

1.3 Inquiry and the Scientific Method

We believe that the universe obeys a set of rules that we call **natural laws**. We believe that everything that happens everywhere obeys the same natural laws. Unfortunately, the natural laws are not written down nor are we born knowing them. *The primary goal of science is to discover what the natural laws are.* Over time, we have found the most reliable way to discover the natural laws is called *scientific inquiry*.

What inquiry means

Inquiry is learning through questions	Learning by asking questions is called inquiry . An inquiry is like a crime investigation in that there is a mystery to solve. With a crime, something illegal happened and the detective must figure out what it was. Solving the mystery means accurately describing what actually happened.
Deduction	One problem always is that the detective did not see what happened. The detective must deduce what happened in the past from information collected in the present.
Theories	In the process of inquiry, the detective asks lots of questions related to the mystery. The detective searches for evidence and clues that help answer the questions. Eventually, the detective comes up with a theory about what happened that is a description of the crime and what occurred down to the smallest details.
How you know you have learned the truth	At first, the detective's theory is only one explanation among several of what <i>might have happened</i> . The detective must have proof that a theory describes what <i>did happen</i> . To be proven, a theory must pass three demanding tests. First, it must be supported by significant evidence. Second, there cannot be even a <i>single</i> piece of evidence that proves the theory is false. Third, the theory must be unique. If two theories both fit the facts equally well, you cannot tell which is correct. When the detective arrives at a theory that passes all three tests, he or she believes they have learned from their inquiry what happened.

VOCABULARY

natural laws - the set of rules that are obeyed by every detail of everything that occurs in the universe, including living creatures and human technology.

inquiry - a process of learning that starts with questions and proceeds by seeking the answers to the questions.

deduce - to figure something out from known facts using logical thinking. For example, "this is what happened ... because ...".

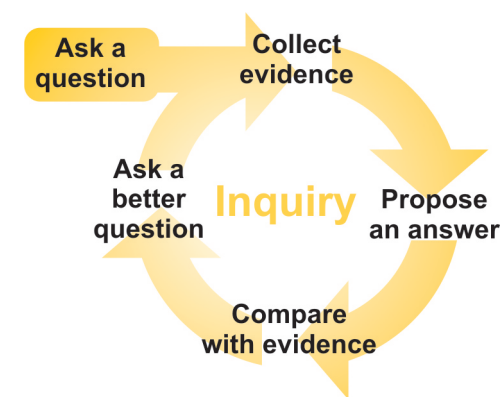


Figure 1.14: The steps in learning through inquiry.