Title goes here!

First Author[1], Second Author[2], Third Author[1], and Fourth Author[1]

[1]Department, Institution/School
[2]Department, Institution/School (use if you have non-CSEC majors or non-RIT/Rochester Main Campus students on your team)

March 23, 2023

Abstract

The abstract is in a sense the most important part of your paper, since many readers will scan an abstract first before deciding to invest effort in reading the paper.

An abstract should be about 300 words long at most, and should act as a clear summary of the paper. It should state the aim and scope of the research, methods, results and conclusions, and the implications of the paper's finding. The abstract should be broadly accessible (i.e. able to be understood by as many people as possible - even those outside the field) and communicate the importance of the work being done.

Structure the abstract as follows: background and aims, methods, results and conclusion. You should include the total number of papers you reviewed during your literature review, as well as a high-level description of the 3 or 4 key themes you extracted during your literature review.

Examples of some decent abstracts can be found here, with the main ideas highlighted.

Keywords

Select keywords with care, because they will help users discover your paper. To determine appropriate keywords, put yourself in the position of someone who is trying to search for a paper like yours. What search terms would you use? From those terms, select a list of at least three and no more than five words. Include these words in the text of the abstract and if at all possible, in the title of the paper.

1 Introduction

Before we get to the actual introduction, welcome to Overleaf, as well as LaTeX itself! Although LaTeX certainly has its quirks, we hope that by contrasting the template you see here with the compiled document on the right side, you can get an intuitive sense of how to work with it.

Another thing before the introduction; here, I'm going attach a citation to this sentence [1]. Scroll on down to the bibliography section of the LaTeX code if you'd like to see the other end of the built-in references system. The numbering is all handled in-house – you just have to assign each reference a key, and Overleaf takes care of the rest.

On with the actual introduction! The introduction should provide context and background information appropriate for an academic audience. It should state a focused research question, define the variables being studied, and make clear the objective, importance, and relevance of the work.

Here is where you'd introduce the context surrounding your study. What led you to the question you ended up asking? Why is it relevant? Which fields of science is your question based around? What has previous literature demonstrated?

While the structure of the previous parts of the introduction can be relatively variable, you must make sure to provide a brief overview of the study itself, and the methods you used to accomplish it. Obviously, excessive detail is not necessary (that's what the next section is for). Lastly, be sure to make mention of the potential implications of your findings, but once again remember that you'll be going into more detail about that in the discussion.

For your Auth Paper: treat your introduction as the initial pitch of an idea or a thorough examination of the significance of a research problem. After reading the introduction, your readers should not only have an understanding

of what you want to do, but they should also be able to gain a sense of your passion for the topic and to be excited about the study's possible outcomes.

Think about your introduction as a narrative written in **two to four paragraphs** that succinctly answers the following four questions:

1. What is the central research problem?

2. What is the topic of study related to that research problem?

3. Why is a literature review appropriate to analyze the research problem?

4. Why is this important research, what is its significance, and why should someone reading the paper care about the outcomes of the proposed study?

2 Background & Significance

This is where you explain the context of your paper and describe in detail why it's important. It can be melded into your introduction or you can create a separate section to help with the organization and narrative flow of your paper. Approach writing this section with the thought that you can't assume your readers will know as much about the research problem as you do. Note that this section is not an essay going over everything you have learned about the topic; instead, you must choose what is most relevant in explaining the aims of your research.

To that end, while there are no prescribed rules for establishing the significance of your proposed study, you should attempt to address some or all of the following:

- State the CORE research problem and give a more detailed explanation about the purpose of the study than what you stated in the introduction. This is particularly important if the problem is complex or multifaceted.

- Present the rationale of your proposed study and clearly indicate why it is worth doing; be sure to answer the "So What? question [i.e., why should anyone care].

- Describe the major issues or problems to be addressed by your research. This can be in the form of questions to be addressed. Be sure to note how your proposed study builds on previous assumptions about the research problem.

- Explain the methods you plan to use for conducting your research. Clearly identify the key sources you intend to use and explain how they will contribute to your analysis of the topic.

- Describe the boundaries of your proposed research in order to provide a clear focus. Where appropriate, state not only what you plan to study, but what aspects of the research problem will be excluded from the study.

- If necessary, provide definitions of key concepts or terms.

3 Related Work

Your RELATED WORK will consider other, exemplar literature reviews related to your topic. You will use these to understand the structure and format of a good literature review and also consider what some of the open questions are in the field, popular methods for investigating those questions, and how to describe/present the findings of a literature review. The core question (and sub-question) you should consider when examining the near-neighbor literature reviews is CORE QUESTION: "what questions remain that are related to my sub-topic," SUB QUESTION: "how can I use literature review method to answer ONE of those questions?"

Connected to the background and significance of your study is a section of your paper devoted to a more deliberate review and synthesis of prior studies related to the research problem under investigation. The purpose here is to place your project within the larger whole of what is currently being explored, while demonstrating to your readers that your work is original and innovative. Think about what questions other researchers have asked, what methods they have used, and what is your understanding of their findings and, when stated, their recommendations.

NOTE: Do not shy away from challenging the conclusions made in prior research as a basis for supporting the need for your paper. Assess what you believe is missing and state how previous research has failed to adequately examine the issue that your study addresses. For more information on writing literature reviews, go to: https://libguides.usc.edu/writingguide/literaturereview.
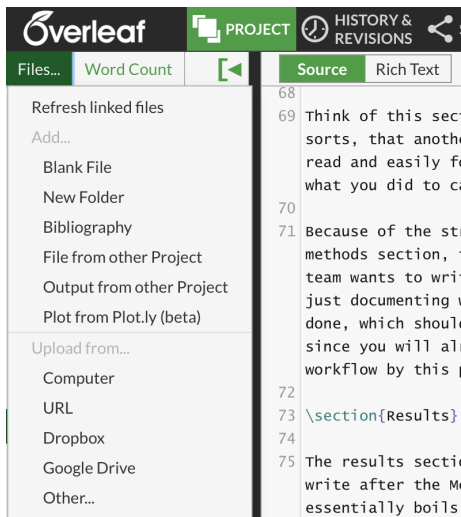
Figure 1: Notice how LATEX automatically numbers this figure.

4 Research Method

Your Research Method is a LITERATURE RE-VIEW.

This section must be well-written and logically organized because you are not experts in this field. Still, your reader must have confidence that you have conducted the appropriate due-diligence to understand and properly characterize the available literature on your chosen topic. The reader will never have a study outcome from which to evaluate whether your methodological choices were the correct ones. Thus, the objective here is to convince the reader that your overall research design and proposed methods of analysis will correctly answer ONE CORE IS-SUE/IMPORTANT QUESTION with your literature review, and that you understand what methods will provide the means to further investigate meaningful questions that derive from your literature review findings (which happens in a later section). Your literature review design should be unmistakably tied to the specific aims of your study.

4.1 Limitations and Risks

Anticipate and acknowledge barriers and pitfalls in carrying out your literature review and explain how you addressed them. No method is perfect so you need to describe where you believe challenges existed in obtaining data or accessing information. It's always better to acknowledge this than to have it brought up by your professor.

4.2 Procedures

Keep in mind that the methodology is not just a list of tasks; it is an argument as to why these tasks add up to the best way to investigate the research problem. This is an important point because the mere listing of tasks to be performed does not demonstrate that, collectively, they effectively address the research problem. Be sure you clearly explain this.

4.3 Novel Techniques

Did you use any novel methods to conduct your literature review? Atypical (non-scholarly) data sources are generally discouraged, but may have merit in rare cases. If you are contemplating the use of a novel technique or data source, it's best to check with your professor early instead of getting too far down that rabbit hole only to find out it is unacceptable and/or contrary to the learning objectives of this project.

5 Findings

Since a literature review is information dense, it is crucial that this section is intelligently structured to enable a reader to grasp the key arguments underpinning your proposed study in relation to that of other researchers. A good strategy is to break the literature into "conceptual categories" [themes] rather than systematically or chronologically describing groups of materials one at a time. Note that conceptual categories generally reveal themselves after you have read most of the pertinent literature on your topic so adding new categories is an on-going process of discovery as you review more studies. How do you know you've covered the key conceptual categories underlying the research literature? Generally, you can have confidence that all of the significant conceptual categories have been identified if you start to see repetition in the conclusions or recommendations that are being made.

To help frame your paper's review of prior research, consider the "five C's" of writing a literature review:

- Cite, so as to keep the primary focus on the literature pertinent to your research problem.

- Compare the various arguments, theories, methodologies, and findings expressed in the literature: what do the authors agree on? Who applies similar approaches to analyzing the research problem?

- Contrast the various arguments, themes, methodologies, approaches, and controver-

sies expressed in the literature: describe what are the major areas of disagreement, controversy, or debate among scholars?

- Critique the literature: Which arguments are more persuasive, and why? Which approaches, findings, and methodologies seem most reliable, valid, or appropriate, and why? Pay attention to the verbs you use to describe what an author says/does [e.g., asserts, demonstrates, argues, etc.].

- Connect the literature to your own area of research and investigation: how does your own work draw upon, depart from, synthesize, or add a new perspective to what has been said in the literature?

The findings of your literature review should be organized by THEME.

You should have at least 3 themes in your wireframe and final paper:

5.1 Theme One: Data Sources

The first THEME should characterize/classify the data sources that other researchers have used. Where/how did they gather data/inputs? Where/how did they NOT gather data, but perhaps should have considered? Be specific about the parameters the researchers use to obtain information and how they validated the data/sampling/approach was REPRESENTATIVE of the broader population they were investigating. If it was a proof-of-concept or a formal experiment, how did they determine the components they'd use in their experiment/test? Why are those the right components to illustrate broad/deep meaning for the field?

5.2 Theme Two: Methods

The second THEME should characterize/classify the research methods that other researchers have used. Where/how did they manipulate/transform the data into new knowledge? Where/how did they NOT transform the data, but perhaps should have considered? Be specific about the methodological approaches you saw in your literature review; what parameters did the researchers use to transform and analyze the data? How did they test external validity [i.e., the trustworthiness and "generalizability" of their study to other people, places, events, and/or periods of time]?

5.3 Theme Three: Theories

Another THEME should characterize and describe the main theories in use for literature concerning this topic. Each research paper applies specific theories; sometimes this is stated, sometimes it is unstated and requires some analysis on your part. When describing the data sources and methods you observed, be sure to cover the research process and the way researchers interpret the results obtained from their method in relation to the research problem. The theory that researchers apply is precisely how researchers interpret the results. By examining the main/contemporary theories relating to the topic/field, you should be able to characterize how mature the topic/field is. This is one of the most important ways to generate expertise in a field as new researchers–it gives you a way to anticipate future evolution in your chosen area of expertise.

5.4 Theme Four...etc: XXX

There will probably be other interesting findings that warrant their own analysis as a THEME. Consider what trends/generalizations you might extract from your analysis. You can learn a lot by presenting your literature review results in a table and considering how things have evolved/might change over time.

6 Implications and Considerations for Future Work

When thinking about the potential implications of your study, ask the following questions:

- What might your results mean in regards to challenging the theoretical framework and underlying assumptions that support the study?

- What suggestions for subsequent research could arise from the potential outcomes of your study?

- What will the results mean to practitioners in the natural settings of their workplace?

- Will the results influence programs, methods, and/or forms of intervention?

- How might the results contribute to the solution of social, economic, or other types of problems? Don't get too verbose on this, a sentence or so will be sufficient.

- What should be improved or changed as a result of your literature review?

NOTE: This section should not delve into idle speculation, opinion, or be formulated on the basis of unclear evidence. The purpose is to reflect upon gaps or understudied areas of the

current literature and describe how your proposed research contributes to a new understanding of the research problem should the study be implemented as designed.

7 Conclusions

The conclusion reiterates the importance or significance of your paper and provides a brief summary of the entire study. This section should be only one or two paragraphs long, emphasizing why the research problem is worth investigating, why your research study is unique, and how it should advance existing knowledge.

Someone reading this section should come away with an understanding of:

- Why the study should be done,

- The specific purpose of the study and the research questions it attempts to answer,

- The decision to why the research design and methods used where chosen over other options,

- The potential implications emerging from your proposed study of the research problem, and

- A sense of how your study fits within the broader scholarship about the research problem.

8 Acknowledgements

In the Acknowledgements section, the author(s) acknowledge or thank any persons or institutions who helped support the work in any way. In particular, this section must disclose any funding for the research completed, including the grant number (if a grant was awarded).

Anyone to thank/credit for helping your team along the way? This is the place to do it.

This is NOT the place to grade grub by thanking your professor (our egos are big enough already, thank you very much).

9 Appendix

Appendices are optional sections that should include additional tables, figures, or other data beyond what is included in the results section. An appendix should be able to stand separately from the prinicpal article. Therefore, no references (callouts) to appendix figures or tables should be made in the principal article. If required, the appendix should have its own bibliographic reference list with citations to that list confined to the appendix. [1]

References

[1] Goossens M, Mittelbach F, Samarin A. The LaTeX Companion. Reading, Massachusetts: Addison-Wesley; 1993.