



ENGR/RSCH 361: Scientific Research Communication

Assignment #4 – Research Report

Please read the guidelines for this assignment carefully. If needed, request clarification promptly.

Write a research report about work you have done in your research lab or in a teaching lab. This may include a report you have already prepared. Alternatively, you may choose to use experimental data published in the literature, also known as a meta-analysis.

The structure of your report should follow the organizational guidelines of the *American Chemical Society* (ACS), *American Psychological Association* (APA), *Modern Language Association* (MLA), or the *Chicago Manual of Style* (CMOS).

ACS guideline: <https://libguides.com.edu/c.php?g=649106&p=4553540>

APA guideline: <https://owl.english.purdue.edu/owl/resource/560/01/>

MLA guideline: <https://style.mla.org/mla-format/>

CMOS guideline: <https://www.chicagomanualofstyle.org/home.html>

SOURCE DATA ASSIGNMENT

You will need to specify what data source you plan to use for the report. Write a brief description of how the data was collected (~150 words) and reference work, submit an electronic document. If you plan to use published data from the literature (a meta-analysis), attach copy of the publication containing the data you plan to use. Be careful to write the report in your own words; you may use data but nothing else from the published paper.

RESEARCH REPORT 1st, 2nd, and FINAL DRAFT

The report should be written for a reader who has a good science background and is somewhat knowledgeable about the topic on which you're writing (not an expert in the field). The length of the final report should be about 2000 words. You will lose credit if your report is less than 1700 words or more than 2500 words. **Your research report should include the following sections: Title page, Abstract, Introduction, Methods, Results, Discussion, Conclusion, References, and Figures.**

You must include references of **at least six** publications relative to the subject of the report. These would normally include an original publication of the methods being used as well as other references to the problem being studied. At least four of the references should cite original research literature.



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Formatting & Submission of Assignment 4

1. Submit only electronic copies of each draft by the designated deadline.
2. Submit electronic copies as (*.docx) via Dropbox on BeachBoard (drafts will be edited and reviewed for plagiarism).
3. **Final submission: Submit an electronic copy of the final draft by the beginning of class on due date.**

DOCUMENT - *FOLLOW THE FORMAT GUIDELINES FOR YOUR FIELD*****

4. All written work should be typed, double-spaced, with 1" margins on all sides, using an 11-point Arial font.
5. Include a title page. The title page should include a concise title that reflects and emphasizes the content of the project described in the report. The author's name should follow the title on a separate line, followed by the author's affiliation, and the date. Follow the style guide!
6. Include a suitable concise title (in the header), and page numbering (in the Footer).
7. Figures and tables should include captions and proper labels, titles, legends, and description. All figures and tables should be referenced within the text. Figures and tables should be placed after the references in your document. Each figure and table should be included on its own page.
8. Accepted referencing style and in-text citations must be used (see below).
 - a. Cite References in Text in one of three ways:
 - By superscript numbers, which appear outside the punctuation if the citation applies to a whole sentence or clause. ¹
 - By italic numbers in parentheses on the line of text & inside the punctuation (1).
 - By author name and year of publication in parentheses inside the punctuation (LastName *et al.*, YEAR).
9. Reference List:
 - ACS
Author 1; Author 2; Author 3; etc. Title of Article. *Journal Abbreviation* Year, Volume, Inclusive Pagination.
Example:
Klingler, J. Influence of Pretreatment on Sodium Powder. *Chem. Mater.* 2005, 17, 2755–2768.
 - APA
Author, A. A., Author, B. B., & Author, C. C. (Year). Title of article. *Title of Periodical*, volume number (issue number), pages.
Example:
Scruton, R. (1996). The eclipse of listening. *The New Criterion*, 15(3), 5-13.

Grading will be based on completion and quality of all components of the assignment (content), submission of all documents by the specified time and the Grading Rubric (next page).

NOTE: This research report will be the data source for Assignment #5, the poster.



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RESEARCH PAPER GRADING RUBRIC

	A Level	B Level	C Level	D Level
ABSTRACT (10 points)	The ABSTRACT -was well organized -described each section of the paper -under the word count -concise where each element was presented in a straightforward manner -clear for the intended audience (10 points)	The ABSTRACT had ONE or TWO of these limitations: -disorganized -over the word count -did not present the sections of the paper concisely -unclear or incorrect audience -weak first sentences (8 points)	The Introduction had THREE or FOUR of these limitations: -disorganized -over the word count -did not present the sections of the paper concisely -unclear or incorrect audience -weak first sentences (7 points)	The Introduction had more than FOUR of these limitations: -disorganized -over the word count -did not present the sections of the paper concisely -unclear or incorrect audience -weak first sentences (6 points)
INTRODUCTION/ BACKGROUND (15 points)	The INTRO/BACKGROUND -first sentence grabbed readers attention -was well organized -logically presented previous literature about the topic -identified the gap(s) in the literature -provided background for proposed experiments -stated the hypothesis clearly (15 points)	The INTRO/BACKGROUND had ONE or TWO of these limitations: -first sentence did not state the research performed -disorganized -did not present literature on the topic -did not identify the gap(s) in the literature -did not provide background for proposed experiments -did not state the hypothesis (13.5 points)	The INTRO/BACKGROUND had THREE or FOUR of these limitations: -first sentence did not state the research performed -disorganized -did not present literature on the topic -did not identify the gap(s) in the literature -did not provide background for proposed experiments -did not state the hypothesis (12 points)	The INTRO/BACKGROUND had more than FOUR of these limitations: -first sentence did not state the research performed -disorganized -did not present literature on the topic -did not identify the gap(s) in the literature -did not provide background for proposed experiments -did not state the hypothesis (10.5 points)
METHODOLOGY (15 points)	The METHODOLOGY -was well organized -described the equipment used -provided step by step instructions with images -described the variables that were collected -described the data analysis (15 points)	The METHODOLOGY had ONE or TWO of these limitations: -was well organized -described the equipment used -provided step by step instructions with images -described the variables that were collected -described the data analysis (13.5 points)	The METHODOLOGY had THREE or FOUR of these limitations: -disorganized -did not described the equipment used -did not provided step by step instructions with images Did not -described the variables that were collected -did not described the data analysis (12 points)	The METHODOLOGY had more than FOUR of these limitations: -disorganized -did not described the equipment used -did not provided step by step instructions with images Did not -described the variables that were collected -did not described the data analysis (10.5 points)
RESULTS & FIGURES (15 points)	The RESULTS & FIGURES -were well organized -clearly presented the results in narrative form -figures include descriptive captions - figures with data have appropriate labels (axis labels, units, etc.) -figures referenced in the text (15 points)	The RESULTS & FIGURES had ONE or TWO of these limitations: -disorganized -did not present the results in narrative form -figures did not include descriptive captions -figures with data did not have labels (axis labels, units, etc.) -figures referenced in the text (13.5 points)	The RESULTS & FIGURES had THREE or FOUR of these limitations: -disorganized - did not present the results in narrative form -figures did not include descriptive captions -figures with data did not have labels (axis labels, units, etc.) -figures referenced in the text (12 points)	The RESULTS & FIGURES had more than FOUR of these limitations: -disorganized - did not present the results in narrative form -figures did not include descriptive captions -figures with data did not have labels (axis labels, units, etc.) -figures referenced in the text (10.5 points)
DISCUSSION (15 points)	The DISCUSSION section was -were well organized -restated the hypothesis -articulated the authors interpretation of the results -discussed the implications of results in context of existing literature -discussed possible future work -stated a clear conclusion based solely on the results. (15 points)	The DISCUSSION had ONE or TWO of the following limitations: -disorganized -did not restate the hypothesis -inadequately articulated the authors interpretation of the results -did not discuss the implications of results in context of existing literature -did not discussed future work -did not state a clear conclusion based on results. (13.5 points)	The DISCUSSION had THREE or FOUR of the following limitations: -disorganized -did not restate the hypothesis -inadequately articulated the authors interpretation of the results -did not discuss the implications of results in context of existing literature -did not discussed future work -did not state a clear conclusion based on results. (12 points)	The DISCUSSION had more than FOUR of the following limitations: -disorganized -did not restate the hypothesis -inadequately articulated the authors interpretation of the results -did not discuss the implications of results in context of existing literature -did not discussed future work -did not state a clear conclusion based on results. (10.5 points)
READABILITY (10 points)	The READABILITY is -professional -easy to understand -uses appropriate vocabulary -mature syntax style (10 points)	READABILITY is affected by ONE or TWO of the following limitations: -jargon -wordiness -redundant phrasing -awkward syntax structures -choppy sentences -run-on sentences -incorrect use of vocabulary (8 points)	READABILITY is affected by THREE or FOUR of the following limitations: -vocabulary jargon -wordiness -redundant phrasing -awkward syntax structures -choppy sentences -run-on sentences -incorrect use of vocabulary (7 points)	Writing is affected by FOUR or more limitations: -vocabulary jargon -wordiness -redundant phrasing -awkward syntax structures -choppy sentences -run-on sentences -incorrect use of vocabulary (6 points)
Writing Mechanics (10 points)	The paper is free of spelling, grammar, and punctuation errors. (10 points)	The paper has less than 5 errors in spelling, grammar, or punctuation. (8 points)	The paper has 6-10 errors in spelling, grammar, or punctuation. (7 points)	The paper has more than 10 errors in spelling, grammar, or punctuation. (6 points)
FORMATTING/ REFERENCING (10 points)	FORMATTING rules are followed for citations, numbers, quotes, references, headers, etc. (10 points)	The paper has TWO or less FORMATTING rule errors. (8 points)	The paper has THREE to FOUR FORMATTING rule errors. (7 points)	The paper has more than FOUR FORMATTING rule errors. (6 points)