Chapter 3

Competence-Based Approach to Training in the Virtual Educational Environment

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ABSTRACT

Training includes process of the organization, transfer and assimilation of knowledge, skills of activity (Big Soviet Encyclopedia 1970). Educational process (or otherwise, training process) are connected with development of training in time and space and mean consecutive system of actions, it realizing. Traditionally process of training is connected with transfer of knowledge by the teacher to the pupil (or to the trainee). In the course of training since ancient times began to apply various supportive applications promoting acceleration, strengthening of understanding. In modern time process of training became already impossible without use of the computer equipment, and at the first stages involved as auxiliary. It led to emergence of a new paradigm of educational process – electronic education (e-learning) which is realized in the form of remote education. The educational process realized on the basis of the electronic training systems represents purposeful and controlled hard independent work of the trainee who can study in time, convenient for it, having only access to funds of training and to methodical materials. Possibility of contact with the teacher in such systems is, as a rule, conducted by means of e-mails. In this sense, of course, efficiency of a traditional type of training with the teacher in the form of lecture, practical and laboratory researches is more significant. With the reasons of crisis of the higher education of the last time it is covered in discrepancy between opportunities of traditional methods of training and that volume of the actual knowledge which modern society demands from the trained. Therefore the Government of the Russian Federation sees solutions of tasks in development of educational process within an intensification, optimization of educational process and development of electronic education (Development of education 2013). The modern level of development of telecommunication means allows removed trainees to provide access to educational resources of educational institution (remote education). However, at realization of this approach sharply there is a problem of control of the actual knowledge acquired by the trainee. In article it is offered to consider one of forms of a paradigm of electronic education connected with creation of the virtual educational space (VES). Within VOP it is offered to resolve issues of training and control of knowledge at the new level.

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TRAINING PROCESS DECOMPOSITION

Process of training can be treated as process of management of assimilation of knowledge. This process is realized in the closed system and characterized by the purpose of management, has object of management (trainees), a control unit and the channel of feedback (Figure 1). As criterion of quality of management results of control of knowledge can serve.

Decomposition of process of training given on Figure 1 is simplified and formal. In it the set of the factors and features arising in the course of training isn’t considered. However this decomposition allows to formulate the main thesis of this article that control of knowledge is the central link in the course of training. This decomposition reminds elements of schemes of the theory of management (Gaponenko, 2003) when according to the training purpose a control unit (the training trajectory) develops a set of the operating impacts on the trainee in the form of the studied material. Response of the trainee (laboratory works, control points, questions, etc.) on feedback it is transferred to a control unit where as the limiter the control of knowledge (which is carried out training) is and which results allow to correct, as a result, the operating influences for achievement of a certain result (passing of a lecture course, performance of laboratory researches, transfer to the following cycle of training, etc.).

At traditional form of education, control of knowledge is adaptive process when parameters of management can change. For providing an adequate assessment of knowledge and as a result, control, methods of collection of information, processing and the analysis of the answers trained have to be based intellectual approaches. Complexity of a task of the organization of process of training is that it is difficult to formalize this process, difficult to pick up formal parameters which will connect the training purpose, with result meaning the multiple indignations arising during realization of the training trajectory (see Figure 1).

The solution of this task, in our opinion it is possible to find in attraction of modern approaches of Data mining (Duke 2001) where the special attention is paid to the approaches based on knowledge:

- About subject domain of training (it is necessary to have a full set of methodical materials);
- About a training technique (the rule of formation of the operating influences);
- About the trainee (about object of management).

According to Figure 2 determination of current state of process of training will consist in the analysis of the data obtained during the work trained over certain types of works (lectures, consultations, a labo-