

Calculators: A revolution in the classroom

The advent of the pocket calculator will revolutionize the teaching of elementary school arithmetic, said Lauren Woody, professor of mathematics at Michigan State University.

"At the push of a button on a \$5 calculator, a child has access to most of the computational skills normally acquired over seven or eight years of schooling in this arithmetic," Woody explains.

Because more than half of all elementary school pupils in the country have access to their own or their parents' pocket calculator, he said, educators should begin developing suitable classroom materials to take advantage of these devices, rather than arguing against their use.

"Teachers will have to face the fact that children will use calculators whether or not they are permitted in the classroom," he added.

This winter, Woody will teach a course for teachers in the use of hand calculators in the classroom at the Birmingham Center for Continuing Education.

Some teachers are reluctant to face the issue of calculators in the classroom, Woody explained, because they see the mini-

machines as threats to their positions as teachers.

As he views them, pocket calculators simply eliminate the drudgery of time-consuming operations in addition, subtraction, multiplication and division.

"These devices do not eliminate the need to understand the concepts behind these basic operations," he said. "There will always be a need for teaching the concepts and theories of basic math because we have not replaced the human mind required to properly operate the machine."

Because calculators are so fast and accurate, Woody believes they will eventually free up more time for creative mathematical thinking and for the better development of basic concepts.

Many students in high school still have weak foundations in some basic arithmetic, he points out.

Woody said he recognizes that even under the best of situations, pocket calculators will not always be handy or available and that the need for some hand or mental calculation will persist.

These devices do not eliminate the need for skill in arithmetic with small numbers, Woody added.

"It would be ridiculous for a fifth grader to resort to a calculator to multiply five times three or to subtract 15 from 23," he said.

"We ought to focus our efforts on teaching young children how to make accurate

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MSU studies two-way TV

Researchers at Michigan State University will soon be demonstrating television and computer teaching systems linked by two-way cable.

Funded by a \$420,000 National Science Foundation (NSF) grant, the experiment could help to determine the future uses of two-way cable TV.

MSU's project, located in Rockford, Ill., will provide part of the daily training of firefighters by two-way television monitoring of utility meters and security alarms.

The research, said Baldwin, examines a variety of two-way TV services which, as technology progresses, could make two-way cable economically viable for many existing cable systems as well as those to be built in the future in urban areas.

Muth, who is a lawyer, will also explore public policy problems and questions associated with the introduction of the system.

Baldwin said there are only a handful of functioning two-way cable systems in the U.S. Rockford, however, is one city where a two-way system has been in daily operation since 1973.

The city of Rockford was selected for the experiment because of its size, demographic mix and the facilities of Rockford Cablevision.

The special cable system hardware and computer programming for two-way communication was designed by Coastal Scientific Corp. of Sarasota, Fla. Modifications of the system to meet the specific demands of the MSU/NSF team, which includes researchers in communication, public affairs, social science, advertising, economics, law, engineering and telecommunications, will demonstrate the system with an instructional program on "pre-fire planning" for the city's firefighters. Pre-fire planning was chosen because it is a high priority item in Illinois and in most every fire department across the country.

It involves a complete survey of major buildings so that in the event of fire, the firefighters will know where the occupants are located, understand the floor plan, and recognize potential hazards inside and outside the building.

"Obviously, this is a vital thing for a fire department so they can be better prepared to cope with a fire," said Baldwin.

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