Writing the Discussion section

In this short video clip, I would like to give you some information about writing the discussion section of your report.

Slide 2: What is the purpose of the discussion section?

The first thing you ask yourself is: What is the purpose of the discussion section? Well, this is the section where you are going to summarize your most important findings and your answers to the questions that you proposed at the beginning of your report. And now you're going to explain your results. And this is where it becomes very important that you describe how you're going to support those answers that you give because of the experimental results and analysis you've done, by citing other sources. You have to ask yourself, "Do these answers filled with what others have done?" In which case, you need to support them by others that you're going to refer to. Or do they contradict the conclusions of others - in which case, again, you want to point out which particular things they contradict and who it is that did this work which it contradicts? In both cases, you need to appropriately cite the literature. You also have to say, Are there exceptions to the general pattern that you observed in your analysis? So, there may be some things where you have to say, "these don't fit". Because, of course, now you have to say, "Why don't they fit?". You need to understand why are they exceptional? Is it because you didn't consider them in your model? Is it because there is something biasing your data, so it didn't come out as you expected? Or did you, in fact, have the wrong theory about it, to begin with? And of course, sometimes whenever you find these results that don't match the pattern that you think is there, they give you hints about "mmhm, this is a future area that I should dig into because I need to understand why it wasn't as I expected". Of course, in your discussion, you need this state your interpretation, your opinions, and the theoretical or practical implications of what you just found. Why is this significant - in the sense of acting others? And of course, the discussion really is the heart of the document; that is where you have a chance to present what it is that you believe that you have observed and why, and [then] related to the analysis of your data.

Slide 3: Components of the discussion section [write in present tense]

It is now - the discussion section is written in the present tense because you have done it. So what do you do? You start by summarizing the key findings, and most people work from the general to the specific. So you start with the more general view, and you get more specific using the literature, the theory, and practice. And of course, one of the things that you need to do is discuss if you actually achieved your goals. Did you solve the problem that you set out to do? If so, you want to say that. If not, you want to explain why you didn't. You, of course, want to answer each of the questions that you raised at the beginning of your work. And you want to describe how the results support your hypothesis or refute your hypothesis - if you had a hypothesis. You want to state the evidence that you have to support each of your conclusions. And, of course, as always, you need to cite the relevant work of others. And at

the end of your discussion section, you want to make a very clear statement of both the practical and general importance of your results and the conclusions. And of course, how given this new knowledge someone should act. Now, why is that so important? Well, you started out with some purpose. You had a clear problem in mind that you were trying to solve. And now you want to say having solved that problem, and this is the conclusion that I can draw from it. And now that I have that conclusion, this is what I should do.

Slide 4: For each major finding

So for every major finding, you want to state your answer, your results, and you want to cite the evidence to support it or to compare it against, or contrast each of your results. And you're going to defend your answers, and therefore you don't want to shy away from conflicting explanations. Because often where you have a mismatch from what others have shown -- that is where you can gain tremendous insights. Why is it different? What did you do? Was it the method that you used? Was it the instrument you use to acquire it? Did you use a different type of device? Did I look at a different time scale? Was I able to get data under different sets of conditions? So, if the results are unexpected, be sure to discuss them because later somebody else might be able to explain them, now that you've identified them. So don't shy away when the results are not as you expected, say "hmmm! There's something to be gained from this.".

Slide 5: Add appropriate tables, graphics, pictures, ...

And of course, it's important in your discussion that you add the appropriate tables, graphics, pictures, etc. Why? Because you want to make it easy for your reader to see the patterns that you think that you found. You want them to be able to easily understand the argument that you're going to give. And to make it easy for you to show the anomalies, the unexpected things because now they can say, "Aha! They occur at this time or under these particular conditions. Okay, let's go back and isolate that and understand why that occurred." Remember, these elements are not there to show your results - because you showed your results themselves in your earlier section on results - they appear in the discussion section because you use them to help support your discussion.

Slide 6: Suggested Future Research

Now, it's very important that you suggest future research. Often future research is one of the most interesting outcomes of a research project because now that you found this set of answers - along the way you have identified new problems or you found these things that weren't as you expected and now (yes) that's the next obvious thing to be done. So you want to explicitly write of this future research. It is often one of the most important things that you can write. And it's one of the most interesting things for many of your readers who want to build on what you've already done. Now, if your suggestion for future research could have been done in your project, then you need to address the question of: "Why didn't you do it?". Right, if they obviously could have been done, why didn't you use them. Typically, reasons

might be budgetary; it might be limited time; etc. But in general, you want to be clear about: "Why didn't I do it?".

Slide 7: Avoiding common mistakes

Now, some common mistakes you want to avoid in the discussion are: Never claim more than your evidence supports. You don't want to overgeneralize. Every project has a limited time, budget, staffing, etc. so don't apologize for the weaknesses on those points of view, instead state clearly how they affected your interpretation and the validity of your findings. So I once went to a presentation where the speaker spent a long period of time apologizing over the fact that he had only analyzed three thousand of his set of ten thousand data elements that he had collected - because he didn't have enough time before the conference was to take place. But having analyzed three thousand of them, he was many thousand ahead of anyone else in the field. Don't apologize for it, instead say, "all right; I have ten thousand cases; I've examined three thousand of them; these three thousand show these behaviors, and in another six months, I'll be able to have another three thousand done." And six months later, then you can say, did the next three thousand show the same results as the first [three thousand]? You're not writing a magnum opus when you write - your writing something that is valid for a particular point in time. Discuss everything and make sure that you've addressed all of your results. It is extremely important both from an ethical point of view and from the point of view of convincing your readers _not_ to ignore part of your data, even if you don't understand it, you should say, "I don't understand it.". Don't try to hide it. It's also important to be concise. Your readers have a limited amount of time and attention, so you want to make it possible for them, as quickly as possible, to understand what are your key results. Are they supported? Are they consistent with what's known? Or inconsistent with what's known?

Slide 8: References

They're more references that you can read about this. I wish you success in writing your discussion sections.