

Workshop Report: Mathematics Education Enhancement Workshop

Teacher Attendee: Ms. Simran Bhatia

Date: February 16-17, 2024

Venue: Sanskriti School

Day 1: February 16, 2024

8:15 am - 8:30 am: Registration

The workshop commenced with a seamless registration process, ensuring a prompt and organized start.

8:30 am - 8:45 am: Welcome

Participants were greeted warmly, setting a positive tone for the workshop. Opening remarks emphasized the significance of the event in advancing mathematics education.

8:45 am - 10:15 am: **Create, Visualize and and Explore with GeoGebra**

The morning session delved into GeoGebra, offering participants hands-on experience in creating, visualizing, and exploring mathematical concepts. Practical activities engaged attendees and laid the foundation for the subsequent sessions.

10:15 am - 10:45 am: Tea and Refreshments

A brief break provided an opportunity for networking and informal discussions among participants, fostering a collaborative environment.

10:45 am - 11:45 am: **Understanding Chance: using spreadsheets to explore probability - Prof Amber Habib**

Prof Amber Habib captivated the audience with an insightful exploration of probability using spreadsheets. Attendees gained valuable insights into integrating technology to enhance probability education.

11:45 am - 12:00 pm: Break

A short break allowed participants to rejuvenate before the next session.

12:00 pm - 1:15 pm: **GeoGebra Activity and GeoGebra Classroom**

The day concluded with an interactive GeoGebra activity, reinforcing the morning's learnings. Participants also explored the GeoGebra Classroom, gaining practical skills for future implementation.

Day 2: February 17, 2024

8:15 am - 8:30 am: Welcome and Feedback of Day 1

The second day began with a welcome and a feedback session, encouraging participants to share their reflections from Day 1.

8:30 am - 10:30 am: **Create, Visualize and Explore with Desmos**

Participants delved into Desmos, expanding their technological toolkit for mathematics education. The session encouraged creativity and innovation in teaching practices.

10:30 am - 11:00 am: Tea and Refreshments

A mid-morning break facilitated networking opportunities and informal discussions among participants.

11:00 am - 12:00 pm: **Developing Computational Thinking in Mathematics Classrooms through Explorations - Dr Jonaki B Ghosh**

Dr Jonaki B Ghosh provided valuable insights into developing computational thinking, emphasizing the role of explorations in mathematics classrooms.

12:00 pm - 12:15 pm: Break/Math Walk

A short break encouraged physical activity with a math-themed walk, promoting a holistic approach to learning.

12:15 pm - 1:15 pm: You must know these!

The workshop concluded with a session highlighting essential concepts, ensuring participants left with key takeaways.

1:15 pm - 1:30 pm: Feedback & Valedictory

The event wrapped up with participant feedback and a valedictory session expressing gratitude to the speakers, organizers, and attendees for contributing to a successful workshop.

Overall, the Mathematics Education Enhancement Workshop provided a dynamic platform for educators to acquire innovative teaching methods, integrate technology, and enhance their approach to mathematics education. Participants left with valuable insights and practical strategies to implement in their classrooms. The workshop's success was attributed to the engaging sessions, expert speakers, and a collaborative learning environment.

Key Takeaways from the Mathematics Education Enhancement Workshop:

Integration of Technology: The workshop emphasized the effective use of tools like GeoGebra and Desmos to enhance mathematical learning. Utilize these platforms to

create interactive lessons, visualize concepts, and engage students in a dynamic learning environment.

Exploration and Activity-Based Learning: Incorporate hands-on activities and exploratory learning experiences in your classroom. Encourage students to explore mathematical concepts actively, fostering a deeper understanding of the subject.

Probability Education with Spreadsheets: Apply Prof Amber Habib's insights into using spreadsheets for probability education. Introduce practical exercises that involve students in probability simulations using spreadsheet tools.

Computational Thinking: Implement strategies shared by Dr Jonaki B Ghosh to develop computational thinking in mathematics classrooms. Design activities that encourage students to approach problem-solving in a structured and algorithmic manner.

Implementation Strategies:

Professional Development Workshops: Organize in-house workshops to share the insights gained from the Mathematics Education Enhancement Workshop with fellow teachers. Encourage collaborative learning and the adoption of new teaching methodologies.

Technology Integration Plan: Develop a comprehensive plan for integrating GeoGebra, Desmos, and other relevant technology tools into your school's mathematics curriculum. Provide training sessions for teachers to ensure effective implementation.

Curriculum Design: Revise the mathematics curriculum to include more hands-on activities, exploration-based learning, and real-world applications. Align the curriculum with the workshop's focus on integrating technology and fostering computational thinking.

Student Workshops and Clubs: Create extracurricular opportunities such as math clubs or workshops where students can explore mathematical concepts using GeoGebra, Desmos, and other tools. Foster a love for mathematics through interactive and engaging activities.

Mini-Projects: Assign mini-projects where students use GeoGebra to create dynamic visualizations related to specific topics. For example, they can model geometric shapes, plot functions, or explore trigonometric relationships.

Collaborative Explorations: Foster collaboration by having students work in pairs or small groups on GeoGebra explorations. This encourages teamwork, discussion, and the sharing of insights.

Dynamic Worksheets: Utilize GeoGebra's dynamic worksheets to create interactive exercises. Students can manipulate elements on the screen to understand mathematical concepts in real-time.

Integration with Assessments: Incorporate GeoGebra into assessments by including questions that require students to use the platform to solve problems. This reinforces the idea that GeoGebra is a valuable tool for problem-solving.

Real-World Applications: Show how GeoGebra can be used to solve real-world problems. This could involve modeling physical phenomena, analyzing data, or simulating scenarios to make mathematics more relevant and engaging.

Graphing Exercises: Introduce Desmos through graphing exercises. Start with simple linear equations and progress to more complex functions. Emphasize the real-time nature of Desmos graphs.

Desmos Art Projects: Engage students creatively by assigning art projects where they create visual masterpieces using Desmos graphs. This activity combines mathematical principles with artistic expression.

Interactive Quizzes: Design interactive quizzes on Desmos where students input answers graphically. This not only assesses their understanding but also makes assessments more engaging.

Resource Sharing: Create a centralized repository of GeoGebra and Desmos resources, including tutorials, activity ideas, and example projects. This facilitates easy access for both teachers and students.

Cross-Disciplinary Projects: Collaborate with other subjects to create cross-disciplinary projects that involve Desmos and GeoGebra. For example, use mathematics to model and analyze data in science experiments or historical events.

Student-Led Exploration: Encourage students to explore and discover functionalities of Desmos and GeoGebra independently. This fosters a sense of ownership over their learning and promotes curiosity.