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Methodological Aspects of Using Information and Communication Technologies in The Process of Teaching Mathematics

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Annotation: Information and communication technology are a pedagogical technology that uses special software and hardware to access various information sources (electronic, printed, instrumental, human) and tools for joint activities aimed at achieving a specific result. The use of information and communication technologies in the work of a mathematics teacher is justified by the following factors: decreased interest in the subject; poor development of students' communication skills; lack of variety of clarity in the lesson; inability of students to competently use sources of information, assess its reliability, correlate new information with previously acquired knowledge. The article discusses some of the methodological aspects of using information and communication technologies in the process of teaching mathematics.

Key words: Mathematics, Information and Communication Technologies, Computer, Mathematics Lesson, Presentations, Media Resources, Computer Support, Electronic Teaching Aids, Computer Simulators.

The introduction of modern information technologies into the educational process is a vital issue for the state and society as a whole. The desire to use computer technology in mathematics lessons is dictated by social, pedagogical and technological reasons: firstly, a social order has been formed for the inclusion of such activities in the education system; secondly, the pedagogical reasons are due to the need to find means to increase the effectiveness of teaching; the computer significantly expands the possibility of presenting educational information, allows you to strengthen the motivation of learning and actively involve students in the educational process [1].

The use of information technology in mathematics lessons helps to improve the quality of education, which is the main goal for every teacher, as well as for me.

Information and communication technology is a pedagogical technology that uses special software and technical means for access to various information sources (electronic, printed, instrumental, human) and tools of joint activities aimed at obtaining a specific result [2].

The use of information and communication technologies in the work of a mathematics teacher is justified by the following factors: decreased interest in the subject; poor development of students' communication skills; lack of variety of clarity in the lesson; inability of students to competently use sources of information, assess its reliability, correlate new information with previously acquired knowledge[4].

In the practice of teaching mathematics at school, it is currently used in the following areas: as a means of controlling knowledge; as a means of teaching a lesson; as a means of preparing students for admission to universities; as a means of self-education for students.

The capabilities of the computer are used in teaching mathematics in the following ways: fragmentary, selective use of additional material; use of diagnostic and control materials; improving the quality of visibility and accessibility in the presentation of the material through the use of presentations in the classroom; performing home independent and creative tasks; using a computer for calculations, plotting graphs, sections of polyhedra; the formation of information competence of students, i.e. the ability to obtain information from various sources, including electronic [5].

The use of multimedia tools for practical classes turns them into a creative process, allows the principles of developmental learning to be implemented, allows to form and develop the cognitive motivation of schoolchildren to acquire new knowledge, helps to create conditions for the success of each student in the lesson, significantly improves clarity in the organization of the work of a class or group of students. The presentation can be used at any stage of the lesson: when checking homework, when

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presenting new material; when consolidating the passed, repetition, generalization and systematization of students' knowledge, in the process of checking and monitoring mathematical knowledge, skills and abilities.

In mathematics lessons, using slides created in the Power Point program, mathematical warm-ups and self-tests can be organized, examples, historical information can be demonstrated, and problems can be solved using ready-made drawings. Working according to a scheme, a ready-made drawing contributes to the development of constructive abilities, the development of the skills of the culture of oral mathematical speech, teaches the preparation of oral plans for solving problems of varying complexity. With the help of computer animation, it becomes possible to create a situation of an educational game in the lesson, and the majority of children increase their motivation to learn. When conducting such lessons, the principles of accessibility and visibility are implemented. Lessons are effective in their aesthetic appeal, a presentation lesson provides more information and assignments in a short period.

The use of presentations in the classroom helps the teacher to solve new methodological problems, deepens the knowledge of the subject, raises the professional level, and allows you to increase the time spent working in the classroom. Moreover, they make it possible to make each of them work even at very different levels of their individual readiness. Everyone will be able to see, hear, analyze - albeit at his own level. That is, the level of individualization of training increases significantly. [5]

Of great importance for increasing the effectiveness of lessons is the use of Internet resources, which allow students to find the necessary information when preparing reports, abstracts, messages, etc.

For this, they are provided with a large amount of information; check and evaluate your capabilities by completing test tasks online both at school and at home. In turn, the Internet resources open up the opportunity for the teacher to replenish the bank of materials for the lessons.

An analysis of mathematics lessons using information and communication technologies shows the effectiveness of using computer technologies to develop mathematical abilities in the formation and improvement of computing skills, consolidation and deepening of numerical and geometric concepts.

Each teacher uses visual material in the lesson, setting a goal - to present the student with visual images, so that the student looks and sees what is inherent in these images. So, for example, when studying the topic "Axial symmetry" in the 8th grade, you can use a multimedia presentation. The presentation lesson provides more information and assignments in a short period.

By observing carefully how the computer performs the construction, the students get the opportunity to complete the construction tasks that the teacher suggests, to check whether the construction was completed correctly.

The use of a computer in a geometry lesson allows the teacher to demonstrate the transformation of space or plane in dynamics, which contributes not only to better memorization of the educational material, but also ensures the optimal inclusion and adaptation of new material into the student's knowledge.

When studying geometric material, it is advisable to use such packages as “Live Geometry”, “Geometric Shapes Designer”.

The heart of the programs is Drawing Animation. The leading line of the course is the organization of geometric activities: observation, experimentation and design, as a result of which students independently acquire geometric knowledge and develop special qualities and skills: geometric intuition, spatial imagination, eye, visual skills.

The use of computer technologies, for example, in an algebra lesson, when explaining the topic “Transformations of graphs of functions”, it is possible to use a computer not only as a visual aid, but also to involve children in the construction process.

Using the ADVANCED grapher program allows students to see the simplest transformations in dynamics. When a student builds a graph of a function on paper, significant spatial restrictions arise, since, as a rule, the graph is depicted only in the vicinity of the origin of the coordinate system and the students should continue mentally to the region of the nearest infinity. Not all students have the necessary spatial imagination, as a result, superficial knowledge is formed on such an important mathematical topic as graphics. For the development of spatial imagination and the correct formation of concepts related to this topic, the computer becomes indispensable.

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The use of information technology makes us look differently at many school traditions. For example, homework. Occasionally, you might ask students to put together a presentation on a geometry problem.

This is real, taking into account the capabilities of modern computer facilities. The student has to not only solve the problem, but also make a presentation, and this contributes to a deeper immersion in the "problem".

Regardless of the degree of preparedness of students, everyone has to go through the path of processing knowledge in mathematics and computer science. In some situations, students turn out to be more skillful, more "advanced" in ICT, and now they offer help to the teacher. Such cooperation is mutually beneficial for both parties.

The introduction of information technologies has an impact not only on the forms of organization of the educational process, but also on the content of the educational material. Thus, information technologies not only allow a new look at school subjects, but also provide the necessary scientific and methodological apparatus for their analysis and updating, and computerization is one of the main factors in the development of the content of education.

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