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THE ADAPTIVE MEANS OF TRAINING  
IN THE AUTOMATED EDUCATIONAL ENVIRONMENT  
BASED ON THE PARAMETRICAL COGNITIVE MODELS BLOCK

The creation of the structure of the information-educational environment of the automated (remote) training system with the properties of adaptation based on the cognitive models is the complex scientific problem, initiating the entering of changes into the organization (the complex of additional actions) and the technology of training (the modification of the principles of functioning of the main components), and also the development of the parametrical cognitive models block, the cognitive modeling technology and the complex of programs for the automation of research.

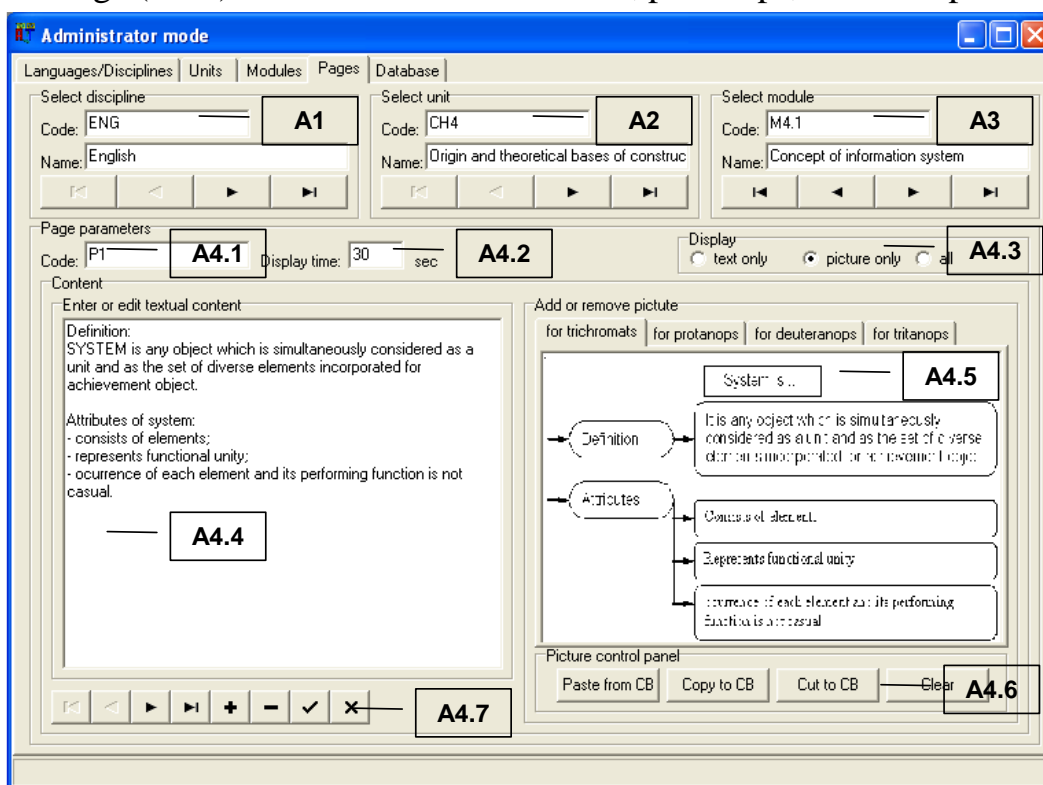
The developed complex of programs for the tasks of research of the information environment of the automated (remote) training system with the properties of adaptation based on the parametrical cognitive models block includes: the adaptive means of training (the electronic textbook) – provides the individually-oriented generation of the information-educational influences of various type taking into account the individual features of personality of the subjects of training; the basic diagnostic module – provides the automation of testing of the level of residual knowledge of the contingent of trainees; the applied diagnostic module – realizes the automated diagnostics of parameters of the cognitive model of the subject of training, which reflects the individual features of personality of the subjects of training.

The adaptive means of training acts as a key component of the information-educational environment of the automated training system, operates on the basis of the adaptive representation of information fragments processor, provides the loading of information by means of the semantic model of discipline and the processing of values of the parameters of CM of the subject of training and the means of training for the formation of the individually-oriented educational influences.

The principle of functioning of the adaptive means of training involves the saving of previously structured information as the first-form of aggregate of knowledge on a set of disciplines, which is further used in the content of interface forms at the work of user in the various modes of functioning of the program (the administrating of accounts in the database of users, the modification of parameters in the database with the subject content and the adaptive training).

At the work of user in the mode of administrating for the modification of parameters of the semantic model of discipline it is possible to select and change the parameters of language of statement of the material, the name and description of discipline, and also the sections and their parameters, changes the parameters of modules (paragraphs) and elementary pages.

The setting of parameters of the information fragment of a certain page is performed as follows: it is selected from the formed list of discipline (A1), section (A2), module (A3), and then a new page is added or modifying the parameters of the existing page: identifier (A4.1); the interval of display by default (A4.2); the displayed elements (A4.3): text, graphic image, all; the textual content (A4.4); the graphic image (A4.5) for the normal trichromates, protanops, deuteranops and tritanops.



Pic. 1. The interface form of the adaptive means of training in the mode of administrating of the content of discipline

The direct control of the generation of educational influences by the various ways adequately to the individual features of personality of the subjects of training provides the adaptive representation of information fragments processor, reflecting the main and additional part of the content of the discipline.

The structure of the adaptive representation of information fragments processor includes three modules providing respectively the control of processing of the physiological, psychological and linguistic parameters of the cognitive models of the subject and means of training for the providing of the individually-oriented generation of educational influences to the contingent of trainees.

The module of control of processing of the physiological parameters of the cognitive models includes:

- the procedure of processing of the parameters of sensory perception of the information by the subject of training – the algorithm of analysis of the parameters of the visual sensory system, the algorithm of accounting of the anomalies of perception of space (acuity of vision and field of vision), the algorithm of accounting of the anomalies of color-perception; the algorithm of analysis of the parameters of auditory sensory system, the algorithm of accounting of the anomalies of perception of the sound;
- the procedure of processing of the parameters of representation of the information by the means of training – the algorithm of analysis of the parameters of visual representation of the information by the means of training, the algorithm of analysis of the parameters of sound representation of the information.

Set the parameters of the background and font (type, size and headset), the color scheme (for trichromats, protanops, deuteranops and tritanops), volume, timbre and type of sound flow (the sound scheme).

The module of control of processing of the linguistic parameters of the cognitive models comprises:

- the procedure of accounting of the level of understanding of the content of information fragments – the algorithm of accounting of the level of proficiency in language, the algorithm of accounting of the level of understanding of the dictionary of terms and definitions, the algorithm of accounting of the level of proficiency of the elements of interface of the program;
- the procedure of accounting of the level of statement of the information by the means of training – the algorithm of output of the list of levels of statement of the information (material), the algorithm of output of a set of used terms and definitions, the algorithm of output of a set of used elements in the basis of the interface of program.

At the same time it is provided to set the level of statement of the material (the information), a set of terms and definitions and a set of elements in the basis of the interface of program for the concrete category of users.

The module of control of processing of the psychological parameters of the cognitive models aggregates:

- the procedure of accounting of the speed of presentation of the information by the means of training – the algorithm of calculation of the speed of presentation of the information fragments;
- the procedure of accounting of the additional possibilities of the means of training – the algorithm of selection of the additional parameters of representation of the information;
- the procedure of accounting of the kind of learning-ability – the algorithm of detecting of the predisposition of the subject of training to the implicit or explicit learning-ability;
- the procedure of accounting of the level of intellectual abilities – the algorithm of analysis of the convergent abilities and the algorithm of analysis of the divergent abilities of the subject of training;
- the procedure of accounting of the way of presentation of the information – the algorithm of selection of the kind of presentation of the information fragments by the means of training;
- the procedure of accounting of the cognitive styles of trainee – the algorithm of revealing of the cognitive styles of information processing by the subject of training, the algorithm of selection of the style of presentation of the information by the means of training.

It is reached the setting up of the speed of presentation of the information fragments, the additional parameters, the kind of presentation of the information fragments, the style of presentation of the information fragments by the means of training.