

Completing a Peer Review



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Based on “Writing in the Sciences” an online resource provided by the learning commons at the University of Guelph.

Note to Students: The following are general guidelines to complete a critique of written work completed by a peer in the biological sciences. The guidelines can be applied to a paper describing an experiment or a paper written using previously published data. Writing a critical review of a peer’s work can help to improve your research and writing skills. By assessing the work of others, you develop skills as a critical reader and become familiar with the type of evaluation criteria that will be applied to your field and thus your own work. When completing a peer review you are expected to read the article carefully, analyze it, and evaluate its quality and originality, as well as its relevance and presentation. Its strengths and weaknesses are assessed, followed by its overall value. Do not be confused by the term critique. This does not mean that you only look at the negative aspects of what the researcher has done. You should address both the positive and negative aspects.

Your instructor may request that you provide an edited draft in track changes. This exercise is to provide specific comments on the document to assist the author. You may also be required to use the PEAR system to complete this review. This is a system that helps organize the review process. Finally, a typical evaluation rubric is inserted at the back of this document. This is to demonstrate the elements that are typically expected in a review and also help you evaluate a peer review if required.

Note to Instructors: If you wish to modify this document to suit your course, please make clear (in your document) that your version is only for your course. This will help avoid confusion among students who might otherwise encounter multiple versions with contradictory guidelines.

Analyze the Text

As you read the paper for the first time consider the following questions to help you understand how and why the research or project was completed.

1. What type of article is it? (theoretical, experimental, a correlational study, research review)
- Most relevant section: **Abstract**
2. What is the author’s central purpose?
- Most relevant section: **Introduction**

3. What methods were used to accomplish this purpose (systematic recording of observations, analysis and evaluation of published research, assessment of theory)?

What were the techniques used? How was each technique performed? What kind of data can be obtained using each technique? How are such data interpreted?

- For a research paper the most relevant section: **Methods**

4. What objective evidence was obtained from the author's efforts (published data, observations, measurements, etc.)?

What were the results of the study?

How was each technique used to obtain each result? What statistical tests were used to evaluate the significance of the conclusions based on numeric or graphic data?

How did each result contribute to answering the question or testing the hypothesis raised in the introduction?

- Most relevant section: **Results**

5. How were the results interpreted? How were they related to the original problem (author's view of evidence rather than objective findings)? Were the authors able to answer the question (test the hypothesis) raised?

Did the research provide new factual information or a new understanding of a phenomenon in the field?

How was the significance of the work described?

Did the reported observations/interpretations support or refute observations/interpretations made by other researchers?

- Most relevant section: **Discussion**

Establish the Research Context

Once you are reasonably familiar with the article, it is important to gain an understanding of the research context. To establish the research context, questions such as the following should be addressed:

- When and where was the research conducted?

- Why did they do this research?

- On what prior observations was the research based? What was and was not known at the time?

- How important was the research question posed by the researcher?

This background information can then be used to help you understand the paper/experiment that you are critiquing. For example, you must have a clear understanding of the research question (or hypothesis) posed in the article; this background information will help to determine why that particular question was asked/why that particular hypothesis was being tested. Some of the answers to these questions can be found in the article itself, in the Introduction and Discussion sections — look at the articles that are cited in these sections. Read some of these articles.

Evaluate the Text

After you have read the article and answered the questions in the previous section, you should have a good understanding of the research/work undertaken. You can now begin to evaluate the author's research. Making judgments about someone else's work is often the most difficult part of writing the review. Many students feel that, because they are new to a discipline, they do not have enough knowledge to make judgments of other people's work. The following checklist may assist you:

Introduction

- Read the statement of purpose at the end of the introduction. What was the objective of the study?
- Consider the title. Does it precisely state the subject of the paper?
- Read the statement of purpose in the abstract. Does it match the one in the introduction?
- Check the sequence of statements in the introduction. Does all information lead coherently to the purpose of the study?

Methods

- Review all methods in relation to the objective of the study. Are the methods valid for studying the problem?
- Check the methods for essential information. Could the study be duplicated from the methods and information given?
- Check the methods for flaws. Is the sample selection adequate? Is the experimental design sound?
- Check the sequence of statements in the methods. Does all the information there belong there? Is the sequence of methods clear, pertinent?

Results

- Examine carefully the data as presented in the tables and figures. Does the title or legend accurately describe the content? Are column headings and labels accurate? Are the data organized to facilitate comparison and interpretation? (Tables and figures should be self-explanatory, with a title that accurately and concisely describes content. Table column headings should accurately describe information in the cells. Figure captions should define symbols and acronyms used in graphs or images.)
- Review the results as presented in the text while referring to the data in the tables and figures. Does the text complement, and not simply repeat, data? Are there discrepancies between the results in the text and those in the tables and figures?
- Check all calculations and presentation of data.
- Review the results in light of the stated objective. Does the study reveal what the researcher intended?

Discussion

- Check the interpretation against the results. Does the discussion merely repeat the results? Does the interpretation arise logically from the data or is it too far-fetched? Have the faults/flaws/shortcomings of the research been addressed?
- Is the interpretation supported by other research cited in the study?
- Does the study consider key studies in the field?
- Are there other research possibilities/directions suggested?

Overview

- Reread the abstract. Does it accurately summarize the article?
- Check the structure of the article (first headings and then paragraphing). Is all material organized under the appropriate headings? Are sections divided logically into subsections or paragraphs?
- Are stylistic concerns, logic, clarity and economy of expression addressed?

Write your Critique

You have completed your analysis and evaluation of the journal article. How do you then put all this information together? If your instructor has not provided a format for your critique, you might present it in the following way:

Introduction

In the introduction, cite the journal article in full and then provide the background to this piece of research, establishing its place within the field. Use the answers to the questions in *Establish the Research Context* to develop this section.

Body

Follow the structure of the article and evaluate each section — Introduction, Methods, Results, Discussion — highlighting its strengths and weaknesses. Use the answers to the questions in *Evaluate the Text* to develop this section.

Conclusion

In this section, sum up the strength and weaknesses of the research as a whole. Establish its practical and theoretical significance. Use the answers to questions in “Establish the Significance of the Research” to develop this section.

Evaluating a Peer Review. Example of a rubric that would be used to evaluate a peer review. Use this a guideline to evaluate a peer review as well as to help you write a peer review. Rubric developed by Hafiz Maherali with material and inspiration from the Pedogogy online resource page (<http://metrorichmedia.com/pedagogyonline/default.asp>) by James Falkofske and Technoheutagogy (<http://www.technoheutagogy.com/>) by Bill Pelz.

Criteria	A	B	C	D
1. Feedback on quality of research topic, background information, and significance.	Comments include specific suggestions for improvement, additional resources for consideration and possibilities for improving significance.	Comments are useful, reflecting some analysis of the topic, but not complete.	Comments are superficial and do not reflect an analysis of the topic.	Little useful feedback. Comments indicate that reviewer is unfamiliar with the topic.
2. Feedback on justification for the research plan. Includes comments on logic of arguments, assumptions, hypotheses, predictions and experimental design.	Comments include several specific and useful suggestions for improving or developing logical arguments, hypothesis development and/or experimental design.	Comments illustrate useful analysis of logic, assumptions, and hypothesis development. Suggestions on improvement provided.	Comments provided have flaws in logic or are superficial.	Little useful feedback. All comments are superficial.
3. Feedback on writing quality and effectiveness of communication	Comments include specific suggestions improving structure and mechanics of writing.	Comments illustrate an analysis of the writing, but provide few concrete suggestions.	Comments are superficial or only weakly analyze the writing, or focus only on typographical errors.	Little useful feedback.
4. Tone of comments	Comments specifically praise strengths as well as constructively addressing weaknesses. Comments were provided in a positive and constructive manner.	Comments include some positive feedback and suggestions. Comments addressing weaknesses, though constructive, were written in a negative tone.	Few positive comments. Most comments were not constructive and did not help with revisions.	No feedback, or comments were unnecessarily negative, confrontational, and/or rude.

Questionnaire for quantitatively evaluating a peer review

Please use a ranking of 0-3 for each of the following statements. 0 = disagree, 1 = moderately agree, 2 = agree, 3 = strongly agree.

- 1) The reviewer made an effort to complete the review. _____
- 2) The review was well written. _____
- 3) The reviewer provided useful feedback on quality of research topic, background information, and significance. _____
- 4) The reviewer provided useful feedback on project justification, logic of arguments, assumptions, hypotheses, predictions and experimental design. _____
- 5) The reviewer provided useful feedback on writing quality and effectiveness of communication
- 6) The reviewer appears to have familiarized themselves with the topic. _____
- 7) The tone of the comments was professional and appropriate. _____
- 8) The feedback provided by the reviewer was fair and balanced
- 9) Overall we think the reviewer did an excellent job. _____

Please add up all rankings and insert value here: _____/27

Other comments on the quality of the review: