COMMON TECHNICAL WRITING ERRORS

The following is a list of some common technical writing errors. It is not exhaustive, but each item contains a brief discussion of common, high-frequency errors seen in undergraduate technical writing assignments. It would be advisable to read your own writing looking for these specific errors before submitting work to your instructor.

1. VAGUE LANGUAGE AND FIGURES OF SPEECH

Engineers deal in specifics and must quantify or qualify their ideas and discussions using clear, specific language that is not open to interpretation by the reader. Making vague statements or presenting ideas without offering reasoning and evidence to support those ideas should be avoided.

The following sentence was taken from the introductory sections of a first year design report documenting the process of creating a unique bike rack design for the City of St. John's:

➢ Bike racks in St. John's need to be more efficient.

The choice of wording in this sentence is quite vague – "more efficient"? What does this actually mean in the context of a bike rack? Specific language that accurately describes what is meant by "more efficient" is needed. If you write statements that are vague and open to interpretation, the reader may partially or completely misinterpret your intent. At the very least, the reader may get confused. But often, vague statements made by engineers lead to more serious consequences, such as poor design choices, project delays, cost overruns, or even injuries on the job. Being specific and describing exactly what you mean is an essential technical writing skill.

In the example above, "efficiency" was intended by the student to mean maximizing capacity while maintaining ease of use (discovered only after speaking directly to the student). However, without context or further explanation, the word can mean many things, including energy efficiency, time efficiency, space efficiency, production efficiency, and more. The sentence could have been clarified in numerous ways to ensure the intent was fully understood, as shown below:

➢ Bike racks should be designed to maximize the number of bikes that can fit into the provided space and still allow users to easily lock and unlock their bikes.
➢ Bike racks should hold "X" (state number) of bikes in "Y" space (allotted area/dimensions) while still allowing easy access by users.

Some further examples of vague statements that require additional clarification to ensure the author's intent is fully understood are shown below:

➢ Stainless steel will hold up well to the wet climate in St. John's. (vague)
   o …will not deteriorate when exposed to rain and snow. (more specific)

- ➢ Aluminum might be a pretty good material choice for bike racks. (unclear, figure of speech)
  - o Aluminum is preferred over powder coated iron because it is lightweight and does not deteriorate as quickly. (specific and descriptive)
- ➢ Purchasing commercial bikes racks was too expensive for this project. (vague)
  - o Purchasing and installing commercial racks would cost between $X - $Y and is outside of the allocated project budget of $Z. (specific details add clarity)

Figures of speech should always be avoided in a technical report. You cannot assume that others will understand your intended meaning. Furthermore, using figures of speech in formal technical writing just doesn't sound professional. Quite often, the particular saying will not be familiar to everyone reading the report and may lead to confusion, or misinterpretation of your intent. Aiming for clarity should always be your goal in technical writing.

- ➢ Each of the three main types of bike racks has their ups and downs. (Use advantages and disadvantages, OR strengths and weaknesses).
- ➢ The bike rack should be pleasing to the eye. (Use aesthetic, OR artistic).
- ➢ We decided to take the use of aluminum off the table as a potential choice of material because… (Use eliminate, exclude, OR reject).
- ➢ The bottom line is that Design X is the most suitable concept. (Use final decision, conclusion).

2.   AMBIGUOUS PRONOUNS (IT, THEY, THESE, THOSE…)

A pronoun can take the place of a noun in a sentence, but a pronoun must always refer clearly and un-ambiguously to its antecedent, or the noun that it replaces. If by using a pronoun there is a possibility that the reader may not know what noun (person or thing) the pronoun replaces, don't use the pronoun–repeat the noun instead. Repeating the noun may sound repetitive or redundant, but again, clarity is of utmost importance in technical writing.

For example:

- ➢ Both temperature and concentration affect the conductivity of a solution but it was not recorded during the experiment. (incorrect - ambiguous pronoun use)

What was not recorded? Temperature? Concentration? Or both? Using the pronoun "it" has created ambiguity in the sentence that can be avoided by simply stating which variable(s) was/were not recorded. It is good practice to avoid the use of a pronoun altogether unless you are sure that the meaning of the sentence is clear.

Correct:

- ➢ Both temperature and concentration affect the conductivity of a solution but concentration was not recorded during the experiment. (remove "it" and state the variable by name)
- ➢ Both temperature and concentration affect the conductivity of a solution but these variables were not recorded during the experiment. (the pronoun "these" is NOT ambiguous in this case)

 As another example, (taken from a recent student design report):

- ➢ Research on possible bike rack designs shows that they generally prefer racks that allow for two points of contact with the bike.

Who is "they"? The designers? Researchers? Cyclists? It is not clear who the pronoun "they" refers to. In the following sentence, the pronoun "they" has been removed and the sentence has been re-written to ensure clarity.

➢ Research on user feedback regarding bike rack design indicates that cyclists generally prefer racks that accommodate two points of contact with the bike.

One further example (again taken from a student report):

➢ St. John's gets, on average, over 300 cm of snowfall each year. To solve this problem, the bike racks should be designed to be portable for winter storage.

"This" problem? What problem? A problem hasn't been stated. The writer has stated a fact (300 cm of snowfall) and wants/expects the reader to interpret or assume the specific problem that large amounts of snowfall can create. The fact that St. John's gets 300 cm of snowfall is not the problem. The accumulation of snow around the racks is the problem as it will make the racks unusable and also pose issues for snow clearing activities. As a writer, you should never assume that the reader will intuitively interpret the intent of a statement.

In the example above, to ensure clarity you could write:

➢ Making the bike racks portable might help address the potential problem that snow accumulation around racks presents for snow clearing activities during winter.
➢ Snow accumulation will make the racks unusable during winter in certain locations so making them portable for winter storage should be considered.

3.   USING DIRECT QUOTATIONS UNNECESSARILY

It is very important to cite the source of any information in a report that is not your own ideas. This is accomplished by adding an in-text citation next to any paraphrased, summarized, or directly-quoted information. However, in the majority of instances, it is more suitable to paraphrase or summarize content instead of quoting the content verbatim. The only good reason for direct quoting is when paraphrasing or summarizing the information might compromise or change the meaning. For example, you might quote something spoken by a subject matter expert, obtained during an interview. However, even then, if the information could be paraphrased without changing the meaning, direct quoting is often not necessary.

For example, if when writing a report about bike racks designs, you decide that you want to establish that one of the reasons why residents in St. John's are not often choosing bicycling as a means of transportation is because the necessary infrastructure is not in place. When doing research, you find the transcript of an interview recoded with a local subject matter expert and decide that their ideas are valid, and you want to include the information in your own report. You could say the following:

➢ In a recent CBC news interview about biking in the City of St. John's, councilor Dave Lane said, "You might want to bike somewhere, but if you can't secure your bike when you get there, you're less likely to go".

However, instead of quoting his words directly, you could easily paraphrase his message without changing the meaning, as follows:

> ➢ According to a recent CBC news interview with city councilor Dave Lane, one of the reasons why people are less to use their bikes to go places is because they are not sure that they will be able to secure it once they arrive.

The paraphrased message says that same thing as the direct quoted message so there is really no need to quote his words verbatim. Quite often, students will include information quoted verbatim from the source because it's easier than re-phrasing the content. This is not a good practice and should be avoided.

4. "CHERRY-PICKING" INFORMATION FROM YOUR SOURCES

When you consult sources of information while doing research, it is very important that you read the entire source, or at least all the pages/sections related to a particular topic, to be sure you fully understand the content and its full context. If you find information that supports your ideas and you want to include that information in your report, it is super important to ensure that you do not change the overall intent of information by only including selected parts of the author's message, aimed to suit your own intent. This is known as "cherry picking" information. If you only select and include evidence to confirm a particular viewpoint, while ignoring significant contradictory evidence, the picture you create is incomplete and/or misleading. Cherry picking information to suit your intent is very poor practice and should be avoided at all costs. Read your sourced information thoroughly to gain complete understanding of the authors message and context and be sure to express that information accurately in your own report.

5. COMMON PUNCTUATION ERRORS

Incorrect semi colon (;) use

Semicolons are an often misused type of punctuation. Using improper punctuation in a sentence is distracting and sometimes confusing for a reader and also sends the message that the author does not have a good command of writing mechanics. Thus, it is best to avoid using semicolons unless you are sure you are doing it correctly. In fact, you can write almost any type of document and never have to use a semicolon. However, there are some common uses that are relatively easy to apply.

One common use for semicolons is when you want to create emphasis between two adjacent, independent, but related clauses in a paragraph. For example,

> ➢ The engineering team discovered major structural cracks in the concrete pillars; the bridge would likely have collapsed within days.

In this example, using the semicolon emphasizes the connection between the two statements. However, given that each clause could stand as a grammatically complete sentence on its own, a period could be used in lieu of using the semicolon. Alternately, the two clauses could be joined using "and".

Semi colons are NOT used to introduce a list of items—use a colon. Also, you only use a semicolon between items in a list if any of the items contain commas. For example:

➢ Payment is due for the following services: audio/visual equipment installation, including equipment rental fees; consultancy services, including associated travel fees; and advertising costs, including all associated printing fees.

Omitting the serial (Oxford) comma

The serial comma is used to delineate the last item in a list. For example:

➢ The technician measured the fluid temperature, pressure, and density.

The comma placed after "pressure" in the above example is known as the serial, or Oxford comma. In technical and scientific fields, the use of this comma is highly recommended because ambiguity can create confusion or can even cause hazards. The use of the comma before "and" tells the reader that the last two items are discrete items. The Engineering Writing Centre at Cornell University provides an excellent example of why omitting the serial comma can create confusion, or even hazard, as explained below:

Example: "For the lab, we need hydrogen peroxide, calcium, rubidium and distilled water".

If you Google "rubidium and water", you will learn why you wouldn't want anyone unfamiliar with these chemicals to put them together! It is advisable to always use the serial comma in engineering and scientific writing to ensure that the reader recognizes the last two items in a list as separate, discrete items. Some writers oppose its use, calling the "extra" comma redundant and stylistically annoying.

However, using a serial comma is always grammatically correct and given the importance of maintaining clarity and avoiding confusion in technical writing, it is a good idea to form a habit of using the serial comma regularly. If you choose not to use the serial comma, you must be absolutely sure that the sentence, as written, is clear. Also, it is inadvisable to go back and forth between using a serial comma and not using one. Whichever you choose, you must maintain that usage for the entire document.

Comma splices

Comma splices occur when you incorrectly link two complete sentences together using a comma. For example:

➢ The project was completed on May 15/19, the total project cost was $850 Cdn.

There are two independent clauses (sentences) in the example above. A comma is simply not powerful enough to make one grammatically correct sentence out of two and thus the sentence needs to be re-written and can be correctly expressed in several ways, including:

➢ The project was completed on May 15/19, and the total project cost was $850 Cdn.
➢ The project was completed on May 15/19 at a total project cost of $850 Cdn.
➢ The project was completed on May 15/19. The total project cost was $850 Cdn.

Run-on sentences

A run-on sentence occurs when you join what should be two or more sentences, without using any stops (punctuation). For example:

➢ The building materials will be delivered next week management plans to begin the project by the following week.

There are two complete sentences in this example that have been fused into one grammatically incorrect sentence. Once you recognize a run-on sentence, it can be easily fixed by either:

Making two separate sentences:

➢ The building materials will be delivered next week. Management plans to begin the project by the following week.

Adding a semi-colon:

➢ The building materials will be delivered next week; management plans to begin the project by the following week.

Adding a conjunction (linking word)

➢ The building materials will be delivered next week and management plans to begin the project by the following week.

6.   MAKING DEFINITIVE STATEMENTS WITHOUT OFFERING SUPPORTING INFORMATION

Engineers and scientists are required to offer opinions on matters related to their field. Being able to speak confidently about your work and ideas is very important and encouraged. However, by no means does that mean you can freely make definitive statements without supporting those statements with sound evidence and reasoning. Engineers are expected to speak and write knowledgeably and to not make speculative statements that lack credibility. When writing reports, it is also very important to stay focused on and within the scope of the project.

To illustrate, the following statement was made in the introduction of a first-year report on bike rack design:

➢ Adding more bike racks in the city will increase the number of people riding bikes to work and thus there will be less greenhouse gases in the atmosphere and less pollution.

There are many problems with this sentence. It is highly speculative and evidence to support the connection between adding more bike racks and the subsequent increase in ridership was not offered. The author is making a very definitive statement, using words like "will" that imply a cause and effect relationship that has not been established. Furthermore, the statement also includes definitive claims on elements that are beyond the scope of the project—a reduction of greenhouse gases and pollution. While reducing greenhouse gases is obviously an important issue for engineers to think about, an in depth discussion of how we need to get more cars off the road and start riding our bikes more to save the earth is beyond the scope of an introductory design project to create a new bike rack design.

A more accurate statement that reflects the available evidence and also stays within the scope of the project could be written, as follows:

➢ Adding attractive and well-designed bike racks in strategically chosen locations throughout the city may/will likely encourage people to ride their bikes to those locations.

7.   UNSTRUCTURED PARAGRAPHS

Organization is key to effective technical communication and writers need to ensure ideas are purposefully presented so readers can move through the report with ease.

One common error at the paragraph level of organization occurs when students discuss multiple topics in the same paragraph and fail to establish connection between the ideas presented. Writers who use this "information dump" approach to writing fail to recognize that it is insufficient to simply provide information; you have to actively plan how to present that information to ensure understanding. Don't try to jam all your ideas together. Take time to think about what should be discussed first, second, etc. and employ the one idea = one paragraph approach. Basic paragraph structure involves introducing a concept/topic and then discussing all the necessary supporting details for that topic. Helpful figures and tables that complement that topic should be incorporated into the report and placed close to the associated text and also referred to (cross referenced) directly in the text.