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Expert systems in the educational process

Olga Seidykh, Svetlana Makovetska

National University of Food Techologies

olgased@ukr.net

Introduction. The concept of the educational environment in the modern pedagogical science has acquired a new status in connection with information technology (IT) and new means of information exchange. Some scholars derive it from the concept of gaining knowledge in education process, developed within the constructivist cognitive science. According to this direction, learning is an active process aimed at obtaining and constructing knowledge, rather than simply "copying" it. Learning in this aspect plays a role rather as support of constructive efforts of the student than just the transfer of knowledge from teacher to student. The basis for such education can be didactic model of information space of educational institution, both traditional and virtual, constructed by the computer network tools (both software and hardware). Presentation of the learning environment as a single information and educational space that includes distributed databases, virtual libraries, electronic tutorials, virtual classes, e-learning platforms and portals is becoming increasingly recognized.

Materials and methods. The last decades of intensive development of Informatics as a science characterized by the creation of innovative tools of information processing, which initiates the formation of promising educational technologies, focused on the intellectual development of the student. One of the main areas of advanced use of IT tools in education are the expert educational systems.

The idea of the development and application of expert educational systems is based on the realization of the potential of expert systems – artificial intelligence systems that use knowledge from a rather narrow subject area. Conventionally, expert systems are divided into two groups: the first uses judgments based on probabilistic concepts; the second – on the strict logic. According to the educational functions, which must implement expert learning system, it is expedient to use the possibilities of the second group of expert systems. According to the educational functions, which must be implemented by the expert educational systems, it is expedient to use the possibilities of the second group of expert systems. Thus the expert educational system should provide a response to the request of the student and resolve problems from a particular subject area. As a means of knowledge representation, expert educational system organizes the dialogue between the user and the system that is able to explain the course of the judgment while solving particular learning tasks in a form that is understandable to the user.

Results. Expert educational systems contain the following main blocks: the knowledge base, the body of knowledge about the subject area and the ways of solving problems, written in a form that is understandable to non-specialists in programming; the machine inference, which, using information from the knowledge base, generates recommendations for the solution of the problem; the user interface unit designed for interfacing the expert system with the user through which the system requests the required data, and outputs the result.

Conclusions. The expert educational system has the ability to provide an explanation with the progress of logical judgments in solving problems of the studied subject area in dialog support of the solution process; to control the level of knowledge, abilities and skills with the diagnostic of errors by learning outcomes and the assessment of the reliability of the control; the automation of control process by the system as a whole. Targeting the student to independent work, expert educational system initiates the development of the process of cognitive activity, increases motivation of learning through variability of self-employment, self-control and self-correction capabilities.

References

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KEY WORDS

Expert educational system, knowledge base

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