

Guidelines for writing a research paper

The following are guidelines for writing and organizing the different sections of a research paper.

○ The Title

- Be thoughtful when choosing the title of your paper. This is the part of a paper that is the most widely read and most often it is the only thing that is read. Electronic indexing services rely heavily on the accuracy of the title to allow users to find papers that are relevant to their research. A good title should
 - have the fewest possible words that adequately describe the contents of the paper;
 - identify the main issues of the paper;
 - be accurate, unambiguous, specific, and complete;
 - not contain abbreviations unless they are well known by the target audience, and
 - attract readers attention

○ The Abstract

- The abstract is intended to capture the interest of the potential audience, and will often determine whether or not readers will read the rest of the paper.
- A poorly written abstract will not encourage interest in your work. It is important therefore to ensure that you take the time to prepare a good abstract that captures the salient points of your paper.
- Although it is the first section of your paper, the abstract, by definition, should be written last since it will summarize the contents of your entire paper. In writing the abstract first, it may fail to convey the essentials of the final paper.
- The abstract of your paper needs to be a precise, stand-alone, one paragraph statement that adequately summarizes the essential details - purpose, objectives methods, findings, interpretations, significance/implications or recommendations of the paper.
- The abstract should be between 150 – 300 words.
- The abstract SHOULD NOT contain:
 - Lengthy background information,
 - References to other literature [say something like, "current research shows that..." or "studies have indicated..."],
 - Using ellipticals [i.e., ending with "..."] or incomplete sentences,

- Abbreviations, jargon, or terms that may be confusing to the reader, and
- Any sort of image, illustration, figure, or table, or references to them.
- **The Introduction Section**

The introduction serves the purpose of leading the reader from a general subject area to a particular field of research. It establishes the context of the research being conducted by summarizing current understanding and background information about the topic, stating the purpose of the work in the form of the hypothesis, question, or research problem, briefly explaining your rationale, methodological approach, highlighting the potential outcomes your study can reveal, and describing the remaining structure of the paper.

The Creating a Research Space [C.A.R.S.] Model

- This C.A.R.S model was developed by John Swales based upon his analysis of journal articles representing a variety of disciplinary practices. The model attempts to explain the organizational pattern of writing the introduction to scholarly research studies. Following the CARS Model is useful because it helps one get started with the writing process [getting started is often the most difficult task] and by laying a foundation for understanding the way in which an introduction sets the stage for the rest of your paper and how it fits within the larger scope of your study.
- The model assumes that writers follow a general organizational pattern in response to two types of challenges [“competitions”] relating to establishing a presence within a particular domain of research:
 - 1) the competition to create a rhetorical space and,
 - 2) the competition to attract readers into that space.
- The model proposes three actions [Swales calls them “moves”], accompanied by specific steps, that reflect the development of an effective introduction to a research paper. These “moves” and steps can be used as a template for writing the introduction to your own research articles.

Move 1: Establishing a Territory [the situation]

This is generally accomplished in two ways:

- by demonstrating that a general area of research is important, critical, interesting, problematic, relevant, or otherwise worthy of investigation; and
- by introducing and reviewing key sources of prior research in that area to show where gaps exist or where prior research has been inadequate in addressing the research problem. The steps taken to achieve this would be:
 - Step 1: Claiming importance of, and/or [writing action = describing the research problem and providing evidence to support why the topic is important to study]
 - Step 2: Making topic generalizations, and/or [writing action = providing statements about the current state of knowledge, consensus, practice or description of phenomena]
 - Step 3: Reviewing items of previous research [writing action = synthesize key prior research that further supports the need to study the research problem; this is not a literature review but more a reflection of key studies that have touched upon but perhaps not fully addressed the topic]

Move 2: Establishing a Niche [the problem]

- This action refers to making a clear and cogent argument that your particular piece of research is important and possesses value. This can be done by indicating a specific gap in previous research, by raising a question, a hypothesis, or need, or by extending previous knowledge in some way. Examples of possible steps that can be taken to achieve this include:
 - Counter-claiming, or [writing action = introduce an opposing viewpoint or perspective or identify a gap in prior research that you believe has weakened or undermined the prevailing argument]; OR
 - Indicating a gap, or [writing action = develop the research problem around a gap or understudied area of the literature]; OR
 - Question-raising, or [writing action = similar to gap identification, this involves presenting key questions about the consequences of gaps in prior research that will be addressed by your study. For example, one could state, “Despite improved learning outcomes due to technology integration in instruction, it remains unclear why some faculty are still resistant...”]; OR
 - Continuing a tradition [writing action = extend prior research to expand upon or clarify a research problem. This is often signalled with logical connecting terminology, such as, “hence,” “therefore,” “consequently,”

“thus” or language that indicates a need. For example, one could state, “Consequently, these factors need to be examined in more detail...” or “Evidence suggests an interesting correlation, therefore, it is desirable to survey different respondents....”]

Move 3: Occupying the Niche [the solution]

- The final move is to announce the means by which your study will contribute new knowledge or new understanding in contrast to prior research on the topic. This is also where you describe the remaining organizational structure of the paper. The steps taken to achieve this would be:
 - Step 1: Outlining purposes, or [writing action = answering the “So What?” question. Explain in clear language the *objectives* of your study]
 - Step 2: Announcing present research [writing action = describe the purpose of your study in terms of what the research is going to do or accomplish. In the social sciences, the “So What?” question still needs to be addressed]
 - Step 3: Announcing principle findings [writing action = present a brief, general summary of key findings written, such as, “The findings indicate a need for...,” or “The research suggests four approaches to....”]
 - Step 4: Indicating article structure [writing action = state the organization of the paper]

Literature Review

As the discussion above indicates, the review of literature should be integrated within the Introduction section to support the purpose of your study. Keep the following points in mind when incorporating the literature review. The literature review should:

- be part of the Introduction or can appear as a subsection in the Introduction. Due to space limitations, the literature review in a journal article has to be significantly condensed and cannot be written as one would in a research report, thesis or dissertation;
- guide the reader to current state of knowledge on the issue under investigation and should allow the readers to understand the rest of the paper without referring to previous publications on the topic;
- orient the readers to the lens or mental model framing your research i.e. the perspective, theoretical or conceptual framework informing the work. Not all readers will have a broad or deep knowledge of your field or topic, so you may need to briefly elaborate on some of the ideas and explain some concepts and terms.

Citing sources:

- When citing sources avoid the temptation to show that you are familiar with everything of significance which has been published regarding the general *field* within which your topic is located instead, your contribution should focus on the knowledge that you have specifically built on, in engaging with your chosen problem. Do not simply provide a long string of citations without any explanations about their key points, significance or differences.
- Only report on previous work which is directly relevant and has contributed to your own study.

Remember to conclude the Introduction section by providing a brief outline of the structure of your paper.

○ The Methods Section

- The Methods section is the portion of the manuscript in which you outline how you performed your study. In many cases, the Methods section is the most important portion of the manuscript because poor methodology can only lead to results that are suspect, thereby seriously impairing the credibility of the manuscript.
- On the other hand, if the methods are scientifically sound, even uninteresting results can have merit. Readers will judge the reliability, validity or trustworthiness of the study by this section. The method section answers two main questions:
 1. How was the data collected or generated?
 2. How was the data analyzed?
- Introduce the overall *methodological approach* for investigating your research problem. Is your study *qualitative* or *quantitative* or a combination of both (*mixed method*)? Did you take a special approach, such as ethnography, action research, or a more positivistic stance?
- Indicate how the approach fits the overall research design. Your methods should have a clear connection with your research problem. In other words, make sure that your methods actually address the problem. One of the most common deficiencies



found in research articles is that the proposed methodology is unsuited to achieving the stated objective of your paper.

- Provide background and rationale for methodologies that are unfamiliar for your readers. Be clear and concise in your explanation. This information is particularly important when a new method has been developed or an innovative use of an existing method has been utilized.
- *Data collection*: Describe clearly the specific methods of data collection that was used, such as, surveys, interviews, questionnaires, observation, archival research.
- *Participant selection and sampling procedures*: Provide a rationale for subject selection and sampling procedures. For instance if interviews were conducted, how was the study sample selected? If texts were analyzed, how were the texts chosen, and why? If using statistics, why is this set of statistics being used? If other data sources exist, explain why the data you chose is most appropriate.
- *Data analysis*: Explain how the findings were analyzed. Whether statistical analysis was used or specific theoretical perspectives to help analyze text or observations? If analysis was done of existing data, such as a data set or archival documents, describe how these were originally created or gathered and by whom.
- Describe clearly strategies or measures taken to ensure *trustworthiness, reliability and validity* of the study should be articulated clearly. For example, qualitative researchers agree on strategies that promote trustworthiness in a study and include: *triangulation, member checks, saturation, peer review, audit trail, thick description, and plausible alternatives*, or the rationale for ruling out alternative explanations.
- *Address potential limitations*. Are there any practical limitations that affected your data collection? How did you control for potential confounding variables and errors? The methodology should discuss any problems that were anticipated and the steps you took to prevent them from occurring. For any problems that did arise, you must describe the ways in which their impact was minimized or why these problems do not affect the findings in any way that impacts your interpretation of the data.



- Can the study be *replicated* based on the description of the methods section? This section represents a blueprint by which another investigator could reproduce the study, quite similar to the manner in which a recipe outlines the steps by which a cook can prepare a culinary dish. In other words, if the reader could not use the Methods section as a guide to replicate the study, then the Methods section is lacking.

Problems to Avoid

1. *Unnecessary Details*: The methodology section of your paper should be thorough but to the point. Don't provide any background information that doesn't directly help the reader to understand why a particular method was chosen, how the data was gathered or obtained, and how it was analyzed.
2. *Unnecessary Explanation of Basic Procedures*: Remember that you are not writing a how-to guide about a particular method. You should make the assumption that readers possess a basic understanding of how to investigate the research problem on their own and, therefore, you do not have to go into great detail about specific methodological procedures. The focus should be on how you applied a method, not on the mechanics of doing a method. An exception to this rule is if you select an unconventional approach to doing the method; if this is the case, be sure to explain why this approach was chosen and how it enhances the overall research process.
3. *Problem Blindness*: It is almost a given that you will encounter problems when collecting or generating your data. Do not ignore these problems or pretend they did not occur. Often, documenting how you overcame obstacles can form an interesting part of the methodology. It demonstrates to the reader that you can provide a cogent rationale for the decisions you made to minimize the impact of any problems that arose.
4. *Literature Review*: Just as the literature review section of your paper provides an overview of sources you have examined while researching a particular topic, the methodology section should cite any sources that informed your choice and application of a particular method [i.e., the choice of a survey should include any citations to the works you used to help construct the survey].

○ The Findings/Results Section

- In the Results section, the authors should systematically and clearly announce the study findings. If the results are unclear, the reader must decide whether the analysis of the data was poorly executed or whether the Results section is poorly organized. The latter need not be a fatal flaw, whereas the former usually indicates that the manuscript is unacceptable for publication. Therefore, the organization of the Results section is an important consideration.
- For most research articles, there are two ways of presenting and organizing the results:
 1. Present the results followed by a short explanation of the findings. For example, you may have noticed an unusual correlation between two variables during the analysis of your findings. It is correct to point this out in the results section. However, speculating as to why this correlation exists, and offering a hypothesis about what may be happening, belongs in the discussion section of your paper.
 2. Present a section and then discuss it, before presenting the next section then discussing it, and so on. This is more common in longer papers because it helps the reader to better understand each finding. In this model, it can be helpful to provide a brief conclusion in the results section that ties each of the findings together and links to the discussion.

In general your results section should include the following elements:

- An introductory context for understanding the results by restating the research problem underpinning the purpose of your study.
- A summary of your key findings arranged in a logical sequence that generally corresponds with your methodology section.
- Inclusion of non-textual elements, such as, figures, charts, photos, maps, tables, etc. to further illustrate the findings, if appropriate.
- In the text, a systematic description of your results, highlighting for the reader observations that are most relevant to the topic under investigation [remember that not all results that emerge from the methodology that you used to gather the data may be relevant].
- The page length of your results section is guided by the amount and types of data to be reported. However, focus only on findings that are important and related to addressing the research problem.

Problems to Avoid: When writing the results section, avoid doing the following:

- Discussing or interpreting your results. Save all this for the discussion section of your paper, although where appropriate, you should compare or contrast specific results to those found in other studies [e.g., "Similar to Reza [2012], one of the findings of this study is the strong correlation between motivation and academic achievement...."].
- Reporting background information; this should have been done in your Introduction section. Often the results of a study point to the need to provide additional background information or to explain the topic further, so revise your introduction as needed.
- Ignoring negative results. If some of your results fail to support your hypothesis, do not ignore them. Document them, then state in your discussion section why you believe a negative result emerged from your study. Note that negative results, and how you handle them, often provides you with the opportunity to write a more engaging discussion section, therefore, don't be afraid to highlight them.
- Presenting the same data or repeating the same information more than once. If you feel the need to highlight something, you will have a chance to do that in the discussion section.
- Confusing figures with tables. Be sure to properly label any non-textual elements in your paper.

NOTE: The discussion section that follows, should generally follow the same format chosen in presenting and organizing the results.

○ **The Discussion Section**

- The discussion part is the counterpart to the Introduction since this part should lead the reader from narrow and/or very specific results to more general conclusions.
- The purpose of the discussion is to interpret and describe the significance of your findings in light of what was already known about the research problem being investigated, and to explain any new understanding or fresh insights about the problem after you've taken the findings into consideration.

- The discussion will always connect to the introduction by way of the research questions or hypotheses you posed and the literature you reviewed, but it does not simply repeat or rearrange the introduction; the discussion should always explain how your study has moved the reader's understanding of the research problem forward from where you left them at the end of the introduction.
- This section is often considered the most important part of a research paper because it most effectively demonstrates your ability as a researcher to think critically about an issue, to develop creative solutions to problems based on the findings, and to formulate a deeper, more profound understanding of the research problem you are studying.
- The discussion section is where you explore the underlying meaning of your research, its possible implications in other areas of study, and the possible improvements that can be made in order to further develop the concerns of your research.
- This is the section where you need to present the importance of your study and how it may be able to contribute to and/or fill existing gaps in the field. If appropriate, the discussion section is also where you state how the findings from your study revealed new gaps in the literature that had not been previously exposed or adequately described.
- This part of the paper is not strictly governed by objective reporting of information but, rather, it is where you can engage in creative thinking about issues through evidence-based interpretation of findings. This is where you infuse your results with meaning.

Generally, in this section you should do the following:

- *Reiterate Research Problem and Major Findings:* Only a brief recap of the research problem and major findings should be given with a focus on discussing and not reiterating what has already been presented. Many authors tend to reiterate the results in the Discussion section, which is an unnecessary step that distracts the reader from the more important points of the discussion.
- *Explain the Meaning of the Findings and Why They are Important:* Systematically explain the meaning of the findings and why you believe they are important. No one has

thought as long and hard about your study as you have. The discussion should be focused on discussing the meaning of the findings, not reiterating what has been said in the results section.

- *Relate the Findings to Similar Studies:* The discussion section should relate your study findings to those of other studies, particularly if questions raised by previous studies served as the motivation for your study, the findings of other studies support your findings [which strengthens the importance of your study results], and/or they point out how your study differs from other similar studies.
- Another problem to which some authors succumb is to use the Discussion section to review the entire literature surrounding a problem rather than simply reviewing the portion that is relevant to their study. Avoid introducing any new information, theories or citations unless absolutely necessary.
- *Consider Alternative Explanations of the Findings:* In a good manuscript, the authors will attempt to explain unexpected findings rather than ignore them. This process is especially important for findings that are not supportive of the authors' claims or that do not serve as evidence in favor of their hypothesis. To fail to do this is to risk unjustifiably emphasizing only some of the results and reaching inappropriate conclusions. Also report any unexpected findings.
- *Acknowledge the Study's Limitations:* It is important that authors note limitations to their study that could influence its internal and external validity. The lack of a limitations statement suggests that the authors did not prospectively take any limiting factors into account when they designed the study or did not retrospectively assess these features when they reviewed their data. Anticipate the questions readers may still have and suggest what further investigations are still needed.
- *Make Suggestions For Further Research:* There should also be a proposed follow-up research questions and outlook on further work. Conclusions or emerging hypotheses should be drawn from the results, with summary of evidence for each conclusion.
- *Length:* The Discussion section should be long enough to discuss the findings against the background of previous work and explain similarities/differences with previously published reports. However, it should not be lengthy to the point of appearing rambling

or unfocused, which can substantially detract from the merits of an otherwise good manuscript.

- **The Conclusion Section**

- The conclusion is intended to help the reader understand why your research should matter to them after they have finished reading the paper. A conclusion is not merely a summary of your points or a re-statement of your research problem but a synthesis of key points. For most essays, one well-developed paragraph is sufficient for a conclusion, although in some cases, a two-or-three paragraph conclusion may be required.
- A well-written conclusion provides you with several important opportunities to demonstrate your overall understanding of the research problem to the reader. These include:
 - Presenting the last word on the issues you raised in your paper. Just as the introduction gives a first impression to your reader, the conclusion offers a chance to leave a lasting impression. Do this, for example, by highlighting key points in your analysis or findings.
 - Summarizing your thoughts and conveying the larger implications of your study. The conclusion is an opportunity to succinctly answer the "so what?" question by placing the study within the context of past research about the topic you've investigated.
 - Demonstrating the importance of your ideas. Don't be shy. The conclusion offers you a chance to elaborate on the significance of your findings.
 - Introducing possible new or expanded ways of thinking about the research problem. This does not refer to introducing new information [which should be avoided], but to offer new insight and creative approaches for framing/contextualizing the research problem based on the results of your study.
- The function of your paper's conclusion is to restate the main argument. It reminds the reader of the strengths of your main argument(s) and reiterates the most important evidence supporting those argument(s). Make sure, however, that your conclusion is not simply a repetitive summary of the findings because this reduces the impact of the argument(s) you have developed in your essay.

Consider the following points to help ensure your conclusion is appropriate:

- If the argument or point of your paper is complex, you may need to summarize the argument for your reader.
- If, prior to your conclusion, you have not yet explained the significance of your findings or if you are proceeding inductively, use the end of your paper to describe your main points and explain their significance.
- Move from a detailed to a general level of consideration that returns the topic to the context provided by the introduction or within a new context that emerges from the data.

Developing a Compelling Conclusion

Strategies to help you move beyond merely summarizing the key points of your research paper may include any of the following:

- If your essay deals with a contemporary problem, warn readers of the possible consequences of not attending to the problem.
- Recommend a specific course or courses of action.
- Cite a relevant quotation or expert opinion to lend authority to the conclusion you have reached [a good place to look is research from your literature review].
- Restate a key statistic, fact, or visual image to drive home the ultimate point of your paper.
- If your discipline encourages personal reflection, illustrate your concluding point with a relevant narrative drawn from your own life experiences.
- Return to an anecdote, an example, or a quotation that you introduced in your introduction, but add further insight that is derived from the findings of your study; use your interpretation of results to reframe it in new ways.
- Provide a "take-home" message in the form of a strong, succinct statement that you want the reader to remember about your study.

Problems to Avoid

- *Failure to be concise:* The conclusion section should be concise and to the point. Conclusions that are too long often have unnecessary detail. The conclusion section is not the place for details about your methodology or results. Although you should give a summary of what was learned from your research, this summary should be relatively brief, since the emphasis in the conclusion is on the implications, evaluations, insights, etc. that you make.

- *Failure to comment on larger, more significant issues:* In the introduction, your task was to move from general [the field of study] to specific [your research problem]. However, in the conclusion, your task is to move from specific [your research problem] back to general [your field, i.e., how your research contributes new understanding or fills an important gap in the literature]. In other words, the conclusion is where you place your research within a larger context.
- *Failure to reveal problems and negative results:* Negative aspects of the research process should never be ignored. Problems, drawbacks, and challenges encountered during your study should be included as a way of qualifying your overall conclusions. If you encountered negative results [findings that are validated outside the research context in which they were generated], you must report them in the results section of your paper. In the conclusion, use the negative results as an opportunity to explain how they provide information on which future research can be based.
- *Failure to provide a clear summary of what was learned:* In order to be able to discuss how your research fits back into your field of study [and possibly the world at large], you need to summarize it briefly and directly. Often this element of your conclusion is only a few sentences long.
- *Failure to match the objectives of your research:* Often research objectives change while the research is being carried out. This is not a problem unless you forget to go back and refine your original objectives in your introduction, as these changes emerge they must be documented so that they accurately reflect what you were trying to accomplish in your research [not what you thought you might accomplish when you began].
- *Resist the urge to apologize:* If you've immersed yourself in studying the research problem, you now know a good deal about it, perhaps even more than any expert out there! Nevertheless, by the time you have finished writing, you may be having some doubts about what you have produced. Repress those doubts! Don't undermine your authority by saying something like, "This is just one approach to examining this problem; there may be other, much better approaches..."

○ The References Section

- Authors are reminded that the quality of the references often reflects the quality of the manuscript as a whole. Poorly written manuscripts frequently have a References section filled with mistakes indicating lack of citation accuracy, incorrectness of abbreviations and punctuation, and failure to adopt the journal’s citation format. If poorly done, this section will give reviewers a poor impression of the manuscript.
- Reviewers do not generally have the time or inclination to review every citation for correctness. However, reviewers are expected to perform a spot check to determine whether references are cited correctly and to scan the reference list to determine whether important articles were not included and whether appropriate format was followed.
- Authors should be careful not to misinterpret articles to buttress their own arguments or to support their results. In an age when published articles are often relatively accessible via electronic sources, a quick reading of the article in question can answer any suspicions readers may have.
- Authors should ensure that
 - all references are accurate and that only references cited in the text appear in the reference section.
 - when there is more than one article by the same author(s), list the most recent paper first.
 - prepare an unnumbered reference list in alphabetical order by author using the American Psychological Association (APA) format.
- For more information on citing sources authors can refer to:
 - how to Use the APA Format: <https://owl.english.purdue.edu/owl/section/2/10/>
 - visit APA Style Help at <http://www.apastyle.org/apa-style-help.aspx>