

# Teaching Scientific Reasoning Skills: A Case Study of a Microcomputer-Based Curriculum

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One major concern of science education is preparing students to live in a rapidly changing society. In order to recognize, address, and shape new scientific and technological changes, students need not only understanding of scientific facts from the natural and physical sciences, but also problem-solving skills. These expert thinking skills do not develop spontaneously. Science educators must look for ways to encourage and develop such important inquiry skills in their students.

The recent incorporation of new information technologies into schools offers science education an unprecedented opportunity to reconsider traditional approaches to science curricula. In our instance, the integration of 16 microcomputers into a middle-class, eighth grade classroom has resulted in dramatic curricular changes. As researchers of the Computer as Lab Partner Project from the University of California at Berkeley, we are currently investigating the educational potential offered by Microcomputer-Based Laboratories (MBL)—a new class of probeware and software for real-time data collection and presentation. The Project's curriculum focused on three specific objectives: a) to teach the subject matter; b) to teach graph interpretation skills; and c) to foster students' scientific reasoning skills. This

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# Teaching Mathematics And Science Patterns Of Microcomputer Use

**Mark Steyvers**



## **Teaching Mathematics And Science Patterns Of Microcomputer Use:**

*Teaching Mathematics and Science - Patterns of Microcomputer Use* Rand Corporation,1984     *Teaching Mathematics and Science* Richard J. Shavelson,1984     **Resources in Education** ,1986     *Microcomputers in Education* ,1984  
Administrative Policies for Increasing the Use of Microcomputers in Instruction John D. Winkler,1986     **The Education & Human Resources Program** Linda Darling-Hammond,1988     District and School Incentives for Teachers' Instructional Uses of Microcomputers Cathleen Stasz,1985     **Microcomputers and Education** Jack A. Culbertson,Luvern L. Cunningham,1986     **"Successful" Teachers' Patterns of Microcomputer-based Mathematics and Science Instruction** ,1984     **A Bibliography of Selected Rand Publications** Rand Corporation,1988     *How Effective Teachers Use Microcomputers for Instruction* ,1984 To summarize cluster analyses of various instructional decisions and tasks employed by effective microcomputer using teachers revealed four characteristic patterns of use orchestration enrichment adjunct instruction and drill and practice Orchestrators are distinguished by their multiplicity of uses and degree of integration between microcomputer use and ongoing instruction Enrichers appear to encourage student familiarity with the microcomputer within a less ambitious instructional program Adjunct instructors appear to use the microcomputer selectively to enhance conceptual mastery within the subject matter Drillers seem to provide students with an extensive program of drill and practice on the microcomputer to enhance mastery of procedures     **Children and Microcomputers** Milton Chen,William Paisley,1985-06 Microcomputers have been acquired in homes and schools faster than any educational technology in history The pace of these technological changes presents social researchers with many stimulating questions Children and Microcomputers is a compilation of research on children s use of microcomputers It gives a brief history of microcomputers and related microprocessor technologies together with an analysis of their distinguishing features and patterns of diffusion The contributors review past and current research on utilization and effect and project future directions for research     **Alberta Journal of Educational Research** ,1987     **Teaching with Technology** ELIZABETH ANNA UZDAVINIS CARLSON,1991 goals for the teaching and learning that occurred in their classrooms     **Selected Rand Abstracts** Rand Corporation,1984 Includes publications previously listed in the supplements to the Index of selected publications of the Rand Corporation Oct 1962 Feb 1963     **Investigations in Mathematics Education** ,1986     *Journal of Research on Computing in Education* ,1987     *Use of Tool Software to Employ the Computer as a Learning Tool for the Teaching of Mathematics* William Michael Casolaro,1986     Capstone Journal of Education ,1982     **RAOP** ,1986

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