

The Twenty-First Century Mathematics Classroom and Impact of Technology in Teaching and Learning Mathematics

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INTRODUCTION:

Students sitting quietly in rows to listen the class, raising hands to the questions posed by the teacher, and sincerely writing notes. Is this the 21st century mathematics classroom? No not at all because that was the traditional way of classroom. Present 21st century classroom means classroom equipped with digital tools, digital boards used to explain mathematics concepts, mathematics related graphs and diagram. Few mathematical concepts have become much easy to explain with the help of technology and diagram which we cannot draw easily on papers these have now become easy to draw. With the help of technology very difficult concepts of mathematics became easy to help students understand better. The term "21st-century skills" is generally used to refer to

certain core competencies such as collaboration, digital literacy, critical thinking, and problem-solving that advocates believe schools need to teach to help students thrive in today's world. In present classroom situation teachers have become passive and students have become active. Students in the 21st century classroom are learning by constructing their own knowledge with interacting with the teachers. The evolved 21st century classroom is a productive environment in which students can develop the skills they will require in the workplace and teachers are facilitators of their learning. Computers in the classroom include any digital technology used to enhance, supplement, or replace a traditional educational mathematics

curriculum. As computers have become more accessible, inexpensive, and powerful, the demand for this technology has increased, leading to more frequent use of computer resources within mathematics classes, and a decrease in the student-to-computer ratio within schools.

HISTORY:

The early 1990s marked the beginning of modern media technology such as CD-ROMs as well as the development of modern presentation software such as Microsoft PowerPoint. Other computer-based technology including the electronic whiteboard and the laptop computer became widely available to students. In 1990, the Methodist Ladies' College became the first campus to require every student to purchase a laptop. In 1996, Bill Clinton made over \$2 billion in grants available in the Technology Literacy Challenge Fund, a program which challenged schools to make computers available to every student, connected to the outside world, and engaging. This marked

a significant increase in the demand for computer technology in many public school systems throughout the globe.

Correlating with the development of modern operating systems like Windows 98 and the continuing support of government funding, the prevalence of educational computer usage boomed during this era. Between 1997 and 1999, the ratio of students to multimedia computers decreased from 21 students per machine to less than 10 students per machine. Colleges began creating specialized classrooms designed to provide students with access to the utilization of the most modern technology available. Classrooms such as the "Classroom 2000" built at Georgia Tech in 1999 which featured computers with audio and video equipment designed to capture detailed recordings of lectures as a replacement for traditional note taking began to become more common. By 2000, the student to computer ratio at some schools in the US decreased to only 5 students per school

computer. As collaborative classroom environments became mainstream, more schools as a whole began to invest in powerful networks and faster Internet connections. By 2010, many school districts implemented or encouraged "1:1 learning programs" which would ensure that all students in grade school would be provided with a personal laptop. Computers have significantly changed traditional teaching methodology into a more "hands-on" approach, with Forbes predicting that, "Instead of parking themselves in a lecture hall for hours, students will work in collaborative spaces, where future doctors, lawyers, business leaders, engineers, journalists and artists learn to integrate their different approaches to problem solving and innovate together.

SIGNIFICANCE:

The term mathematics itself scares students but with slight change in teaching styles and method we could actually play with numbers. One such innovative

interesting methods are with usage of technology digital boards and introducing computers to increase students efficiency competitive spirits and allow them to learn and explore at their pace. Complicated abstract concepts like problem solving, reasoning can all be enhanced and improved by technology as it gives wide exposure and motivates the learner to better their performance. Small minor changes in classroom and instructional strategies can internalize math concepts in students and thereby have longer retention. Observations, discussions with children, and small-group activities to solve problems will be helpful to enhance student's critical thinking and problem solving ability and making them competent problem solvers in the society.

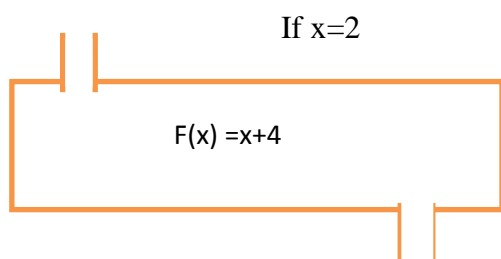
FEW EXAMPLES TEACHING IN 21ST

CENTURY MATHEMATICS

CLASSROOM:

Ex:1 Generally as we know the term function means giving the right input and we get the required output, in other words

substituting value and getting result, this is the traditional way of explaining. Some school still follow these methods but in 21st century mathematics classroom we can teach the same concept diagrammatically as follows:



$$F(x) = 2 + 4 = 6$$

Ex:2 Generally traditional teachers will draw the axis's of graph on board that could be very difficult for the student to understand. As a modern 21st century teacher the x and y axes are drawn on the surface (floor) and at the place of z axis, student is asked to stand and teacher explains the following concept by involving every other student of the class this engages all the students in learning, enhances their motivation and has longer retention. This method of teaching infers

the modern style of teaching to make students understand the concepts in simple and easier terms.

DISCUSSION AND CONCLUSION:

Well, no wonder students often complain about facing difficulty in mathematics, it's just their fear. In my 10 years of experience in teaching mathematics, I always felt mathematics to be the easiest subject as you can play with numbers and it's always joyful learning. Learning the basic concept and theorems in mathematics is the baseline, once the baseline i.e. concepts learned during lower classes are strong they can have a positive impact and drive child's attention and motivation towards the subject. Any deviation at lower stages can actually develop phobia towards learning mathematics. Innovative methods play way methods, child centric approaches can all be used to enhance child's motives towards learning mathematics. Involving students in daily activities allowing students to solve real life situational

problems develop creativity and critical thinking can actually change student's attitude and learning mathematics.

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