California State University, Long Beach

ENGR 361 Scientific Communication

Assignment 2: Research Paper

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[DATE]

# Abstract

*The Abstract is the summary of the entire study. Typically, Abstracts are 300 words or less. First two sentences highlight the purpose and research question/problem. The next sentence describes the study design. The next couple of sentences are the major findings and your analysis. The final sentence is a summary of your interpretations (the discussion section) and your conclusions.*

**\*\* This Template is ONLY a start. You must use a proper format guide found during the library trip. You must change this document to fit the format used in your field.**

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# Introduction / Background

*The background section is the section where you should present all information regarding your research question: all relevant previous research, where the gaps are in the knowledge, how others have attempted to research this topic, their results, and their limitations, etc. You need to include background on the equipment used to collect the data. The reader should know that the equipment is reliable and the data collected is acceptable. You can separate this section out into as many sections as you think you need. You also can name each subheading you think you need to describe the background.*

*The first sentence of this section MUST grab the readers attention. Do not dilly-dally around trying to set up your ‘story’. The first sentence should use key words that are in the title leading to what the study did. After you get their attention, then you build the case for the research you completed and are presenting.*

*This section will include MANY in-text references from all of the literature you found relating to the study.*

*This section will be 3 to 4 pages.*

*The final paragraph of this section clearly states the purpose and hypothesis leading into the Methodology...*

The purpose of this study was to investigate the … The authors hypothesize that … The researchers will test the hypothesis by …. The results will increase our knowledge…

# Methods

## Subjects or Specimens or ….

*Describe the subjects/specimens recruited/used for this study. Describe the inclusion and exclusion criteria.*

*If you are using a Meta-analysis, that means you are collecting data from other research article to perform YOUR analysis on that data to answer YOUR research question/hypothesis.*

## Equipment

*Describe the equipment used to collect data.*

## Data

*Describe the variables collected that are intended to provide support to the hypothesis.*

## Protocol

*Everything that was performed from the time data collection began until the time data collection ended (plus cleanup if necessary). The laboratory space and setup must be described in detail here. What was the specific data collection protocol? How was the data collected? Make sure this procedure is explained clearly, that it is systematic and repeatable.*

## Data Analysis

*How was the data analyzed? What statistics were performed?*

# Results

*The results section ONLY presents the results of the experiments. There is NO data interpretation in this section. Present data collected that provide evidence for the hypothesis. You may have access to more data than you will need to present in the paper. Choose the data to be presented based on your research question. Additionally, the way the data presented is important. Choose the method of presentation carefully (table, chart, plot, etc.)*

# Discussion

*The first paragraph of your discussion should restate the purpose and hypothesis of the study. The next couple paragraphs will be a summary of the findings. This is where the author can interject their expert interpretations of the results. The author should be creating an argument for how the results and their interpretations of the results support or do not support the hypothesis. The next paragraph should compare the results with other published literature. Do your results agree with or do not agree with other studies? You can elaborate as to why there is or is not agreement based on protocol, subject population, etc. The next paragraph should outline the limitations of your study. What limits your study from being generalized to a larger population? What are limitations in the data collection? Subject selection? How does your subject population limit the interpretation? Finally, if you can, make a conclusion based on the evidence you presented.*

# Conclusions

*This section is short. In the Discussion, you should have outlined your interpretations of the results and supported your statements with data and/or previous literature. After you have stated your interpretations, now you have built a case for your final conclusions of the study. The conclusions belong here. Typically, conclusions is a short section (1 or 2 paragraphs) that make a broader statement based on the discussion.*

# References

*Follow your formatting guide for the referencing style used in the research paper.*

# Figures

*When you write a paper for publication, most journals want the figures as high quality prints on separate pages at the end of the document. Your figures belong in this section.*