



Research Paper

At this point, you are in the home stretch. Except for writing the abstract (described below), preparing your research paper will just entail pulling together the information you have already collected into one large document.

Here are the basic elements of a scientific research paper:

- **Title Page**
- **Table of Contents**
- **Abstract:** The Abstract is a short summary of the project and includes the key highlights of your experiment: purpose, procedure, and conclusions. Following are some tips on writing your abstract from the California State Science Fair :

Objectives: State the purpose or hypothesis upon which the project is based.

Materials and Procedures: Indicate the materials and procedures used in your project. Briefly describe your experiment or engineering methods.

Results: Summarize the results of your experiment and indicate how they pertain to your purpose or hypothesis.

Conclusions/Discussion: Indicate if your results supported your hypothesis or enabled you to attain your objective. Discuss briefly how information from this project expands our knowledge about the category subject. If you did an engineering or programming project, state whether you met your design criteria.

- **Question and Hypothesis:** The question that you are trying to answer with your experiment. Be sure to clearly state your hypothesis at the end.
- **Review of Literature:** Background information that reflects the knowledge you have acquired, through your research, on the topic your of your experiment. You should be providing the reader with useful background information for your project.
- **Materials and Procedure (Research Plan):** This is essentially your research plan. You should be certain to include a list of all materials that were used in your experiment and how they were used. It is best to present your procedure in steps and to include as much detail as possible about measurements and techniques in each step.
- **Results:** A precise recap of what you found out in your experiment, focusing on your observations and data, leaving all interpretation for the Conclusion section.
- **Conclusion:** A summary of your interpretation of the data and results of the experiment. You should restate the hypothesis and whether you found the hypothesis to be true or false. You should also comment on how the results of the experiment satisfied your original purpose.
- **Acknowledgments:** This is your opportunity to thank anyone who helped you with your project, from a single individual to a company or government agency.
- **Reference List / Bibliography.**
- **Table and Figures:** Include tables, charts, and photographs that further help explain your experiment and results.

Your Assignment

Prepare your research paper in a word processor.

Grading Yourself

| What Makes for a Good Research Paper? | For a Good Research Paper, You Should Answer "Yes" to Every Question |
|--|---|
| Does your abstract include a short summary of the hypothesis, materials & procedures, results, and conclusion? If you did an engineering or programming project, did you state whether you met your design criteria? | Yes / No |
| Does your research paper include: <ul style="list-style-type: none"> • Title page • Table of contents • Abstract • Question and hypothesis • Review of literature • Materials list • Procedure • Data chart(s) • Graph(s) • Conclusion • Bibliography | Yes / No |

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