Calculators in the Classroom: Where We’ve Been, Where We’re Going

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Where We’ve Been

- Hewlett-Packard introduces first scientific calculator in 1972.
- Last slide rule manufactured in the United States in 1975.
- Casio introduces first graphing calculator in 1986.
What is a calculator?

A usually electronic device for performing mathematical calculations

Merriam-Webster’s Collegiate Dictionary Online
Progression of Calculators

- Arithmetic
- Scientific
- Graphing
- Algebraic

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How have calculators changed mathematics?

More important
- discrete mathematics
- data analysis
- parametric representations
- non-linear mathematics

Less important
- paper and pencil arithmetic
- symbolic manipulation
How have calculators changed mathematics teaching?

❖ Teachers can focus on conceptual development.
❖ Data collection devices allow for connections between mathematics and the sciences.
❖ Data analysis tools allow for connections between mathematics and the social sciences.
Pedagogical Responses to Calculators

✧ Prohibition of use
✧ To check pencil and paper calculations
✧ To substitute for pencil and paper calculations
✧ Simultaneous use of calculator, pencil and paper AND mental math
The Call to Use Calculators

- Texas Essential Knowledge and Skills call for appropriate technology use at all grade levels.
Obstacles to Calculator Use

- Debate on the nature of mathematics
- Fear of student dependence on calculators
- Equity issues
- Lack of training on appropriate calculator use
- Lack of acceptance of calculators at the university level
- Assessment issues
More Thoughts on Assessment

- If calculators change teaching, they must change assessment as well.
- Calculators are required on Advanced Placement Calculus and Statistics Exams.
- Calculators are required on Algebra I End-of-Course Exam.
- Calculators will be required on Grade 9, Grade 10 and Exit Level TAKS.
Where are we going?

- Computer-upgradable calculators can have their functionality upgraded with the latest software.
- Application software can extend calculator use outside of the realm of mathematical computations.
- Calculators are serving many of the same purposes as computers.
Many calculators today are computers.

Computer-a programmable electronic device that can store, retrieve and process data.
Where might we be going?

- Increased acceptance and assessment with calculators at lower grade levels
- Increased use of algebraic calculators in the instruction of algebra
- Even less distinction between calculators and computers