The information provided below is a guide to writing an EEI report and plan the steps of your experiment.

**Language and style**

Scientific reports are conventionally written in the **past tense**, and in the **third person** (also called **passive voice**). For example, it is preferable to write “The sodium hydroxide was dissolved in water. This solution was then titrated with hydrochloric acid.” (passive voice) instead of “We/I dissolved the sodium hydroxide in water. We/I then titrated this solution with hydrochloric acid.” (active voice). In these sentences, you can count on your reader to know that you are the one who did the dissolving and the titrating. The passive voice places the emphasis on your experiment rather than on you.

Note: Over the past several years, there has been a movement within many science disciplines away from passive voice. Scientists often now prefer active voice in most parts of their published reports, even occasionally using the subject "we" in the Materials and Methods section. However, the policy at St Augustine’s College for writing scientific and lab reports is to use the passive voice.

Be consistent throughout in the use of fonts, size and spacing. Choose a main font type and size (between 10 and 12 pts), with single or 1.5 lines spacing. Use bold font for headers.

Do not unnecessarily and inappropriately capitalise names. All chemical elements and compounds, instruments, devices, sensors, methods… do not take a capital, unless their name is derived from the name of the inventor/discoverer or are a brand name. For example: magnesium, iron chloride, decantation, titration, Bunsen burner, thermometer.

**Cover page**

Showing the title, your name and the date.

**Contents page**

List all headings and sections and the corresponding page.

**Declaration of authenticity**

Where you ensure the authenticity of your work. It can take various form. An example is:

*I [YOUR NAME] declare that all my work completed and submitted by me is entirely my own. I have included all the necessary documentation including planning notes, drafts and teacher feedback associated with my work, so that authorship can be traced and verified. I have read and understood the college Academic Integrity Policy and I understand the strict penalties which will be applied in the event of plagiarism.*

**Don’t forget to sign this declaration.**

**Abstract**

The guidelines below address issues to consider when writing an abstract.

**What is the report about, in miniature and without specific details?**

* State the aim of the study. (What did you investigate? Why?)
* Briefly describe methods. (What did you do?)
* Summarize the most important results. (What did you find out?)
* State major conclusions and significance. (What do your results mean? So what?)

**What to avoid:**

1. Do not include references to figures, tables, or sources.
2. Do not include information not presented in the report.
3. Do not use bullet points.

**Additional tips:**

1. Length: Do not exceed about 10% of the report’s length (may vary from 50 to 300+ words).
2. Process: Extract key points from each section. Condense in successive revisions.

**Introduction**

Guidelines for effective scientific report introductions.

**What is the problem?**

* Describe the problem/question investigated.
* Carry out a literature review that summarizes relevant research to provide context, key terms, and concepts so your reader can understand the experiment.

**Why is it important?**

Review relevant research to provide rationale. (What conflict or unanswered question, untested population, untried method in existing research does your experiment address? What findings of others are you challenging or extending?)

**What solution (or step toward a solution) do you propose?**

Briefly describe your experiment: research question(s), hypothesis(es), general experimental design or method, justification of method if alternatives exist.

**Additional tips:**

1. Move from general to specific: from problem in real world, to literature review to your experiment.
2. Keep the reader engaged by using clear and concise language in short sentences.
3. Be consistent by making clear the links between problem and solution, question asked and research design, prior research and your experiment.
4. Be selective, not exhaustive, in choosing studies to cite and amount of detail to include. (In general, the more relevant an article is to your study, the more space it deserves and the later in the Introduction it appears.) You should not need to cite more than 6-8 relevant sources.

**Aim**

What are you trying to achieve in your experiment.

**Hypothesis**

From your research on the topic, describe what is the expected relationship between the two variables (Dependent and Independent).

**Method section**

You may choose to do your materials and method separately or combined. This may also be in dot form or as paragraphs.

**How did you study the problem?**

Briefly explain the general type of scientific procedure you used.

**What did you use?**

(May be subheaded as *Materials*)

* Describe what materials, subjects, and equipment (chemicals, experimental animals, apparatus, etc.) you used. (These may be subheaded Animals, Reagents, etc.)
* Complete and refer to a risk assessment form for the experiment through [www.riskassess.com.au](http://www.riskassess.com.au) (username: stac2, password: Saints86!!). Include the risk assessment in appendix.

**How did you proceed?**

(May be subheaded as *Methods* or *Procedures*)

Explain the steps you took in your experiment. (These may be subheaded by experiment, types of assay, etc.)

**Additional tips:**

1. Provide enough detail for replication. For a journal article, include, for example, genus, species, strain of organisms; their source, living conditions, and care; and sources (manufacturer, location) of chemicals and apparatus.
2. Order procedures chronologically or by type of procedure (subheaded) and chronologically within type.
3. Use past tense to describe *what you did*.
4. Quantify when possible: concentrations, measurements, amounts (all metric); times (24-hour clock); temperatures (centigrade).

**What to avoid:**

1. Do not include details of common statistical procedures.
2. Do not mix results with procedures.

**Results**

* Carefully choose which data to incorporate.
* Remaining data\calculations in the Appendix.
* Select graph type based on if data is continuous (table of data always comes before the graph.
* Label all tables and graphs at the bottom and give a statement after. E.g **Table 1**: Shows the relationship between .....
* Make sure your tables and graphs have headings and are correctly labeled on the axis and the series are labelled.
* Use the averages of the three trials (minimum of three trials).
* Incorporate one set of each calculations in the main assignment and place the remaining data in the appendix (show how you did each calculation and why).
* Report main result(s), supported by selected data:
	+ **Representative:** most common
	+ **Best Case:** best example of ideal or exception

**Additional tips:**

Order multiple results logically:

* + from most to least important
	+ from simple to complex

**What to avoid:**

1. Do not simply repeat table data; **select.**
2. Do not interpret results.

**Discussion**

**What do your observations mean?**

* Summarize the most important findings at the beginning. ALWAYS LINKING TO YOUR AIM AND HYPOTHESIS.
* Systematically refer to data and results to support your discussion.
* Describe the patterns, principles, relationships your results show.
* Explain how your results relate to expectations and to literature cited in your Introduction. Do they agree, contradict, or are they exceptions to the rule?
* Explain plausibly any agreements, contradictions, or exceptions.
* Describe what additional research might resolve contradictions or explain exceptions.

**How could you improve the accuracy of the results your obtained?**

* Explain any sources of uncertainty and describe the effects.
* Suggest ways to reduce the impact of these and possible improvements to the method.

**How do your results fit into a broader context?**

* Suggest the theoretical implications of your results.
* Suggest practical applications of your results?
* Extend your findings to other situations or other species.
* Give the big picture: do your findings help us understand a broader topic?

**Additional tips:**

1. Move from specific to general: from your finding(s) to literature, theory, practice.
2. Do not ignore or bury the major issue. Did the study achieve the goal (resolve the problem, answer the question, support the hypothesis) presented in the Introduction?
3. Make explanations complete.
	* Give evidence for each conclusion.
	* Discuss possible reasons for expected and unexpected findings.

**What to avoid:**

1. Do not over generalize.
2. Do not ignore deviations in your data.
3. Avoid speculation that cannot be tested in the foreseeable future.

**Conclusion**

Restate your hypothesis and state if this is supported by evidence or unsupported/disproven. You can use a few very specific results to summarize your findings. A great way to conclude is to suggest additional experiment(s)/research that would confirm or extend your findings.

**What to avoid:**

1. Do not introduce any new information.
2. Avoid the restatement of detailed numerical results

**Appendix**

All support calculations, secondary graphs, tables of raw data or materials such as MSDS forms.

**Bibliography and references**

You must reference all the sources you are referring to throughout your report. You can choose between the Harvard style and APA style. To obtain more details on these referencing styles, consult the website <https://www.citethisforme.com/guides>.

In summary, your report will include the following:

* Cover/title page
* Contents page
* Declaration of authenticity
* Abstract
* Introduction/Literature review
* Aim
* Hypothesis (including prediction)
* Materials
* Safety precautions (including risk assessment form)
* Method
* Results
* Discussion with evaluation of the method
* Conclusion
* Bibliography/references
* Appendix