

The Scientific Method

Problem, Purpose, or Research Question: The problem or research question is the single most important part of the scientific method. Every part of your project is done to answer this question. The research question is sometimes formed as a statement and is called the "Problem" or "Problem Statement." What is your goal or what idea are you trying to test? What is the scientific question that you are trying to answer?

Hypothesis: The hypothesis is an "educated guess," formed as a statement that you propose to be the answer to the research question. Explain how you think your project can demonstrate your purpose. You should try to state the results you are predicting in measurable terms. Not always will your conclusion match your hypothesis.

Materials: List all supplies and equipment used in conducting your research or experiment. Your list of materials should include all of the ingredients of the procedure.

Procedure: The procedure is a somewhat detailed, step - by - step description of how you conducted your experiment. Be clear about the variables vs. your controls. Be specific about how you measure results to prove or disprove your hypothesis. Your procedure should be like a recipe whereby another person should easily be able to follow it. Photos depicting the steps are good to have on your display board.

Observations, Data, Results: The results are usually in the form of a statement that explains or interprets the data. Results can be in the form of raw data, graphs, general summarization of what your data is telling you. Photos can also be used here. Example: "Test Plant 3 showed little difference in growth rate as compared to the Control Plant."

Conclusion: The conclusion is a summary of the research and the results of the experiment. This is where you answer your problem or research question. You make a statement of whether your data supported your hypothesis or not. You may have data that supported part of your hypothesis and not another part. You may also have data that did not support your hypothesis at all. In this case, you may explain why the results were different.