

CS 6023 Research Methods and Presentations

Initial Exercise

Read and Compare Two Research Articles

Update for Spring Semester 2002--Version 2

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Due Date (fill in):

1. Objectives

Upon successful completion of the assignment, each student will be able to:

- Identify a library or source of information on computing.
- Identify research publications and articles that will be of value to an information goal you have established. Information goals are required to keep the research project focused. They provide the researcher with a description of the target information for the research project. They also define a stopping point for the research project. Information goals vary in complexity, and are generally one of three types (definitions are from Webster's Third New International Dictionary [WEBS76]):
 - *Question* (n) something the correctness or existence of which is open to doubt. For example, it is an open *question* whether the addition of the search function is an improvement.
 - *Thesis* (n) a claim put forward, a statement or proposition; specifically, a position or proposition that a person (as a candidate for scholastic honors or degree) advances and maintains or offers to maintain by argument. For example, it is my *thesis* that at least one-third of the success of every software development project rests upon the user interface.
 - *Hypothesis* (n) a proposition tentatively assumed in order to draw out its logical or empirical consequences, and so test its accord with facts that are known or may be determined through an experiment. For example, the experiment was designed to test the *hypothesis* that user interfaces are more quickly designed and coded in Microsoft's Visual Basic than in Microsoft's Visual C++.
- Plan, design, and implement a close reading of two appropriate research articles in an area of computing using a reading questionnaire. As part of this objective, create and use a reading questionnaire for close reading of research articles
- Identify, understand, and document the methodology, rhetorical techniques, and abstracts for two articles by performing a comparison study and reporting on the study. This study will use an information model of a side-by-side comparison and include findings (results) as well as the student's critique.

- Develop presentation slides and present findings to your class colleagues.
- (Optional) Identify an information goal for the final project that results from this comparison study or the articles used in the study. If so, include this information in the recommendations section of the report.
- EXTRA CREDIT OPTION – Find and review a formatting template for submitting research articles or proceedings publications on computing topics.
- Identify and distinguish the following when reading a research article:
 - Methods:** how the information is developed or produced
 - Rhetoric:** how the information in the article is presented
 - Content:** What information is in the report

2. Deliverables

2.1 Comparison Study Report

The student will write a comparison study report. Your report should follow the outline provided here with appropriate expansion.

Front Matter – Title Page, Table of Contents, Abstract (about this report)

Section 1. Introduction

Includes subsections regarding your information goal, purpose/relevance of this goal to you, and other introductory material

Section 2. Method

This method refers to the method you use to complete this comparison study. The step-by-step guidelines in the next section represent a sample method and would only require a very brief summary or statement to that effect. If you use a different method for performing the comparison, briefly document those steps in this section.

Section 3. Results and Conclusions

Results will include the side-by-side comparison of the methods, rhetorical devices, abstracts, etc. that you found in the articles. These are the data findings of this study. The results are the facts that you find.

The conclusions provide your interpretive understanding of the facts. For example you might conclude that article with the clear abstract was easier to read and understand than the article without any abstract.

Include a subsection for each of the following:

- Methods used in each article
- Rhetorical devices used in each article
- Your synopsis and critique of each article

Section 4. Discussion and/or Recommendations

In the discussion section, you should make generalizations about your results and conclusions. Use the discussion to build a bridge between your study and the bigger picture. For example, you might generalize that articles, which present data in graphs and tables make understanding the information quick and easy for you.

In the recommendations section, you should put your study--it's information goal, results, conclusions, and discussion--into action. You should make recommendations to your peers and clients in the scientific community. For example, you might recommend to "always include an abstract for each study report written," and "use tables and graphs to show data trends."

Section 5. References and Bibliography

Refer to the textbook for the distinction between a reference and a bibliographic citation.

Appendix A. Article Mark Ups

Appendix B. Reading Questionnaire/Reading Log

Appendix C. (Optional) Research Experience

Appendix D. (Optional) Research article submission formatting template

2.2 Article Mark-up Copies

Attach copies of the article that include your notes, markups, highlights, and post-it notes that show a close reading of the article. Include this when submitting the report.

2.3 Reading Questionnaire/Reading Log

Attach the completed reading questionnaire or a copy of the reading log. A reading log would include answers to questions in your reading questionnaire as well as other notes. Include this when submitting the report.

2.4 Presentation

You will give a presentation on your research for this assignment. Details on presentation format are included later in this document. Due dates will be discussed in class.

Use the following as a guide in preparing the presentation. The presentation provides a summary of your review, findings, and conclusions about the articles. It is suggested to use bulleted points in a side-by-side format. Use a leveled outline format or tables or both. Your presentation slides should approximately follow:

Slide No.	Slide Contents
1	Presentation title, your name
2	Each article's citation
3	Each article's main information goal for research and its background or purpose
4	Research methodology of each article. Provide details such as primary versus secondary, study design, measures, etc.
5	The main results, findings, and conclusions of each study

Slide No.	Slide Contents
6	The main rhetorical devices and the information model used to present the information in each article
7	The main recommendations of each study.
8	Your summary review, evaluation, and criticism of each study, and final comparison. For example, which article (if either) might serve as a model article for you, one that you would like to read more like it or write articles like it.

3. Step-by-Step Guidelines

This section is essentially the method for this specific two-article comparison study.

3.1 Establish Your Information Goal

Establish one or two information goals that you want to attain. As an example, a goal may be “How do the two articles compare with respect to methods, rhetoric, etc.” Another goal might be to “Find two articles on the growth of the Internet.” As a suggestion, establish goals with potential for your final research project. Your information goals may include the reasons for selecting these articles.

This step occurs after a close reading, but is included here for continuity. In addition to the information goal for the assignment, list each article's information goals. Document these as findings in the result section of the report.

Document your information goals in the introduction section of your report. The information goals for each article are probably considered data findings and reported in the results section.

3.2 Article Citations for Your Review

Find a library or source of information for ACM or IEEE publications (hint: <http://www.acm.org> and <http://www.ieee.org>). Pick a research article from an ACM or an IEEE journal and copy it.

Locate a second research article that is neither in an ACM nor in an IEEE journal and copy it. (You are encouraged to try a web search engine or two in doing so. One example search engine is www.google.com.) The second article can be in:

- the popular or trade press
- in a technical or professional publication in another area of expertise for you
- in a research publication from your nation or origin
- from a reputable web site that is not associated with the ACM or IEEE

All citations (references and bibliography) must follow the format provided in the course textbook.

Document the citations in your report under the reference section. Describe where you found each article (on the web, in the library, in the newspaper, etc.). Describe how you made your copy of the article. Did you print it from the web? Did you photocopy it?

Any comments, notes, or issues involved with getting the resource can be documented in the (optional) research experience appendix.

3.3 Your Reading Questionnaire and Close Reading

Develop a set of questions to use in reading the article as are appropriate for these specific articles. Document this set in an appendix in the report. As an example of questions, consider the following:

What is the citation for this article?

What is the information goal of this article? What type of goal is it: a question, a thesis, or a hypothesis?

What methodology was used to produce the information? Was it primary or secondary? Was it big-R Research or little-r research? What design did the research study utilize?

What are the main results or findings of this article?

What are the main conclusions and recommendations of this article?

What information model was used to present results, findings, and conclusions in this article? What is the link between the information goal(s) and model?

What rhetorical devices (charts, graphs, headings, etc.) were used to enhance the presentation of the information? Did they aid in understanding? Do you want to use them in articles you will write?

What is the overall relevance and value of this article to my information goal?

Read each article closely. While reading, mark the article up and answer the questions in your reading questionnaire. Fill out the questionnaire as you read the article. Keep your notes to refresh your memory. (This is a great time to start a reading log.)

You will need to make additional questions that are specific for each article. Include these questions on your questionnaire.

Submit your completed reading questionnaires with your report in an appendix.

Submit your marked up copies of the articles with your report in an appendix.

3.4 Your Results and Conclusions--Comparison of Methodologies

Your aim here is to describe how the information was produced for each article. Some articles have a methodology section, so much work is done for you. Some do not, or they have an inadequate methodology. In this case, you must derive a methodology section from the article (if possible).

Do this for each article. If the article has a methodology section or if it describes the methodology in some detail, copy the section(s) describing that methodology. If it does not, you should write a methods section. Remember that a good methods section should include sufficient detail so that someone with reasonable skill can duplicate the study.

For articles without a methodology section or an inadequate one, you need to write a methodology for the article. If you write a methodology section, spend no more than an hour trying. Ideally this describes how the research was done to produce the information model that addresses the information goal. The following are important points to consider including in your methodology section:

- The article's information goal(s)
- The article's method of procedure to approach the information goal(s)
- Whether it is primary or secondary research
- Study design, e.g., Literature Review, Case Study, Comparison Study, Controlled Experiment, etc.
- The measures, variables, and criteria used in the study
- The data analysis approach used to develop the research findings
- The article's approach to interpreting the research findings in quest of the information goal(s), including how the information model was developed

Document the results of the above as part of the side-by-side comparison that are your data findings and go into the results section of your report. Remember:

Part of Research	Description
Methodology	Describes how the information is developed or produced
Rhetoric	Describes how the information in the article is presented
Contents	Describes what information is in the report

3.5 Your Results and Conclusions--Article Abstracts

In order to encapsulate the content information presented in the article, copy the abstract for each article, and/or write one utilizing one or two sentences in answer to each of these questions:

- What is the main information goal of the research?
- What are the background and/or purpose for the research?
- What is the research methodology?
- What are the main results, findings, and conclusions of the study?
- What are the main recommendations of the study?

Document the results of the above as part of the side-by-side comparison that are your data findings and go into the results section of your report.

3.6 Your Results and Conclusions--Comparison of Rhetorical Devices

Describe the rhetoric of each article, i.e., whether it used sections with headings, sidebars, graphs, tables, etc. Here you should describe how the article presented the information.

Document the results of the above as part of the side-by-side comparison that are your data findings and go into the results section of your report.

3.7 Your Discussion--Article Critique and Evaluation

In this section of your report, provide a critique and evaluation of each article. A good way to criticize and evaluate the articles is to establish goals and criteria before reading, and see how each article does against the goals and criteria. Don't forget to include

appropriate questions in your reading questionnaire. Common areas and items to include in your critique include the following questions:

- Did the authors set reasonable information goal(s) and were they achieved?
- Was an adequate abstract or executive summary provided?
- Was the methodology adequately described?
- Was the methodology adequate?
- Do you agree or disagree with the conclusions? Were the conclusions sound?
- What confidence do you have in the information?
- In terms of the methodology used, why do you have confidence in the information or why do you not have confidence in the information?
- What information model was used?
- Were recommendations provided, and if so, were they sound?
- Was the presentation rhetoric a contribution?
- What is the value of the research or information to your goal?
- Did the authors achieve their information goals? What about your information goals--were they achieved?

3.8 Your Recommendations--Actions to Recommend for Researchers

In this section of your report, provide substantive recommendations for researchers. Based on your comparison study, describe what you recommend all researchers should do to perform solid, quality research and present it clearly to the scientific community.

3.9 EXTRA CREDIT OPTION--Find and review a formatting template

EXTRA CREDIT OPTION--Find and review a formatting template for submitting research articles, technical reports, or proceedings publications on computing topics. Hints: try your firm if you are working. Often firms will have a standardized format for technical reports or memoranda. If you would like to publish a paper or submit a paper for presentation or publication, try the publication or the conference. A good starting point is the web site for ACM or IEEE conferences and publications. A standardized template for technical reports can be found at <http://www.niso.org/standards/>.

Besides presenting a 1 to 5 page summary of the formatting template you find, answer the question of whether you think the template adds to understanding and communication among the scientific community of computing professionals.

4. Presentation Guidelines

Use this as a checklist of items and factors to cover in your presentation:

- Your name
- Title
- Tell 'em what you're going to tell 'em
- Tell 'em (The eight slides you have prepared will help here)
 - Information Goal(s)
 - Methodology comparison
 - Rhetoric comparison
 - Other (optional) content that you want to present

Tell 'em what you told 'em
What was shown
Interaction & Eye Contact
Timing

5. Evaluation Criteria – Points for Consideration

Comparison – We are looking for a direct statement of comparison. For example, "Article A was a compilation of facts, but Article B used correlation to search for patterns." The strongest comparisons will cover both presentation (rhetoric) and the logic or argument of the inquiry.

Presentation or rhetoric – We are looking for statements about how the information is presented, and the writing is organized. For example, "Article A made abundant use of graphic charts. Article B's headings were all at one level, where I thought some belonged better as sub-levels." The strongest coverage of rhetoric and presentation will analyze how the language and the writing of the article either communicates or doesn't.

Methodology – We are looking for statements about how the information is obtained, developed, identified or interpreted from the data. For example, "Article A examined the hypothesis that forward-chaining is easier to set up in financial analysis, but less reliable than the more difficult backward-chaining." The strongest coverage of the methodology will outline, analyze, and compare the articles' methodological argument, strengths, and flaws.

Reading – We are looking for signs and evidence of a close reading. We look at what is highlighted, written in the margin, written on Post-Its (TM), etc. The strongest readings will show links between sections, thoughts, and ideas.

6. References

WEBS76 *Webster's Third New International Dictionary*. Springfield, MA: G&C Merriam, 1976.