

CALCULATOR KEYSTROKES: TOOLS FOR COMMUNICATION AND THOUGHT

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Over the past 25 years, research has pointed to the need for studying how the calculator affects the learning process, and how the teacher mediates the learning process with the use of the calculator (Hembree & Dessart, 1992; Shumway, White, Wheatley, Reys, Coburn, & Schoen, 1981). Moreover, Lampert (1991) argues that the teacher has the responsibility to find “language and symbols” which students and teachers can use to enable them to talk about the same mathematical content. Current research has not yet investigated the idea of calculator keystrokes as a language that can be used to create community knowledge and understanding in mathematics classrooms.

Based on sociocultural theory (Rogoff & Lave, 1984; Vygotsky, 1978), a case study of a fifth-grade classroom (Chval, 2001) was conducted during the 1998-99 academic year investigating how the teacher used calculators in mathematics instruction. Data sources included field notes from classroom observations, audiotapes of 110 mathematics lessons, and student work. Common patterns in the teacher’s talk were identified.

The teacher introduced a keystroke-based language as a social tool that facilitated social activity and communication. The keystrokes were used as referents for writing and discussing mathematical ideas. As students participated and interacted in that social activity, the keystrokes went beyond the role of a communication tool to take on additional roles in developing higher cognitive functions such as planning, reflection, analysis, problem solving, and writing.

References

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