

Lingua Mathematica

ICT tools that can be use in teaching mathematics

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Introduction

Technology is essential for teaching and learning mathematics. It improves students' learning and affects the achieved success. The integration of technology into the teaching and learning process in the classroom has attracted much attention in recent years. Providing a rich learning environment, promoting social interaction as well as critical thinking skills are the reasons for the need to include technology in the classroom. The advent of computers in mathematics education has brought with it's optimism for enriching the teaching process by adding a new dimension to learning mathematics.

The traditional school system brings our students to a state of passivity, a state of school saturation, phenomena of resistance to school and learning.

Little interest in the work of students, the need to facilitate learning, the need for more interesting teaching, the development of technology, the achievement of the general and specific goals of mathematics are some of the reasons that stated the need for the introduction of ICT tools in the teaching of mathematics.

ICT Tools that can be use in teaching mathematics

The use of ICT tools and activities with them in the classroom in the mathematics lesson have a significant role. They have the potential to develop greater abilities in students provided under a condition to use effective teaching strategies with technology. This should be the aim of any applicable ICT tools in mathematics teaching.

In the following, I will list several ICT tools that can be used in teaching mathematics.

SMART board

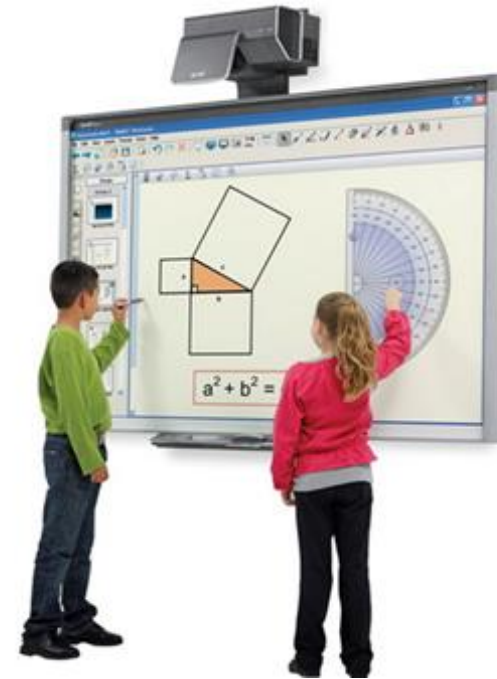
Smart board are also known as electronic whiteboard or interactive multimedia whiteboard. They transform traditional teaching into interactive teaching that is in line with the demands of modern society.

ICT Tools that can be use in teaching mathematics

Interactive whiteboards affect better student motivation. The introduction of an interactive whiteboard in the classes makes the lectures and the learning process more attractive, dynamic and meaningful. It allows teachers to be more creative in compiling teaching materials. The smart board facilitates the process of saving, changing and forwarding materials to students.

Interactive whiteboards encourages active learning among students. Students ask more questions and take more notes than on regular whiteboards, allowing for more effective group activities.

By using an interactive whiteboard, students can collaborate better in the classroom.



ICT Tools that can be use in teaching mathematics

Internet as an ICT tool

The Internet as an ICT tool is applicable in every teaching subject as well as mathematics. Its application is seen through the use of pages whose content is strictly related to the material being worked on, as well as Internet sites whose content is entertaining - such as those that contain mathematical and logical games and mathematical jokes.

Students may also be assigned research homework, for example an assignment that involves finding information on the Internet. Homework may include finding appropriate math passages, pictures of geometric objects, historical information related to the mathematics and information about the lives and work of great mathematicians.

ICT Tools that can be use in teaching mathematics

Digital textbooks

Digital textbooks represent an electronic form of a traditional, printed textbook. Students can download a digital textbook or access it online on computers or on their phones.

Digital textbooks have started to be used more recently. The opinion of parents, students, teachers and professors about their use are divided. Some support their use and others point out that their use overloads students because they have to read from a computer or some other device.

However, the use of digital textbooks has been supported by the digital era in which we live.

ICT Tools that can be use in teaching mathematics

E-learning

E-learning or electronic learning is a modern way of transferring knowledge and skills electronically using software applications that allow 24/7 availability for use by a large number of users.

When the term online learning is used, one often imagines a virtual classroom accessed by teachers and students from different locations.

Educational software

Educational software for teaching mathematics is software used to model, analyze or calculate numerical, symbolic or geometric data. It is a type of application software used to solve mathematical problems or study mathematics.

ICT Tools that can be use in teaching mathematics

One of the most used mathematical software in the teaching of mathematics is the GeoGebra software.

GeoGebra is a program for dynamic mathematics that includes geometry, algebra and analysis.

Teachers around the world have recognized the potential of the program and recognized that it is program that brings mathematical concepts closer to students. GeoGebra is a free program translated into more than fifty world languages, one of which is the Macedonian language.

GeoGebra provides a simple representation of complex concepts, and a better understanding of them.

In recent years, it stands out as a tool that teachers include in their teaching, and students easily accept it.

Software GeoGebra

Tools available in GeoGebra that is often use in math classes to visually represent problems in tasks are:



A circle defined by a center and a radius

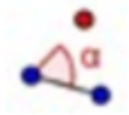
After selecting an arbitrary point O representing the center, in the opened dialog window the length of the radius is entered.



A circle through three points

A circle through three points is obtained by selecting three points.

Software GeoGebra



An angle of given size

Two points A and B are selected and an angle is entered in the dialog box. Point C will be obtained and angle ABC.



Distance or length

This tool determines the distance between two points, a point and a line, two lines... Also so it can determine the length of a line segment.



Area

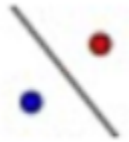
This tool renders the area of a polygon or circle as dynamic text in the drawing window.

Software GeoGebra



Central symmetry

An object which should be mapped is selected, and then the point (center of symmetry) is clicked.



Axis symmetry

Select an object to map, then click on the line (axis of symmetry)



Rotation of an object about a point by a given angle

We select the object that we want to rotate, and then click on the point that will be center of rotation. In the dialog box that will open, we enter the size of the corner on rotation.

Software GeoGebra



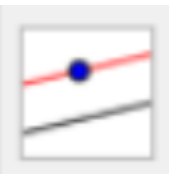
A line segment between two points

It is used to draw a segment between two existing points or on an empty drawing surface.



Line

It is used to draw a line between two points



Parallel line

It is used to draw a parallel line for given line

Software GeoGebra



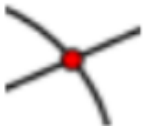
Perpendicular Bisector

It is used to draw a perpendicular bisection with select two points or one segment



Angle Bisector

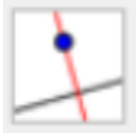
It is used to draw a angle bisection with select three points or two lines



Intersect

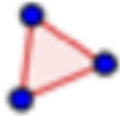
It is used to find intersect of two objects

Software GeoGebra



Perpendicular line

It is used to draw a perpendicular line on a given line.



Polygon

It is used to draw a polygon with select all vertices and then first vertex again.



Vector

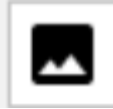
It is used to draw a vector with select starting point and then end point

Software GeoGebra



Text

It is used to insert a text in Graphics.



Image

It is used to insert image in Graphics.



Point

It is used to enter point in Graphics.

Advantages

From my experience of using ICT tools in teaching mathematics I can single out the following advantages and disadvantages related to use of ICT tools:

Advantages:

- It helps students develop digital and audiovisual skills for the future.
- Students are encouraged to participate actively in class.
- The motivation and opportunities for experimentation among students increases.
- More new things are learned in a shorter time.
- Students with special needs have access to essential material and special ICT tools that they can use for their educational needs.
- ICT enables students and teachers to access learning resources and materials.

Disadvantages

Disadvantages:

- A certain level of understanding is necessary to use a large part of ICT tools. If teachers and professors are not trained and don't know how to use them properly, it can be a big problem.
- Technical problems may occur when using ICT tools.
- Students may be exposed to information overload when ICT tools are used in learning.
- Some of the ICT tools can be expensive.
- The use of technology in the classroom can be distracting for students.
- Unreliable information is everywhere, that is, not everything published on the internet is always correct.

Conclusion

So we can conclude that the use of information technologies in the learning process can definitely be one of the most influential factors for new knowledge. Information and communication technologies facilitate the individualization of the teaching process and increase creativity in work.

The application of ICT tools in teaching mathematics contributes to facilitating learning, increasing the desire to solve mathematical tasks, raise the teaching process to a higher level and also motivate students to work and learn more independently.

Also we can conclude that the impact which ICT tools has in educational institutions is so great that school life without ICT is impossible for people who are used to it.