

Understandings about Inquiry

Accomplished science teachers understand that inquiry is important to science classrooms for two basic reasons. Inquiry is both the process scientists use to learn about natural phenomena and a process that students can use to develop their knowledge of science content and their metacognition related to the field of science. (See [Standard III—Curriculum and Instruction](#).)

Accomplished science teachers understand that scientists use inquiry to learn about natural phenomena. Scientific inquiry involves making observations; posing questions; examining books and other sources of information to see what is already known about a given subject; planning investigations; using tools to gather, analyze, and interpret data; proposing answers, explanations, and predictions; and communicating results. Inquiry requires the identification of assumptions, the use of critical and logical thinking, and the analysis of alternative explanations. Inquiry must be undertaken with consideration for the ethics of the scientific process.

Accomplished science teachers provide students with multiple opportunities to engage in scientific practices, including inquiry. They teach students how to develop scientific questions, design and conduct investigations, obtain and analyze meaningful data, and arrive at conclusions. (See [Standard III—Curriculum and Instruction](#).)

Accomplished science teachers know that their students need more than the ability to conduct scientific inquiry. Students need to possess a deep understanding about the capacity of scientific inquiry to generate knowledge, solve problems, answer questions, generate new questions, and enhance collaboration. Accomplished teachers facilitate the process through which students learn to combine their ability to conduct investigations, their understandings about scientific inquiry, and their critical thinking skills to further their own scientific understandings.