1. **Explain your research results**

The discussion part of your paper is the most important section of your paper. Even though readers may come to your research looking for methodology or data analysis, this is the part where you bring the entire study together. It's when you provide insight on effects of the experiment and the knowledge it produced that could benefit your field. A good discussion section will mirror your introduction by referring to the research questions posed. It uses the existing frame of the paper to outline how the study picks up from the problems presented in the introduction and takes them to a space of new information and knowledge. This is not a copy of your introduction, but a springboard from it. Writing about your results can feel overwhelming. So far, your study has constrained you and asked you to follow protocols and procedures meticulously detailing the problem and your process of research. In the discussion, this approach changes pretty drastically. You're no longer asked to outline the blueprints of a study, but are rather asked a simple but difficult question. What does it all mean? First, let's look at a few of the specific techniques to employ in writing. You need to leave out jargon. Use acronyms only after you have detailed the full name you are shortening and only use if there is a direct purpose for the acronym in your research, or the acronym is well known. For example, in medical research, the acronym CDC is well known as the Centers for Disease Control. Even though CDC is widely used, you would still introduce it as the Centers for Disease Control. The United States Department of Education acronym, ED, is not as well known. It is best to write it in full as many people mistake the Department of Energy's DOE as the acronym for education. Discussion and analysis breaks the mold of your matter of fact presentation of information. Research writing should always be clear and direct. Your audience will gain more from your results, if you discuss how the results compared expectations. As well as the potential reasons expectations were or were not met. The structure of your paper does not change here. You'll continue to proceed through the research in the same point by point faction you use with your methodology and data analysis. The difference here is, after restating the research question, your analysis discusses how the findings related to the research, weaving together the literature review and the problem to provide new knowledge on the field. During your analysis you may come across findings that are especially meaningful. A result that was either unexpected or turned out to be of more practical significance than anticipated. Use the result section as an opportunity for a deeper dive into those findings. Were there any trends found in your analysis to explain the result? Or a link of the unexpected findings to the research problem? It can be daunting to shift gears from description to analysis, but remember that most of that anxiety comes from thinking about your analysis in a deliberate format. The difference between writing methodology and results is not a seismic shift in style, but the opportunity to put your data analysis to use.

1. What is the primary purpose of the discussion section in a research paper?

A) To outline the methodology used in the study

B) To provide insight on the effects of the experiment and the knowledge it produced

C) To present the results of the study

D) To introduce new research questions

1. How does the discussion section relate to the introduction of a research paper?

A) It mirrors the introduction by referring to the research questions posed

B) It presents new research questions unrelated to the introduction

C) It provides a summary of the literature review

D) It outlines the methodology used in the study

1. What is a key technique to employ when writing the discussion section?

A) Using as much jargon as possible to demonstrate expertise

B) Avoiding the use of acronyms entirely

C) Introducing acronyms only after detailing their full name

D) Using acronyms without explanation

1. How should the structure of the discussion section compare to other sections of the research paper?

A) It should follow a different structure than the rest of the paper

B) It should provide a historical overview of the topic

C) It should proceed through the research in the same point-by-point fashion as the methodology and data analysis

D) It should focus solely on describing the results of the study

1. What is the significance of analyzing unexpected findings in the discussion section?

A) It allows for a deeper dive into meaningful results

B) It should be avoided as it may confuse readers

C) It demonstrates a lack of thorough research planning

D) It detracts from the clarity of the discussion

1. **Limitations, recommendations, and future research**

Once you've run your research instrument and analyzed the results, it may feel like you finished your study. But before you move on to the summary, it's important to think about two things. What did your study leave out, and where should the field go now that your study exists? Addressing the limitations of your study grounds your work, and recognizes your awareness of what a study cannot do. Acknowledging limitations shows the critical perspective of your research and your study. While all studies have limitations, you want to focus your discussion directly on the limitations of the research problem. Your limitations are only about topics directly related to your proposal. Focus limitations mostly fall into two categories: limitations based on methodology, and limitations based on the research team. Methodology limitations involve obstacles and gaps in the collection and assessment of the data. The most common limitation is size. Either the sample population was too small, or the data received was too small. If your study does not use enough research subjects, it will not be able to scale to provide representative views of the population. If you do not have enough data, or you do not have enough reliable data, your study will be unable to establish significance. Sometimes, usually with new research, there are chances to miss critical information. This oversight can result in measuring the wrong variables. Most research team limitations are environmental. In some cases, the research team will lose access to the population or barriers will exist which were not considered during development or obstacles will emerge in the collection process. In others, you might run across instances of bias in how a question was designed or in cherry-picking information to support your hypothesis. Here, it's important to point out the opportunities for future research, as well as corrective steps taken by the research team. By doing this, you can link to the potential of further research. Further research is not a throwaway part of the paper. A reasoned and articulated recommendation list will provide your audience information and ideas for how to continue this research project. In the same way you clearly defined terms, methodology, analysis, and results, you'll want to present the opportunities for additional research as well as a recommendation for further steps. Acknowledging your research had methodology or environmental limitations is not a mark against your study. Instead, it shows a critical understanding of how your research relates to the rest of the field. Feel confident in adding these limitations to your results and analysis section, and use the opportunity to push readers to seek research opportunities building from your study.

1. What is the purpose of addressing limitations in a research study?

A) To highlight the strengths of the study

B) To recognize the critical perspective of the research

C) To ignore potential weaknesses

D) To inflate the significance of the findings

2. What are the two main categories of limitations discussed in the passage?

A) Environmental and personal limitations

B) Methodology and results limitations

C) Limitations based on methodology and limitations based on the research team

D) Data collection and data analysis limitations

3. Which of the following is a common limitation related to methodology?

A) Biases in the interpretation of results

B) Lack of access to the study population

C) Inadequate reporting of findings

D) Small sample size

4. Why is it important to acknowledge limitations in a research study?

A) To invalidate the findings

B) To shift focus away from the study's objectives

C) To provide transparency and credibility

D) To exaggerate the significance of the results

5. What is the significance of providing recommendations for future research?

A) To demonstrate the study's perfection

B) To discourage further exploration in the field

C) To provide guidance for future studies based on the current findings

D) To avoid acknowledging limitations

1. **Write your abstract and final summary**

There's an old adage about music. It doesn't matter what you have in the middle if you don't give your audience a good beginning and a good ending. This is especially true with the first and last sections of your research, let's talk about these. The abstract and the final summary. Before you begin, think about how you approached the literature review for your study. You had numerous titles to choose from. And in order to determine what was worth reading, you relied on their abstracts and summaries. A strong abstract would be concise and direct. In two sentences or less, it states the problem. It then gives a very brief sentence description of the instrument and another sentence to flesh out the methodology. Then it addresses significant findings. Abstracts can range in length but 150 to 200 words is a rough estimate. At the same time, your abstract will be read by more people than any other part of your work. How can you get people to your abstract and how can you insure that they'll read the full paper? Part of this is using keywords, not just listing them for search engine optimization but weaving them into the problem and the methodology. What are the terms that most succinctly but also most commonly identify your problem? Those words must be in your abstract. Now for those who read your paper, the final summary will be the most read part. The same critical lens brought to the abstract will be brought to your summary. Readers are looking to see not only if the research is pertinent to theirs but also if it is worth their time to fully dive into. The summary and the results sections is a unique part of any research paper. In previous chapters, you also wrote summaries, which were a brief description of the chapters before. A good summary will provide more relevance for your research, not just by attracting more readers but also serving as a way for others to share your findings. In the results section, the summary is the place where you bring every part of the study together and review the entire project. The research problem, the significance of the topic, the research questions, the literature review, the methodology, the findings, the conclusions and the meaning for the field and future work, all of this needs to be addressed in the last part of your paper. This does not mean you introduce anything new. No problem statements, no analysis, no findings. Taking all the labor that you've put into your entire study and summarizing it in one or two pages can feel like the goal posts are moving. The finish line that is right there cannot be reached. One way to make this easier is to think about the summary as a second abstract. Using the same format you did when developing your abstract, put the pieces of your summary into place, only this time with greater detail. A narrative focus, bringing the reader through the problem to the solution will not only help you tie it all together but will provide your reader a succinct finale. Focus especially on the relevance of your findings. Make sure your reader can answer the question, why does this matter by the time they have completed your summary. For example, how would you explain a movie to someone who had not seen it but wanted to know what happened? You'd outline the environment and the main obstacle in the film which in your research, is the problem. You'd introduce the characters which is your instrumentation, you'd note the problems they face which is your analysis. You'd then give away the ending which are your results. Each of these sections would need to be addressed but you'd only bring up the most vital part of the story, leaving the color and detail to someone watching the full movie or reading your full study. And that's why a film teaser and summary take 90 seconds each instead of two hours. And a research abstract and summary take one or two pages each rather than anywhere from 20 to 200.

1. What is the primary purpose of the abstract in a research paper?

A) To summarize the entire study

B) To provide a detailed analysis of the findings

C) To attract readers to the full paper and highlight key aspects of the study

D) To introduce new ideas and concepts

2. How long is a typical abstract, according to the passage?

A) 50 words

B) 100 words

C) 150-200 words

D) 300 words

3. What is one strategy suggested for attracting readers to the abstract?

A) Including lengthy explanations

B) Using complex terminology

C) Incorporating relevant keywords

D) Avoiding any mention of the methodology

4. What is the final summary of a research paper primarily intended to do?

A) Introduce new findings

B) Provide additional analysis

C) Summarize the entire study and its significance

D) Highlight specific research questions

5. How is the final summary of a research paper similar to the abstract?

A) It includes a detailed methodology section

B) It provides a concise overview of the study

C) It introduces new concepts not covered in the main text

D) It contains lengthy descriptions of findings