

ПЕДАГОГИКА ВА ПСИХОЛОГИЯДА ИННОВАЦИЯЛАР

ИННОВАЦИИ В ПЕДАГОГИКЕ И ПСИХОЛОГИИ

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ИННОВАЦИИ В ПЕДАГОГИКЕ И ПСИХОЛОГИИ
INNOVATIONS IN PEDAGOGY AND PSYCHOLOGY**

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**USING THE ELECTRONIC EDUCATIONAL-METHODICAL COMPLEX IN
DEVELOPING QUALITY OF TEACHING THE SUBJECT "THEORY OF
ALGORITHMS"**



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ANNOTATION

The article gives a brief information about how the electronic educational-methodical can be used in studying the subject of "Theory of algorithms" and also about it's significance in developing the quality of the study process.

Key words: Algorithm, Electronic educational-methodical complex, Theory of algorithms, education.

**ELEKTRON O'QUV-USLUBIY MAJMUANING "ALGORITMLAR
NAZARIYASI" FANINI O'QITISH SIFATINI OSHIRISHDA QO'LLANILISHI**

ANNOTATSIYA

Maqolada "algoritmlar nazariyasi" fanini o'qitishda elektron o'quv-uslubiy majmuaning qanday ishlatilishi va o'quv jarayonining sifatini oshirishdagi ahamiyati haqida muloxazalar keltirilgan.

Kalit so'z: Algoritm, Elektron o'quv-metodik majmua, Algoritmlar nazariyasi, ta'lim.

**ИСПОЛЬЗОВАНИЕ ЭЛЕКТРОННОГО УЧЕБНО-МЕТОДИЧЕСКОГО
КОМПЛЕКСА В ПОВЫШЕНИИ КАЧЕСТВА ОБУЧЕНИЯ ПРЕДМЕТУ
"ТЕОРИЯ АЛГОРИТМОВ"**

АННОТАЦИЯ

В статье рассматриваются вопросы связанные с преподаванием предмета "теория алгоритмов" посредством электронного учебно-методического комплекса, а также его значения для повышения качества учебного процесса.

Ключевые слова: Алгоритм, Электронный учебно-методический комплекс, Теория алгоритмов, образование.

INTRODUCTION. The development of information technology touches practically all spheres of human life. It also includes education. The informatization of the educational process is one of the most important tasks of the modern education. It is connected with development of material and technical base of the educational institutions, refresher course of teachers, development of the methods of teaching, formation of a new culture of pedagogical labour. Introduction of modern computer technology, being principally new facility of education and powerful instrument of the cognition, requires the development of methods and organizing the forms of education. On modern stage of development of new methods is impossible without collaboration of a teacher of informatics and object-teachers. This concerns both humanitarian education and spheres of exact sciences. New technologies allow more effectively organize the educational process, give the trained new facilities and sources of receiving information: Internet resources, electronic textbooks, encyclopedias, electronic libraries and etc. Presently open and remote education also actively develops in the society, in which the process of education can be realized on principles of personal-oriented approach within the framework of liberally chosen by trained own educational path. In these purposes in educational institutions are formed electronic educational-methodical materials for ensuring the education process on different forms of education.

MATERIALS AND METHODS. Creation systematized educational-methodical complex (EMC) on separate discipline presents interest, intended for organization of education on day-time, correspondent and remote forms. Like EMC plays great importance for teacher and students. They can be logged in local-area network of high school, in global generally available network Internet. Certain difficulties presents together with the development of computer EMC. It is necessary in them to provide the friendly interface, automate many works, for instance, suitable search system, system of testing, accustomed navigational system and miscellaneous. Created at this moment training complexes can not satisfy the need of each separate discipline. It is introduced that efficient direction of improvement of education process is a development EMC for separate discipline. All this has served the cause to choice of subject of our research.

DISCUSSION. Computer educational-methodical complex is software program (the programme complex), intended for solution of definite pedagogical problems, having the subject content and oriented on interaction with trained. The given definition fixes that EMC is a facility, specially created for solution of pedagogical problems i.e. the use in educational process is its main purpose.

The requirement of the subject contents implies that computer EMC must include educational material on definite discipline or course. The educational material is understood as information that has declarative (descriptive, illustrative) character, tasks for controlling the knowledge and skills, as well as models and algorithms, presenting studying objects and processes. The presence of subject contents allows to separate EMC from auxiliary facilities, providing technical and methodical support of educational process (electronic journals of progress, monitors for remote control and consultancies and others.). Computer EMC is a product for trained. The solution of pedagogical tasks is realized in the process of interaction the latter with EMC. The orientation on training means that they form the basic category of users, calculating on which are defined the contents and functions, personified in EMC. The other participants of education process (teachers, instructors, methodists) use EMC in their professional activity, but do not fall into the basic category of its users. The orientation on independent

work of training is the most important feature of computer EMC. As far as the development of technologies of computer facilities of education (CFE) created their new varieties, which traditionally stood out on the following sign. Firstly, CFE were built as electronic analogues of educational-methodical manual on paper carrier. This base corresponds to automatic textbooks, books of assignments, reference books and etc. Secondly, in CFE were personified the functions of technical, but not computer educational facilities: physical simulator and laboratory installation. So there appeared more universal, compact and less high-priced computer simulator systems and laboratory practical works. Thirdly, CFE matched up with the types of educational classes and events, on support of which they were orientated. The given orientation has conditioned the highlighting of multimedia lecture, automated control works, interval control works and others. Finally, fourthly, CFE were associated with solving with the pedagogical tasks. The last aspect corresponds to the automatic reconstruction courses, systems of controlling the knowledge and etc. Computer EMC reuniting all these signs is a most efficient facility of achievement of pedagogical tasks.

Following the ideas of individualization and differentiation of education, reinforcement of independent work and as a whole increasing the quality knowledge of students we designed technology of using of computer programme products in study and teaching the subject "Theory of algorithms" in high schools. The programme kit will consist of electronic educational-methodical complex on basic course of "Theory of algorithms". The complex will include the electronic textbook, presentation in support of text lecture, laboratory practical work, testing program, the list of questions and tasks for final control on the course, glossary, educational-methodical provision, library of computer models and etc., containing as possible greater volume different planned educational material, oriented to different levels of preparedness of training.

For example we shall consider the methods of teaching and study of the theme "Intuitive notion of algorithm and necessity of its formalizations". On traditional methods there are given theoretical material which keeps information on notion of algorithm, history of arising the notion of algorithm and the term algorithm, information on personalities of al-Khorezmi, Evklid and other scientists, their contribution to the development of mathematical science. There are also described the notion of formal algorithm and necessity of concrete definition of intuitive algorithm. If in interpreting the theoretical material by lecturer there will be used specially prepared presentation or hypertextual electronic version of the text lecture, which will contain, for instance, genealogy of al-Khorezmi, the list of his scientific works, photo album of historical documents referring that epoch, initial texts of classical algorithms such as "Algorithm of Evklid" or "Sieve of Erotosfen" will be created qualitatively new information-educational space, in which increasing information flow makes all participants of the process will transfer from the model of accumulation of knowledge to the system of mastering the skill self-education. At study of this subject it is important to unite in one logical chain of the notion of intuitive algorithm, formal algorithm, formally-algorithmic theories and their purposes. On practical classes on this theme the students of "Applied mathematics" direction study the classical algorithms and algorithms of computing mathematics. Here supporting inter-subjectal relationship with the course of "Bases of programming" on laboratory classes are studied and form the program to this algorithm on algorithmic languages Turbo Pascal and Delphi. The computer practical work must contain the programs and their theoretical materials on all studying algorithms. While using computer practical

work students have an opportunity to work in several programme ambiances at the same time: study the material on concrete algorithm of working ambience of computer practical work, enter and defer the text of the programme realizing algorithm, get result in ambience of Turbo Pascal or Delphi, as well as design the report of executed work in ambience of MS Word or MS Excel. Above-mentioned programme complex is also useful in independent education of students. Since it is extensive educational-methodical resource for studying of the given course.

RESULTS. Educational-methodical complex on the course "Theory of algorithms" consists of several blocks, oriented on different types of classes and the levels of students. The program of "Basic course of Theory of algorithms" is university programme on the course "Theory of algorithms" intended for two semesters of education in higher educational institutions, programme practical work in support practical classes on the given course.

The choice of the programme is produced on starting page of the complex. The further transition between programme is realized with the help of element of managing falling out list, being in any page of the complex. Each of the programs consists of several large sections, which in turn have their own subsections. The navigation on this whole system is very simple and presents classical scheme of the presentation as a menu by itself, located on the top of each page. Transition between different pages is realized mainly with the help of this menu. In each program it is shining differently in purpose of conservation of orientation of the location at present moment education or viewing. The menu allows passing with any place of the complex on any other, without using herewith intermediate pages. This introduces the user or trained very suitable and easily remembered since transition between any pages takes not more than 1-2 seconds. The complex consists of a big number of pages and, in avoiding of confusion of the user or trained in the process of education or viewing, each page certainly contains information on that, what page is open at the moment. Besides, on each of the lesson or lecture there is opportunity of the suitable transition to nearby pages onward or back and in the beginning and in the end. This noticeably simplifies the work in navigation with the complex.

In addition there will be an opportunity for searching the necessary information in the complex on key words or phrases. The complex will contain not only educational, but also a lot of auxiliary materials. Such as glossary, electronic textbook, library of computer models, a big list of recommended literature. It also includes lessons, lectures, laboratory classes, designing tasks, tests, rating questions.

In each of the programme there is a list of projects for independent work. These designing tasks imply either building of new models of different algorithms, or improvement of already made, falling into the library of fulfilled computer models.

CONCLUSIONS. The main pedagogical tasks solved with the help of computer EMC:

- 1) initial introduction with object sphere (OS), mastering its basic notion and concept;
- 2) basic preparation on different level of depth and detailedness;
- 3) working out the ability and skills of solving of the standard practical tasks on given course;
- 4) working out the ability of analysing and decision making in non-standard (the non-standard) problem situation;

- 5) developing abilities to definite types of activity;
- 6) undertaking educational-research experiments with the models of studying object, processes and ambiances of activity;
- 7) recovering the knowledge, ability and skills (for seldom encountering situation, tasks and technological operation);
- 8) controlling and evaluating the level of knowledge and ability.

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