

**Rhetorical Analysis of Two Lab Reports**

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## **Introduction**

A lab report is a document that describes the process, results, and conclusion of an experiment. The purpose of a lab report is to communicate the findings of an experiment to the reader. The report should include the eight common elements suggested by Mike Markel in Technical Communication (Ch. 19). The title, abstract, introduction, materials and methods, results, discussion, conclusion, and references, all of which are needed to convey the results of a scientific experiment. This paper will analyze two lab reports and their eight common elements. Lab report 1 is titled “Deep Learning-Based Methods for Sentiment Analysis on Nepali COVID-19-Related Tweets” by C. Sitaula, A. Basnet, A. Mainali, and T. B. Shahi. Lab Report 2 is titled “Using Artificial Intelligence to Visualize the Impacts of Climate Change” by A. Luccioni, V. Schmidt, V. Vardanyan, and Y. Bengio.

### **Element 1: Title**

A title is important in a lab report because it tells the reader what the report is about. It should be brief and to the point. The title should be concise and descriptive so that the reader knows what to expect from the report. A good title will also help to make the report easier to find if it is needed in the future. A title should be informative and should give the reader an idea of what the report is about. Both lab reports have descriptive and brief titles that inform the reader of what the report is about. However, the title of lab report 2 is more concise and thus more effective, “Using Artificial Intelligence to Visualize the Impacts of Climate Change”. It is clear what the report is about, while the title for lab report 1 is much longer and the meaning of “sentiment analysis” could be a bit unclear.

### **Element 2: Abstract**

An abstract is a brief summary of a lab report. Its purpose is to provide a concise description of the experiment, its results, and the implications of those results. The abstract is important because it allows readers to quickly determine whether the report is relevant to them. It is also important to attract the attention of the reader. Lab report 1 starts off by stating, “COVID-19 has claimed several human lives to this date. People are dying not only because of physical infection of the virus but also because of mental illness, which is linked to people's sentiments and psychologies.”. This is a strong and powerful statement that attracts readers to continue reading and hooks their attention. Lab report 2 also starts off with a strong and clear statement, “Public awareness and concern about climate change often do not match the magnitude of its threat to humans and our environment.”. The abstract for Lab report 2 follows with a clear purpose to solve this issue of mismatching the concern to the actual threat of climate change which makes for a stronger abstract. Lab report 1 does not follow the same structure in solving the issue or statement that is presented at first.

### **Element 3: Introduction**

The purpose of an introduction in a lab report is to provide background information on the experiment being conducted. The introduction should explain why the experiment is being conducted and what the expected outcomes are. It is important to include enough information in the introduction so that the reader understands the purpose of the experiment and the expected results. Both lab reports introduced the topics and had relevant details. Lab report 1 included a figure regarding Nepali alphabets and numerals and explained the significance and relevance of including the figure while Lab report 2 did not have any figures. Lab report 1 also described the significance and purpose of “Sentiment analysis”. Lab report 2 included the purpose and relevance of using AI to visualize the impacts of climate change.

## **Element 4: Materials and Methods**

The materials and methods section of a lab report is where the researcher details the materials they used in the experiment, as well as the methods they used to carry it out. This section is important because it allows other researchers to replicate the experiment, and also to understand the researcher's thought process in designing and carrying out the experiment. Lab report 2 only states the custom AI models that it used and suited to their needs. An explanation of how the AI model was trained and the result of the training process was given. Lab report 1 is much more in-depth with the material and methodology compared to lab report 2. Lab report 1 included tables for the dataset that was used, along with 8 different types of machine learning algorithms that were used. Lab report 1 also discussed the implementation of the algorithms and descriptive tables on the models. Both lab reports include the technologies that were used and listed the implementation of the AI models or ML algorithms. Lab report 1 is much more in-depth and comprehensive, however, in lab report 2 they stated they created their own Artificial Intelligence models which could be a reason for it being less comprehensive than lab report 1.

## **Element 5: Results**

In a lab report, results are the section where you present your data and observations. This is important because it is where you report what you have found in your experiment. This is the section where you answer your research question. Both lab reports provide results and data regarding their research. Lab report 2 included multiple figures that were generated using one of their models. Lab report 1 provided statistical analysis of their results along with comparisons of their methodology and machine learning models. The in-depth statistical analysis of the results from lab report 1 is very useful and important when drawing conclusions for the report.

## **Element 6: Discussion**

The discussion section of a lab report is where the author explains the meaning of the results of the experiment. This is important because it allows the reader to understand the purpose of the experiment and the significance of the results along with its implications. The discussion also allows the author to make suggestions for further research. Both of the lab reports did not include a discussion section where the data and results are interpreted.

## **Element 7: Conclusion**

The conclusion section of a lab report is important because it allows the reader to see the overall results of the experiment. It also allows the reader to determine if the results support the hypothesis. The conclusion should be concise and to the point. Both of the lab reports have concise conclusions. In lab report 2, they discuss current future plans that are already being worked on and improvements in their AI models. In lab report 1, improvements are provided and the limitations of the methodology implemented, “Our method has three main limitations. First, our method ignores the sequential approach of tokens, which could be an important clue for tweets classification.” Lab report 1 further provides suggestions on those limitations, which leads to a more effective and concise conclusion.

## **Element 8: References**

The references section allows readers to consult the sources used in the lab report. This is important because it allows readers to verify the information in the report and to understand the methodology used. Additionally, the references section helps readers to understand the context of the work reported in the lab report. Both reports include references at the end that are well documented, and follow conventional formats.

## **Conclusion**

Both lab reports included comprehensive methodology and provided results that corresponded with the purpose of the research and hypothesis. Neither of the lab reports had a discussion section, however, results were discussed in the conclusion for both of them along with future plans and limitations. The lab reports followed the eight elements and both provide meaningful research to the area that they pertain to.

## References

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A. Luccioni, V. Schmidt, V. Vardanyan and Y. Bengio, "Using Artificial Intelligence to Visualize the Impacts of Climate Change," in *IEEE Computer Graphics and Applications*, vol. 41, no. 1, pp. 8-14, 1 Jan.-Feb. 2021, doi: 10.1109/MCG.2020.3025425.