

How the scientific method works.

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1 Introduction

The scientific method is fundamental to successful experimentation. It consists of four main stages: observation, hypothesis, experimentation, and analysis. A successful scientific endeavor covers each of these stages thoroughly.

1.1 Observation

Observation consists of noticing a phenomenon, asking questions about it, and researching what is known about the phenomenon. For example, you might notice that two objects of the same dimensions fall at the same rate. A question this might raise is whether the mass of these objects affects how quickly they fall. You can then look for information from previous experiments or equations that seek to explain the phenomenon.

1.2 Hypothesis

After you're done observing, you move on to hypothesizing. A hypothesis is an educated guess about the phenomenon. After doing research on falling objects and deriving equations about them, you might hypothesize that objects of the same dimensions will fall at the same rate regardless of mass because the same forces are acting on each object.

1.3 Experimentation.

Once the hypothesis has been formed, you can move onto experimentation. A good experiment will have a control, or a result against which other results can be gauged. For this experiment, it could be falling objects of the same dimensions and same mass. The variable group, which is compared to the control group, could include falling objects of the same dimensions and variable masses. The results of these experiments would then be recorded accurately in pen so they cannot be changed to better suit the hypothesis.

1.4 Analysis

When the experiment is over, the data is analyzed. If the data correlates to the hypothesis, the hypothesis is considered to be supported. If it doesn't, the hypothesis can be considered disproved. Either way, the analysis is generally published as a scientific report, which is then subject to critique by the experimenters' peers. Ideally, the experiment is then repeated to determine if the results are the same every time.

2 Conclusion

To be successful in science, the scientific method should be used for all experiments. The experimenter should observe, hypothesize, experiment, and analyze to retain accuracy. When the scientific method is employed, the results should speak for themselves.