Writing Suggestions

There are four sections of scientific papers that require considerable writing – introduction, methods, results, and discussion. The methods and results sections are generally the easiest to write because their purpose is to convey very specific information and there are generally accepted formats for reporting this information. For example, the method section is typically divided into sub-sections (e.g., participants, procedures, etc.). So, when writing a methods section, the outline and format is clear and all that one needs to do is put the information in the appropriate sub-section. In addition, the methods and results sections are often written in chronological order so even the layout within a sub-section is clear. For instance, in the procedures sub-section, there is often a chronological description of what happened to participants from the time they arrived until they completed the experiment (e.g., participants did this; then they did this; next, they did this…).

The introduction and discussion sections are much more difficult to write because there are not generally accepted formats. There are many different ways to write these sections and any of them could work depending on your objects. For instance, one way to write an introduction is to start by describing a theory and then describe how the experiment you will report in the paper can help clarify this theory. Alternatively, you might start by describing previous research and illustrating that the findings of this research is not clear and then describe how your experiment to address this problem. These two approaches could be used to describe the exact same study and both of them could work if done well. The key phrase here is “if done well.” To help you write better, here are some suggestions.

1) Get your reader interested in the topic at the beginning of the paper. Tell the reader why your topic is interesting and important. There are many ways to do this. You could discuss the applied implications of your findings or discuss inconsistencies in previous research that need to be explained.

2) ALWAYS assume that your reader knows a lot less about what you are doing than you. This means that you need to explain ideas that seem obvious to you.

3) Start with general ideas and then elaborate on these ideas with more specific details.

4) Use computer software to help you write. Word processing programs have spelling and grammar checking abilities and you should use them.

5) Know the limitations of computer spell and grammar checking software. It can check words (i.e., spelling) and sentence structure (i.e., grammar), but it cannot check meaning. It is possible to write perfect words and sentences that are completely meaningless because there is no relation among the sentences.

6) Revise and re-write.

7) Revise and re-write again.

8) Revise and re-write some more.

All good writers go through many drafts before they finish a paper. Each time you go through a paper you, should try to look at different things. For example, you might start by carefully evaluating each paragraph; the second time you might evaluate the sections (i.e., introduction, discussion, etc.) of a paper; finally, you might evaluate each and every sentence. Great writers will go through these processes and revise and re-write multiple times (sometimes dozens or
even hundreds of times). Below is an example of what you might do each time you read through a paper.

9) Read what you’ve written out loud. When you read silently, you will often fill-in or not notice things that are missing and/or not notice things that are awkward or hard to understand. Reading what you’ve written aloud slows you down and makes these things more obvious.

This is example of what you might do when re-reading and revising a paper. In the first step (paragraph analysis), you would carefully read the paragraphs and try to make sure that each paragraph is consistent and meaningful. To do this, you focus only on individual paragraphs and do not worry about how one paragraph relates to another. Each paragraph should have one self-contained idea (this means that a reader should not have to remember a previous paragraph to understand the one they are currently reading). The first sentence of each paragraph is called the topic sentence, and it should summarize/describe the entire paragraph. Every other sentence should expand on the first one to provide more detail and explanation. If a paper is written well, a person should be able to read the first sentence of each paragraph and understand the paper.

In the second step (section analysis), you would focus on how the paragraphs relate to one another. Because each paragraph should contain one idea, you should look to make sure that the paragraphs fit together.

Once you are happy with the general outline of your paper (i.e., paragraphs and their organization), you can move to the third step and analyze each and every sentence to make sure that it is useful.

**Paragraph Analysis**
1) Carefully read first sentence of paragraph
2) Read entire paragraph
3) Does first sentence describe the paragraph?
4) Are there ideas (i.e., sentences) that do not contribute to the development of the idea in the paragraph?

**Section Analysis**
1) Read first sentence of paragraph, skim paragraph, and read last sentence of paragraph
2) Read first sentence of next paragraph
3) Do ideas in the two paragraphs fit together?
4) Are there other ideas (paragraphs) that need to be inserted to bridge the gap?
5) Does topic sentence of paragraph follow nicely from preceding paragraph?

**Sentence Analysis**
1) What is the purpose of this sentence (relative to the topic of the paragraph and the preceding and subsequent sentences)?
2) Is the sentence necessary (e.g., is it repeating previous idea?)?
3) Is this sentence accurate? Does it say exactly what you want it to say?
4) Have you introduced term with which reader is unfamiliar?
5) Does the sentence make a statement that needs to be cited?
6) Clause/Phrase Analysis – (a) What is purpose of clause/phrase? (b) Is it needed? (c) Examine subject and object of sentence to determine if a qualifying clause or phrase is needed.