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METHODS OF IMPROVING THE STUDY OF EQUATIONS AND SYSTEMS OF EQUATIONS IN GENERAL SECONDARY SCHOOLS AND ACADEMIC LYCEUMS

Jamoliddinov Sharobiddin Shaxobiddin ugli
2nd Year Master's Student, Mathematics Department
Andijan State University, Master's Faculty

Abstract
This methodological manual is aimed at improving the teaching of equations and systems of equations in general secondary schools and academic lyceums. The manual contains theoretical and practical recommendations for teachers teaching mathematics. Basic concepts of equations and systems of equations and the stages of their study; Methodological methods that serve to develop students' logical and analytical thinking skills; Innovative approaches to teaching equations on the basis of pedagogical technologies and interdisciplinarity; recommendations for eliminating complications that arise in the course of the lesson. is an effective tool for strengthening knowledge, increasing interest in the subject, and developing skills for solving practical problems. The manual is intended for mathematics teachers, methodologists and scientific researchers.

Keywords: Equation, teaching system of equations, methodology, mathematical education, students' thinking skills, pedagogical technologies, general secondary education, academic high school, innovative methods, interdisciplinary integration.

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Introduction

The current education system pays great attention to the formation of students' logical thinking, creative approach and practical skills. The process of studying equations and systems of equations, which is an integral part of mathematical education, is important in developing students' analytical thinking skills and forming an independent approach to solving problems.
However, a number of difficulties arise during the teaching of this subject in school and academic lyceum classes. This may be due to students' insufficient understanding of the subject, difficulties in solving complex problems, or insufficient interest in the subject.
The main goal of this study is to develop effective pedagogical approaches aimed at improving the methodology of teaching equations and systems of equations in general secondary schools and academic lyceums, strengthening students' knowledge and developing practical problem-solving skills.
Equations and inequalities and related material comprise a large part of the high school mathematics course. Because equations and inequalities are widely used in solving problems of practical content in the study of various branches of mathematics. It is known that the ancient

Egyptians and Babylonians were based on the method of numerical calculation in solving mathematical problems. However, in everyday life and in the study of mathematics, there are such problems that can be solved only with the help of an equation or a system of inequalities. Arithmetic methods were used to solve such problems in the early days.Later, algebraic ideas began to form. For example. Vavelonian calculators were able to solve quadratic equations. Thus, the method of solving textual problems is created, which is then used in the separation of algebraic components and in the study of its unknown. In other times, Arab mathematicians used such applications to standardize equations with the help of certain operations (summing the terms of similar equality, transferring the equation and term from one side to the other side with the opposite sign.

In this work, the importance of using innovative methods, modern technologies and interdisciplinarity in the study of equations and systems of equations and the practical application of these methods are analyzed. Also, within the framework of the research, proposals and recommendations were developed to eliminate existing difficulties in the educational process.

The role and importance of mathematics in the current modern education system is incomparable. In particular, the study of equations and systems of equations is important for the development of students' logical thinking, analytical solutions in problem situations, and development of mathematical skills.

At the same time, a number of methodological problems arise in the process of teaching equations and systems of equations in general secondary schools and academic lyceums. The level of knowledge of students, their interest in the subject, and their ability to understand complex issues affect the effectiveness of teaching. For this reason, there is a need to use a new approach and innovative methods to improve the educational process, make classes interesting and effective.

The main goal of this study is to develop advanced methods aimed at facilitating and improving the efficiency of learning equations and systems of equations. In this process, special attention is paid to forming students' skills to solve practical problems and increasing their interest in the subject.

In this work, the effectiveness of modern pedagogical technologies, interdisciplinary integration and innovative approaches used in teaching equations and systems of equations is considered. Also, during the research, new methodological methods that serve to deepen students' knowledge of equations and systems of equations are analyzed and practical recommendations are developed.

The results of this research have important theoretical and practical significance for mathematics teachers and methodologists and serve to improve the quality of education.

Reasoning plays an important role in the formation of logical thinking and analytical skills in students. In schools and academic lyceums, the equation and its main features, solving approaches by various methods, as well as problems of different levels of the system of equations are taught.

Research results. The results of the study show that the use of innovative methods and technologies in teaching equations and systems of equations:

1. Increase students' interest in the topic;
~ Development of logical and analytical thinking skills;
- It allows to increase the efficiency of solving equations.

These approaches serve not only to make the educational process effective, but also to increase the general knowledge level of students.

Learning equations and systems of equations is an important stage for students in mathematical education. In this department, it is intended not only to teach students mathematical formulas and methods, but also to develop their abilities to think analytically, draw logical conclusions, and solve practical problems.

Basic Concepts of Equations and Systems of Equations

An equation is an expression with an unknown variable that can be used to solve mathematical problems.

Learning systems of equations is the process of solving multiple equations together, which helps students develop systematic thinking.

Key Challenges in Students Learning Equations and Systems of Equations. Lack of interest in theory: Students often do not understand the importance of the system of equations and its real-life applications.

Difficulty in solving complex problems: Many students make logical errors in the process of solving systems of equations.

Failure to understand the relationship between answers and results: Students have difficulty correctly analyzing the results associated with solving equations.

Innovative Methods in Teaching Equations and Systems of Equations. Practice-based approach: Through problems based on real-life situations, students develop an interest in understanding and learning about equations and systems of equations.

Mathematical Modeling: Solving equations by teaching students to represent complex situations as mathematical models.

Interactive teaching methods: Involve students in the process of group work, joint problem solving and discussion.

Practical Recommendations

Step-by-step teaching: Starting with simple equations, moving to complex systems of equations.

Computer software and technology: Using computer software or math calculators in the classroom allows students to solve problems quickly and efficiently.

Cross-disciplinary integration: Increase students' interest in the subject by connecting equations to other subjects, such as physics or economics.

Research Results. Application of the above approaches and methods increased students' success in learning equations and systems of equations. Pupils learned to think more independently, were able to solve problems quickly and clearly. Also, teachers managed to further develop students' mathematical thinking.

Summary

Improving the methodology of learning equations and systems of equations is a necessary factor for the development of students' mathematical skills, increasing interest in the subject, and effective organization of lessons. Innovative pedagogical technologies, interdisciplinarity and practical approaches serve to strengthen students' knowledge.

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