Decision Support system in modern education

DANIMIR MANDIC
Informatics and didactic
University of Belgrade
Faculty of Teacher Training
SERBIA

NADA VILOTIEVIC
University of Belgrade
Faculty of Teacher Training
SERBIA

IVKO NIKOLIC
Arandjelovac
SERBIA

danimir.mandic@uf.bg.ac.rs  http://www.uf.bg.ac.rs

Abstract:
In a society that is changing schools must not remain the same. It should not just follow the changes in the scientific, technical, technological, artistic and other than being a development momentum wheel that drives forward the whole environment. But most modern educational system, even the most developed ones, has failed to achieve this requirement... All serious analysts believe that the cause of the inertia of educational systems that are not adapted to the rapid scientific and technical and technological changes. Decision support system in education requires particular educated leaders. Managing innovations is very complex, because of teacher’s resistance that occurs due to insufficient capability and inadequate equipment in schools. Development of information technology and constantly innovating educational technology causes changes in the methods and forms of teaching and organization that would be optimal in the era of mass application of Internet and electronic sources of knowledge. Education, as a rule, slowly opens the new technologies in relation to production, transport, services. et al. However, young people at home and out of school live in a technologically rich environment expected changes in education in accordance with the imperatives of education for 21 century.

Key-Words: Decision support system, Innovation, Educational software

1. Introduction
Education is a relatively independent area associated with science and material production. It should reflect the changes taking place in manufacturing, technology and science, too, and be an active factor in the changes that will affect the acceleration of scientific-technological revolution, together with material production and science, affect the functioning of the mechanism of scientific technological revolution as a whole. If we start from Toffler thinks that modern education is defined as a change, then we come to the inevitable requirement that the school in all its segments changes and innovates. Innovation is not introduced randomly. They should be planned, each devised a plan prepared by a series of decisions. It is planned to be achieved, and the whole process should be managed. Good ideas and concepts can be successfully achieved if the process is well managed. Management means not only the conduct of business, but also organize the work process, and streamlining the development of an organization. Management is making key strategic decisions
aimed at achieving the set goals. These strategic decisions are implemented leadership - through the exercise of decision making and operational character. [2] Therefore, we believe that the administration and management are two different but mutually complementing process. The first is strategic, and other operational nature. The contemporary theory of management (management of the term) does not indicate the category management as a parallel control, but there is a business management as a management phase. We created Web portal for school managers with more than 300 documents for research and there is Decision support system to help them in analyzing results.

Software is based on multivariate analyze key factors to determinate success in changes comparing them with a parallel group that did not make any changes in educational work. It is iterative and ever-changing process [6]

2. Innovations in teaching

First steps in changes are recommended in internal organization of education. Only in the last ten years with the mass use of computers in schools has created the prerequisites for quality educational technology innovation. Multimedia applications designed for personal computers offer the ability to create electronic books with text, pictures, sound and animation films so that students can independently progress in mastering instructional content, to return to the contents that they are not sufficiently clear, and to obtain additional feedback according with their abilities and interests. Interactivity and the quality of the material presented with the use of multimedia and hyper text gives much richer in content compared with the instruction that occurs in traditional classrooms.

Development of telecommunications technology and the massive use of Internet enabled interactive distance learning based on the systematic approach to using electronic media sources of information. The development of personal computers in last ten years, experienced a significant rise, so that the processor speed increased up to hundred times the capacity of main memory and peripheral configuration of the standard was increased at least ten times, and are perfected and peripheral devices.
Improvement of operating systems to concentrate the work of the users of the system, so that a large number of institutions, especially the faculties and schools, instead of large computer systems, their computer networks based on multimedia personal computers. [7] Permanent Internet connection provides the traditional manner using telecommunications media, but in the last two years of intensive work on the use of cellular communication link, which will provide a connection to the sources of information in any location using a portable computer. Using voice recognition software and manuscripts is expected to become a secondary device keypad and a microphone and an electronic device to become primary. Using new technology education becomes accessible to a wider circle of people interested in permanent improvement in their activities. Information Technology in Education provides opportunities for the use of new teaching methods and a new organization which would continue the shortcomings of traditional teaching awareness could limit the tolerance. [6]

School media file helps teacher to programme, with the assistance of media operator, and use more teaching aids during one school lesson or during one work day, to make teaching visual, contents to be more interesting, adjusted to previous knowledge and abilities of pupils. It can be concluded from numerous research results, which will be mentioned later, that effects in teaching where auditive perception is dominant are about 20%, while audiovisual perception and motor activity give effects up to 90%. We can conclude from these results that effects are higher if more senses are engaged in the teaching process. Whether more or less senses will be engaged in teaching process considerably depends on adequate selection of teaching aids and their skilled pedagogical application. Aware of the fact many teachers decide to use teaching aids on multimedia base, supported by school media file. In these conditions teachers do not have any irrational oppositions towards modern education technology and innovations provided by it. Thingking that teacher oppose to innovations is correct only when teachers do not know pedagogical meaning of certain innovations, when they are not trained for their application and when they can not apply them successfully. Equipping schools with suitable teaching aids, choice of those are estimated as most effective for teaching, their pedagogical-methodical justification, reasonable use in all phases and forms of teaching, contribute to motivation of pupils in the process of learning, directs attention to essential contents, help in acquiring permanent knowledge and that they should be used in the process of gaining new knowledges and in everyday work. That is why all the countries of the world have scientifically based standard for teaching aids for primary, secondary schools and universities.

Fig. 4 Multimedia classroom at Teachers Training faculty in Belgrade

Classrooms and the classical forms of work are not sticking, but adds a new technology that integrates the positive elements of traditional technologies by changing the position of students and teachers in order to increase students' active participation and constant monitoring of his progress. [5]

3. Essence of educational technology

Educational technology, as we understand it, includes knowing pupils, definition of aims of their education, precise stating of possible teaching organization, planning education contents, choice of forms, methods and teaching aids, fixing teachers and pupils position in teaching and evaluation of the achieved teaching and learning results. From what we had indicated it followis that educational technology is a process which is directed towards realization of education aims and therefor includes people (teachers, pupils, associates), ideas, organisation, teaching bases, aids, forms and methods of work, as well as procedures and means for evaluation of what had been realized during the
education process. Technology od education includes organisation, realization and verification of teaching and learning process. For that reason technology is essential factor of teaching and learning, not technique or aid used by teacher. [7]

One of key factors which contributes to successful education is knowing pupils, ther personality structures, learning styles, suitability for certain kind of school, problems and difficulties in behaviour and learning, special advantages (being talented and being exceptionally talented) and evident defects (invalidity, neurosis, having poor vision, phobias). Who had decided to be a teacher must try, as much as possible, to know pupils with whom he cooperates and whom he should educate.

Each activity, specially pedagogical, starts from the point of what should be realized. In the process of defining aims of education and teaching, care is taken, as precise as possible, to define general aim of education and work out by taxonomy what is possible in certain time period (year, final grade, some degree of schooling) to realize and evaluate as precisely as possible as realized result (final product). Aim of education determines organization, methods, contents, realization processes and evaluation criteria. Having in mind aim, teacher selects organization of teaching, contents, methods, forms and procedures in teaching; follows, encourages, and directs learning; chooses instruments and procedures for estimation and evaluation of pupils results.

Teaching organization as a whole and organisational forms of carrying out teaching specially, are important assumption for defining teachers and pupils position in teaching, for choice of teaching contents, aids, forms methods of work, as well as technique and technology of teaching. Thus, for example, in frontal teaching pupils are listeners, and teacher is lecturer and examiner, while in team teaching teacher is more organizer of teaching work, adviser and intellectual guided of his pupils, and they are active participant in group and individual work, responsible for teaching and learning success. In frontal teaching introductory lectures are given with possible demonstrations of visual and acoustic additions, while in team teaching programmed and semiprogrammed materials are used, teaching packages, television and computer presentation. Organization and carrying out teaching according to "open plan school" system, school without grades, individually planned teaching, considerably has effect on the fact that teacher teaches less, and pupil learns more making his own effort. In the field of teaching organization is planning and programming of school work as a whole, individual teachers and pupils. School curriculum is official document containing the whole process of school pedagogical activity, time frames are foreseen in which certain activities will be realized, material and other conditions are provided for successful realization of programme contents, actors of programme activities are anticipated, fair distribution of work obligations is made among members of school collective, it is precisely known who does certain work and for which works and tasks is responsible. In good work organization collective looks like a good unity, material and other conditions are always provided for those who realize programmes with the aim of successful work, realization of programme tasks is carried out evenly, social climate and discipline are high, and work results are in accordance with predictions. In good organization managing is easier and directing, correcting and supporting and helping when it is necessary and when it is known that it will have positive effects. That is why in organization there is no idle speed, avoiding obligations and superficial work. The fact it self it is precisely known who, what, when, with what, how, how much and in which time frames should do, is an additional reason for importance of work organization. Work organization is basic condition of control and management of teaching and learning process, while control and management are guarantees of successful pedagogical activity. [6]

Forms of teaching work, teaching methods and teaching aids should make possibilities for efficient teaching which will contribute to thinking activity of pupils, their better quality learning and more complete development. For active pupils participation in teaching, for their better quality learning and full development it is necessary to dynamize forms of teaching: by combining frontal and group form of work, work in small groups, in pairs and individually; by introduction of new work methods, in addition to traditional ones, such as: expository, cooperative, researches - discoveries, using pupils experiences and simulations; by application of traditional aids (written materials, diapositives, films, slides, graphoscopic prese-
ntation) and universal teaching aids (sophisticated teaching machines, TV presentations, computers, multi-media systems); by application of didactic-methodically shaped materials (tests, control papers, programmed textbooks, semiprogrammed contents of some teaching subjects, teaching sheets). Now it is possible to use multi-media teaching aids, programmed teaching with special purpose (package system), teletext and video text. Special care is taken, to advance technique and procedures of qualitative learning and enable pupils for independent acquiring of knowledge as well as distance learning.

Fig. 5. Cooperative learning

Teacher is bearer of programming and teaching organization, creator of strategy of teaching and learning realization process and technologist of practical teaching activity performing; realisator of advisory work, the aim of which is encouraging pupils to know techniques of learning and independent gaining knowledge; he is therapist in his activities trying to eliminate various deviations in work and behaviour of young people. It is evident from this that teacher is less and less lecturer and examiner and more and more educator of young people.

The basic task of evaluation is to find out to what extent educational aims are realized. That is why process and result are evaluated, as well as knowledge, ability, interests, complete development of personality, not only academic realization. Evaluation of pupil work results takes into consideration the most important facts, what makes more complete personality development and what gives guarantee for his further advancement. The aim of evaluation is not only statement of knowledge, but also discovery of problems and taking measures for their elimination.

4. Conclusion

In order that educational technology complex would be clear to us we must ask questions about what we want to acquire, what activities we should do, to whom those activities are intended, who is going to realize them, by what means and how is the realization possible, which strategies should be applied and how is it possible to evaluate what is realized. If answers to these questions are clear to us, educational technology will also be clear.

While in the field of material production team of experts is engaged in organization, team of technologists and other experts in production and team of experts in final product control, in teaching activity, although it is the most complex in its work, all jobs are done by teacher. That is why we should seriously think about the fact how to help teacher, how to make easier his work, evaluate more what he does, prepare him more thoroughly for complex functions he realizes, organize school in a different way, employ experts who would, together with teachers, deal with works of organization, realization and evaluation of pedagogical activity.

Pedagogues and psychologists, trained in a traditional manner, can not by themselves offer considerably assistance, because they do not have enough experience and because teachers do not accept them. It should be thought about possibility how to qualify some outstanding teachers in practice for some time to be teaching technologists who would be accepted by school and teachers, and who would be spiritus movens of changes in teaching technology in primary and secondary schools. Of course, this kind of experts would not make needless school pedagogues and psychologists, but it would provide that, so called, general experts make a complete team capable to be advocate of innovations in school. Web-based software created to help managers to decide about dynamic of integrating innovations in education is used in several schools and managers recommend portal for research and multivariate analyze in educational changes.
References:


