

## Part III: Writing your “Materials and Methods” Section

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This is the “how to” section of your paper. The purpose of this section is to describe in as much detail as necessary that allows the reader to duplicate your experiment. You will explain your experimental design, how you collected your data, what control(s) you used and so on. If necessary, you can use diagrams to help explain your procedures. These diagrams are not to replace words but support your explanation. (This section is unique to you but should be recognizable as the same procedure as your other group members.)

### Things to remember:

1. Use active voice/active verbs to describe your work and process. For example:
  - The hypothesis has been tested by the biology students at Camas High School. (passive)
  - The Camas High School biology students tested the hypothesis. (active)
2. Use past tense, describing your methods as if you were telling a story in chronological order.
3. Include units (for measurements) used
4. Include specific type of equipment used, except for typical lab equipment. For example, you do not need to write, “Placed 400 mL of HCl in the 500 mL Pyrex beaker.” Instead, you would write, “Placed 400 mL of HCl in a 500 mL beaker.”
5. If you have a particularly lengthy materials and methods section, it is appropriate to use subheadings (APA heading level-3), such as “temperature treatments,” “pH treatments,” and so on.
6. Include what statistical analysis method you will use and how that method fits your data set.

### General organization:

Generally explain your process in chronological order. Make sure to include:

- Introductory paragraph that includes an overview of the topic and a well thought-out hypothesis or objective of the experiment.
- Specific materials used (manufacturer and model)
- Subjects (make sure to include the genus and species of any organism used)
- Design (independent and dependent variables, control...)
- Procedure (include the what, how, and why you chose to do what you did)
- Statistical analysis

After you finish this write-up, have somebody that is not familiar with your research read the section to see if they understand how to replicate the experiment. Make adjustments to clarify your procedures.

### Grading the Materials and Methods Section (obtained from the “Final Paper Rubric”)

1. *Clearly describes materials integrated into methods.*
2. *Clearly describes how project data will be measured including units and in experimental projects how researcher will change independent variables.*
3. *Documents manufacturer and model and/or catalog number of all equipment and materials used.*
4. *Clearly outlines how data will be statistically analyzed (mean, t-test, stand. deviation, correlation coefficient, etc.) and/or graphically (scatter plot, etc.)*
5. *One could read the paper then recreate the investigation and obtain similar results.*