ISSN NO: 2770-2367
Date of Publication: 10-05-2023

Interesting Organization of Mathematics Lessons

Noriyeva Aziza Jasur qizi
Jizzakh branch of the National University of Uzbekistan.

Annotation: The article presents the possibilities of using specialized software such as Mathcad, Matlab, Mapl, Matematica in learning algebraic materials, and these possibilities serve to organize lessons effectively and interestingly.

Key Words: Mathcad, Matlab, Mapl, Matematica, information and communication technologies, modern programming languages

Introduction

Today, the rapid development of information and communication technologies has a strong impact on all areas of human life, including the general secondary education system. The main goal is to improve the teaching of mathematics, among other subjects. The use of information and communication technologies in the teaching process allows: forming an individual learning trajectory for each student due to the automatic selection of various options of educational tasks; to develop the ability of students to work independently due to the possibility of searching for educational information in local and global networks; automation of mastered material control; increasing students' motivation and activating their educational activities in the conditions of visual presentation of educational material on a computer screen, etc.

Discussion

Taking into account these opportunities, in this work we tried to determine the areas where it is possible to use information and communication technology tools in the context of application-oriented teaching of mathematics. For example, specialized software tools such as Mathcad, Matlab, Mapl, Matematica can be used in the process of studying algebraic materials to achieve the following goals: create a screen image of functional dependence in the form of a matrix, graphs, tables, diagrams; dynamic representation of the change of the function value in accordance with the change of the argument value, in accordance with the change of the function value, increase (or decrease) the considered part of the graph of the function displayed on the screen; depicting the geometric interpretation of equations, systems of equations, inequalities, solutions of systems of inequalities on the screen; dynamic representation of asymptotic approximation of graphs of functions, dynamic representation of integer equations, system of equations, system of equations, solutions; analysis of various data and statistics; analysis of arithmetic and geometric sequences; creating a geometric construction of two-dimensional images and two-dimensional representation of three-dimensional objects on the screen; dynamic representation of geometric substitutions on the screen and explanation of its essence on this basis; visualization of theorem proving process; dynamic description of the stages of construction of any geometric drawings; dynamic presentation of various definitions, concepts and axioms.[1]

It is considered appropriate to use a spreadsheet to achieve the following goals: finding the optimal solution to mathematical problems; expressing the solution of equations numerically and graphically; find integer solutions of equations, systems of equations, inequalities, integer solutions of systems of inequalities; study of the scheme of construction of numerical sequences; analysis of statistical data.

Modern programming languages can be used to achieve the following goals; development of skills in the process of checking geometric shapes; development of programming skills and learning the essence of the algorithmic process. Also, the following skills that are formed in the student in the

[1] Kozak, K., Ström, A., & Watkins, L. (2021). Mathematics at two-year colleges: Lessons from AMATYC. *New Directions for Community Colleges*, *2021*(194), 101-112.

ISSN NO: 2770-2367
Date of Publication: 10-05-2023

conditions of application-oriented teaching of mathematics using information and communication technology tools; put forward hypothesis and hypothesis; developing skills to check them and analyze the results;[2] distinguish general statements that are the basis for creating generalizations; understand the difference between mathematical justification and mathematical explanation obtained on the basis of experience; to conclude.

Understanding and using the properties of the shapes of geometric objects requires the formation of the ability of students to describe their shapes and create their images using the language of geometry, as well as knowledge about the symmetry of two- and three-dimensional figures and their use in the process of solving problems. In this case, the student should be given the opportunity to use information and communication technologies to create and replace graphic images, as well as to solve problems related to their creation. Understanding information models and using them in the process of solving problems involves the formation of the following skills in students: creating their own models; solving more complex problems by changing the rules and parameters of making one's own model; hypothesize the results of these changes and justify the nature of the model.

When solving optimization problems, the student should be able to see many specific situations, each of which is expressed in numerical form, collect and collect appropriate data, and choose the most optimal combination. In order to understand and use functional dependence, the student should have the following skills: create and interpret a table of values and a graph of a function; construction of graphs based on the created matrix; using graphing calculators and computers to check the function.

In order for the student to understand equations and formulas and be able to use them in the process of solving practical problems, he should have the following skills: construction, interpretation and use of formulas and equations expressed by words and symbols; be able to use a computer to perform calculation operations.[3]

The student should also have the following skills; apply knowledge of mathematics to solve practical problems, research real-life situations. Establishing a mathematical relationship between one object and another object, and establishing a mathematical relationship between different objects allows to form the concept of construction.

Conclusion

In conclusion, it can be noted that the use of information and communication technologies in the process of teaching mathematics allows the following: formation of students' need for knowledge; activation of students' cognitive activity; increasing students' interest in learning science; to acquaint students with current modern methods of scientific knowledge of the world related to the use of computers; increase the level of individuality of the student; development of student's creativity; ensuring the diversity of the content of materials; expanding the range of educational materials used in education; strengthening visuality in education; student's self-control, i.e. expanding the factors of the assessment process, etc.

Achieving such opportunities in the teaching of educational subjects with the help of computers requires a large amount of scientific and methodological training and is based on serious difficulties. At the same time, the systematic use of information technology tools in the process of learning the basics of science gives the student the opportunity to communicate with modern teaching methods and prepares him for multifaceted intellectual activity in the information society.

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ISSN NO: 2770-2367
Date of Publication: 10-05-2023

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