# WRITING TIPS

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Do not start writing until you can answer the question, "What do I want to say?".

**If you are unable to write clearly about a topic, it might be because you don't fully understand it.** Address the cause, not the symptoms.

## STYLE TIPS FOR SCIENCE WRITING

- BREVITY and CLARITY are important values
  - Do not give a whole load of information which is not relevant to your point
  - Do not add a whole lot of figures which are not relevant to your point
  - Stay on topic – this is where it helps to make a proper outline of your paper, including section headings and key points for each section before you start writing
- TONE OF AUTHORITY
  - Interpretations/conclusions are stated with a tone of authority
  - Clearly state the *degree of certainty* of your interpretation, and discuss alternate interpretations and why yours is preferred.
  - Consider the level of specialization of your readers – never hurts to start at the beginning and set the scene – write for your peers and include enough background that an average student in the course would understand all the information that you present.
- SYNONYMS
  - Do not try to replace scientific terms with the thesaurus – even if you use the same word often. Even though there are synonyms for some terminology, it is confusing to the reader if you use different technical terms to refer to the same thing.
  - Do use synonyms of 'conversational' words to keep your writing interesting.
- STYLE
  - Use formal words and language without being pompous or overbearing. Avoid slang. In general, write shorter sentences rather than longer ones because this makes arguments clearer and easier to follow. A useful rule is to never present more than one fact per sentence.
  - The use of the first person "*I performed analyses*…" vs. using the passive voice "*Analyses were performed*…" is to some degree a matter of personal style, and changes with time. For a paper which is essentially a literature summary, there will be very few instances where the first person voice is appropriate.

## REFERENCING

When to use references:

- To establish a fact that supports your argument
- To describe the data or interpretations of other authors which will be challenged or questioned
- Credit others for their ideas (otherwise you're essentially saying it's your own)

Use your own references – don't copy references from within another reference ("nesting"). The only references in your paper are the ones you have actually read and used. If you read it but didn't take any information from it, don't cite it. It is not necessary to cite EVERY possible paper for a reported fact that appears frequently in the literature. When this happens, cite the original source of the material.

There are (at least) three criteria you should use in selecting references to use in your paper.

1. AUTHORITY – How trustworthy is the source?
   Peer reviewed work the most authoritative. Getting a paper published in a peer-reviewed journal requires vetting by multiple reviewers who have themselves been vetted by knowledgeable editors. Turnaround time for publication is short (typically 6-12 months) so they are somewhat timely. "Special Volumes" and the like are often published by the same organizations/ institutions that run the peer-reviewed journals. They may be considered in the same light.
   Textbooks may be as authoritative, but they usually summarize the result of a number of peer-reviewed papers on any topic. Therefore, they are not as timely and not as authoritative because the textbook author rarely reviews the original data that led to a particular conclusion. However, they are much better for an overview of a topic. Books like this may be appropriately referenced in cases where you are writing an overview, e.g. "Introduction" or "Geologic Setting" sections.
   Informal writings from primary sources (e.g., the website of a researcher, or conference abstracts) are useful for you to understand concepts and to find figures. However these are not appropriate to reference as they have not been vetted by an editor/reviewer and facts drawn from this source should be checked and referenced against published, edited work.
   The only time when web sources are appropriate is when the web is the primary mode of publication for certain information. This is often in raw data form (e.g. geologic maps or seismicity maps). Although much of the information on Wikipedia is correct, some unknown percentage is complete BS – so beware.
   - Best – peer reviewed articles
   - OK – text books
   - OK under specific circumstances (for scientific information) – web sources

2. TIMELINESS – How up-to-date is the source?
   Newer works are expected to build on, and expand on, work which came before. Therefore, it is generally true that newer papers are better references than older ones. This is also a time saver, as newer papers must summarize the background on which the study is based. Newer work will often disprove older work. A caution: work in a particular area will often be popular for a short time (e.g. a funding cycle or two) and then focus will shift to a new area. You may find a particular decade where most of the material on the area is published. Even if this is the case, be sure to scan newer records for updated data and interpretations. Websites such as the personal/professional websites of geologists are by far the

most timely sources but there is a problem with authority (see above) as they have not been vetted by editors or reviewers. Wikipedia is probably the timeliest but we have found it factually unreliable on many topics in geology and we would advise you to use extreme care.

3. RELEVANCE – How closely related is the source to *your topic*?
   In other words, just because something is easy to read, or currently in your hand, does not supplant the rest of the criteria here. During the formative stages of your paper, there will be some give-and-take between your topic and your sources as you decide exactly what to write about. It is a common mistake seen in student papers to expound on information that is only peripherally related to the topic. This is boring and frustrating for readers, as well as raising the question in their minds of whether you know where you are going in the paper.

PRACTICE PROPER REFERENCING

- THIS IS YOUR CHANCE TO LEARN TO DO THIS RIGHT. In future courses it may be assumed that you understand proper referencing techniques so take this opportunity to practice.

FINDING THE *RIGHT* PAPERS

- Configure your Google Scholar settings for McGill Library Access:
  - Go to Google Scholar's Settings: http://scholar.google.ca/scholar_preferences?hl=en
  - In the "Library Links" field search for McGill University
  - Select McGill University - Find It at McGill and save your settings
  - Do your search in Google Scholar
  - Click on the link for "Find It at McGill" that will appear to the right of the title of the resource and you'll be prompted to enter your Username and Password.
  - Please note – if you click on the title and not the "Find It at McGill" link you won't be taken to the resource.
- Smart searching
  - Pick keywords that are very specific to your search – you want fewer, better hits. E.g. "diamond inclusions" instead of "kimberlite" or "decollement" instead of "subduction"
  - When you find an interesting article listed on Google Scholar, you can click the "cited by" link or "related articles" links to find similar and more recent papers on the same topics
  - Read abstracts/scan figures to determine the most relevant papers – check MANY papers and pick best ones - don't just download the first papers you find and then try to distort your topic to fit those papers.

- It is impossible to find all information about your topic. After you read several papers you will find that more papers are not giving you a lot of new information (the point of diminishing returns). Then stop. New questions may arise while you are writing – you may have to search again to answer them.

**FIGURES & REFERENCING**

Figures should be included where appropriate to aid in your essay.

1. Each figure may appear on its own page or embedded within the text. Either way it should be accompanied by a caption explaining the title of the figure and the source.
2. Figures may be copied directly from literature sources (with proper referencing) and should be described in the text. Example caption:

*Fig.2: Map of Kodiak Island Geology, from Byrne and Fisher (1984; Fig. 1)*

3. Original figures created by you but displaying *information* sourced from reference material should be noted as such. Example caption:

*Fig. 2: Map of Kodiak Island Geology, modified from Thompson (2002) and Byrne and Fisher (1984).*

At the end of your paper, you will list the sources to which you refer. Only sources you refer to should be on your list. If you have used a source for background information, it should be referenced where you have written that information. In other words, <u>all</u> the books and articles you used to write the essay should appear on your reference list, as well as within your paper, but no additional sources that are not explicitly referenced should be in the list. Do not differentiate between "references" and "bibliography". The following is an example of one sentence that draws information from multiple sources, and references them appropriately. Note that the contribution of the author of this sentence is to show the pattern that a certain type of earthquake rupture causes large tsunamis – and examples are provided from the literature.

<u>As formatted for the journal GEOLOGY</u>

*Ruptures along forearc splay faults have been invoked to explain the extraordinary tsunamis caused by some earthquakes such as Alaska 1964 (Plafker, 1972), the peculiarly large runup in the Banda Aceh region during the December 2004 tsunami (Lay et al., 2005), and the 1946 Nankai event (Park et al., 2000).*

Lay, T., Kanamori, H., Ammon, C.J., Nettles, M., Ward, S.N., Aster, R.C., Beck, S.L., Bilek, S.L., Brudzinski, M.R., Butler, R., DeShon, H.R., Ekstrom, G., Satake, K., and Sipkin, S., 2005, The Great Sumatra-Andaman Earthquake of 26 December 2004: Science, v. 308, p. 1127-1133.

Park, J.-O., Tsuru, T., Kodaira, S., Nakanishi, A., Miura, S., Kaneda, Y., Kono, Y., and Takahashi, N., 2000, Out-of-sequence thrust faults developed in the coseismic slip zone of the 1946 Nankai earthquake (Mw=8.2) off Shikoku, southwest Japan: Geophysical Research Letters, v. 27, p. 1033-1036.

Plafker, G., 1972, Alaskan Earthquake of 1964 and the Chilean Earthquake of 1960: Implications for Arc Tectonics: Journal of Geophysical Research, v. 77, p. 901-925.

WHAT IS PLAGIARISM?

Here are a list of things students often do which YOU SHOULD NOT DO, in order to preserve your academic integrity and get the maximum learning experience from writing your paper. *Any of these actions will result in failing the assignment and possibly disciplinary action at the University level*.

1. Direct copying of someone else's written word. This includes the use of one sentence of one source and another sentence from a different source, patched together. No matter how you build your "mosaic", the fact doesn't change that you are not the author of those words.
2. The "reworking" of previously published material – e.g.
    - Changing the order of sentences,
    - Reversing clauses within the same sentence
    - Alternating gently reworked material from two or more sources so that the product does not exactly replicate one source (the "mash-up").
3. Use of quotes rather than making the effort to synthesize information into one's own words. Direct quotes are *strongly* discouraged, even if properly referenced. Quoting from other text is usually LAZY. If you are including any string of words, from another author's work, and you are in doubt about how to properly reference it, do not hesitate to ask your instructors.

INDICATORS OF INTENTIONAL PLAGIARISM:

- Changing one or two words in a sentence, including changing the citation so that it does not indicate the actual source
- Terminology which is sometimes used correctly in sophisticated sentences, and used improperly elsewhere, so that it's clear that at least one of the writers on the paper doesn't really know what the word means.
- Since you are the only author on your paper, it should sound as if it was entirely written by the same person. Changes in level, tone, and grammatical habits are often quite obvious.
- Reliance on supposedly obscure sources, e.g. very old manuscripts, or a lack of recent references.
- Papers which quote only one reference in one paragraph, then one other reference in the next – this shows that the writer did not synthesize multiple sources and is just paraphrasing. Frequently associated with liberal borrowing of phrases.