# POSSIBILITIES OF USING INNOVATIVE TECHNOLOGIES IN TEACHING MATHEMATICS

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## ABSTRACT

*The article highlights the practical application of some methods and innovative technologies in teaching mathematics. Some problems are considered using the methods of analogy, generalization, concretization, classification, induction, deduction and others. In the lessons of mathematics (algebra, geometry, trigonometry, etc.), information and communication technologies are also used. They increase interest in the subject and give scope for independent creative work. Using an interactive whiteboard develops independence, interest in learning. All methods and technologies increase the efficiency and quality of the educational process.*

**KEYWORDS**: *Mathematical education, methods of teaching mathematics, information and communication technologies, analogy, induction, deduction.*

## INTRODUCTION

The introduction of innovative ideas into education in relation to the pedagogical process means the introduction of something new into the goals, content, methods and forms of teaching and upbringing, the organization of joint activities of the teacher and the student. In the mathematical

education of students, methods are used such as experiment and observation, comparison and comparison, analysis and synthesis, generalization, concretization, classification, abstraction, etc. The observation method, for example, can be applied in a geometry lesson, when several figures are given and among them you want to find figures with axial symmetry. In the study of geometry, the comparison method is also used when it is required to find similar and different sides of a quadrilateral and a hexagon. The generalization method is used when formulating mathematical rules, identifying patterns, etc. Depending on the content and goals of the lessons, the generalization process may include comparison, analysis or synthesis, other logical techniques and forms of thinking. Abstraction is a mental selection of those essential properties and attributes of an object or phenomenons that are needed depending on the purpose of their study, while simultaneously abstracting from other properties and attributes. Conversely, concretization is a mental transition from the more general to the less general, from the general to the singular.

## METHODOLOGY

The use of interactive methods, information and communication technologies give a good result for the development of new topics by students. When explaining new material, the teacher can make extensive use of presentations created in MS PowerPoint. The presentation in the lesson is a kind of supporting outline, and also replaces the blackboard. On the slides, you can place not only definitions, but also diagrams, illustrations for the lesson material, assignments for independent work, and questions for a frontal survey of students. In addition, the widespread use of electronic textbooks, multimedia encyclopedias, simulators increase the effectiveness of teaching. When implementing projects, creating presentations, students apply the acquired knowledge in practice, develop qualities such as initiative, independence, and composure. The use of an interactive whiteboard is also one of the most widespread and effective innovative technologies in teaching mathematics. When using an interactive whiteboard, the following are used: a screen for demonstrating presentations, electronic manuals, various software functions (for example, graphing functions). The use of various methods and information technologies in mathematics lessons allows you to improve the quality of perception of new material, automate knowledge control, diversify the forms of the lesson, motivate students to learn, develops their communication skills and creativity, increases information competence and the strength of the assimilation of knowledge and skills.

The software of mathematics as an academic discipline is very diverse: textbook programs, training programs, reference books, encyclopedias, video tutorials, libraries of electronic visual aids. However, the difficulty in using it lies in the fact that the teacher has to adapt the resources at his disposal to the teaching materials used for teaching, to the characteristics of students in his class. This becomes possible only if the teacher is confident enough in computer technology.

As noted in the materials of conferences at various levels devoted to the problems of introducing ICT into education, a lesson with the use of a computer will be more effective for a teacher who preserves human priorities in learning; has a kind, trusting attitude to the machine and its pedagogical capabilities; knows how to carefully and at the same time boldly handle a personal computer; intellectually developed, erudite, able to assess the pedagogical capabilities of computer programs; methodically flexible; disciplined, accurate, owns an ordered, logical thinking. Thus, mastering ICT requires professional and personal growth of a teacher.

The role of the computer is as follows:

• A high degree of motivation is formed, interest in the learning process increases;

• The intensity of training increases;

• Individualization of training is achieved;

• The objectivity of the evaluation of results is ensured;

•The proportion of independent work is increasing. When teaching mathematics in primary school, the following organization of educational activities using ICT tools is possible:

• Individual work with the training system;

• Creation and use of presentations in the lesson;

• Modeling: using ready-made models and developing new ones;

• Automatic testing systems;

• Project method of work;

• Game forms, contests, quizzes, participation in distance contests;

• Creation with the help of Microsoft Office and use of tools for organizing activities;

• Accounting of progress;

• Use of instrumental training programs;

• Use of web technologies.

Students can use ICT as a tool to perform calculations, draw graphs, and help solve problems. The most obvious example of using ICT in this way is when students use a calculator or the like to perform more complex calculations. However, spreadsheets, computer algebra systems, or graphing calculators can be used to solve problems with tests and improvement or search techniques. Mathematics students can use graphing calculators or plotters instead of algebra to graphically solve an equation. Students can seamlessly perform statistical analysis on the data they collect using the extensive statistical functions of the graphing calculator. Generating an image in a dynamic geometry package can help a student understand, solve, and then prove a geometric problem. When students use ICT as a tool to help them find things, solve problems, or understand what's going on, it often helps them develop their skills in using and applying math. ICTs can be a vast and effective tool, but students need to acquire the necessary technical skills in order to constructively and effectively capitalize on the opportunities presented to them.

**CONCLUSION**

This study shows the integration of ICT in mathematics. Several problems on the usefulness of ICT in mathematics have been derived from the literature. The integration of ICT into mathematics education has a positive impact on both the learning process and the learning process. The study was conducted to identify barriers to integrating ICTs into mathematics teaching and learning at teacher training colleges and at the secondary school level. There are some obstacles to integrating ICTs into the teaching and learning of mathematics in various areas of mathematics. In the future, we will expand my studies to a higher education level for

continuing education.It is thus emphatic from these deliberations that the reach of mathematics education in the present era is hugely dependent on the pace of creative innovations in IT, particularly, by all key stakeholders in the sub-sector.

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