English 21007

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3//26

The two lab reports that I will be analyzing are “Geotechnical Engineering Lab Report” and the “Ohm’s Law Lab Report” According to Mike Markel and Stuart A. Selber in Technical Communication, a lab report is a formal document, with the purpose of sharing the results of an experiment in a way that is clear and easy to follow. To do this correctly, writers need to follow a specific structure so that readers can find the information they need quickly. In Chapter 19, the authors explain that the first four steps of a report are the title, abstract, introduction, and materials and methods. This analysis will look at how well these two student reports follow those four sections. These steps should be followed to get the desired results that come with making a lab report.

Markel and Selber state that a good title should be clear, specific, and give you an idea of what the report is going to be about by using keywords. The title “Experiment 2: Ohm’s Law – S39 Group 10” is pretty simple. It tells us the topic is Ohm’s Law, but it isn’t very specific in what about Ohm’s Law is going to be explored. It doesn't specify if they were testing different materials or just checking basic voltage. The author likely used this title because it was straight to the point on what the topic of the lab is going to about not considering the audience, who might want or need keywords in the title to help them get a better idea on what is going to be reported.

The title for the second report, “Geotechnical Engineering Lab Report,” is also very general and simple. It tells the reader the field of study, but it doesn't say which specific test was

done. Markel and Selber would say this title is too broad because it doesn't help a reader to know what the end results will be. The author probably chose this title because the report is a collection of many different labs done over a whole semester rather than just a onetime lab. This shows how a student might prioritize organizing their schoolwork over following professional lab report guide.

The next step is the abstract, which is a short summary of the whole report. Markel and Selber say an abstract should tell the reader the problem, the methods, the results, and the conclusion all in one paragraph. The Ohm's Law report does a good job in this step, by having a section clearly labeled "Abstract" that explains that they wanted to see how voltage and current relate. It mentions using a multimeter and resistors and gives a quick summary of what they found. This fulfills the textbook's requirement because a busy person could read just this part and understand what the whole project.

On other hand, the Geotechnical Engineering report leaves out the abstract section entirely. Instead of providing a concise summary, the report moves directly from the title page into the specific data and introductions for each individual test. This is a big change from the standard format described by Markel and Selber. The authors likely made this choice because they saw it as unnecessary in their report even though it is an important step. However, Markel and Selber emphasize that in professional engineering, an abstract is vital for external readers who need to grasp the main points quickly without reading through the entire technical document.

The third step is the introduction. A good introduction should give the background of the experiment and explain why it is being done. The Ohm's Law report has a short introduction that explains the math behind the law, like how V=IR. It tells the reader what they are trying to

prove. It follows the textbook's rules by giving enough information to understand the technical parts that come later in the report. How ever it is shorter than what is advise by Markel and Selber. The author probably figured that since the theory is well-known, they didn't need to write a long history of electricity. They focused on just the facts they needed for their specific lab.

The introduction of the Geotechnical Engineering report is actually very strong. It goes into a lot of detail about the properties of the soil and the formulas that are used to calculate things like stress and strain. This is actually meeting the requirements that Markel and Selber have given us in the way of providing the "theoretical background." While the report was lacking an abstract, the introduction is very professional. The author probably included this so they could prove to their professor that they really understood the complex math and science behind the tests. While it is good in a professional environment to have this much detail included, the reasoning behind the author is probably so they could show off their knowledge and get a better grade.

Finally, we have the materials and methods section. This part is supposed to list everything used and describe the steps taken so that someone else could do the same experiment. The Ohm’s Law report is very clear here. It lists the resistors, the power supply, and the wires, and then it gives a step-by-step list of what they did. This matches the textbook perfectly because it focuses on "replicability." The students probably wrote it this way because they were following a list of instructions from their lab manual. It makes sense for a student to write this clearly so the teacher can see that they followed the correct steps and didn't make any mistakes in the setup.

The Geotechnical Engineering report also explains the methods, but it does it by referencing "ASTM" standards. These are official industry rules for how to test soil. Instead of

writing out every single tiny step, the author says they followed the standard procedure. Markel and Selber mention that referencing standards is a common thing in technical writing. The student likely did this to sound more professional and to show they know how real civil engineers work. It saves space and makes the report feel more official. The reasoning here is that in a higher-level engineering class, the professor expects you to know the industry standards, so you don't have to explain every little detail like you would in a basic physics lab.

The next step after materials and methods is the result, which Markel and Selber describe as the section where you present the collection of data that was gathered during the experiment, without interpreting it. They suggest leaving the graphs and tables as it is; this allows readers the chance to read the data easily. In the Ohm's Law lab report, the author does this step by using a very clear table that shoes the different voltage levels and measures the current. These tables are easy to understand. By keeping the text to a minimum, the author followed the textbook's guidelines and allowed the data to speak for itself.

On the other hand, the Geotechnical Engineering lab report uses many complex graphs in the result section, rather than having easy to digest information like how the previous lab report had. This could be because the author was catering to a more advanced audience that might be able to understand the table. Markel and Selber talk about how the visuals and tables should be labeled and referenced, which this lab report does a great job in doing.

After the result comes to the discussion section, this is where the author should start to interpret the results of the experiment, breaking it down into what it shows and means, based on what Markel and Selber suggests. The Ohm's Law lab report includes a short discussion where the author mentions that the measured resistance was slightly different from the theoretical resistance, the reason listed is the resistance of the wires and equipment. The author adding this

information shows that they know how to make a lab report and follow the guidelines suggested by Markel and Selber.

The level of discussion in the Geotechnical Engineering report is much longer and more analytical. They compare the soil samples with industry standards and discuss how the moisture content affects the strength of the soil. This is in line with the guideline given in the textbook of interpreting the findings. The reason for the long discussion is probably that the author thinks the behavior of the soil is more unpredictable, and they are showing they are capable of handling unpredictable results and coming to a logical conclusion.

The seventh step in the list is the conclusion and according to Markel and Selber, the conclusion should summarize the main point of the report and give a recommendation. The first lab report ended with a simple statement saying that the experiment was a success and proved the relationship between voltage, current, and resistance. This partially follows the guidelines because it lists what the lab was about in one easy to read conclusion, but it doesn't give any recommendations on what to do next with the information.

The second lab does this a bit differently. The report ends with a conclusion that has a more professional recommendation. It summarizes which soil samples are compatible with construction and which are not. This matches the textbook's idea of how a lab report should help people make decisions.

After this is acknowledgment, which Markel and Selber describe as the place to thank the people or organization that provided resources or help. In the Ohm's law report, the acknowledgments are centered around lab partners and the teaching assistant. This could be seen as a good way to show collaboration by the guideline standard.

Geotechnical Engineering reports again are more formal, by thanking the univeristy's civil engineering department and lab technician. This follows the guidelines because it's acknowledging those who provided help.

The final steps are the References and appendices. Markel and Selber highlight that the references section is important because it helps with the reliability of the lab. The first lab report has a short references list, citing the lab manual and a textbook only. This was kept short likely due to the fact that this was all the information that the author was given. On the other hand, the second lab report lists several materials and sources, which perfectly follow the guidelines from the textbook.

For appendices, the first lab report skips this step entirely because the data was simple enough to fit in the main lab report, while the second lab report takes this chance to include original data and other instructions. Markel and Selver suggest using appendices for information that might clutter the main lab report and information. Both authors use this section to fit their needs, even if it wasn't needed.

In conclusion, both reports demonstrate an understanding of the basic nature of technical communication. While the Ohm's Law report is a better example of following the guideline the books provides, the Geotechnical report shows how these elements can be adapted to meet professional industry standards.

References

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