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MATH PACKAGES IN TEACHING OF MATH

Elchin Taghiyev
Mingachevir State University
doctoral student of Ganja State University
elchin.taghiyev@mdu.edu.az

Abstract: *The article on computer technologies deals with the issue of introducing computer technologies into the educational process, in particular in mathematics lessons when studying topics included in textbooks with functional graphic lines. Construction of graphs of functions and graphs of piecewise is given functions.*

Keywords: *information technologies, educational process*

Introduction

The introduction of computer technologies in the field of education has affected both the activities of the student and the activities of the teacher, which inevitably leads to the search for improving the methods of studying mathematics. Proceeding from this, the problem is to determine the importance of information technologies in teaching mathematics and to determine ways to use them for the qualitative assimilation of educational material in the subject.

The main goals and directions of using computer technologies help to organize the work of the teacher and students in such a way as to equip the latter with effective methods of educational activity, form a positive attitude towards it, and develop a responsible attitude towards mathematics.

Special teaching programs

In a modern school, the situation with the use of information technology in the study of mathematics is changing. To a large extent, this is due to the emergence of powerful universal and easy-to-use integrated systems – application packages, which are currently the main form of specialized software in mathematics. An example is software products such as Visual Geometry, mathematical packages MathCad, Maple, MathLab etc., to which the following methodological requirements apply:

- the ability to visually demonstrate various mathematical objects (formulas, graphs, tables);
- reduction of time for the presentation of the material;
- the opportunity to familiarize students with formulas, definitions, theorems and their proofs;
- the possibility of providing additional information on the topic under study;
- improving the accuracy of graphic constructions;
- the ability to dynamically change expressions, formulas, functions.

Computer technologies are universal, transferable to the content of various sections, topics of the mathematics course. Our interest was aroused by the following problems:

- the growing role of computer technologies in education;
- and, in particular, their impact on mathematical education at various levels and stages of education.

On the one hand, the ever-increasing role of information technology in the learning process, on the other hand, improving the quality of knowledge and the role of the teacher [1, 3].

The organization of educational material using computer technology is based on the division of educational material into blocks: theoretical, practical, control and correction of knowledge. This contributes to the search and identification of such a set of training lessons, the structural feature of which allows you to navigate in the variety of designing their elements using a computer and helps in their creative development.

Based on the analysis of the use of the possibilities of computer technology and the didactic principle of visibility, a conclusion was made about their close relationship, which opens up new

opportunities for improving the process of teaching mathematics and allows you to maximize interest in studying the subject [2].

The analysis of scientific and methodological literature makes it possible to determine the main directions and development of computer technologies, and their application for educational purposes, the use of their capabilities in the following areas: organizing various types of educational activities for working with educational information based on the use of multimedia technology, telecommunication network resources; implementation of modeling and description of processes to create training simulators.

Developed methods for selecting educational material for conducting lessons in mathematics using computer technology in high school. Its main provisions are related to the preliminary study of the educational material and the selection of computer training programs used in the lessons and at individual stages of the lesson, the regular inclusion of control elements in the process of assimilation of the educational material and the system of a differentiated approach.

The educational paradigms

Information technologies make it possible not only to change the forms and methods of educational work, but also to significantly transform and enrich educational paradigms.

When teaching mathematics with the help of a computer, it acquires a practical bias: the interactive nature of working with a computer, its computational modeling capabilities predispose to learning in the form of solving practical problems.

A separate area of using a computer in education is the integration of subject training courses. At the same time, the computer is no longer used as a means of learning, but as a means of processing information. With the help of tool programs on a computer, you can solve mathematical problems in an analytical form, build diagrams and graphs, perform calculations in a tabular form, prepare text, diagrams, etc.

At the same time, the computer acts as a means of objective activity, bringing the style of educational activity in the classroom closer to the standards of modern scientific, technological and managerial activity.

Let us do in more detail on the use of information technology in the study of some topics of the school mathematics course. Currently, many textbooks of the new generation adhere to the functional-graphic line of presentation of educational material, graphs and diagrams allow you to visualize the results of calculations, deeply analyze the source data, because visibility is one of the main tools in the work, the student must see the result of his activity.

MathCad

One of the main skills in the study of functions is the construction of a graph, knowledge of the domain of definition and scope of the function, finding the largest and smallest values, finding the minimum and maximum of the function. An example is the construction of graphs in the MathCad package.

The advantage of this program is the input language, it is quite simple and close to natural mathematical, which greatly simplifies the work of the teacher in mastering the program, preparing for the lesson and presenting the topic. To plot graphs, students need to know the valid and invalid values of the functions.

Example

Let's plot the function $y = \sin 2\ (ax+b)$.

Let's complicate the task: in one coordinate system, we will complete the following graphs (Fig. 1):

$y = 2\sin x,$

$y = 2\sin(3x + 2),$

$y = 2\sin\ (3x + 1)$

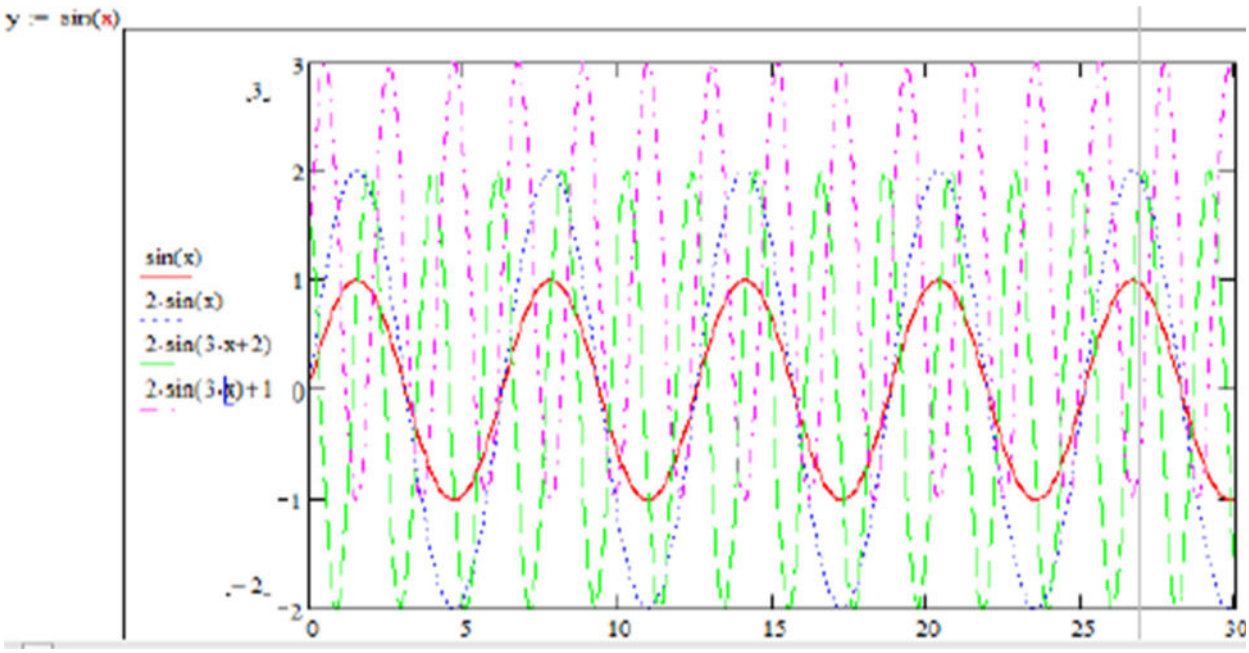

Fig. 1. The function $y = \sin 2\,(ax+b)$.

MathCad will do this quickly, each of the following is highlighted in a different colour, students would spend a lot of precious study time on this. The main purpose of such a task is to show clearly what happens to the template graph when coefficients appear, the argument increases, and the graph moves along the coordinate axes. After this stage of the lesson, you can give the following task, the implementation of which will require students to know the domain of definition of functions, without which graphics cannot be built.

Conclusion

Thus, the current stage of development of education is characterized by the widespread introduction of computer technologies into the educational process. The richest possibilities for presenting information on a computer make it possible to change and enrich the content of education indefinitely; the performance of any task, exercises with the help of a computer creates an opportunity to increase the intensity of the lesson, the use of material for a differentiated approach to learning contributes to the individualization of learning [4].

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RİYAZİYYATIN TƏDRİSİNDƏ RİYAZİ PROQRAMLAR PAKETİ

E.N.Tağıyev
Mingəçevir Dövlət Universiteti
Gəncə Dövlət Universitetinin doktorantı

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Açar sözlər*: informasiya texnologiyaları, təhsil prosesi*

МАТЕМАТИЧЕСКИЕ ПРОГРАММНЫЕ ПАКЕТЫ В ПРЕПОДАВАНИИ МАТЕМАТИКИ

Э.Н.Тагиев
Мингячевирский государственный университет
докторант Гянджинского государственного университета

Резюме: *В статье о компьютерных технологиях рассматривается вопрос внедрения компьютерных технологий в учебный процесс, в частности на уроках математики при изучении тем, включенных в учебники с функциональными графическими линиями. Дано построение графиков заданных функций частями.*

Ключевые слова*: информационные технологии, образовательный процесс*

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