

The Matrix

"The Matrix" is a way of organizing and summarizing the essential material from the four papers you will read. It is also a simple tool for organizing any complex body of material that you need to keep track of.

The Matrix consists of a spreadsheet or data table, in which each row is an "Object" and each column is an "Attribute". For our purposes, the objects are the individual papers that we are reading and discussing each week. Thus, by the end of the semester, your matrix will contain 24 rows, one for each of the papers.

Here are the columns of your literature matrix

Author Name. Just the last name of the first author is sufficient, such as "Jones" is sufficient. If you are good at details, you may be able to remember papers with two authors "Jones and Smith". If there are 3 or more authors, we usually abbreviate this as "Jones et al." (*et al.* is Latin for *inter alia*, which means "and others"). You will frequently see this term in the text of a scientific paper that is citing other works.

Date. Use the year in which the paper was published as the date. Together, the author name and date constitute the essential "tag" or "label" that you will use when you talk about any paper. For example, we might discuss Jones (1980) or Smith (1975). Again, this is how you will see these papers cited in the text of other scientific papers.

(Journal). The Journal name is useful, if you can remember it, but not essential for our purposes.

(Article Title). This is important to study because it will help you remember the paper when you see it referred to, but it is not something to commit to memory.

(Volume and Page Numbers). Again, these are used for a full literature citation in the scientific literature, but not something to keep track of in your head.

Topic. What is this paper specifically about. That is, what questions are being asked? What mechanisms and hypotheses are being considered? Sometimes, these questions will be explicitly addressed in the final paragraphs of the introduction of the paper.

Study Organism. What kind of organism is being studied here? It helps to be as detailed as you can. If you don't know anything about the biology of this organism, do a quick search on the web. "Google image" is a great source for pictures, and Wikipedia may give you some fast answers about the basic details of the biology. If you can discover a common name for the organism (which is sometimes given in the paper), that will help you remember and visualize the beast.

Location. Where in the world and what habitat was the study conducted in? Your information here might be "bogs in Vermont" or "chaparral of California". Again, do a little homework if you need to (for example, what is chapparal, and what, exactly, is a bog?).

Methods. What exactly did the authors do in this study? If it was an experiment, what did they manipulate and how? Once the manipulation was carried out, what "things" were measured during the course of the experiment? Try to capture enough detail so that you can explain to someone else, in your own words, what was done. You may need to consult the chapters from the statistics primer here to fully understand how the study was set up.

Results. What happened at the end of the experiment. For the variables that were measured, which "groups" (or treatments) were the same, and which were different? In otherwords, what were the essential patterns in the data? Carefully study the figures and tables in the paper for this information. If there are multiple experiments, you will need to keep straight the different pieces and results.

Conclusions. What conclusions did the authors draw from these results. In other words, how did they relate the patterns in the data to the mechanisms and hypotheses they were trying to study?

If you can identify all the elements of the matrix and state them simply in your own words, you will be able to "tell the story" of paper, which is the whole reason for constructing the matrix.