Functioning of Control Module of Learning Materials

Shahnaz N. Shahbazova

Abstract The work presents the results of practical realization of database and methods. These results are the basic main element on which the work was done to determine the practical efficiency of application intelligent systems in learning process.

Keywords Artificial neural networks · Technical solutions · Fuzzy logic · Imitation of knowledge control procedures · Expert systems · Complex systems · Imitation of learning function · Decision making · Cybernetic simulation

1 Introduction

The learning system is in the constant development and advancing the methods of teaching, and knowledge control is the strategic task of almost all countries in the world. The existing reality demands constant increasing of qualification from the modern man and therefore relatively increases demands to available and effective learning system of education. One of the most perspective and reliable method is distant education [1].

The numerous system of distant education was designed, which is working perfectly on the base of traditional institutions of high and special education. However, they present itself as a development of informatization of traditional method of teaching, whereas connection of "teacher–student group" is translated to the virtual plane.

The big attention should be paid to the system of knowledge control where in majority it has existing system that was realized in the form of usual subprogram of testing.

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In this work, special meaning was used on the mechanism of knowledge control and methods of its advancing, and it is one of the significant modules of teaching system. For example, models of conducting full cycle of teaching system with the minimum or completely without teacher's participation were developed on its basis.

2 The Principles of Presenting in the System of Information Resources and Functioning of Block Management of Teaching Materials

The presentation of information resources in automatization environment is the important implied task from the selected methods of decision where it depends on the flexibility and efficiency of functioning of the last product. Developed model of automatization educational system is aimed for the use in distributed environments of educational institutions, and the main users will be teachers and students with different levels of computer skills [2]. As the main distributors of informational materials, the teachers have a burden of intellectual analysis of learning materials with the purpose of dividing them on the maximum possible quantity of connecting teaching fragments [3, 4].

Resulted in the end numerous teaching pieces present itself as an initial step of translation of teaching materials in format necessary for the automatization system. As the automatization methods of intellectual analysis of educational materials are quite limited, the experts have a main burden [5]. The process of filing with teaching materials is illustrated in Fig. 1.

Learning materials management is conducted in 5 steps. The first step—layout of learning materials into minimum meaning fragments (Fig. 2) [6–8].

The second step—composing numerous questions determining the definition of learning fragments (Fig. 3) [9].

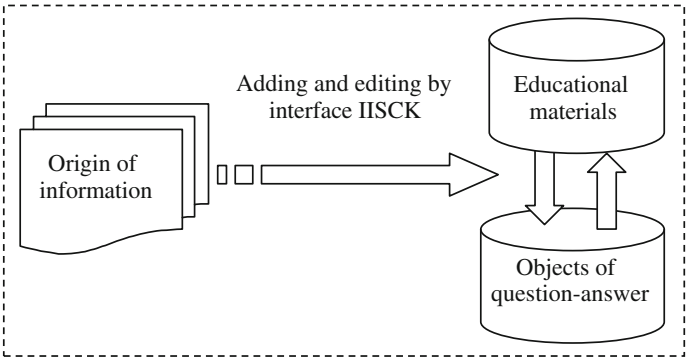

Fig. 1 The process of filing with learning materials

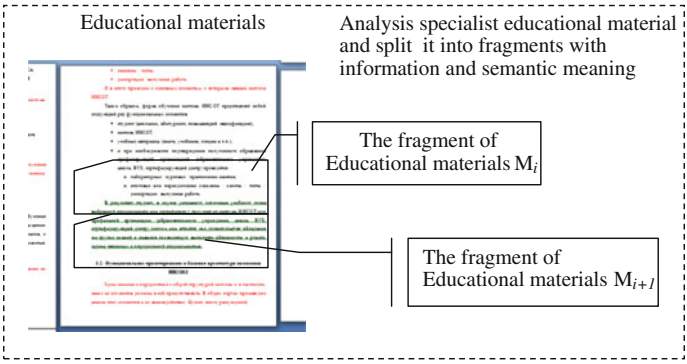

Fig. 2 Layout of teaching materials into minimum meaning fragments

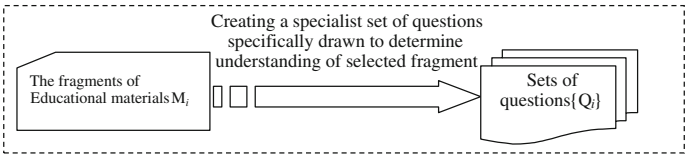

Fig. 3 Composing numerous questions determining the definition of learning fragments

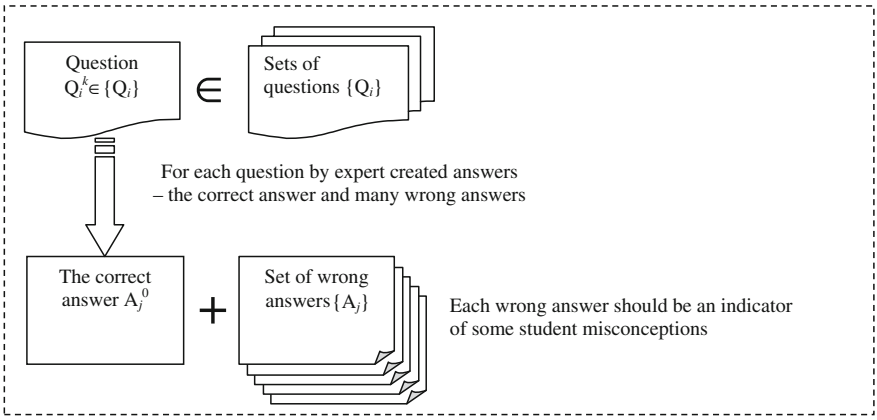

Fig. 4 Composing numerous wrong responses determining lack of understanding of learning material

The third step—composing numerous wrong responses determining lack of understanding of educational material (Fig. 4) [10].

The fourth step—creation of signs of wrong responses to the concrete pieces of learning material [11] (Fig. 5).

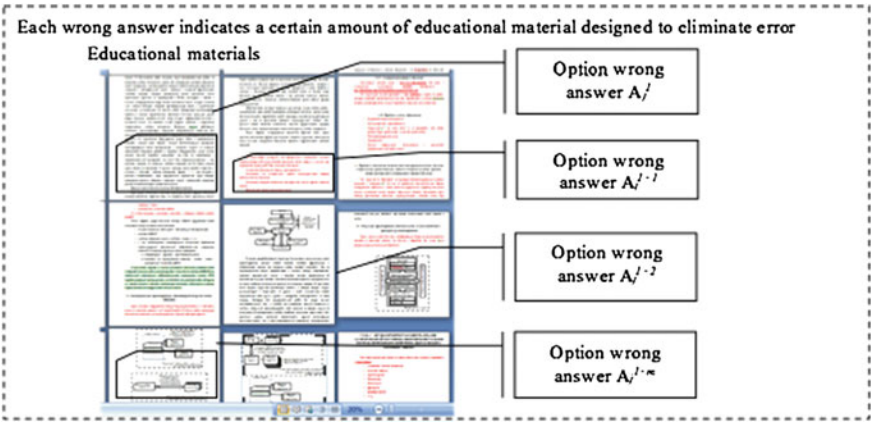

Fig. 5 Creation of signs of wrong responses to the concrete fragments of learning material

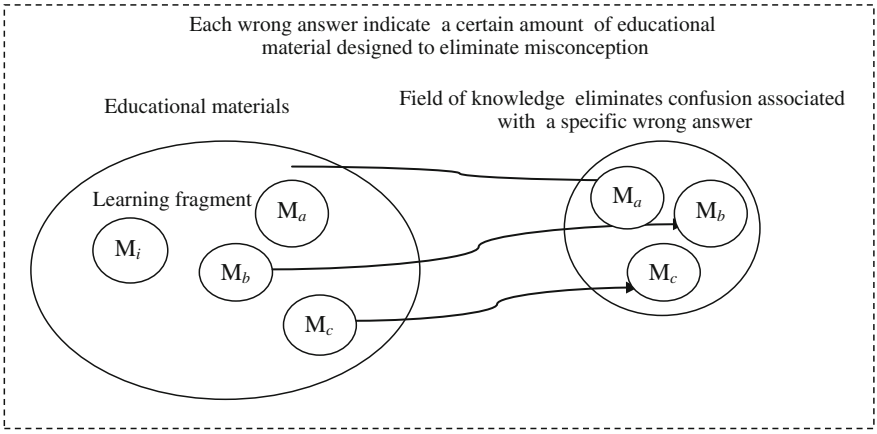

Fig. 6 Merging of numerous learning pieces in the knowledge volume eliminating concrete delusions

The fifth step—merging of numerous learning fragments in the knowledge volume eliminating concrete delusions [12] (Fig. 6).

The basis of knowledge system of student is the method of formalization of teaching process. Learning material, which is devoted to the some field of science and technology, is divided into the certain logically connected groups of learning courses [13, 14]:

- Multitude learning material
  - Learning course ∈ learning material
    - Multitude question–answer ∈ learning course

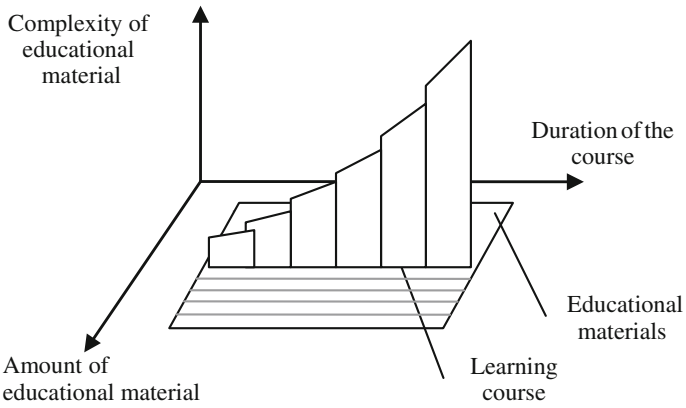

Fig. 7 Tripled presentation of learning system and testing

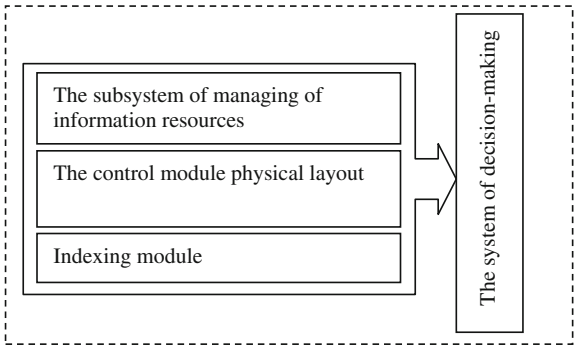

Fig. 8 General model of functioning of learning databases

Multitude of learning materials (Ω) consist of submultitudes of learning courses (ω) and present complex field of crossed submultitudes.

Multitude of learning course (ω) consists of learning materials which might be described as chapters of relevant courses (Figs. 7, 8) [15, 16].

Knowledge control system is one of the main modules where the general achievement of research work is depending on as all other modules itself are relied on the results given by this current module.

With the practical viewpoint, the process of knowledge control leads to the questioning of students with the purpose of establishing their knowledge and skills in the field of tested subject [17, 18].

One of the more effective and qualified knowledge controls is willing to perform only teacher of relevant subjects. Therefore, selection as etalon system of teacher's behavior is more reasonable.

The analyses of teacher's behavior while performing the process of knowledge control determine the limited application of automatization system in the field of

knowledge control of learning discipline, whereas the clear definition of right answers is possible [19, 20].

3 Conclusion

These results are the basic main element on which the work was done to determine the practical efficiency of application intelligent systems in the learning process. Presented in the paper, research work allows to make several statements which might be formulated as a complex of models and methods capable to undertake the function of complete intellectual complex of existing function of teaching and the process of knowledge control with the minimum participation of teacher and profiling educational institutions.

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