

How (and Why) to Write a Work Term Report (or anything else that is science-y)

- Writing is for the sake of the reader, not the writer/author. The writer is the tour guide, and the reader is being led by the guide. Write for the reader, not for the sake of producing written work that is designed to impress. Aim for clarity and simplicity.
- On the other hand, it is well-known that writing also benefits the writer via increased understanding of the topic. The effort involved in systematically organizing concepts, ideas and facts about a topic, for the benefit of the reader, also benefits the writer. That is, the act of writing benefits the writer as well.
- When writing a document, it is important to know your audience and write for your audience. In the case of the Biology Co-op Work Term Report, the audience is an educated-in-biology reader. But the reader likely does not know all the nuances of the field in which you did your work term. Therefore, define all terms and abbreviations. Don't make assumptions about specialized background knowledge; explain the relevant background information (the Introduction is a good place to do that).
- Aim for maximum information content of titles, headings and all sentences. Get rid of extraneous words and phrases.
- Don't be vague. The goals for every sentence are clarity and brevity, with maximum information content.
- Start with a clear and descriptive title. Example of a vague work term report title: "Effects of nutrients on growth of crops."
- This leaves the reader wondering about: which nutrients, which crops, what aspects of growth?
- A better work term report title: "Interactions between phosphorus and nitrogen application rates on the yield of canola."
- Never leave the reader wondering; spell it out for the reader. Explain why you are telling the reader about certain observations or facts; don't expect the reader to piece it together (it's not a mystery novel). Outline the reasoning.
- Each paragraph should have a central idea; that central idea should be clear from the first sentence. Each sentence in a paragraph should logically flow from the preceding sentence. Paragraphs are not simply a group of sentences; they have a logical structure.
- Subsequent paragraphs should logically flow from preceding paragraphs. The reader should not be surprised by the subject of a new paragraph; it should be a logical continuation of a developing theme. Consider using transition words or phrases (e.g. "however", "in addition", "in contrast")

Parts of the Report

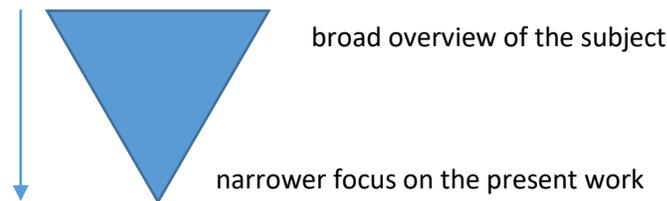
Abstract

- This is a summary of the work, and typically does not contain references.

- The Abstract is a stand-alone paragraph that provides an overview of the work, without reference to the rest of the document.
- This section briefly states the hypothesis, question or problem being addressed, along with the general approach (methods), major results and major conclusions.

Introduction

- Starts broad, with an overview, and end more narrowly, focused on the work being described.
- Provides the reader with the relevant background information.
- Describes the hypotheses being tested, or the purpose of the work. What's the question? What's the goal?
- Often described as an inverted triangle, broad at the top and narrowing to a point:



Materials and Methods

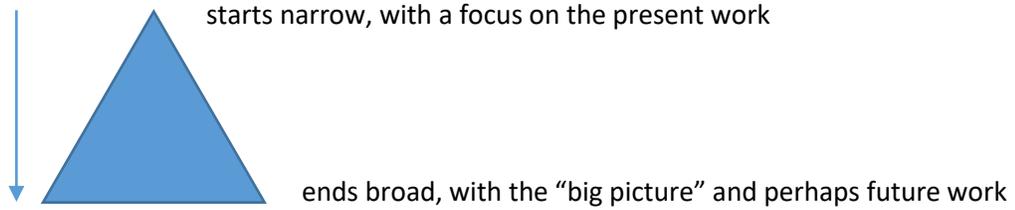
- Provides enough information for the reader to understand how the work was conducted, and potentially to be able to replicate the work.

Results

- This is more than a listing/description of data. Highlight the important results for the reader. Don't highlight every result or piece of data (important \neq all). Guide the reader to the important stuff.
- Try to avoid the dreaded phraseology that states what is shown in a figure or table, along the lines of: "The results shown in Figure 1 indicate that phosphorus application rates in excess of 25 kg ha⁻¹ led to a decrease in canola yield". It's simpler to write that "Phosphorus application rates in excess of 25 kg ha⁻¹ led to a decrease in canola yield (Fig. 1)."
- Another dreaded phraseology: "The data show that phosphorus application rates in excess of 25 kg ha⁻¹ led to a decrease in canola yield (Fig. 1)." The first part of that sentence ("the data show") adds no value or meaning to the sentence.
- Don't go into detailed discussions of the results in the Results section; that's the role of the Discussion.

Discussion

- Places the results in the context of the hypothesis that was being tested, the question being asked, or the purpose of the work.
- Places the results within the context of what is already known about the problem or question from previous work.
- Try to avoid the (yet another) dreaded phraseology of "Chen and Yablonski (2020) found that optimal nitrogen application rates to canola are dependent upon the potassium status of the soil". It's simpler to write: "Optimal nitrogen application rates to canola are dependent upon the potassium status of the soil (Chen & Yablonski 2020)."
- Often described as a triangle sitting on its base:

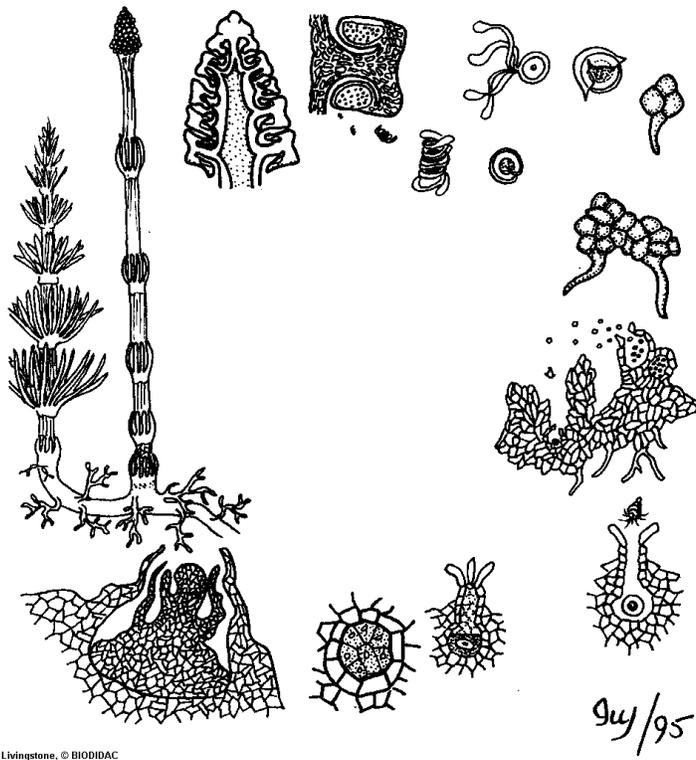


Literature Cited

- Choose the format of a standard biology journal for the Literature Cited section. Be consistent in using that format.

Lastly, the convention about past and present tense in scientific writing

- Work that has been published, or is generally accepted to be accurate, is described in the present tense, e.g. “Optimal nitrogen application rates to canola are dependent upon the potassium status of the soil (Chen & Yablonski 2020).”
- Work that you are describing for the first time (e.g. your own results in the present experiment) are described in the past tense, e.g. “Phosphorus application rates in excess of 25 kg ha⁻¹ led to a decrease in canola yield (Fig. 1).”



Equisetum (horsetail) life cycle. *Equisetum* is a seedless vascular plant; Saskatchewan has several species in this genus. From Biodidac.