Recent Trends, Innovations, Research and Studies in Mathematics

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Abstract

The intention of this paper is to study the recent trends in present-day mathematics and role of mathematics in other fields. The paper is in four parts. Section one is Introduction. Section two is dealing with trends of application areas of mathematics, Section three looks at the changes in mathematics application as a result of the modern approach to mathematics and discoveries in other fields, section four addresses connecting math concepts to the real world

Technology provides dynamic opportunities for instruction in math and STEM classrooms. We can enhance the learning process and make concepts come alive through engaging and interactive media. We may also offer additional supports to address the needs of all learners and create customized learning experiences. Here are some important ways that students can benefit when we incorporate technology with our math and STEM (**Science, Technology, Engineering and Mathematics**) lesson instruction.

Key words

Trends of 20th century, changes in mathematics today, connect math concept to the real world.

I. INTRODUCTION

Math is present in day to day life and is being used even when people don't realize they are using mathematical reasoning. Almost all areas of human activity make more and more use of mathematics. They use all branches of mathematics, not just traditional applied mathematics. Mathematical activity like research, applications, education, exposition, has changed a lot in the last some years. Some of these changes, like the use of computers, are very perceptible and they are being applied in mathematical education fairly broadly. Many new forms of mathematical activity like algorithms and programming, Modeling, conjecturing, expository writing and lecturing, are acquisition significance. I will say some more about the new trends in mathematics, and discuss the question of their influence on mathematical education.

II. TRENDS OF 20TH CENTURY

The 20th century made a rethink on the foundations of mathematics, it was marked out by a new approach to

Mathematics. In International Congress of Mathematicians, David Hilbert's (1862-1943) vision was to analyses axioms of each subject and state results in their full generality. This vision became concrete in the 1930's through the development of the axiomatic approach to algebra. Parallel trends took place in functional analysis with Banach Spaces. This extent to other subfields of mathematics like partial differential equations, harmonic analysis and algebraic topology. The 20th century approach to mathematics resulted in a more developed mathematical language, new powerful mathematical tools, and inspired new application areas that have resulted in remarkable discoveries in other applied sciences. Towards the end of the 20th Century, Mathematicians were making a re-think on the need to bridge the division lines within mathematics, to open up more for other disciplines and to support the line of interdisciplinary research. The current cry is that this interaction will be further stabilized in the 21st Century. In the drive to seek generality, 20th century mathematics became more diverse, more structured and more complex.

III. CHANGES IN MATHEMATICS TODAY

In this section, I will discuss broad changes in mathematics today. These are as follows:

A. Teaching math using technology - Use Multimedia

Multimedia brings learning to life! We can bring videos, animations, interesting movies and other media into the learning process to help our students develop skills and understandings. And it can help to motivate and excite our students about their learning!

Mr. DeMaio, a third grade teacher in Union Beach, New Jersey, creates customized movies to help his students understand class topics such as multiplication tables and borrowing in subtraction. He hosts a YouTube channel with "edu-training" lessons and music videos that feature teachers in the school and recurring favorite characters such as puppets Steven and Andy.

The movies are so enjoyable to watch that kids play them again and again and ask for more on different topics! Compared to prior school years, Mr. DeMaio has found that this multimedia approach to blended learning has led to better retention and increased student understanding of the concepts, even in math and STEM lessons.

B. Interactive Visualizations and Explorations

Making math (or STEM subjects) visual goes beyond student engagement; brain research indicates it to be integral to learning maths. Neuroscientists at Stanford University are studying how the brain thinks mathematically and evidence shows that visual pathways are involved even when working on symbolic number calculations. According to Jo Boaler and the team at Stanford Graduate School of Education's you cubed, representing all mathematical concepts visually, and including visual activities at all grade levels, can greatly help students. Technology provides additional opportunities for learners to see and interact with mathematical concepts. Students can explore and make discoveries with games, simulations and digital tools. One excellent platform for teachers and students is the web-based graphing calculator, Desmos. The Desmos classroom activities page is a great starting point to engage students in playing with and testing mathematical ideas and also sharing and collaborating.

IV. Connect math concepts to the real world

Teachers can use technology to help students see how concepts they are learning in the math or STEM classroom can be applied to everyday life. Instead of giving her students a problem-solving worksheet, educator Jennie Magiera recorded a short video in the dairy aisle of the supermarket, posing the real-world problem of deciding what would be the best deal. She challenged her students to figure out what brand and size of cheese to buy based on the prices and promotions seen on the shelves. Recording videos of scenarios outside of the classroom such as this can be done easily with a smartphone and then shared on YouTube or the class website. Integrating technology in the math classroom allows students to interact with people outside of the classroom to help broaden their understandings and perspectives about what they are studying. Teachers can set up live interactive video calls with experts on a wide variety of curricular topics using sites such as Skype in the Classroom and Nepris. One teacher on Nepris posted a request for industry experts to share ways they use math concepts in their daily work, and as a result students were able to virtually meet a playground designer who demonstrated how he uses measurement, multiplication, and more in his decision-making and planning.

CONCLUSION

Every branch of mathematics has a potential for applicability in other fields of mathematics and other disciplines. All these, have posed a big challenge on the mathematics curricula at all levels of the education systems, teacher preparation and pedagogy. The 21st Century mathematics thinking is to further strengthen efforts. Technology gives us the ability to expand and enrich our math lessons using technology.

References –

1. **Changes in mathematics today**
   https://www.google.com/search?q=hanges+in+mathematics+today&oq=hanges+in+mathematics+today&aqs=chrome..69i57j33i10i160l4j33i22i29i30l2.12681j0j7&sourceid=chrome&ie=UTF-8

2. **Trends of 20th Century**
   https://www.google.com/search?q=trends+of+20th+century+in+mathematics&oq=trends+of+20th+century+in+mathematics&aqs=chrome.0.69i59.3468j0j9&sourceid=chrome&ie=UTF-8

3. **Connect math concept to the real world**
   https://www.google.com/search?q=connect+math+concept+to+the+real+world&oq=connect+math+concept+to+the+real+world&aqs=chrome..69i57j33i10i160j33i22i29i30l3.13895j0j9&sourceid=chrome&ie=UTF-8