately reflecting the scientific content of the discipline and allowing to realize rational system of education methodology;

-identification of the systematic totality of education forms (sequence of activity types).

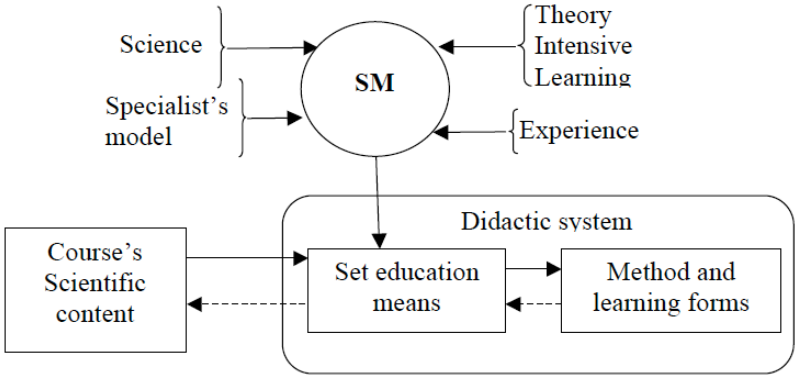

Figure 1. Structure of special methodology for Higher education discipline

In the first we consider the forming method of subject's training goals on educational discipline "Electrical engineering" for the mechanical engineer on specialty "Mechanical engineering".

Carry out the analyses of qualified characterization and taking into account the possibilities of the educational discipline "Electrical Engineering" we can conclude, that the tasks to be decided are directly not the vocational task of the specialist. However, his activity is related with electro technical training. In accordance with the main directions of mechanical engineering technology progress, the mechanical engineer has to decide the problem on automatization of production processes (Figure 2) [7].

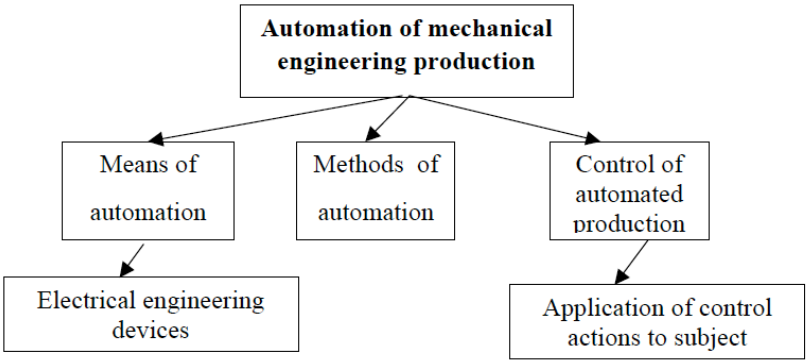

Figure 2. Main components of automation of mechanical engineering production

Consequently, for the given specialty it is possible to choose the narrow-directional training on automatization of production processes, formed by "Electrical engineering", and other training disciplines of the curriculum according to specialty.

Analysis of the field of science and practice to which the discipline "Electrical engineering", belongs, promotes to make known the systems of specialist's activity in necessary volume. Since, during the process of electro technical activity the specialist has to read, mane up sciences and to carry out the calculation of electrical circuits. He must also use the electro technical means of automatization for projecting decision; production process controlling and research work (Figure 3).

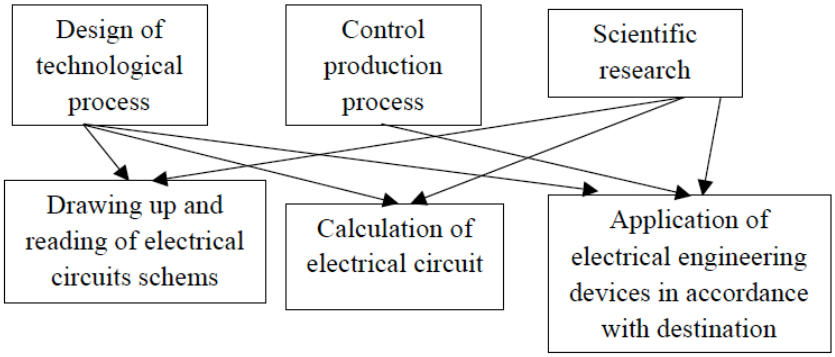

Figure 3. Specialist's required electrical training action field

Analysis of the specialty curriculum and existing working programmers according to educational disciplines, gives the possibility to pick out those educational disciplines, which together with considered one form the contents of narrow directional specialist's training.

The carried out analysis shows, that "Electrical engineering" is the basis discipline for all following educational disciplines.

On the basis of requirement's analysis to the considered educational discipline, it is possible to define its final goal in general. The formulation of final training goal must give brief information about object and processes, which constitutive the subject of considering, and also about main forms of activity with them.

Thus, the training goal of educational discipline "Electrical engineering" is the theoretical and practical training of mechanical engineering in the field of electrical engineering, so that they should choose the necessary types of electro technical devices, be able to operate correctly, jointly with electrical engineers to make the technical task for working out the electrical parts of automatic plants at controlling of controlling of production processes [8].

Determination of subject's training goals to the educational discipline supposes to choose the common typologies of task and the system of skills for their solving. These skills are the components of final training goal of the educational discipline in general form [9].

Let us consider as the special skill "Measurement of the current in the circuit by amperemeter" in the structure of the complicated skill "Investigation of electrical motor conduction". The object of activity is the electrical circuit. The product is the knowledge about the magnitude of current, as the property of the process, taking place in this object (in the circuit). The mean is the device-amperemeter.

Projecting of contents of specialists' training bases upon the principles of an intensive education system. The main requirement of the principle consists in adaptation of content of the specialists' training and methodict of education to purpose and task of a professional training [8]. To the general directions of an intensive training system in the process of work at contents of educational disciplines the following:

-general of conception of intensive training system, which are transformed into the special ones, control a process of work at content of the educational discipline as a whole and by separate phases of this process.

During projecting of the training technology it is worked out the methods and means of training technology it is worked out the methods and means of training, and then, it is established the forms of training within the frame work of which the didactical process can be organized [10].

Conclusion: Subject methodology of higher schools is a special and pedagogical science about regularity of study of a concrete discipline. the main dielectrically tasks of the special method are the followings:

-formation of content of study, it means selection of the scientific material and its transformation into the content of the learning discipline;

-substantiation of the system of methodology of education considering the specifies of content of the subject and regularities of the cognitive teaching targets set before the discipline and providing its achievement on the basis of rational combination of activities of teachers and students;

-designing and formation of the education means adequately reflecting the scientific content of the discipline and allowing to realize rational system of educational methodology;

-identification of the systematic totality of education forms (sequence of activity types).

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