



NCTM POSITION STATEMENT

The Use of Technology in the Learning and Teaching of Mathematics

Position

Technology is an essential tool for teaching and learning mathematics effectively; it extends the mathematics that can be taught and enhances students' learning.

Rationale

Calculators, computer software tools, and other technologies assist in the collection, recording, organization, and analysis of data. They also enhance computational power and provide convenient, accurate, and dynamic drawing, graphing, and computational tools. With such devices, students can extend the range and quality of their mathematical investigations and encounter mathematical ideas in more realistic settings.

In the context of a well-articulated mathematics program, technology increases both the scope of the mathematical content and the range of the problem situations that are within students' reach. Powerful tools for computation, construction, and visual representation offer students access to mathematical content and contexts that would otherwise be too complex for them to explore. Using the tools of technology to work in interesting problem contexts can facilitate students' achievement of a variety of higher-order learning outcomes, such as reflection, reasoning, problem posing, problem solving, and decision making.

Technologies are essential tools within a balanced mathematics program. Teachers must be prepared to serve as knowledgeable decision makers in determining when and how their students can use these tools most effectively.

Recommendations

- Every school mathematics program should provide students and teachers with access to tools of instructional technology, including appropriate calculators, computers with mathematical software, Internet connectivity, handheld data-collection devices, and sensing probes.
- Preservice and in-service teachers of mathematics at all levels should be provided with appropriate professional development in the use of instructional technology, the development of mathematics lessons that take advantage of technology-rich environments, and the integration of technology into day-to-day instruction.
- Curricula and courses of study at all levels should incorporate appropriate instructional technology in objectives, lessons, and assessment of learning outcomes.
- Programs of preservice teacher preparation and in-service professional development should strive to instill dispositions of openness to experimentation with ever-evolving technological tools and their pervasive impact on mathematics education.

- Teachers should make informed decisions about the appropriate implementation of technologies in a coherent instructional program.