

A Dive into Cybersecurity: Lab Report Analysis

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When creating a lab report, there are specific rules that need to be followed in order for your lab report to be optimized. These rules are that you need an, Introduction, Materials/Method. Results, Discussion, Conclusion, Acknowledgements, References and Appendixes and is referenced in the Technical Communication textbook and is said to be the ideal format when creating a lab report which can be found in the textbook “Technical Communication” . To fully grasp the concept of what a Lab Report truly is, there needs to be a Lab Report where we can reference when looking for the best one. Today we will be looking at two very specific lab reports, Lab Report 1 being “Gamification of Cybersecurity for Workforce Development in Critical Infrastructure, and Lab Report 2 will be “Towards a Cybersecurity Culture Framework for Mobile Banking in South Africa” both having to do with the topic of Cybersecurity. Within this paper we will be examining which one of these lab reports best represents the 8 traits of a lab report the best. I will be referring to “Gamification of Cybersecurity for Workforce Development in Critical Infrastructure” as Lab Report 1, and “Towards a Cybersecurity Culture Framework for Mobile Banking in South Africa” as Lab Report 2.

The title that Lab Report 1 has is a very good starting place for the textbook “Technical Communication” to begin to show us how important a title could really be. Lab Report 1 is titled “Gamification of Cybersecurity for Workforce Development in Critical Infrastructure” this is a great title because of the fact that there are a bunch of key words that will make the lab report stand out. When looking at the Lab Report 1 the introduction that was created by this team which seems to do a very good job at following the first sentence of Chapter 19, “The introduction is the section of the report in which you begin to establish that your work is important.” In the

introduction they start off by discussing how important “critical infrastructure” which is basically” consists of disparate services that are vital to a nation’s operations and serve as the backbone of societal and economic functions” (Lab Report 1). Another thing that this introduction does very well is allowing people such as myself (who may be new to the topic of technology) to pick up the very complex topic of how it works. They also do this by giving readers critical background info, which dived deeper into the concept of gamification which basically is adding game like functions to a project to try to boost production. Soon after introducing a little bit more of cybersecurity and its’ features they begin to slowly ease the point and objective of their research, since we are slowly moving into a world where most of the stuff you do is online, the need for companies and their work to be closely monitored and protected is on the rise “The resiliency of the CI is essential for empowering the continuity of the critical services required for national security. CI resiliency is crucial to a nation’s livelihood and continues to receive significant attention from researchers and legislatures to produce administrative requirements that aid facility operators in fortifying their networks that remain exposed and vulnerable” (Lab Report 1), to keep up this protection and to make sure that this nation keeps on running they begin to introduce their solution which is called “Network Defense training Game”(NDTG) which essentially is their way of ensuring that all workers who are a part of the Critical Infrastructure will be ready for all possible outcomes of threat. In all, I believe that Lab Report 1 does an amazing job at clearly highlighting what the problem they are trying to solve and showing that solution that they found through their studies.

As we continue to dive deeper into the lab report “Gamification of Cybersecurity for Workforce Development in Critical Infrastructure”, we now come across our second section of how to organize a lab report, and this is Materials & Methods. One aspect of this report is that

like mentioned before, they give a very in-depth background to us readers to prep us for the actual methods, or Methodology as they use. The background here was necessary because for us to understand why this team used the specific method that they did, they would have to further break down their problem to us. The background that was given to us was that they looked at gamification as an option due to some studies that they found when researching about it, “A review [4] of 11 studies was done that evaluated the effect of gamification on education and in most cases, it was found that participants felt more engaged and considered it to be more effective and fun.”(Background) Now you probably ask ,”what does this have to do with the digital infrastructure that we have within the U.S” and to answer that question we have to realize that with the introduction gamification it is now possible for people to be put into practice stress testing (in reference to technology, a stress test would be having to deal with malware). As a way that Lab Report 1 displays their drive for gamification of cybersecurity is by attacking the fact that many new people who come to the field of cybersecurity may not have the immediate experience that a senior cybersecurity analyst may have. Lab Report 1 pulls up a study done with (go more into the background and see why the training was inadequate). By doing this, they set up a great start into telling us how gamification of cybersecurity may be the saving grace for the tech world.

Very soon after this, Lab Report 1 jumps into their method unto why they believe that the gamification of cybersecurity will be the saving grace of online safety. One thing that was very comforting inside of this Method was that they broke down each step to us readers. They begin by giving us their approach, this was them creating a whole “new” network and in this network, they explain how they are going to implement several amounts of “weaknesses” into this system. In order to test the limits of gamification, IEEE, set forth 5 phases that players have to get

through, these stages being “identification phase, in which the player performs a hardware inventory that lists each asset. Then the player must analyze the network configuration and decide how to implement security policies, and they can build or remove network devices. An automated attacker then can attack the critical systems. After the attacker moves, the player has the chance to respond to the attack. If they fail to respond and the attacker makes it to the objective of their cyberattack, then they have the last chance to recover their network and keep playing, but they lose the game if they cannot recover from the attack”. Players can then test their resourcefulness by getting to the objective of the game which is “by preventing the adversary from reaching the cyberattack objectives for five rounds.”. When going over your methods that you use, it is very common to include a list of the different variables that you had active within your method, this lab report did a great job at listing these variables (in the form of a cyber network), and they were able to explain their process in a way that is easier for people who might not have the prior knowledge to catch up on in a few sentences. A unique thing that these authors did is that in addition to the Methodology, they also gave us Use Case which is essentially gives readers all possible possibilities that could happen during the method stage, this is a great build up to the results that are to follow.

In the Results section in a lab report, authors usually use this time to introduce the findings from the methodology to readers, while at the same time discussing the relevance that this information has to the question that wanted to be answered at the beginning of the introduction. That question for this lab report being (don’t forget to talk about the question in the introduction). In this lab report, they name their results as the “Demonstration”. In their “Demonstration” they explain to readers all the successful ways that the networks were protected. This exactly matches up with the direction that the textbook wants us to follow while

making a results section, and this is to “present the evidence you will use to support the claims you will make in your discussion” this is usable here because the authors are proving with their results as to why the gamification of cybersecurity is actually beneficial to protecting the networks of many companies. The authors of this Lab report made sure that the readers were able to effectively understand the information by adding graphs and images to simplify it. In a way, these authors basically combined the Results stage and the Discussion stage into each other. In the Discussion stage, writers are looking to basically summarize the results. At the end, the authors even added the game reports so that the readers can make their way to the findings for themselves.

In the conclusion that they created, they added another section to the conclusion which they titled Future Work, from my understanding of this section the Future Work is supposed to be seen as a promise to the future of cybersecurity and works related to that. In the authors’ conclusion, they mention the importance of “securing computer networks” and tie everything back to how the gamification process can play a beneficial role in making network protection an easier and more. This is all that is really needed for a conclusion, the other thing being that you do not add any new ideas into the conclusion. The references in Lab Report 1 followed the APA format of referencing

Towards a Cybersecurity Culture Framework for Mobile Banking in South Africa

The title for lab report 2 “Towards a Cybersecurity Culture Framework for Mobile Banking in South Africa” uses key words that makes it easier for readers to find writings that

they are looking for. Key words such as “cybersecurity”, and “framework” would most likely attract people who are in that field because it may offer insight to these people about certain aspects in their career. In the abstract of the lab report “Towards a Cybersecurity Culture Framework for Mobile Banking in South Africa”, they also follow closely along the guides of what is mentioned in the textbook. Lab Report 2 Abstract contains everything that is needed from an abstract, this being the elements of listing everything that your lab report contains in the same structure that you have it, the summarization of what your lab report will contain, and being easy to comprehend for readers when looking for certain information.

In the introduction for Lab Report 2, it is also following closely behind what the words of the textbook “Technical Communication” says. An example of this being when the textbook mentions that introductions describe “hypothesis or question your study attempted to address and why this question is significant” they question/hypothesis that was posed in Lab Report 2 is how African mobile banks could be protected from the ever prevalent risk of cyber-attacks. After reading this introduction, us as readers are now able to see how the authors of Lab Report will go about explaining to us how they will solve Africans limited mobile defense and this is by labeling the methods that they will go through in order to prove this to us, “This paper proposes a cybersecurity culture framework that can be adopted to mitigate the identified threats in the m-banking sector of South Africa” (Lab Report)

Similar to Lab Report 1, Lab Report 2 offers to us readers sort of a background page which they label the “related Work”, In their “Related Work” the authors of Lab Report 2 basically talk about how the entity of mobile banking actually came into play and the benefits that they offer to the economy and infrastructure of South Africa. In my opinion, this “Related Work” page closely resembles the same structure as the abstract in way such as explaining why a new proposed

cybersecurity culture would actually be beneficial to South Africa and other countries that want to adapt.

Skipping past this “Related Works” page, we then come to the “Method” section in our textbook. Lab Report 2 refers to the Method section as the Methodology (which is the same way that Lab Report 1 refers to theirs). One thing that was refreshing to see withing Lab report 2 is that within the Methodology, they were able to input the sources and materials that they used within their report, “This study utilized secondary sources such as electronic journal databases such as Google Scholar, Jstor, Science Direct, IEEE Xplore, books, and published dissertations to conduct a literature search”, although it would have been beneficial to include the books that were used in case a reader would like to utilize that resource. One thing that did stand out to me is the fact that Lab Report 2 did an amazing job at explaining in simple terms why m banking is important and its position in changing the cybersecurity problem in Africa.

Lab Report 2 introduces its results in two very different ways, they first way being that the authors of Lab Report 2 talk about how the experiment was supposed to go with nothing going wrong at all, they named this section the “The Proposed Cybersecurity Culture Framework “, in a way this can be looked at as the planning before the actual Methodology came in because this is what we are aiming for. The second way is that the authors begin to lay out what was actually found within the analysis and acts like a Discussion section. They labeled this part the “Business Implications”. In the Business Implications readers are now focusing on how the evidence the authors found will be able to answer the issue the authors presented in the Introduction which closely follows what was said within our textbook, “Your research will likely produce raw data in the form of numbers. In the results section, your task is to summarize the data relevant to the question or hypothesis you discussed in your introduction.” One issue that I

found within the Results section of Lab Report 2 is the fact that they did not properly present their data. I say this because these authors were just blindly naming down things that they found during their research and not really explaining how they are intertwined with each other. The Conclusion section of Lab Report 2 does a great job at combining all that was learned within the paper, and just like the textbook said there was no new ideas that were introduced into the paper. Lastly, the Acknowledgement section was followed correctly and let the readers know of other parties who helped make the lab report possible.

In all, both Lab Report 1 and Lab Report 2 utilize component in the textbook “Technical Communication” relatively well. This includes in ways such as, having a good title to make an author’s writing stand out to readers, Results being evidence needed in order to help you prove a claim being correct, and your conclusion not being able to have any new ideas. These two lab reports also helped me as a writer, because now I have the experience on what a real Lab Report is supposed to contain and how to go about it, and as a reader because now I know how to break down a lab report.