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THE WORKING DEMONSTRATION PROTOTYPE OF THE EXPERT SYSTEM OF TRAINING AS THE PEDAGOGICAL PROGRAM-DIAGNOSING MEANS

The changing of the economic and social formations of society has set the task of revising of the structure and content of education as a whole. At the same time, the informatization (computerization) of society is gaining more and more scales (the intensification of growth). In these conditions the informatics and information technologies (IT) play the important role in the modern human culture and the professional activity in particular (by the branches and spheres).

The modern specialist is inconceivable without the active proficiency in the methods and means of informatics and he can not be prepared without the systematic use of ECM in the learning process.

The informatization of education realizes the complex of measures, directed on the improving of the level of preparation of the specialists by the way of the expanding of the sphere of (practical) use of the calculating technics and computer technologies in the learning and scientific-research work, the management of learning process, creates the additional (expanded) possibilities for the stimulating of the creative thinking at the students, increases the significance of their self-dependent work, simplifies the control and self-control (computer), at the same time increasing the level of individual work of the teacher, changing the relationship between the intellectual and routine components in the learning work (the professional activity).

The computer technology of training – is a set of methods, forms and means of influencing on the person in the process of his development (training), with the using of the means of calculating technics (automation). The training technology involves the use of the adequate ways of representing and assimilating of the various kinds of knowledge (by the different areas) with the help of the modern computer technics (the information technologies).

The many-years researches in the area of artificial intelligence have made it possible to distinguish the self-dependent direction: the expert systems (Expert Systems) or the knowledge-based systems (Knowledge Based Systems) (the engineering of knowledge).

The expert training systems provide the achievement of pedagogical purposes in the process of functioning (working) based on the bases of accumulated expert knowledge by the subject areas, play the significant role in the problem training (by the subject areas), which allows to activate the cogitative activity of the trainees, forces them to find the right decisions (results and conclusions) taking into account the set (existing) requirements and restrictions (tasks). The building of the knowledge-based systems is based on the modeling of dialogue consisting of the chain of the question-answers structures (the tasks of test) and the subsequent analysis of (a posteriori) results of the examinee.

For the realization of the program product (prototype) it was used the object-oriented paradigm in RAD (Rapid application development)-environment of programming Borland C++ Builder on the language of high level C++, providing the high speed of visual development of the program, the productivity of repeated use of the (non)visual components, the wide set of capabilities in the combination with the newest (innovative) technological solutions in the area of the new information technologies and programming.

Thus, it was obtained the demonstration prototype – the program-diagnosing module with the elements of explanation, the structure of which includes the various three levels of the hierarchy: the interface, the level of kernel and the interfacing with the environment of functioning.

The first level (interface) is represented by the two components: the interface of user – provides the interaction with the user in the real scale of time RTS (Real time system); the intellectual editor of knowledge base – allows to set the parameters of the algorithm of diagnostics, to fill (to modify) by the expert knowledge.

The second level includes the following components: dialog – supports the interaction between the levels of kernel and interface, explanatory – in case of incorrect answer of the examinee (trainee) forms and displays the content of clarification (explanation), working memory – it is used for the storing of data of the intermediate calculations, knowledge base – contains the structured data (knowledge) by the subject areas (it is provided the switching of existing and the connection of new knowledge bases), solver – models the course of reasoning of the expert on the basis of knowledge (available in the certain knowledge (data) base), provides the control of work of the system (the operating module).

The third level (interfacing) – is intended for the interaction with the external environment and includes the technical means (for example, the network adapters of the equipment of the transmission of data).

The application of the fast prototyping technology made it possible to form the simplified (experimental) samples of knowledge bases by the several subject areas (the foreign languages – the English language, SLA – the hazardous chemical substances, psychodiagnostics – the testing of the analytical thinking by the technique of Miller N.E.).

The prototype can be operated in the three various modes: administration, diagnostics and (adaptive) training. In the mode of administrating of the program is envisaged the objective possibility of filling of the knowledge (data) bases by the subject areas and the setting of the parameters of diagnostics (the setting of the type of selector, the summary quantity of the displayed variants of answer and the indicating of the correct variants among the listed, the weight coefficients, the time limit on the answer, the reproduction of the multimedia file, the modification of the adjusted scales of the levels of knowledge and estimations of knowledge). The scale of the level of knowledge – it is connected with the quantity of the correct answers,- allows to specify the necessary quantity of the levels of knowledge (with the specification of the name and nominal value of the summary weight coefficient for the each level of knowledge); if the examinee answers correctly to the certain quantity of questions, it is reached the SWC, then he is assigned the level of residual knowledge specified in the name (the information field of database). The scale of estimations – is connected with the nominal value of the weight coefficient of the each correct variant of answer,- allows to specify the quantity of estimations of knowledge (the names and nominal values of the summary weight coefficient), if the examinee (trainee) gains the sum of points equal to SWC, then he is rated the estimation with the preliminary determined name. The mode of diagnostics is intended for the analysis of the knowledge of the examinee by the subject area taking into account the formed algorithm of diagnostics in the mode of administrating (the given nominal values of parameter). The mode of (adaptive) training provides the selection of the algorithm of training (the normal mode, the mode of 25 frame and the combined mode) and the selection of the way of the control of display (manual and automatic).

The artificial competence (the artificial intelligence) can not yet to replace completely the human reasoning (thinking), as in the area of creative activity the people have the great abilities and capabilities compared with the most "smart" systems (of artificial intelligence). Nevertheless, the main component of the vector of purposeful direction at the development of these (program) systems is the complete replacement of the natural intellectual abilities of the (model of) person.