Introduction

According to the National Council of Teachers of Mathematics, technology is essential in teaching and learning mathematics. It influences how mathematics should be taught and enhances what students learn. Calculators and computers present visual images of mathematical ideas for students. They help students organize information, support investigations, and develop decision-making, reflection, reasoning, and problem-solving skills.
Technology enhances the teaching of mathematics by presenting concepts in exciting new ways. Children learn the concept of place value by reading their textbook, then translating the words and numbers to a calculator or math software. They use technology to gain basic skills or to practice instant recall of facts and figures. For higher-level thinking, calculators and computers enable students to explore patterns and relations of very large numbers and offer explanations about why certain sequences occur. To promote problem-solving abilities, technology presents complex scenarios of how numbers are used in real life; scenarios that mathematics students have sought for years. Enabling students to perform routine computations quickly and efficiently, technology allows students to focus on the language, meaning, and applications of their answers. Students gain ownership with abstract mathematics and are enriched by the range, quality, and realism of the investigations presented.

Technology in mathematics classes enhances teaching for understanding. Students can examine more examples using technology than was ever possible by hand. The power of the graphics calculator addresses the visual learner, while manipulatives connect the symbols and pictorial representations for the more tactile student. Geometry software allows students to experiment with properties of shapes and draw conclusions about relationships when measurements are adjusted. Computational capacity extends the range of problems presented to students and provides choices to teachers when presenting abstract mathematical concepts.

The boundaries of mathematical landscape are suddenly transformed. With technology, teachers connect student skills to basic development of mathematical understanding, enabling elementary students to organize and analyze large sets of numbers. Middle school students in grades 5 through 8 study linear relationships, experimenting with variables and large amounts of data represented by scatter plots. High school students use simulations to visualize complex computer algebra systems. Random generators enhance probability experiments that approach realistic situations. Sample sizes become huge, and students suggest more realistic predictions about real-life situations using technology-based tools such as spreadsheets.
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