



Science Fair: Dr. Reynold's Paper Guide

RESEARCH NOTES—Delete these when you're ready to finalize your paper for submission.

Research question:

Category of Scientific Research:

| <p>Full Reference in APA Style You need at least <u>5 peer-reviewed sources</u> (e.g., encyclopedia articles, online articles, official websites).</p> | <p>Notes (summaries of the information in your own words, no full sentences, no quotations, use abbreviations and symbols) Types of information to include:</p> <ul style="list-style-type: none">• Definitions for scientific terms or concepts• Results of studies done on your topic• Ways studies were done to research your topic• Why your topic is important |
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Abstract

Do NOT write this section until your entire paper is written.

1. Copy the entire final paragraph of the Introduction and paste it HERE.
2. Re-read your Methods & Materials section and write 2 or 3 new sentences to explain what you did. Don't just copy what you've already written. Figure out how to give a general idea about how you did your study.
3. Look in the first paragraph of the Discussion/Conclusions section for the sentence that says something like "Results suggested..." and copy it. Paste it HERE.
4. Look in the first paragraph of the Discussion/Conclusions section for the sentence that says something like "My hypothesis was supported..." and copy it. Paste it HERE.
5. Look in the last paragraph of the Discussion/Conclusions section for the sentence that says something like "In conclusion..." and copy it HERE.
6. Put all the sentences you copied or wrote into a paragraph. Don't leave them in a list.
7. Go back through what you've written to turn the verbs into past tense (e.g., "The independent variable was...").

Introduction

The goal of the Introduction is to present a rationale (a logical argument) for why your study is worth doing and why your hypothesis makes sense.

First paragraph: Introduce the topic of your study and explain why it is important to study. How does knowing more about your topic help humans and/or the environment? End the paragraph with the question your research is designed to answer.

WRITE THE FIRST PARAGRAPH HERE:

Middle paragraphs: These paragraphs explain the key scientific concepts of your study. Describe any studies that have been done on your topic and what the researchers found.

WRITE THE MIDDLE PARAGRAPHS HERE:

Final paragraph: Fill in the blanks below to write your final paragraph.

The purpose of this study is to _____. The independent variable is _____. The experimental group is: list the levels or conditions of the IV inside these parentheses. The control group is _____. The dependent variable is _____. The constants are _____. The hypothesis is: _____.



Methods and Materials

Make a list of all the materials needed and the steps you'll follow to do the experiment. Explain the safety precautions you will take. Explain how you'll analyze your data.

PUT YOUR MATERIALS LIST HERE:

LIST YOUR PROCEDURES HERE:

- 1.
- 2.
- 3.

PUT SMALL PICTURES OF YOUR EXPERIMENT HERE.

When you've finished the experiment, turn the Methods list into a paragraph in past tense that tells what you did in your experiment (not what you planned to do). Include the materials (e.g., size, number) as you tell what you did. **Don't list the materials as a separate paragraph.**

Results

Identify the important results of your study: the highest and lowest means on your graph. Be sure you include the means (in numbers) and the IV for each mean. Don't explain why you think the results came out as they did—that explanation belongs in the Discussion section.

WRITE YOUR RESULTS HERE:

PUT YOUR GRAPH HERE:

INCLUDE A FEW SMALL PICTURES TO SHOW HOW YOU DID YOUR EXPERIMENT.



Discussion and Conclusions

Paragraph 1: Fill in the blanks and then explain why you think the hypothesis was accepted or rejected. This is your interpretation of the results.

The purpose of this experiment was to _____. The hypothesis was: _____. The results showed that _____. These results _____ the hypothesis. One reason the hypothesis was (rejected? accepted?) may be because _____. Another reason may be because _____.

Paragraph 2: Describe any sources of error that may have made your results not reliable or invalid. These could be errors in the design of the study, mistakes in collecting your data, and/or errors you couldn't prevent. For example, did you do at least 5 trials for each IV level? That increases reliability. Did you hold everything constant except for the variable you were studying? That increases validity. What could you have done to make your experiment more reliable and/or valid?

Some errors that occurred during the study were _____. These errors made the study less valid and reliable. To make the study more valid and reliable, the researcher should _____.

Paragraph 3: State what you learned about your topic in general (don't just repeat your results) and make suggestions for new studies that need to be done based on your findings.

In conclusion, the study suggests that _____. Based on the findings of this study, other studies that should be done are _____.

Literature Cited

Peer-Reviewed Sources

Single-space each reference. Double-space between references.

Non Peer-Reviewed Sources



Appendix

You probably will not need anything in this section of the paper. Only add something, like a computer code you've written, if it's absolutely necessary and is too long to put into the paper body.