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The practice of the analysis of the infrastructure of the information-educational environment based on the cognitive modeling technology

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The informatization of the information-educational environments and centers of automated (remote) training acts as a scientific problem, involves the creation and introduction of new approaches, is achieved due to the use of the means of automation, is directed on the increasing in the efficiency of functioning of their infrastructure and components, causes the need of accounting of many different factors, which relate to the organizational, technical, hardware, software, methodical, personnel, statistical, economic, legal and other support.

The distance education involves the complex of educational services, which are provided to a wide range of differentiated contingent of consumers at the local, regional and world levels by means of use of the traditional, automated or virtual educational environments based on the information and communication technologies, and also the means of automation of the process of training.

The automated training acts as the process of controlled formation of knowledge, including the technological reserves and stages of data processing: the collecting of details for the formation of purposes and tasks, the development of the content of information resources and products in the sphere of education, the monitoring of the condition of the trainee and the means of training, the diagnostics of the individual features and the estimation of the level of residual knowledge of the trainees.

The actual tasks of research include: the revealing of the external and internal factors of influence on the process of functioning of the educational establishment or the information-educational centre; the monitoring of the systematic of work of the divisions of the organizational structure of the educational or scientific establishment; the analysis of the efficiency of functioning of the infrastructure of the automated training system based on the resultativity of the formation of knowledge of the contingent of trainees and the results of the financial-economy activity of the organizational structure; the carrying out of the vertical, horizontal and trend financial analysis of the organizational structure based on the data of the primary registers of the accounting and reporting-documentation; the creation and introduction of the adaptive individually-oriented means and environments of training; the revealing of the physiological, psychological and linguistic factors of influence on the efficiency of information interaction of the subjects and means of training; the modernization of hardware, software and brainware in the basis of the architecture of the adaptive and individually-oriented means of training; the specifics of application of the developed electronic textbook based on the adaptive representation of information fragments processor; the features of development of the procedures of diagnostics of the parameters of the cognitive models in the basis of the applied diagnostic module; the specifics of organization of the testing of the level of residual knowledge of the of contingent of trainee; the selection of the statistical methods of mathematical processing of a posteriori data for the revealing of tendencies and dependences; the development of recommendations on the improving of the infrastructure of the establishment.

The system analysis and the financial analysis are based on the information and system approaches, aggregate the scientific theoretical and practical base for the organizing of an iterative process of research with the subsequent processing of a posteriori data.

As the information basis for the organizing and realizing of the complex analysis of the information-educational environment and the automated training system are used the data about the academic-performance and testing of the individual features of trainees, and also the primary reporting documents and registers with the facts of financial-economy activity of the educational establishment or the information centre.

The developed cognitive modeling technology directly provides the complex system analysis of the object of research in the environment of its functioning (considers its use for the financial analysis of the enterprise), includes the previously formed set of the cognitive models, techniques and algorithms, having the scientific justification in the context of the different subject areas.

The cognitive model represents the (re)constructed (in width and depth) repertoire of parameters, echeloned on a set of portraits and stratified on a row of sets, located at two levels of the allocated hierarchy: the first level – the kinds of properties and properties; the second level – the vectors of parameter and parameters.

The cognitive modeling technology realizes: the system analysis of the information-educational environment – includes the technique of its use, the algorithm of formation of the structure of the cognitive model, the techniques of research of the parameters of the cognitive models, the cognitive models of the subject and means of training, the algorithm of processing of a posteriori data of the (automated) testing; the financial analysis of the organizational structure of the enterprise – aggregates the technique of formation of the normative and information base of the financial analysis, the technique of formation of the working plan of accounts, the technique of formation of the model of accounting, the techniques of carrying out of the vertical, horizontal and trend financial analysis based on the primary registers of accounting and the accounting politics.

The practical use of the cognitive modeling technology showed the relatedness of the system technical and the financial economic analysis, its potential possibility of application for the realization of the analysis of an arbitrary object, process or phenomenon in the different subject areas and problem environments: the infrastructure of the information-educational environment, the information interaction of the subjects and means of training in the automated training system, the influence of diverse factors on the efficiency and resultativity of the process of formation of knowledge of the trainees.

Since 2003 y. in the course of scientific-research work it was possible to personally systematize a posteriori data and to form the apparatus of the cognitive modeling technology: it was prepared the dissertation and the report on SRW (2006 y.), the monography “The features of evolution of the theory of information and information technologies on a threshold of the XXIst century” and the monography “The environment of automated training with the properties of adaptation based on the cognitive models” (2005 y.). The apparatus of technology and mathematical processing of data using the statistical methods allows to obtain the equations of multiple regression and the graphs of functions, reflecting the degree of contribution of the factors into the dependent variables.