



## Strategies for Critical Reading of Technical Writing: Primary Literature

Technical and scientific text is written in a very specific form and tone, which must be read actively and critically. Critical reading is different from passive reading; an active reader pays close attention to both writing style and content. These steps will help you understand and judge the content of journal articles read for research or to augment laboratory work.

- 1. Selecting an Article:** These reading strategies can be used with any technical writing, but when practicing, start with an article that is interesting and relevant to you. Keywords in the title and abstract of an article will help you determine if it is relevant to your field of interest.
- 2. Pre-reading:** Skim the article, paying close attention to sections that interest you the most. Note headings and subheadings, as well as graphics and their captions. Knowing the sections of formal scientific writing is essential to reading them. Unlike fiction, scientific writing need not be read in a specific order. The introduction or the conclusion is a good starting place, because it will provide a context and background for the subject. The next section of importance is the abstract, which will give you a synopsis of the major findings of the study. Sometimes, however, the results will be the most relevant to what you are researching. Or, if you are attempting to reproduce a study or experiment, you will pay close attention to the methods section. Focus on what makes sense for you to read, and if the article seems particularly useful, continue to step three.
- 3. Re-reading:** Always read an article you are trying to understand at least twice. After skimming as in step two, read it from beginning to end, underlining vocabulary words, and making notes in the margins.
  - A. Defining Terms:**
    1. If you can understand the text without knowing a word, you may not have to look it up.
    2. You can glean the meanings of some unfamiliar words from their context within the section.
    3. Identify other terms by thinking about the meanings of their suffixes and/or roots.
    4. Some vocabulary you will need to look up. It can be useful to cross reference the article with introductory textbooks within the field; i.e. if the article is on a chemistry experiment, look in a basic chemistry textbook. The first place to look is the glossary of a textbook in the field. You can also try looking up terms in indices, in case the word is defined elsewhere in the text. A comprehensive Webster's Dictionary also has many scientific terms.
  - B. Evaluating the Text:**

Question the authority of the text. Is the information accurate? Are the methods well designed? Are the results relevant and reproducible? Are the statistics represented correctly? Are the conclusions inferred from the results logical? Make yourself notes about these questions, either in the margins or on another piece of paper. Do not worry about answering all of these questions now; they can be discussed in seminar or answered as you become more familiar with the field. Focus on making sure you write them down, and do not take the information you are reading for granted.
- 4. Collaborative Reading:** Remember that you are learning how to understand this material with many other students. It is likely that you will seminar on articles that you read for your classes, and this can be the best opportunity to gain a full understanding of the text. Come to seminar prepared with questions. If you look up a word and still do not grasp its meaning, ask your fellow students. After discussing the paper, re-read it and compare how you interpreted the text after the first reading to how you understand the content now.

## Strategies for Critical Reading of Scientific Text: Secondary Literature



Technical and scientific text is written in a very specific form and tone, and must be read actively and critically. Critical reading is different from passive reading; an active reader pays close attention to both writing style and content. These steps will help you understand and judge the content of textbooks, seminar books, and other non-fiction books dealing with science.

1. **Pre-reading:** Skim the chapter or section you are about to read. Note headings and subheadings, as well as graphics and their captions. Read the first and last paragraph, as this will give you an idea of the purpose of the chapter. Reading the topic sentence (usually the first sentence) of each paragraph or section can provide you with a loose outline of the topics covered.
2. **Re-reading:** Next you are ready for a deep, critical reading of the text. After skimming, read the chapter or section from beginning to end, underlining vocabulary words and making notes in the margins or on a separate piece of paper.
3. **Defining Terms:**
  1. If you can understand the text without knowing a word, you may not have to look it up.
  2. You can glean the meanings of some unfamiliar words from their context within the section.
  3. Identify other terms by thinking about the meaning of their suffixes and/or roots.
  4. Some vocabulary you will need to look up. The first place to look is the glossary, if the book has one. You can also try looking up terms in the index, to see if the word is defined elsewhere in the text. A comprehensive Webster's Dictionary also has many scientific terms. You may also cross-reference with other textbooks. It can be especially helpful to use introductory textbooks if you are studying an advanced or specialized topic.
4. **Evaluating the Text:** Question the content, motives, and authority of the text. Does the information match what you have learned from lectures and workshops? How is it connected to the information you might find in newspapers, magazines, or on the news regarding current events and policies? What concepts do you have a clear picture of? What are you having difficulty understanding? Is the purpose of the text informational? Is the purpose to persuade you of something? How can you tell? What are they trying to persuade you of? Do you agree or disagree? Make notes about these questions, either in the margins or on another piece of paper. Do not worry about answering all of these questions now; they can be discussed in seminar or answered as you become familiar with the subject. Focus on making sure you write questions down and think about them in terms of what you already know.
5. **Collaborative Reading:** Remember that you are learning how to understand this material with many other students. It is likely that you will seminar on the material that you read for your classes, and this can be the best opportunity to gain a full understanding of the text. Come to seminar prepared with questions. If you look up a word and still do not grasp its meaning, ask your fellow students.
6. **Final Read:** After discussing the text with your peers and faculty, re-read it and compare your initial interpretation with your new understanding of the content. Have your questions been answered? If not, where else could you go to answer them?



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