The 6 key parts in a powerful discussion section – by kayciebutler

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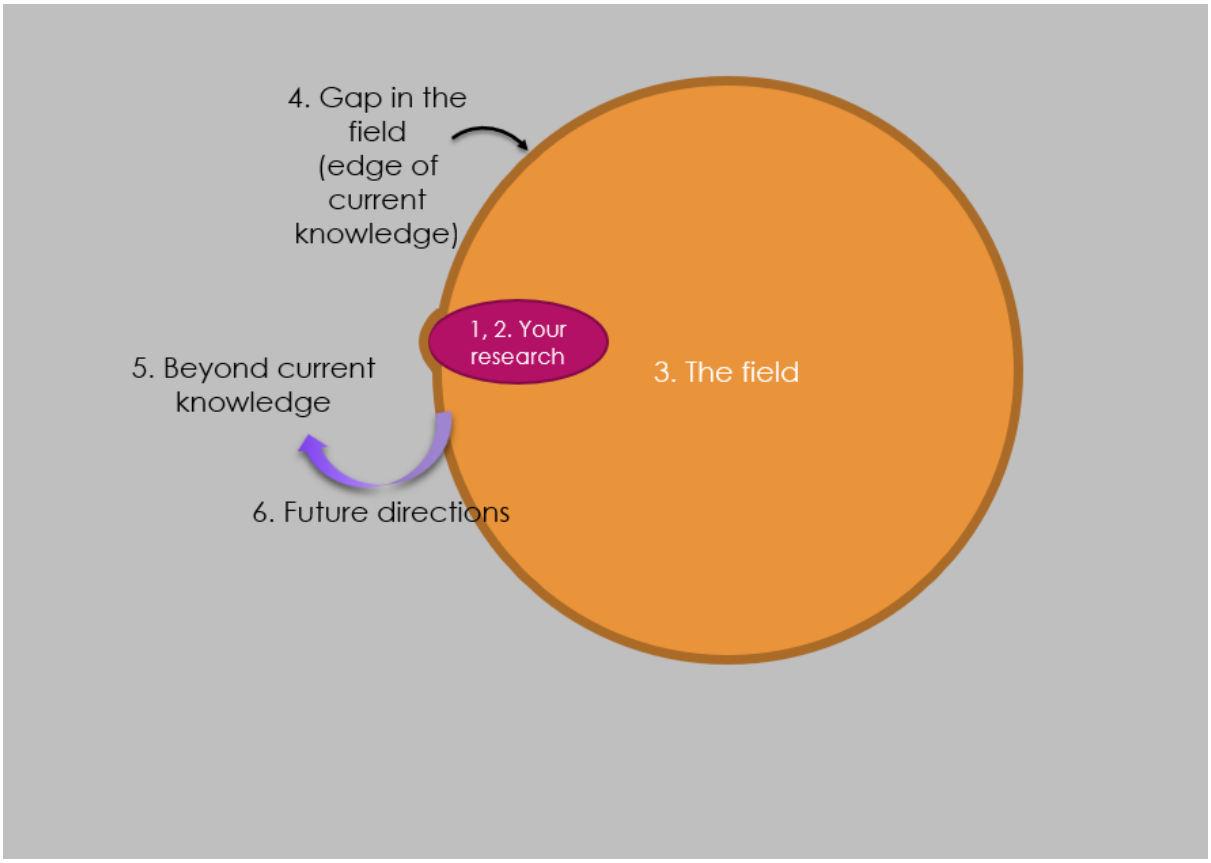


The discussion can be a sticking point for many manuscript writers because it seems to be a free for all with no easy pattern for composing it – but there are actually 6 key parts that need to be included!

While it is true that each research project is different – meaning that different parts of the discussion will carry more weight for each manuscript – there are still several key parts to any good discussion.

In fact, ensuring that these 6 parts are included in your discussion will make it more interesting for readers, more useful for other scientists, and therefore will provide an overall more memorable discussion for your paper.

This post will briefly define a discussion section before detailing the 6 main parts that can help your paper achieve the maximum impact.

These 6 parts represent the various angles that you should consider for all research projects when composing the discussion section, ranging from the narrowest point in scope (your research) to the widest in scope (the impact of your research on the future of science). They should help you brainstorm what to include when writing, and the inclusion of all 6 sections will help to ensure your discussion is well rounded.

What is a discussion?

The discussion answers the questions:

What does your research mean?
How does it fit into the context of the field?

Or, in other words,

a discussion critically **analyzes** and **interprets**
the results of a **scientific study,**
placing the results in the ***context of published literature***
and explaining how they ***affect the field***.

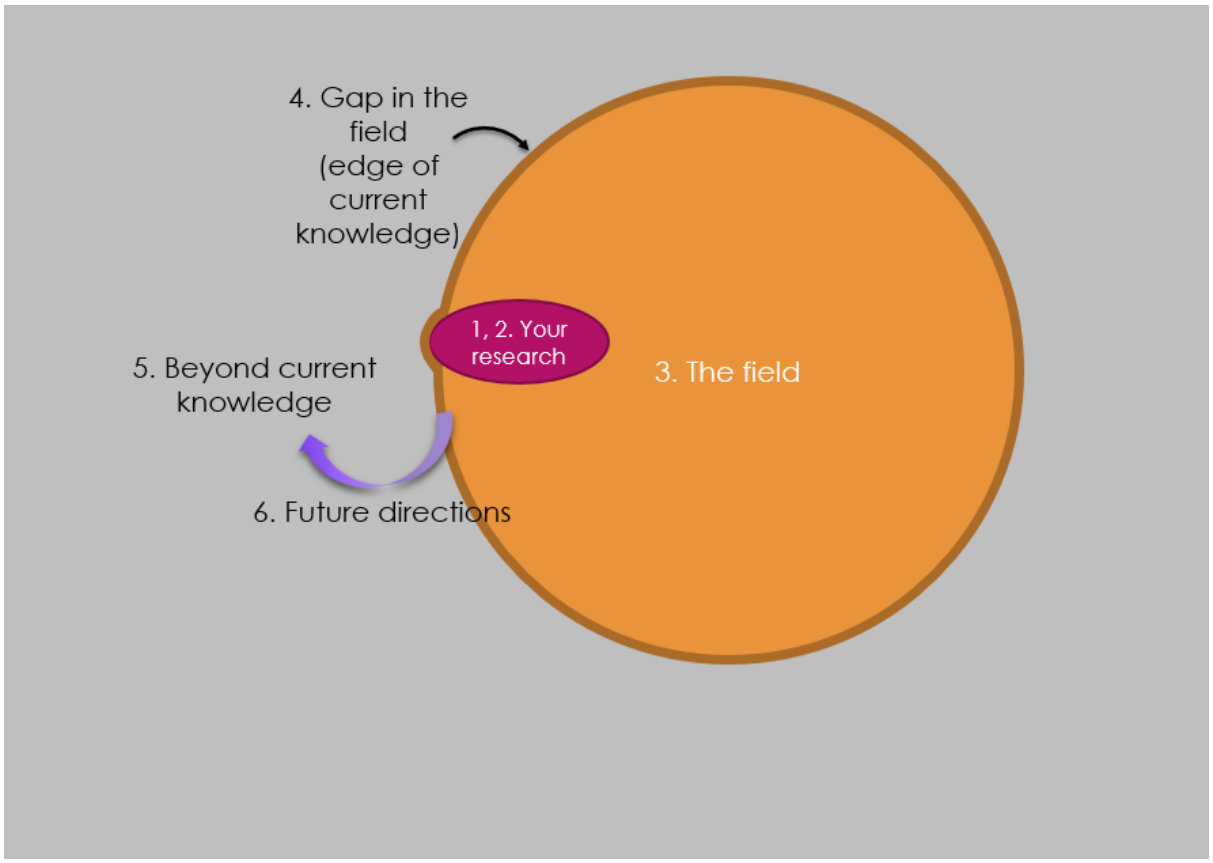
Therefore, a discussion cannot only summarize the results of a paper, but must draw in outside literature from the field to inform the reader of how your latest contribution fits into the current knowledge and how it expands on what is currently known.

6 key parts of a discussion

There are 6 parts to a discussion, and each should be given proper consideration when writing. For most manuscripts, there should be at least some of each category in the discussion, with the proportion depending on the individual manuscript.

It is important to

1. summarize the key points of and then
2. analyze your research before
3. relating how your research fits into the field as a whole. You work should also be compared to
4. the gap in the field, including how your research might have moved the edge of current knowledge. Finally, how your research modified our view of
5. what lies beyond the edge of current knowledge and some
6. suggestions for future directions on how to examine those hypotheses are needed.



Importantly, these parts are not necessarily to be included in the specific order listed here – this list is only designed to highlight the key points that should be included in a discussion, moving from the point narrowest in scope (closest to your every day research) to the point widest in scope (furthest from your every day research, closest to your audience).

A good discussion will ebb and flow between the different sections as the results dictate. Some results will need more critical analysis, some will be more important to relate to the field than others, and some will spark more speculation and future directions.

1. Summary of results

This part of the discussion serves to remind the reader of key results, though care must be taken to avoid extensive summaries, keeping this section to a minimum.

Try for a direct, succinct recap that is used only to help readers avoid having to flip back to the results sections. It is often helpful to reiterate key numbers, especially when they will be next compared to literature values. This part is often not even written in full sentences, and is used as a bridge into a critical analysis of the results:

- "The results XXX and YYY indicate that [critical analysis]…"
- "Because of XXX, we can say that [interpretation]…"

No new results should be brought up in the discussion.

2. Critical analysis of results

This is where you go beyond a general description of the results to tell the reader what your results actually mean and what you learned from them. This analysis should focus more on unexpected, particularly important, or unusual results, analyzing the meaning of these results for the reader.

Your analysis should highlight all of the new trends, relationships, and knowledge uncovered by your research, and should list these analyses in the order in which the results section was written. If there are possible alternative explanations to your results than the ones you have indicated, these should also be listed along with your rationale for excluding them as possibilities.

3. Relate results to the field

This is where you compare your work to previous studies, especially ones that inspired your work or brought up questions that you have addressed. Your work in only one small chunk of a much larger whole, so let the audience know where in that larger whole your work falls and how it integrates.

This is also where papers from the field can be used to support any claims or speculations that you make. These sources can be reused from the introduction or can be new. Additionally, any studies that contradict your conclusions should be discussed along with plausible explanations for why the contradiction might exist. In this part of the discussion, you will also want to describe any generalizations you can now make about the field now that your research exists.

4. Relate results to the gap in the field

This part is essential for any discussion, and its lack or absence is one of the biggest mistakes I see in discussion writing. Only by indicating how your work directly addresses a gap in the field can you show the reader the importance of your study and why it deserves publication. This gap can be a large, obvious gap; a tiny hole that needs to be filled; or even as simple as research reinforcing the current edge of knowledge.

This gap in the field that your research sought to address should be described in the introduction to make sense of why your work was needed. This gap should also be briefly reiterated here in the discussion, often with a brief description of your main results, to highlight how your work addressed this gap.

This part should also describe any important lessons that were learned through your research that advance the current edge of knowledge in your field, such as if you are recommending a change to current best practices or to a known pathway or mechanism. It is important to ensure you address all of the research questions that were brought up in the introduction in this part, or the reader will feel unfulfilled after finishing your discussion.

5. Speculate beyond current knowledge

The world beyond your field of research is vast and full of unknowns.
Your discussion should therefore also indicate how your results can be applied beyond the limits of current knowledge. This can include possible new insights, developing new hypotheses that can be tested in the future, and speculating on possible new research questions that can now be considered because of your research.

Speculation as to how your results fit into an even bigger picture or how they can be applied or related to the field more generally are also allowed, though it is important to ensure these are claims logically supported by your research and the rest of the field. DO NOT make wild claims that your research cannot support.

6. Future directions

Now its time to tell the reader how we might try to get from where we are to where we want to be in the future. This is where a note should be made of any questions left unanswered by your research, including possible routes for answering these questions if they are known…with the one major caveat that you should never discuss future directions that should be included within the scope of your research! If you find yourself needing to do that, consider adding those experiments to the current study.

Additionally, discuss possible future studies that could address any new hypotheses brought up by your research and any new technology that might need to be developed to do that. Details for future studies that could avoid or address any of your study limitations should also be included.
Finally, don’t forget to bring up possible applications of your work, though again, make sure to stick within the realm of the feasible!