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THE FEATURES OF THE PROGRAM REALIZATION OF THE LABORATORY PRACTICAL WORK FOR THE AUTOMATED TRAINING SYSTEM WITH THE PROPERTIES OF ADAPTATION BASED ON THE COGNITIVE MODELS

The information-educational environment of the modern educational establishment includes the automated training system, which is based on the block-modular principle for the realization of (re)combining of the various functions depending on the needs of the final user and is formed as an integral set of the different independent components: the electronic textbook, the diagnostic modules, and also the rectory, the dean's office, the laboratory workshop, the electronic library and other different modules.

The author proposes the automated training system with the properties of adaptation based on the parametric cognitive models block, which includes the adaptive electronic textbook and diagnostic modules.

The electronic textbook based on the adaptive representation of information fragments processor realizes the individually-oriented generation of sequence of the information fragments, each of which reflects content of section, subsection, module and paragraph according to the information model of the subject of studying in the basis of the information scheme of database.

The basic diagnostic module realizes the diagnostics of the level of residual knowledge of the contingent of trainees by means of a set of tests on the subject of studying.

The applied diagnostic module directly provides the automation of research of the physiological, psychological, linguistic and other individual features of “personality” of the contingent of trainees.

The laboratory workshop directly combines the functions of the electronic textbook and the basic diagnostic module in the basis of the innovative automated training system, at the same time it supporting the work in the different modes: the administrating of parameters of the accounts of users, the administrating of parameters of the cognitive model of the means of training, the administrating of parameters of the cognitive model of the subject of training, the administrating of parameters of the subjects of studying, the administrating of parameters of the methods of testing of the level of residual knowledge of the trainees, the administrating of a posteriori data of testing of the level of residual knowledge of the contingent of trainees, the mode of (adaptive) training, the mode of current and final testing of the trainees, the mode of analysis of a posteriori data.

In the mode of administrating of the parameters of accounts of the users it is provided the displaying and modification of the codifier and name of group (the indicator of group), L.F.P., age, password, the gender of user (the indicator of user), the name of localization and the method of research, the date and time of testing of the level of residual knowledge of the examinee.

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In the modes of analysis and administrating of a posteriori data of testing of the level of residual knowledge of the contingent of trainees, the quantity of correct and incorrect answers, the level of knowledge on a rough scale and the estimation of knowledge on an exact scale, the sum of points and penalty points (the indicator of data) are displayed.

The mode of administrating of the parameters of the cognitive model of the subject of training the possibility of displaying and modifying of the parameters is provided: **the physiological portrait** – the various anomalies of perception of the space and the anomaly of color vision; **the psychological portrait** – the convergent and divergent intellectual abilities, the learning-ability and the cognitive styles; **the linguistic portrait** – the level of proficiency in the language of statement, the level of proficiency in the elements of interface and the level of proficiency in the dictionary of terms.

In the mode of administrating of the parameters of the cognitive model of the means of training the possibility of displaying and modifying of the parameters is provided: **the physiological portrait** – the type (typeface), the color of background and its combinations, the name, the size and the color of font, the color scheme of displaying for the trichromats, the complete and partial protanops, deuteranops and tritanops; **the psychological portrait** – the type of information (text, table, flat or volumetric scheme and audio-stream), the style (the complete or detailed, the automatic or manual switching of information fragments, the constant or variable type of information, the deep or surface concretization, the difficult or easy set of terms and the wide or narrow set of terms), the speed of displaying of information fragments and the additional parameters of displaying of the information fragments in the mode of adaptive training; **the linguistic portrait** – the level of statement in the information fragments, a set of the elements of interface and a set of keywords and definitions of the cognitive model of the means of training (the indicator of extended a posteriori data).

In the mode of administrating of the parameters of the subjects of studying it is provided the possibility of displaying and modifying of the codifier and the name of section, the status of activity of the displaying of the description of section (the tab "Section"), the codifier and the name of module, the status of activity of the description of module (the tab "Module").

In the mode of administrating of the parameters of information fragment it is provided the possibility of displaying and changing of the codifier and the name of practical task (the indicator of practical task), the codifier and the name of section (the indicator of section), the codifier and the name of module (the indicator of module), and also on the tab "Practical task" – the codifier and the period of displaying of the information fragment, the type of information by default, the textual content of information fragment, the graphical content of information fragment for the trichromats, for the complete and partial protanops, deuteranops and tritanops.

In the mode of administrating of the parameters of the methods of testing of the level of residual knowledge of the trainees on the tab "Questions" are displayed and modified: the textual content of question (the indicator of question), the graphical content of question for the trichromats, for the complete or partial dichromats (the indicator of graphical image of the formulation of question), the type of content and the interval of time of the displaying of question (the indicator of the parameters

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of question), the textual content of the variants of answer and the sign of correctness (the indicator of the variants of answer), the graphical content of the variants of answer on the question for trichromats and the complete or partial dichromats (the indicator of the graphical content of formulations of the variant of answer), the quantity, the type of content, the way of selection and displaying of the variants of answer (the indicator of the parameters of variants), the status of activity and the text of explanation (the indicator of explanation).

In the mode of (adaptive) training the individually-oriented generation of training influences is realized based on the adaptive representation of information fragments processor, the parametrical cognitive models block and the semantic model of saving and extracting of data.

In the mode of current and final testing of the trainees the diagnostics of the level of residual knowledge of the contingent of trainees based on tests is realized.

The principle of functioning of the laboratory workshop includes two bases: the declarative – the interfaces for the users of different categories and the infological schemes of databases; the production – the computing kernel or the computing processor, modules, algorithms and procedures of input, output, processing, displaying, saving and extracting of different data.

The module of control of the access to database realizes the compatibility on code and data, the verification of input data with the exclusion of repetitions at the level of the structures of data taking into account the information scheme of database, includes the procedures of control of the access to the tables of database on the machine carrier, the procedure of verification of the parameters of the mechanism of access to data BDE and the procedure of interaction of the program with the drivers ODBC.

For the realization of saving and extracting of the information in the form of data developed: the database with the accounts of users, the database of the subjects of studying, the database with tests on the subjects of studying, the database of the parametrical cognitive models block (it is allowed the setting of the parameters of the cognitive model of the means of training by default) and the database with the results of testing of the level of residual knowledge of the trainees.

The program realization of the laboratory workshop as the additional module of the automated training system with the properties of adaptation based on the cognitive models is carried out under my leadership in the course of the diploma projecting of Bocharova L.N. in the integrated environment of object-oriented programming Borland C++ Builder in the language C++.

The development is intended for the automation of training, diagnostics and monitoring in the context of the applied tasks of the system analysis and the increasing in the efficiency of functioning of the information-educational environment.

The results of scientific-research work and dissertation are presented in the report on SRW for 2003-2005 y. “The research of the environment of automated training with the properties of adaptation based on the cognitive models”, in the report on SRW for 2006-2008 y. “The research of the information environment of automated training with the properties of adaptation based on the cognitive models and the financial analysis of the organization by means of the cognitive modeling technology” and in the monography The environment of automated training with the properties of adaptation based on the cognitive models (dep. in “RAS”, 2007 y.).