When we first met in 1962 Bob Karplus was a theoretical physicist and I was an Assistant Superintendent of Schools. We both had a second love (at the time) called elementary science education and our chance meeting as consultants to an educational toy company redirected my career, and enhanced Bob’s commitment to science education. It resulted in what became known as the Science Curriculum Improvement Study or SCIS which in Latin we later found out means to know. According to our editor the SCIS team developed “240 exciting science lessons.” I never counted them and the fact that over 35 years after we started, the SCIS3+ (Their and Knott, 1998) revision of the original materials is still a viable commercial product attests to the fact that at least some of them are exciting. I think this is true because from the beginning (1963) SCIS (first published in 1970) was a pioneer in providing:

- a strong conceptual framework;
- a comprehensive equipment and materials kit; and
- an articulated teaching strategy (the SCIS Learning Cycle).

Furthermore, SCIS was the first elementary school science program to

* Lawrence Hall of Science.

_A Love of Discovery: Science Education—The Second Career of Robert Karplus_,
• use an ecological approach and live organisms to present the study of life science;
• establish Scientific Literacy as its overall goal for students; and
• document achievement of its goal of Scientific Literacy.

All of our distinguished colleagues who made up the SCIS team in Berkeley and our centers from New York to Hawaii contributed significantly to what became SCIS—the outcome of the vision and commitment of Robert Karplus.

Concepts and themes pioneered in the original version of SCIS now appear in many state and local guidelines for elementary science education, as well as the National Science Education Standards and Benchmarks for Science Literacy, Project 2061.

First stated by Bob in “One Physicist Looks at Science Education” (ASCD, 1964, pp. 12–14) the goal of SCIS has always been Scientific Literacy. Investigations are carried out daily by all of us—in fact, investigation is the way we learn. How much water does a plant require? Can a person jump across a stream more than 3 m (10 ft) wide? Will feeding a canary a special food cause it to sing more frequently? Our innate curiosity and search for truth compel us to investigate. When we investigate scientifically, the conclusions we draw are based on factual evidence, not hearsay or opinion. As students develop effective techniques for testing and observing everything around them, they learn the what, how, when, and why of things with which they interact and become scientifically literate. The commitment to literacy and understanding in no way diminished the central importance of content and process in SCIS. Rather than try to separate the two, SCIS stated “this philosophy of and approach to science teaching makes impossible the separation of process goals from content goals, or either one from concept development” (Karplus and Thier 1969). This commitment to the integral nature of science and how one learned it was the vision of the entire SCIS team under Bob’s thoughtful leadership.

Prior to and early in the development of SCIS, Bob’s research (see chapter 4) on how to effectively construct the interaction between a teacher and a classroom full of learners resulted in the commitment to guided student experiences rather than a textbook as the basis of the program. The concurrent development of the LEARNING CYCLE as the conceptual organizer for structuring the interaction between the teacher and a whole classroom of learners provided the approach needed to relate the guided student experiences to the ongoing intellectual and social development of each learner. Exploration, Invention, and Discovery are stages in a learning cycle; each stage can always lead to another. Exploratory sessions frequently include discovery activities for prior concepts while creating a need for the teachers introduction of the new concept. Invention sessions frequently lead to questions best