

Expectations for Project Components



1. Proposal (Application)

- Written description of the experiment the student has chosen. This information helps the student pinpoint what they will be doing. The proposal also serves as a tool to let the teacher check that the experiment is safe, ethically sound, and that it is not a demonstration. The proposal **does not go on the display board and is not a part of the report.**

2. Topic

- Ask yourself, "What am I interested in?" or "What topic do I want to learn more about?"
- Your topic should be in the form of a question, and should grab the attention of the judge (projects will be judged and graded).

3. Purpose

- What questions do you have about your topic? What do you want to know? State the problem as a question.
- In some cases you may want to research your topic before you identify a specific problem.
- This statement describes what the student is trying to find out in their investigation.
- *Example:*
 1. How does the amount of water affect plant growth?

4. Research the Problem and Your Topic

- What do you need to learn about so that you can solve your problem or answer your question? Where can you search for information?
- Learn as much as you can about your topic and problem. Research can be from many different sources including people, books, magazines, the internet, or your own experiences.
- After you do your research you may want to restate your question in a better way.
- *Example:*
 1. Does the amount of food given to a certain plant affect the growth of the plant?

5. Hypothesis

- Now that you have done your research, you need to develop a hypothesis.
- A hypothesis is a prediction. What is your prediction of the answer to your question? What do you think will happen?
- Guess what the answer to your question will be. This is not a mystery. You have educated yourself on the topic and by now you should be able to make a guess the answer based on your learning. This is also called an "educated guess." An educated guess is based on your research and prior knowledge.
- It should be in the form of "If ..., then ..."
- Example:
 1. I predict that if my plant does not get enough water, then it will die.

6. Materials

- How will you test your hypothesis? What tests will answer your question?
- A very detailed and specific list of all equipment needed to conduct the experiment.
- It should be so specific and detailed that it could be replicated by someone else who is completely unfamiliar with your experiment.

7. Procedure

- This is a step-by-step explanation of how to do the experiment and should be very detailed. Use sequential words to help you when you are writing this in a paragraph.
- How will you test your hypothesis? What tests will answer your question?
- Define the variables that will change from one experiment to the next. Amount of water? Amount of plant food?
- **Plan the tests that you want to perform so that you will have a good idea of how much time you will need to complete them in the time allotted for your project. How long will it take to grow your plants and get good data?**

8. Experiment (Testing the Hypothesis)

- The experiment is one of the only requirements that should be completed at home. All of the preparation will primarily take place at school.
- Make sure to document what happens as you conduct your experiment.
- Take detailed notes, pictures, or draw sketches.
- Be very detailed in your documentation and data collection.

9. Results & Graphs

- What do your results tell you? Look at your experimental data. Organize it. Do you see any trends or information that proves or disproves your hypothesis?
- Develop graphs. Graphs not only help you understand your data, but they will also help others to quickly understand what you did.
- You will also discuss and summarize your results in writing.

10. Conclusion

- Was your hypothesis right or wrong? It is OK to be wrong. The objective of the scientific method is to investigate a problem and work towards a solution. Sometimes you will end an experiment with more questions that will then become a part of your conclusion.
- Sometimes a conclusion proposes a new hypothesis and new experiments for future study.
- State what you learned and how this information is helpful in your everyday life.
- Even if you have disproved your hypothesis you have still done a good job if you correctly applied the scientific method.

11. The Report

- The report part of the project requires the Purpose, Hypothesis, Materials, Procedure, Results, and Conclusion to be typed in paragraph form.

13. Project Display Board

- Your display should include the following:
 1. Title
 2. Purpose or Question for your project
 3. Hypothesis
 4. Materials
 5. Procedure
 6. Experiment in Progress (Pictures or Sketches)
 7. Results (In written & Graph form)
 8. Conclusion

