

THE SCIENTIFIC METHOD WORKSHEET

www.selectedreads.com

What is the scientific method?

The scientific method is a systematic process that researchers use to investigate phenomena, acquire knowledge, and develop a deeper understanding of the world around us. This method serves as the foundation for empirical research and helps scientists develop theories, test hypotheses, and draw conclusions based on empirical evidence.



The Scientific method steps

ASK A QUESTION

1

- Observe a phenomenon.
- Formulate a specific, testable question based on the observation.



CONDUCT BACKGROUND RESEARCH:

2

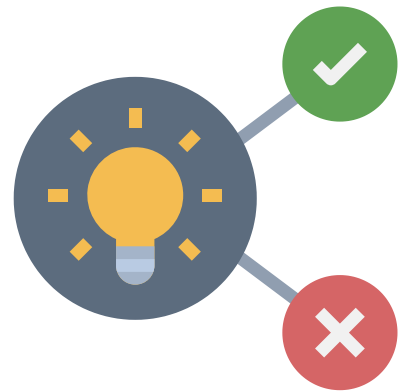
- Gather information on the topic.
- Review previous work done in the field.
- Identify gaps in existing knowledge.



FORMULATE A HYPOTHESIS:

3

- Develop a testable statement or prediction.
- Ensure the hypothesis is specific and falsifiable.



DESIGN AND CONDUCT AN EXPERIMENT:

4

- Plan a controlled experiment to test the hypothesis.
- Determine the independent, dependent, and control variables.
- Set up control and experimental groups for comparison.

COLLECT AND ANALYZE DATA:

5

- Record data during the experiment.
- Analyze data using appropriate statistical methods.
- Determine if the data supports or refutes the hypothesis.



DRAW CONCLUSIONS AND COMMUNICATE RESULTS:

- Interpret the results of data analysis.
- Determine if the hypothesis is supported or not.
- Share findings through presentations, reports, or scientific publications.
- Engage in peer review and validation of findings.
- Revise the hypothesis and repeat the process, if necessary.

6



Resources on The Scientific Method

- 1. The Logic of Scientific Discovery, by Popper, Karl
- 2. The Structure of Scientific Revolutions, by Thomas Kuhn
- 3. Scientific Method in Practice, by Hugh Gauch
- 4. What is this thing called Science?, by Alan Chalmers
- 5. How to Think About Weird Things, by Schick, T., & Vaughn, L.
- 6. Laboratory Life, by Latour et al.
- 7. Against Method, by Paul Feyerabend