

Report Writing Guide

*for Student Scientific Reports in
Environment and Sustainability*



Andy Le Brocque

Faculty of Health, Engineering & Sciences,
University of Southern Queensland

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Report Writing Guide

for Student Scientific Reports in Environment and Sustainability

Preface

This is a simple guide to writing scientific reports for undergraduate students undertaking courses in the biological and environmental sciences at the University of Southern Queensland. Research, technical and scientific reports, essays and review papers are extremely important forms of communication in science. Gaining skills in writing is also an essential part of your overall university education. As a tertiary student, we would expect you to be able to write in clear, grammatically correct, and correctly spelt English. The information in this guide should help you to achieve at least the minimum standard of scientific report writing expected.

The information contained in this guide has been originally developed for environment and sustainability students in REN2200 Ecology for Sustainability. However, this information is also generally applicable to other areas of the biological and wider sciences.

You should first check with your examiner regarding the general suitability of this information for other courses.

Andy Le Brocque *BAppSc (Hons), PhD*

Associate Professor in Ecology & Sustainability,
School of Agricultural, Computational and Environmental Sciences

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Introduction

Many university students regard writing an academic essay or scientific (practical) report as some of the most daunting tasks they need to undertake during their studies. However, being able to effectively and accurately communicate in a scholarly way is an important attribute for all graduates. As a tertiary student, we would expect you to be able to write in clear, grammatically correct, and correctly spelt English. The information contained in this *Report Writing Guide* should help you to achieve at least the **minimum** standard of report writing expected.

The Scientific Report

The objective of writing any scientific report is to clearly communicate the results of technical or scientific experimentation. Essentially, the scientific report allows other people to adequately assess your work in order to make an effective contribution to scientific knowledge. In the class setting, it allows you the opportunity to demonstrate that you have understood the experiment and the background information and theory.

The Report Writing Process

The seemingly daunting task of academic essay writing should be somewhat eased once you understand the process involved.

Scientific papers, regardless of discipline, generally have much the same elements, and therefore structure:

- Abstract [note: this is not always required]
- Introduction
- Methods
- Results
- Discussion [including a concluding paragraph or sub-section]
- References
- Appendices

The Scientific Report Structure

Overall Format

Please check the specific requirements for your individual course. The following formatting requirements are for REN2200.

Scientific reports should be word processed, 1.5 line spaced (minimum) throughout for ease of reading and to allow room for corrections and comments by markers. Use A4 page size, with minimum 2.5 cm margins, and a 12 point font (although headings and subheadings may use larger fonts to distinguish them from text).

Many courses, including REN2200, utilizing the electronic assignment submission, require use of an assignment template and cover sheet, often set up in the required format. If provided, this should form the first page of your assignment. These cover sheets may require you to make a declaration regarding the originality of material presented, in terms of the work being your own (except where acknowledged) and that you have not previously presented this material for assessment, nor colluded with others. Please check that you have not altered any formatted template file.

A title page should also be provided that contains the title of the paper, author, student number, course number and name, examiner/marker and due date. You may also have to include a cover sheet and marking scheme (assignment template) if provided by the examiner.

Pages should be numbered sequentially (either centered at the bottom or placed in the upper right-hand corner of the page). Each paragraph should be separated from the preceding paragraph with a line space (no need to indent the first line). Headings and sub-headings should be clearly indicated with consecutive numbering.

Formatting Summary:

- Follow marking scheme
- Word processed (A4 page set up) using 12 pt font
- Minimum 2.5 cm margins and minimum 1.5 line spacing
- Number all pages

Assignment Template/Cover Sheet (not always required)

If you are provided with a marking scheme from your examiner that must be included in your paper, then it is best placed as the first page of your assignment (unless otherwise indicated by your examiner).

Written assignments in REN courses generally require use of an Assignment Template containing:

- space for student name and number;
- a statement by student that this is their own work except where the work of others has been appropriately indicated – ensure you tick the acknowledgement of the statement otherwise your assignment may not be marked;
- a brief description of the assignment task (please note that you should also consult the detailed assignment task indicated in the Assessment requirements on the Course Studydesk);
- a detailed marking scheme showing criteria on which the written assignment will be judged.

Ensure that you have addressed any specific points that are noted in the marking scheme, as this is how the examiner/marker will be grading you!

Title Page

Make the title a succinct statement of what is in the paper. Try to include significant key words that alert the reader to the content. Include author(s), student number, unit number and name, examiner/marker and due date. If an assignment cover sheet and /or marking scheme is required, make sure this is included before the title page. See Figure 1 for an example of a scientific report title page.

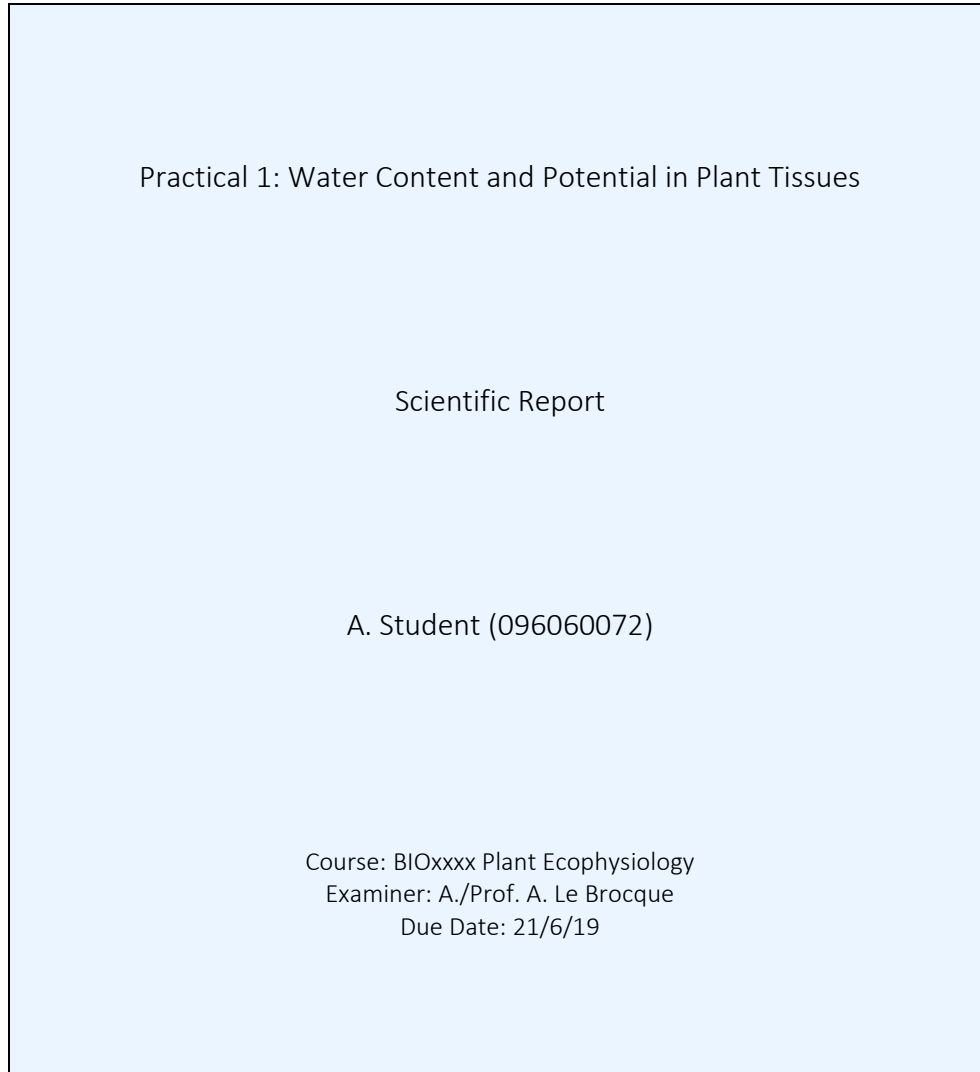


Figure 1: Example scientific report title page.

Title Page Summary:

- Include appropriate descriptive title
- Provide author (including name and student number) and course details
- Use appropriate **Assignment Template/Cover Sheet** if required

Abstract/Summary (not always required)

An abstract presents a summary of the entire report. Most published research papers contain an abstract, but not always (different journals have different practices). The abstract indicates what the report contains, in a form longer than the title, but much shorter than the report as a whole. Abstracts are typically difficult to write, as they involve a considerable reduction of information to just the main points. It is generally more helpful to write the Abstract last. Typically an abstract contains an opening sentence or two providing general background – usually outlining ‘the problem’, a clear statement of the objectives/purpose of the paper, an overview of the critical review of the literature, and finally the main conclusion(s). All these are presented in extremely concise form (usually only a couple of hundred words). Look at some papers in nearly any scientific journal in the Library to get a feel for the style and contents of an abstract.

The requirements in different courses may vary. Consult with your examiner about whether an Abstract is required for any particular paper.

Abstract Summary:

- Provide some general background to begin abstract
- Clearly state the main objectives/hypotheses under study
- Outline the main methods, including any statistical analysis
- Summarise the main results and outline conclusions and generalizations/significance
- Do not include references in the abstract
- Keep to any word limit imposed by examiner

Introduction

This section provides a background to and general overview of the issues involved, and states the purpose or objectives (hypotheses) of the study. Often references to previous work on the topic are cited (see the References section below). Definitions of concepts or terms that are to be used later in the paper can also be provided here, so too is the context and scope of the paper. In other words, the introduction sets the scene for the bulk of the paper that follows

A strong introduction:

- explains the context.
- answers the question “what is this about?” by explaining the focus.
- contains the hypothesis/hypotheses.

Introduction Summary:

- Provide some general background to set the scene
- Provide some more detailed background that relates directly to the study
- Clearly state objectives/hypotheses
- Ensure facts or non-original ideas are appropriately referenced

BIOxxx Plant Ecophysiology Practical 1: Water Content & Potential

1.0 Introduction

Water is an important resource for plants and has been described as one which is most limiting in agricultural productivity and production in natural ecosystems (Taiz and Zeiger 1991). Many plant physiological activities, such as cell growth and photosynthesis, are strongly dependent on the water status of the plant (Kramer 1969).

Plant water content is very much dependent on the water available in the surrounding environment, and as such may vary considerably over time (Taiz and Zeiger 1991). In this practical, the relationship between the fresh and dry weights of plant tissues and the effect of water stress on plant tissue water content are examined.

1.1 Objectives:

The objective of this experiment is to determine the moisture content of fresh tomato seedling tissues grown under two different water regimes and to understand the relative merits of fresh and dry weight determinations. Hypothesis: that moisture content varies across watering regimes.

Page 2

Figure 2: An example scientific report introduction.

Methods

Sometimes referred to as "Methods & Materials", this is essentially where the description of the methodology used for the experiment is provided (Figure 3). The Methods should generally be provided in normal flowing writing (ie do not use point form unless this has been specifically allowed by your Course Examiner).

While the methods are generally brief, enough information should be provided so that the work can be repeated if necessary. These should be written in the past tense. You will probably need to make reference to the original practical notes or to suitable literature on the methods used in this section. However, "as per practical manual" or similar, while allowed in some more basic science courses, is not acceptable in more advanced courses. Again, check with your examiner/tutor if you are unsure.

Avoid long, complex sentences. Too complex sentences will increase the potential for readers to lose track of what you are trying to say. If you need to link a number of ideas together in a sentence, make sure you separate them with appropriate punctuation: commas, semi-colons, colons and parentheses. In addition, using longer or seldom used words do not make your writing any more academic. Look for the words that will best communicate your ideas, rather than just trying to impress with your language skills.

BIOxxxx Plant Ecophysiology

Practical 1: Water Content & Potential

2.0 Methods

Four large (fully-expanded) leaves were removed from both well-watered and un-watered (stressed) tomato seedlings. The four leaves were accurately weighed collectively to determine fresh weight and placed in a pre-weighed labeled paper bag and sealed using a staple. The plant samples were then dried in an oven at about 80°C for one week. The samples were then cooled in a desiccator for about 30 minutes and then re-weighed to determine dry weight. Measurements were corrected for the weights of the bag and staple (Le Brocque, 2008).

The moisture contents of the well-watered and un-watered plants were calculated as follows:

$$\% \text{ moisture content} = ((\text{fresh weight} - \text{dry weight}) / \text{fresh weight}) \times 100$$

Page 3

Figure 3: An example scientific report Methods section.

Methods Summary:

- Do not use point form when describing methods - unless instructed otherwise, write methods in full
- Provide appropriate references to methods where required
- Use past tense throughout when describing methods

Results

This is essentially where the results (observations) from the experiment are summarised using text, tables and figures (Figure 4). All figures or tables presented in this section need to be accompanied by a (sometimes brief) description of the main observations in that figure/table. Generally raw data should be placed in the Appendix, with only summaries (such as means and errors) in tabular or graphical form presented in the Results section.

A major mistake is for students to try and interpret (in other words, discuss) the results in this section. The purpose of this section is really to draw the reader's attention to the main pattern/trends in the data.

Tables are just that, material presented in tabular form. Figures, on the other hand, usually include just about everything else: graphs, maps, photographs and electronic images, flow charts, diagrams, etc. Only include tables and figures that are relevant to the objectives of the study and avoid presenting the same material in multiple forms (i.e. as both figures and tables). Also make sure that appropriate units, axis titles, column/row headings are provided. Tables and figures should be numbered separately with Arabic numerals.

Results Summary:

- Summarize results using text, tables and figures
- All figures and tables must be accompanied by a description in the text
- Raw data should be placed in an appendix rather than results section
- Ensure appropriate units, headings and axis titles are used in tables and figures
- Do not interpret (discuss) patterns in the results section, just note significant trends

3.0 Results

Table 1 shows the fresh and dry weights obtained for the group and the means and standard errors of class results. Leaves of well-watered tomato seedlings weighed more than those of un-watered seedlings as indicated by both fresh and dry weights.

The results indicate considerable variability between groups in the determination of fresh weight (as indicated by the large standard errors for fresh weight determinations).

Table 1. Fresh and dry weights (mg) of leaves of watered and un-watered tomato plants. Group and class results are shown.

Treatment	Group Results (mg)	Class mean (mg)	Std Error
Fresh weights			
well watered	12.258	15.658	3.564
unwatered	1.236	2.367	0.693
Dry weights			
well-watered	2.256	2.869	0.945
unwatered	1.025	1.104	0.879

The calculated percentage moisture contents for the watered and un-watered tomato seedlings are shown in Table 2. Well-watered plants had considerably higher tissue moisture contents than un-watered plants.

Table 2. Percentage (%) moisture contents of water and un-watered tomato plants.

Treatment	Group results (%)	Class mean (%)	Standard error
well-watered	38.6	41.2	6.5
un-watered	15.4	18.9	8.2

Figure 4: An example scientific report Results section.

Discussion

The Discussion is where you will need to discuss (i.e. interpret) your results/observations in light of the background theory and (maybe) provide the conclusions and generalizations emanating from the experiment. That is, do your results agree with what was expected in terms of the objectives/hypothesis outlined in the Introduction?

As you are discussing the results in light of the background theory, you will need to once again refer to appropriate literature. You may also introduce some new references in light of your interpretations of the results. In this section, you also need to explain any results that were not expected. Generally, you will need to outline any possible sources of error that may have impacted upon the experiment, and thus affected the results. Some examiners prefer to see a separate Conclusions section or sub-section of the Discussion. Others may simply require a concluding paragraph within the Discussion section. Check with your examiner/tutor for their preferences regarding conclusions.

Conclusions

As indicated, a synthesis of the experiment is provided in the form of a Conclusion. It is wise, when you are writing your conclusions, that you look back at your original objectives that you set out in the Introduction, the results obtained, and how these have been interpreted (Discussion) and structure your conclusions accordingly. It is generally not advisable to introduce any new material in your conclusions section.

It is wise, when you are writing your conclusions that you look back at your original objectives that you set out in the Introduction and what you have laid out in the bulk of the paper and structure your conclusions accordingly. However, it is generally not advisable to introduce any new material in your conclusions section.

Discussion and Conclusions Summary:

- Interpret your results in light of the background literature
- Relate results to aims/objectives stated earlier, incl. Indicate whether any stated hypotheses are accepted/rejected
- Explain any unexpected results
- Explore any possible sources of error in the study and how these affect the results
- Provide clear conclusions and indicate any generalizations that can be made (or not) and significance of the findings

Academic Style

Academic style differs from other writing in that the language used is *formal, objective* and *cautious*.

Academic writing uses a **formal language**, avoiding the use of slang and colloquialisms associated more commonly with speech, text chat, as well as publications such as newspapers, magazines and online social media. A such, formal language is less personal (impersonal) than informal (relaxed, conversational) language.

The following will help you achieve a more formal language in your essay/report:

- be specific, clear and to the point;
- avoid vague and general phrases;
- avoid slang and colloquialisms – e.g. ‘kids’ (use ‘children’), ‘good/bad’ (‘positive/negative’), ‘right/wrong’ (‘correct/incorrect’), ‘mother nature’;
- do not use contractions – e.g. ‘don’t’ (use ‘do not’), ‘isn’t’ (‘is not’), ‘they’re’ (‘they are’);
- do not use non-conventional abbreviations and informal shortened forms – e.g. ‘asap’, ‘pros and cons’, ‘&’, ‘lol’ – however, shortened forms of institutions, titles and the like (e.g. USA, UN, IMF, USQ) are generally appropriate in academic writing, although should be spelt out in full in the first instance in your essay, followed by the shortened form in brackets;
- avoid *informal verbs* – e.g. ‘go up/down’ (use ‘increase/decrease’), ‘look at’ (‘examine’), ‘find out’ (‘discover’), ‘seem’ (‘appear’); *informal transitional words* – e.g. ‘but’ (use ‘however’), ‘so’ (‘therefore/thus’), ‘also’ (‘in addition/additionally’), ‘to sum up’ (‘in conclusion’); *informal emphasis words* – e.g. ‘lots of’ (use ‘many’);
- do not use clichés – e.g. ‘thinking outside the box’, ‘leaving no stone unturned’, ‘in a nutshell’, ‘in the current climate’.

However, formal does not necessarily mean verbose or overly technical. Unnecessary or jargonistic words will often confuse or even irritate the reader. Students tend to overuse words and often make sentences more convoluted and longer than necessary.

Objective writing involves writing that is based on evidence in order to avoid *bias* in your academic essay. Bias can weaken your arguments and hence, will make your essay/report less convincing.

Avoid subjective language that can be prone to exaggeration or bias. Subjective language tends to be based on assumptions, judgements, opinions, rumours and suspicion, while objective language tends to be based on fact, observation and logical argument. Subjective language is used to express opinions

based on personal values, beliefs or preferences rather than evidence, and hence, are based on subjective judgment rather than on information that can be verified.

The following will help you achieve a more objective language in your essay/report:

- avoid personal pronouns – e.g. ‘I’, ‘my’, ‘we’, ‘you’, ‘our’ – however, some topics may ask you discuss personal opinions/experiences and this rule may be relaxed – check with your course examiner;
- avoid emotive or judgemental phrases – e.g. ‘shocking findings’, ‘surprising results’, ‘extremely important’, ‘in a fantastic study’;
- do not use stereotypes and gender-specific or discriminatory language – e.g. ‘mankind’ (use ‘humankind’), ‘man’s effects’ (‘humans’ effects’) or language that may offend groups of people (e.g. racial, ethnic, religious, age, sexual).

Cautious language is common in academic writing, particularly in the sciences, where there is recognition of the lack of ‘definites’ or ‘absolutes’. Instead, the cautious writer accepts that there is room for doubt and tends to refer to *probability* of patterns or phenomena.

The following will help you achieve a more cautious language in your essay/report:

- avoid absolutes – e.g. ‘proves’, ‘no doubt’, ‘always’, ‘all’, ‘never’, ‘none’;
- use more *tentative* phrases – e.g. ‘indicate’, ‘appear’, ‘may’, ‘possibly’, ‘suggest’, ‘arguably’;

Academic writing is formal, researched based and shows evidence of critical thinking. The notes below suggest ways of achieving an academic writing style.

Referencing

Whenever you make a statement of fact or opinion that is not common knowledge, you must support that statement with your own data and arguments or you must indicate that someone has already done this work. If you refer to another person's work, then you must provide the reader with a citation to a published account or to a personal communication. This serves two purposes: it protects you from a charge of plagiarism and it allows your readers to verify your statements.

In the Faculty of Health, Engineering and Sciences, and indeed across most of the University, we predominantly use the Harvard system of referencing as the default system. The main aspects of this system of referencing is given below, for more detailed information see the USQ Library's website on referencing at <https://www.usq.edu.au/library/referencing/harvard-agps-referencing-guide>.

The References section should list the literature that you cited in the main text of your paper. Generally you should cite primary literature (i.e. journal articles or academic books). You should not be citing encyclopaedias, either online (e.g. Wikipedia) or print based, and discipline-specific dictionaries at this level. It is also becoming increasingly commonplace to cite material from the internet. In this case, you should provide, as a minimum, the author ('anon.' if none are indicated), complete URL and date & time accessed. However, you should be aware that much material can be placed on the internet that cannot be substantiated, so you will have to be discerning on your use of this material. Often, the internet provides a useful starting point when searching literature on any particular topic, but you are strongly encouraged to use a majority of primary sources of literature when developing your paper.

It is expected that normally **no more than 10%** of the references included in your essay will be an internet reference.

Note: in some courses, there may be more specific restrictions on the use of internet references. You should check for any requirements within your particular course.

Two common mistakes in referencing are not including references that are used in the text in the Reference section, and including references in Reference section that are not cited in the text.

Referencing Summary:

- All ideas, statements or materials from other people's work must be appropriately attributed to that person(s)
- Statements of fact or opinion that is not common knowledge must be supported by appropriate evidence (either your own or that of another person(s))
- References cited in the body of the essay must be correctly listed in the Reference section
- Check that all of the references are accurate

Citing a reference in the body of the text.

Numbered footnotes are common in some disciplines, but not in science. Instead, a source is cited by the **author's surname** and **date of publication**.

- If you refer directly to the source, use the surname and place the date in brackets:

Frankham (1995) has also suggested that an increase in the generation length will also increase the degree of genetic adaptation of species to captivity.

- If you refer to the publication indirectly, both author and date go in brackets:

Inbreeding in vertebrate species has reduced the viability and fecundity of a population (Senner 1980).

- For a source with two authors, indicate the surnames of both along with the date:

The maintenance of genetic diversity reduces the risk of extinction for a species (Sherwin and Brown 1990).

- For a source with three or more authors, cite the surname of the first author, and add “*et al.*” to represent the other authors. This is an abbreviation of *et alia* (Latin “and others”), so be sure to punctuate it correctly (not “et al” and not “et. al.”).

Simulating natural selection in captivity is not recommended on the grounds that we do not know enough about it to effectively enforce it (Frankham *et al.* 1986).

- You may cite more than one paper in support of a point. Within brackets, separate the citations by a semicolon. Usually, multiple citations are ordered by date of publication.

The extinction of rufous hare-wallabies has been attributed to fire and predation by foxes (McLean *et al.* 1996; Hickey 1997).

- You may cite more than one paper published by the same author(s). If the year of publication differs, there is no ambiguity: give the surname once and the several dates. If the publication date is the same for more than one paper, the letters a, b, c ... are added after the year to distinguish them.

Studies of plant reproduction have yielded many insights about evolution (Darwin 1876, 1880).

Studies of mate searching behaviour (Parker 1974a) and post-mating defense of females (Parker 1974b) in the fly species *Scatophaga stercoraria* show how time investments affect male reproductive behaviour.

- A citation is part of the sentence to which it refers. A full stop goes after the citation, not before.

Wrong: Inbreeding in vertebrate species has reduced the viability and fecundity of a population. (Senner 1980)

Right: Inbreeding in vertebrate species has reduced the viability and fecundity of a population (Senner 1980).

- Sometimes it is not possible to see the primary literature source on a given topic and it may be necessary to use a 'second-hand' reference; however, this should be kept to a minimum:

Grazing is one of the most important land uses in Australia, occurring across 75% of the continent and 95% of Queensland (CSIRO 1990, cited in Roberts 1992).

Listing references in the References section

List all sources cited with full publication details. List references in alphabetical order according to the surname of the first author. If you cite something in the text, be sure to include it in the reference list. Do not include any “reference” that you do not actually cite in the text of the report. There are slight differences in the format for a paper in a scientific journal, a book, or a chapter from an edited book. One common format (and one expected here) is explained below.

Journal article:

Author(s) (Date of publication) Title. Journal Volume: Pages.

Watson, JD and Crick, FHC 1953, 'Molecular structure of nucleic acids: a structure for deoxynucleic acids', *Nature*, vol . 171, pp. 737–738.

Gibberd, R, Snow, PT, Rice, PG & Patel, NB 1991, 'Nuclear power at what price?', *The Bulletin*, vol. 113, pp. 51-5.

All authors are listed (“et al.” is not used in the References list), and initials of their given names are included. Give the title of the article, and place a full stop at the end. The journal name should be spelled completely, not abbreviated and underlined or italicized.

Book:

Author(s) (Date) Book title (in italics). Publisher: City of Publication.

Fisher, RA 1930, *The genetical theory of natural selection*. Oxford University Press, Oxford.

Chapter from an edited volume:

Author(s), date, chapter title, “in” followed by the book title (in italics), the editor(s) of the book (in parentheses), and the pages on which the chapter occurs. Finally, publisher and city of publication, as for any book.

Gray, AJ 1996, ‘The genetic basis of conservation biology’ in Spellerberg IF ed, *Conservation Biology*, pp. 105–121. Longman, Singapore.

Thesis extract:

Author (Date) Thesis title (in italics). Award (degree, diploma etc), Institution: City of Publication.

Kench L 1995, ‘Captive Breeding of Australian Mammals for Reintroduction’, Diploma of Natural Resources Thesis, University of New England, Armidale.

Web page:

Author(s) [*'Anon.'* if no author indicated or organisation name if indicated], the document date or date of last revision, title of document if indicated (in single quotation marks), the title of the complete work (if any, in italics), the URL address (preceded by the 'less than' symbol and followed by the 'more than' symbol), organisation (if indicated), and the date the material was accessed (in brackets).

Australian Bureau of Statistics, 1997, 'Key national indicators', *ABS Statsite*.
<<http://www.abs.gov.au/>>, Australian Bureau of Statistics (accessed 26 June 2009).

Le Brocq, AF 2000, 'Major Australian Terrestrial Ecosystems (Biomes)'. *Supplementary Resource Materials*. <<http://www.usq.edu.au/users/lebrocq/b-resources/austecosys.htm>> Faculty of Sciences, University of Southern Queensland (accessed 18 July 2011).

Tables and Figures

Generally large tables and figures should be presented on separate pages with a suitable descriptive caption (title). Smaller tables can be presented in the body of the text. Regardless of size, tables and figures should appear as close as possible to where they are first mentioned in the text. Tables are just that, material presented in tabular form. Figures, on the other hand, usually include just about everything else: graphs, maps, photographs and electronic images, flow charts, diagrams, etc.

Tables and figures should be numbered separately with Arabic numerals. If the material presented in these forms is from someone else's work then you should provide a suitable source.

By convention, figure captions are placed under the figure and table captions placed above the table. Captions should be descriptive of the material presented in the table/figure and have sufficient detail that the reader can interpret the information correctly.

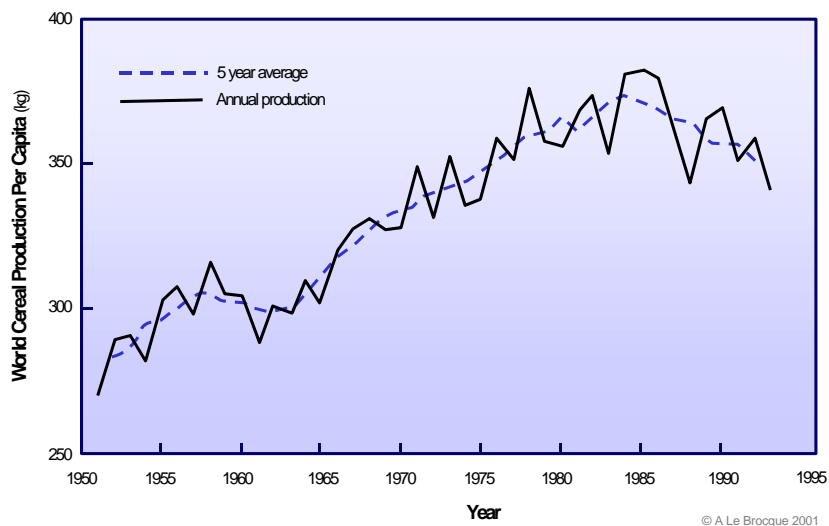


Figure 1: Changes in World Cereal Production (Image AF Le Brocque; after: UN Food and Agriculture Organisation, 1999)

Table 1: Changes in greenhouse gas concentrations in the atmosphere (After Australian Academy of Science, 1996).

Greenhouse gas	1850 (ppm)	1990 (ppm)	Increase (%)	Current annual increase (%)
Carbon dioxide	280	350	26	0.4
Methane	0.75	1.70	126	0.8
Nitrous Oxide	0.285	0.310	9	0.3
Chloroflourocarbon 11	0	0.00024	-	4.0
Chloroflourocarbon 13	0	0.0005	-	4.0

Hints for Good Writing

General

Use an outline (plan) to divide the report or essay into sections before attempting to actually write it. This will help to focus your thoughts and will quickly identify any aspects of the topic that you need to further research.

Read widely and do not base an essay or report on one or two references. It usually shows.

Write at least one rough draft that you re-read and correct before producing the final copy. Check your spelling. Most word processors have spell-check features. Spell-checkers pick up incorrectly spelt words, not words that are simply inappropriate (e.g. there and their) so you should carefully read your work. Read what you have written with a critical eye, and revise when the writing isn't good enough. Reading the report aloud or having a friend read it to you will help you find inconsistencies and mistakes. If your report doesn't make sense when you hear it read, then it won't make sense to your reader. If you don't want to bother revising, okay, but no one writes well on the first pass, so expect a poor mark.

Avoid using direct quotes

Direct quotes in no way shows the reader that you have actually understood the material you are quoting. It is far better to write the point in your own words (i.e. re-word the material), giving suitable acknowledgement to the originator of the idea you are presenting. Very rarely would a direct quote be used in scientific writing.

Scientific Names

Latin binomials (e.g., *Homo sapiens*) are always underlined or, more commonly, *italicized*. The first time you use the Latin binomial name of a microbe, plant, or animal in the body of a paper (i.e., from the introduction on), you should spell the generic name in full and follow the specific name with the last name(s) of the author(s) who described the species. Parentheses are used around an author's name if the current generic placement of a species differs from the original. Do not underline the author's name. Subsequent to its first use, write out the generic name only if it begins a sentence, otherwise abbreviate it using its first letter (include the second letter if there are two genera starting with the same letter) followed by a full stop.

Some Useful References and Further Reading

Anon., 2002, *Style manual for authors, editors and printers*. 6th Edit. Australian Government Publishing Service, Canberra.

University of Reading. No date, *Writing Academically*. University of Reading, Reading, UK.
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Day, RA 1989, *How to write and publish a scientific paper*. Second edition. ISI, Philadelphia.

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Checklist

General

- 1.5 line-spaced or Double-spaced text, tables, and legends?
- Have you provided suitable margins? (At least 2.5 cm left & right)
- Pages numbered?
- Paragraphs composed of more than one sentence?
- Do all your sentences have subjects and verbs?
- Are any sentences too long and wordy?
- Have you used the Spell Checker?
- Are Latin binomials underlined or italicized?
- Tables & figures have explanatory legends & descriptive captions?
- Have you used commas where they are required?

Title page/Abstract

- Title Page with Title, Author (Student Name & Number), Course designation (Course Name & Number), and submission date?
- Abstract providing suitable overview of paper/report? (only if required)

Introduction

- Do you briefly review your topic, providing a suitable overview of the paper?
- Do you explain the purpose of the paper (including aims & objectives)?

Methods

- Methods are in flowing text (not point form)?
- Full methods, incl. experimental design and statistical methods, are detailed?
- Are methods appropriately referenced?

Results

- Results appropriately summarized with appropriate measurement units stated?
- Are Tables and figures accompanied by descriptive text?
- Have you attempted to interpret (discuss) results in this section?

Discussion and Conclusions

- Have you interpreted your results in light of the background literature and related them to aims/objectives
- Have you explained any unexpected results and possible sources of error
- Did you provide clear conclusions and indicated generalizations and significance

References

- Is all literature referred to in the report properly cited?
- Are journal titles abbreviated properly?
- Are your citations correct? in alphabetical order?
- Have you only referenced those citations that are referred to in the text?