



The Scientific Method

Some of the most important discoveries have come about as a result of questioning why things are the way they are. That is how science begins. In order for scientists to investigate and answer questions about the natural world that surrounds them, they have to follow a series of steps called the **scientific method**. It's kind of like a road map that scientists use in order to understand how things work and why they work the way they do.

When using the scientific method, one of the first steps involves making **observations**, or gathering information on a topic of interest. This step comes natural to most people. It involves using the 5 senses to *see, hear, taste, touch, or smell* what is going on in the world.

The next step is to come up with a **problem**, or a good question to be answered. Ask yourself questions about something that interests you and what you would like to learn more about. Does something seem strange to you? Do you want to find out how something works? Questions should be clear and testable, not opinions or questions that test more than one thing.

The next stage of the scientific method involves forming a **hypothesis**, or a possible solution to the problem. This is when scientists use what they already know and have observed, to say what *they believe* the outcome of the experiment will be.

The best part about a hypothesis is that it is simply a *prediction* of what you think is going to happen. If a scientist's results do not match their hypothesis, this does NOT mean that the experiment was a failure.

The most important and exciting step of the scientific method is conducting **experiments**. In this phase, scientists design and carry out tests, or trials, that will help them determine if their hypothesis is correct. This step also requires scientists to write down clear and concise procedures, or steps to follow, and to keep a list of the materials used. Keeping such careful records will allow other scientists to repeat the experiment at a later date.

As scientists work on their experiments, they are constantly making observations and collecting data. This part of the process is known as the **results**. It is important to keep careful records so that they can be shared with other scientists. Data can also be in the form of notes, tables, pictures, charts, and even graphs.

The final step is the **conclusion**. This involves analyzing and summarizing the results. This is also where scientists reveal whether or not the data found supports their original hypothesis. If results do not support the hypothesis, scientists do NOT go back and change their predictions. Instead they try to figure out what might have been wrong with their hypothesis.

