GENERAL WRITING (Language and Learning Online)

General writing

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Editing your thesis

Introduction

This tutorial introduces you to some of the key concerns for:

- finetuning your style
- revising and editing your thesis

Because you become so involved in the *writing* of your thesis it can be difficult changing to a *reader-orientation*, but that is what you need to do. You must make explicit for your reader what your coverage is to be, and include all assumptions, definitions, qualifications, etc. so that any objections can be accounted for.

A thesis should have an informative title, headings, and subheadings. It should present information in a logical order; include all essential steps in any argument and make any implications clear; give sufficient evidence; give examples where appropriate; and explain why any point is particularly important.

Navigate your way through this tutorial using the menu on the left.

Helping the reader

There are various ways you can help your reader make sense of what you're trying to say in your thesis. One of the easiest ways to do this is through the use of an appropriately named and structured system of headings *<www.monash.edu.au/lls/llonline/writing/general/thesis-edit/1.1.xml>* . Headings and subheadings in your thesis serve a similar purpose as road signs in a foreign city. The best signage systems can not only prevent you from getting lost on the route from Point A to Point B, but they can also help you find your way back on track if you do get disoriented. In the same way, headings can not only tell your readers where they are now, but where they have been, and also where they are going.

Similarly, you can also provide your reader with some valuable directions in the text of your thesis itself. Instead of telling your reader to 'go left at Chapter Three', your reader directions *<www.monash.edu.au/lls/llonline/writing/general/thesis-edit/1.2.xml>* will let them know what to expect once they get there.

Headings

Headings serve to reveal the organisation of a text. They can help readers understand the organisational hierarchy of a text by indicating the coordination and subordination of its parts. It is not advisable to go beyond three levels in the numbering of headings (e.g. 2.3.2). If you need to include a fourth level heading, a common practice is to write that sub-heading in *italics* and use no numbers.

The most frequently encountered headings either state the main idea of the segment, or use a key word or phrase. Initial *"The"* is usually omitted in headings.

Click on the highlighted text to see the comments.

Exercise 1

The following Table of Contents gives the headings of a Masters thesis. What do you think of it? What could be improved?

CONTENTS

SUMMARY

LITERATURE REVIEW

RESEARCH PROJECT

INTRODUCTION
METHODOLOGY
RESULTS
DISCUSSION
CONCLUSIONS

APPENDIX

BIBLIOGRAPHY

ACKNOWLEDGEMENTS

[1]**Comments**
[1]

These headings for this thesis are **not very effective**.

The headings give the reader little or no idea of what the thesis is about. It is acceptable to have some structural headings, e.g. *"Introduction"* or *"Conclusion"*, but generally the purpose of a heading is to be informative about the contents. There is also no numbering and no subheadings to give any detailed information. Note: Acknowledgements are conventionally placed at the beginning. Using capitals throughout also makes it more difficult to read.

The following Table of Contents gives the headings of a PhD thesis in Medicine. What do you think of it? What could be improved?

CONTENTS

Acknowledgements
List of Abbreviations
Synopsis

1. Introduction

1.1 Content of Dissertation
1.2 Aims and Hypothesis of the Study

2. The Concept of OCD

2.1 Diagnosis, Classification and Formulation
2.2 The Development of the Disorder
2.3 Subtypes of OCD

[There are then 7 sub-types listed at the next level]
2.4 Other Possibilities
2.5 Discussion and Subclassification of OCD

3. Aspects of BiologicalNeurotransmitters and OCD

[There are then 6 sub-categories listed at this level]

4. Discussion of Methodological Considerations

4.1 The Ethics of Clinical Research in Psychosis
4.2 Approach to Psychopathological Analysis in this Study
4.3 Neuroendocrine Strategy in this Study
[There are then 6 sub-categories listed at the next level]

5. Results

5.1 Refusals to Consent
5.2 Comparison of Patients and Controls
5.3 Within Patient-Group Analysis

6. Discussion

6.1 Elaboration of Results
6.2 Possible Confounding Factors
6.3 Significance of the Results

7. Further Research

7.1 The Planned Study

8. Concluding Remarks

Bibliography
Appendices

[2]**Comments**
[2]

The headings for this thesis are **more effective**.

The headings give the reader a clear idea of the contents without going into overwhelming detail. As it is a medical thesis it needs to be specific, and you will note that the major headings largely follow the

conventional scientific pattern. In a non-scientific thesis, you have more latitude to include informational headings.

Reader directions

A thesis is a very long piece of writing. Whatever signposts or reader directions you can give your reader will help her follow your thought patterns at the macro level. This kind of language has been termed *'metadiscourse'*. Metadiscourse has been defined as "overt commentary on the text in the text: writing about the evolving text rather than referring to subject matter" (Swales 1990, *Genre Analysis*, pp. 188-9). It signals where the author is going, where precisely she has got to, and what she has achieved so far. Some students are very expert at this: there is an art to using just enough metadiscourse, i.e. without predicting to a tiresome degree exactly what is going to happen next or rehearsing tediously what has just happened.

At the different levels of the thesis and starting with the top level this can apply to:

- The whole thesis (*"The focus of this thesis is..."*)
- Another chapter (*"The physical properties are presented and analysed in Chapter 5."*)
- The current chapter (*"The rest of this chapter will examine..."*)
- Another section (*"In the previous section, it was demonstrated that..."*)
- The current section (*"The following case study will illuminate..."*)
- Passage immediately preceeding or following (*"The objectives are as follows:..."*)

More specifically, these reader directions can function to serve the following three purposes:

1. To provide **forecasting statements** which give the reader in advance the structure of what is to follow, so the argument is easier to follow and the detail easier to absorb.
2. To **recapitulate or review**, which enables the reader to make explicit links between what has just been read and what is to come.
3. To give an **overview or purpose** (pointing forward and/or back).

An effective way of helping the reader through the thesis is to provide short introductions and conclusions to each chapter.

In the introduction to each chapter, you can **forecast** by stating the aims(s) of the chapter, outline its structure and provide any background information which will provide the reader with a "road map" for reading the rest of the chapter.

In the conclusion to each chapter, you can **review** the chapter by giving a brief summary of the main information. You can provide a more general **overview** of the chapter, drawing conclusions from the research presented, and linking the work of this chapter to the next or later chapters. This concluding section can also be used to highlight important achievements reported in the chapter.

Forecasting

Although a topic statement at the beginning of a paragraph tells readers what a paragraph is about, it does not tell them how the segment is organised. A **forecasting statement** tells the reader in advance about the organisation of the whole thesis, a chapter, a section, or a passage. Forecasting statements may vary greatly in the level of detail they provide. When deciding how much detail to include in a forecasting statement, concentrate on **forecasting only one level of information at a time**. List only the major divisions. If those divisions are themselves divided, provide each with its own forecasting statement. **Do not provide more detail than readers can easily remember**: for example, if you are introducing the three main characteristics of a system, you might want to name them before explaining them. However, if there are seven characteristics, it would be better stating the number without naming them.

Read the extract below and note the phrases where forecasting statements have been used.

The aim of this chapter is to provide, through selective reference to some of the literature, a clearer understanding of the different microbiological, chemical and physical processes that occur within trickling filters. Experimental observations of various trickling filter phenomena are reviewed, and there is discussion of the sometimes conflicting conclusions about the mechanisms of trickling filtration that have been drawn from the empirical evidence.

The chapter is divided into two parts. The subject of the first is the biological film which is the site of the biological oxidation of organic matter from the wastewater, and is thus the heart of the process of trickling filtration. The formation and structure of the biofilm (or slime layer) is outlined, and the different processes which occur within it are discussed. The remainder of the chapter is devoted to a consideration of the operating variables which determine trickling filter performance.

(From a PhD thesis, Department of Chemical Engineering, Monash University)

[1]**Compare your answer**
[1]

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The chapter is divided into two parts. The subject of the first is the biological film which is the site of the biological oxidation of organic matter from the wastewater, and is thus the heart of the process of trickling filtration. The **formation** and structure of the biofilm (or slime layer) **is outlined**, and **the different processes** which occur within it **are discussed**. **The remainder of the chapter is devoted to** a consideration of the operating variables which determine trickling filter performance.

Recapitulating

Example:
"In the preceding section, the results of tests performed on interfaces comprising concrete and either Johnstone or Gambier Limestone were outlined."

Overview

Example:
"Before I describe and discuss the family rating scales, I believe it is important to give a brief account of the theoretical basis from which they were derived."

Example:
"It is now appropriate to consolidate these ideas and to examine POSTGRES in greater detail in relation to its support for rules and objects."

Purposes and patterns of organisation

You have to think about organising your thesis at many levels. From the overall structure of your thesis to the micro-level structure of sentences within paragraphs, considering the patterns and the purposes of organisation is very important if you want to get your message across clearly.

This section covers topics ranging from the organisation of paragraphs *<www.monash.edu.au/lls/llonline/writing/general/thesis-edit/2.1.xml>* , to the flow that can be generated by effective linking *<www.monash.edu.au/lls/llonline/writing/general/thesis-edit/2.3.xml>* strategies. Sometimes before you go deeply into a subject, you need to define your topic *<www.monash.edu.au/lls/llonline/writing/general/thesis-edit/2.2.xml>* . And sometimes the content of what you have to say lends itself more to being listed in bullet *<www.monash.edu.au/lls/llonline/writing/general/thesis-edit/2.4.xml>* point form than being written out in full.

Organisation of a paragraph

Each paragraph in a text contains a main idea which is related to the other major points presented in the text. *Unity*, or concentration on a single topic, is essential if a paragraph is to be effective.

The main or controlling idea in a paragraph is generally contained in a *topic statement*, often at the beginning of a paragraph. Although this is the most typical paragraph pattern, topic statements may be placed in any position in a paragraph or in more than one sentence. The topic statement contributes to establishing a meaningful pattern to the various pieces of information conveyed within the paragraph.

It is usually helpful to *present generalisations about the topic before specific information*. Although many paragraphs contain a single generalisation which contains the main or controlling idea, in some cases paragraphs contain generalisations of different levels. Moreover, the level of generality of a particular statement depends on the context.

There are numerous ways of supporting the main idea of a paragraph with supporting information. The following are some of the most commonly encountered:

- **Definition** (formal, informal, and expanded; especially in the non-science disciplines, may involve *competing* definitions)
- **Classification** (formal and informal)
- **Description** (physical, function, and process)
- **Expansion** (may involve paraphrasing or summarising the evidence of other researchers on the topic)
- **Cause and effect**
- **Comparison/Contrast**
- **Exemplification** (may involve facts, statistics, evidence, or details that support the topic)

Exercise 1

Click on the highlighted text to see the comments.
Below is an extract from a Masters thesis in linguistics. Which of the following patterns of organisation are used? Tick all appropriate boxes.

Linguists and educationalists have for many years had conflicting views about the value of correcting linguistic errors in the speech and writing of second language learners. With regard to the practice of correcting written errors, one extreme view is that corrections do not have a significant effect on student errors and teachers should, therefore, adopt less time-consuming efforts to direct students' attention to surface error (Robb, Ross and Shortreed 1986:91). The more moderate view does not dismiss the value of correction as a useful teaching technique, but rather, it emphasises the importance of consistency and systematicity if the positive effects of correction are to be realised (Cohen and Robbins 1976:60; Rivers 1981:306; Lalande 1982:140).

☐ formal definition   ☐ expanded definition   ☐ information classification   ☐ physical description

☐ exemplification   ☐ comparison   ☐ contrast   ☐ cause and effect

[1]**Check your answer**
[1]

The paragraph is organised as an **expansion** of "conflicting views" and explores this principally by means of **contrast**, while noting an important point of **comparison:** i.e. what the two views share.

The pattern of organisation of a text is related to its purpose. These patterns can be used to organise paragraphs, or entire sections of a document. In practice, they are generally combined with one another, depending on the purpose of the writing. For example, a paragraph which is essentially about physical description may need to include a definition of a key term and a simple classification.

Moreover, a combination of patterns is necessarily involved in writing a specific section of the thesis, for example the Introduction. Although the section has only one major purpose, it is organised into a number of stages, each of which has its own function.

Note that in a long piece of a work such as a thesis (particularly in the arts and social sciences), you may find that at times the argument needs to extend beyond the typographic bounds of one paragraph, such that we can identify **conceptual paragraphs** - usually two fairly long paragraphs following through the same idea.

Exercise 2

What do you think is the predominant pattern for each of the following extracts taken from a linguistics thesis? Choose the most appropriate pattern from the dropdown list.

| 1 | Theoretical support for the facilitative role of conscious attention in improving linguistic accuracy in writing is found in the cognitive accounts of second language acquisition (SLA) proposed by Bialystok (1978) and Krashen (1981). Although there are major differences between the two theories in relation to the effect that conscious knowledge has on 'acquisition' as opposed to 'learning', both accounts recognise that conscious knowledge can be used to monitor (self-correct) second language (L2) output (Bialystok 1978:78; Krashen 1981:2). | ☐ |

2	It is this inductive application of concordancing for independent student language learning that forms an integral part of the proposed computer-assisted model for error treatment. The concordancer has long been regarded as a useful tool for investigating student errors in writing. A typical classroom application for the tool is that in which students search a corpus of selected expert texts to investigate problematic linguistic structures as identified in corrective feedback received on their writing (Johns 1986:161). In these instances, however, the corpus has not included students' own reformulated texts. Other concordancing applications which include students' texts in a corpus have been reported, but these differ from the application in the current study in that they use students' uncorrected texts in the corpus (Johns 1986:161; Tribble and Jones 1990:53, 66; Bruce 1991 cited in Pickard et al, 1994:300)	
3	On considering Krashen's views regarding the value of focusing on form in writing, it would seem that in contexts where accuracy in writing is demanded of students, the question for teachers should not be 'whether to correct', but rather 'how to correct without raising the student's negative affective filter'. The aim should be, as Tomasello and Herron (1989:392) have suggested, to provide correction in the context of an accepting social environment, so that errors are more likely to be viewed as a logical part of active learning, rather than as something to be embarrassed about. Vygotsky's (1978) theory of the social nature of human learning and cognitive change provides the theoretical underpinning for such an approach. Drawing from his work, Jones and Mercer (1993:22) emphasise the importance of providing 'cognitive support' in an interactive and personalised environment.	
4	Any notes made by students in preparation for the interview/conference session were collected. In addition, the session was tape-recorded and selected parts were transcribed. A written summative evaluation of the students' attitudes towards the corrective feedback/concordancer technique and their beliefs about learning outcomes was also collected.	

5	It seems that M's interest and motivation to use the concordancer, and A's lack thereof, can be explained by a series of interrelated factors. As discussed above, individual differences relating to preferred learning strategies are likely to impact considerably upon a student's ability to adapt to using the concordancing technique for focusing on linguistic form. Inexperience with using unfamiliar inductive strategies, and the provision of only limited preparatory training led to A's failure to adapt to the new focusing strategy. Consequently, his motivation to persevere with the technique was dampened.	
6	Students' specific investigations and use of strategies for focussing on form in the first stage of corrective feedback and the second stage of concordancing were recorded. Outcomes of focussing on form were recorded in terms of: 1. observations made 2. questions triggered from observations 3. other questions (ie, when focussing on form was unproductive).	

Defining your topic

Introductory sections to most types of scientific writing begin with general statements and move to more specific statements. A text may begin with a **formal** or **informal definition**, or an **extended definition**.

For other types of writing you may wish to a) include a glossary of terms, or b) explain commonly held meanings, compared with your own understanding of the terms.

Formal definitions

In a formal sentence definition, the term being defined is first assigned to a **class** or group to which it belongs and then distinguished from other terms in that class. In most cases, the **indefinite article** *"a"* or *"an"* is used before both the term and the class. The second part of a definition contains a **restrictive relative clause**, indicated by the use of the relative pronouns *"which"* or *"that"*. The relative pronoun *"whose"* is less commonly used.

Example:

> **A** star is **a** celestial body **which** shines by itself and **whose** source of energy is nuclear fusion occurring in its core.

Note: in the above example *"that"* could be used instead of *"which"*.

A sentence definition can be reduced by omitting the class to which the term belongs. In this way you avoid stating the obvious or repeating words unnecessarily.

Example:

> A Beckman thermometer is a thermometer that measures small temperature differences.

The highlighted elements can be omitted. The reduced definition is:

> A Beckman thermometer measures small temperature differences.

Informal definitions

Informal definitions usually occur more commonly in non-scientific writing. Here the definition does not follow the formal pattern of *term + class + distinguishing feature(s)*. In an informal definition, the definition is often only implied: e.g. *"Fosters is an open system organisation because it can influence, and be influenced by, its primary and secondary stakeholders."*

Expanded definitions

An extended definition is used when a sentence definition is not sufficient. There are a number of ways to expand a definition. Here are the most common techniques.

1. **Further definition**: words in the sentence definition are themselves defined. For example, the definition *"A vaccine is a sterile liquid medium that contains an avirulent strain of a specific pathogen"* is not completely clear unless *"avirulent"* and *"pathogen"* are also defined.
2. **Concrete examples**: for example, if the word being defined is *"pollution"*, the expanded definition may include examples of common forms of pollution.
3. **Description** of parts or components
4. **Basic operating principles**
5. **Purpose or method of use**
6. **Cause and effect**
7. **Word derivation**: for example, if the term being defined is *"n-type semiconductor"*, we need to be clear that *'n'* means *negative*.
8. **Location and time**
9. **Negative statement**: for example, if the definition is *"Thixotropy is the property of a liquid by which it has a lower viscosity at a higher rate of flow"*, the following sentence could state that this is not a property of most liquids

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Click on the highlighted text to see the comments.

Below is an example of an expanded definition. Which of the techniques listed above are used? Tick all that apply.

An aneroid barometer is an instrument that depends on the changing volume of a container to indicate atmospheric pressure. It consists of an airtight box of thin flexible metal from which the air has been partially evacuated. One side of the evacuated box is attached to a spring. When atmospheric pressure increases, the box tends to collapse. When atmospheric pressure decreases, the sides of the box spring outward. This slight movement is magnified by a series of levers connected to an indicator, which shows the atmospheric pressure.

A variation of the aneroid barometer called the Bourdon gauge was invented by Eugene Bourdon, a French engineer. A flattened tube of metal is evacuated and bent into a circle. The tube tends to close up with greater pressure and open out with lesser pressure. This movement is transmitted to a dial as in the aneroid instrument. The Bourdon gauge is most suitable for measuring high pressure (for example, 2000 atmospheres).

Masters, P. 1986, *Science, Medicine and Technology: English Grammar and Technical Writing*, pp 27-29.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

☐ 6 ☐ 7 ☐ 8 ☐ 9

[1]**Check your answer**
[1]

A number of the techniques are used; some can be seen to overlap.

An aneroid barometer is an instrument that depends on the changing volume of a container **(4: basic operating principles)** to indicate atmospheric pressure **(5: purpose or method of use)**. It consists of an airtight box of thin flexible metal from which the air has been partially evacuated **(3: description)**. One side of the evacuated box is attached to a spring **(3)**. When atmospheric pressure increases, the box tends to collapse **(4)**. When atmospheric pressure decreases, the sides of the box spring outward **(4)**. This slight movement is magnified by a series of levers connected to an indicator, which shows the atmospheric pressure **(5)**.

A variation of the aneroid barometer called the Bourdon gauge **(2: concrete example)** was invented by Eugene Bourdon, a French engineer. A flattened tube of metal is evacuated and bent into a circle **(4)**. The tube tends to close up with greater pressure and open out with lesser pressure **(5)**. This movement is transmitted to a dial as in the aneroid instrument **(4)**. The Bourdon gauge is most suitable for measuring high pressure (for example, 2000 atmospheres) **(5)**.

You will also, particularly in the non-science disciplines, find competing definitions being put forward, as in the following piece of student writing from Human Resource Management:

> Rhetoric, as defined by Phillips (1997), is "the formal elements of an argument used to persuade an audience". Rhetoric has been the foundation of the study of verbal persuasion since the time of the ancient Greeks (Ong, 1997). In the organisational context, rhetoric can be an intentional tool to influence others (Morgan,1998), giving information about the organisation which assists employees to understand it in a certain way.

Linking

A text is cohesive when the sentences within a paragraph and the paragraphs within a text are written in a sequence that supports one point at a time and which enables a smooth flow of sentences and paragraphs.

Cohesion can be achieved through the use of **transitional words and phrases** which show the logical relationship between ideas. Cohesion can also be achieved by using language which makes explicit the relationships between words.

Repeat **key words** from sentence to sentence, and from paragraph to paragraph, e.g.: *"Consideration has had to be given to new and different **means** of assisting staff to acclimatise to foreign conditions. The **means** typically used have been..."*

Use **demonstrative pronouns** to refer to a key word or expression already mentioned, e.g.: *"this report"*, *" **these** experiments"*.

Use a **synonym** for a preceding key word/expression/concept (which may be the entire preceding paragraph), e.g.: *"Isabel's uncontained fears, which prevent her from thinking about her inadequacies and needs, to a great extent shape the **action of the story**. The **narrative** is, at one level, an examination of the kinds of evasion and distortion Isabel attempts."*

Making transitions

You can make use of logical connectors or transitional words to make it easier for your reader to see the links from paragraph to paragraph, and from sentence to sentence.

It often makes your work read better if these are NOT used at the beginning of a sentence, e.g. *"It is clear, **however**, ..."*; *"The result is **thus** similar to ..."*.

Note: the words below with * can also be used within sentences. The unmarked words are more commonly found at the beginning of a sentence or clause.

Addition	Contrast	Reason	Comparison	Sequence	Consequence
In addition	However*	So that*	Similarly	First, Second, etc.	Therefore*
Furthermore	Yet*	In order to*	Likewise	Last, Finally	As a result*
Moreover*	On the other hand*	Since*	In the same way	In summary	Thus*
	Although*	As*	Equally	In conclusion	So*
	Whereas*	So*		Subsequently	Because of
	In contrast*	Because of*			For this reason
		For this reason			Consequently

NOTE: Don't overuse linking words.

Exercise 1

Click on the highlighted text to see the comments.
How effectively - or ineffectively - have transitional words been used in the following example?

Example 1 (Accounting)

Inaccuracy of Product Costing System

Industry trends and automation of some production departments at Rossford Plant have caused management to think about their existing product costing - whether or not it is still applicable to the product. (1) **However**, it was found that current product costing approach undercosted some products i.e. small lites, despite the fact that the cost of cutting and bending each unit to its necessary shape was not proportionate to the size. (2) **Consequently**, the additional cost of small units was assigned into large units to make mark-up profit.

(3) **Furthermore**, each unit of small lite consumed more resources than anticipated by the costing approach. This resulted in a higher plant cost than budgeted. The proportion of factory overheads allocated to the Rossford Plant differed ignificantly from other departments because of different production line systems in different plants.

(4) **In addition**, a single indirect cost pool was allocated to the fabrication (fan) facility rather than allocating the multiple indirect cost pool to drive the cost of the plant. The allocation bases for overhead costing were not the actual driver of the cost.

> (5) **Moreover**, the product mix assigned to the plant was incorrect because allocation of product costing was based on size instead of resources being used. (6) **Thus**, making smaller units should still be considered in the product mix even though it makes a loss.
>
> *Unlike some other languages, in English we do not normally use double connectives: e.g. "* ***Although*** *the price of the product has been reduced,* ***but*** *sales have not increased". In this example, either "Although" or "but" can be used, but not both.*

[1]**Comments**
[1]

The following changes allow the rationale of the Plant's approach and the logic of the argument to be disentangled:

(1) However
Omit OR replace with *"After reviewing the costing ..."*

(2) Consequently
Replace with *"As a result of this ..."*

(3) Furthermore
OK

(4) In addition
Replace with *"An additional problem was ..."*

(5) Moreover
Replace with *"Finally, ..."*

(6) Thus
Replace with *"Thus, it can be concluded that/it is recommended that ..."*

Bullets

Bullets emphasise key ideas and help the reader extract those ideas quickly. Bullets free the writer from having to indicate relationships, order, sequence, and all those other methods we use to expand our ideas in the development of an argument. We thus restrict ourselves when we use bullets.

Limit any sequence of bullet points to the essential few AND limit the number of times you use bullet points in a thesis. If you are constantly writing in point form, you are not expanding, explaining, making complex links, or indicating relationships as you can in ordinary prose.

If you are using bullets, make sure this is the best way to express what you have to say, and word each point succinctly.

Bullet points must be *conceptually parallel* and *grammatically parallel*. To be conceptually parallel, the bulleted items must be discrete, non-overlapping ideas at the same level of specificity.

Click on the highlighted text to see the comments.

Example:

> PhD candidates must:
>
> - complete and submit enrolment documentation
> - pay any associated fees and charges
> - complete and submit an annual progress report

What's wrong with the following bullet list?

> Disadvantages
>
> In order to provide services, each layer should have:
>
> - An interface defines the basic operation
> - A protocol is defined as an agreement between the communication parties.

[1]**Comments**
[1]

> Disadvantages
>
> In order to provide services, each layer should have:
>
> - an interface defining the basic operation
> - a protocol, defined as an agreement between the communication parties

OR

> Disadvantages
>
> In order to provide services, each layer should:
>
> - have an interface which defines the basic operation
> - have a protocol which is defined as an agreement between the communication parties

Handling the writing conventions

Getting a handle on the accepted conventions of academic writing in your discipline can be one of the most difficult things about completing your thesis. Your supervisors and examiners have been involved in researching and writing in your field for years, and over time have built up an extensive understanding of what the acceptable writing norms and conventions are in your discipline. One of the best ways to learn more about what the accepted conventions are in your area is to read extensively. Fortunately for you, writing a thesis involves a great deal of reading.

When you read, pay particular attention to how respected authors establish their presence in the text *<www.monash.edu.au/lls/llonline/writing/general/thesis-edit/3.1.xml>* and how they integrate quotations *<www.monash.edu.au/lls/llonline/writing/general/thesis-edit/3.2.xml>* . Also, note whether or not your discipline has any particular style standards *<www.monash.edu.au/lls/llonline/writing/general/thesis-edit/3.3.xml>* .

Your presence in the text

In a thesis, the relevance and importance of **you as the author** can change from section to section. The way your identity intrudes into the text depends to a large extent on accepted use in your particular discipline. Take your cues from the way this is done in published articles and seek the advice of your supervisor. *'I'* or *'we'* is commonly found in mathematical writing, but is usually advised against for industrial or civil engineering. *'I'* and *'my'* can commonly be intrinsic for psychoanalytic writing, but not for psychology.

In Methods sections of many theses (in Medicine, for example), it is acceptable to break the monotony of many passive voice sentences with some active voice. The difficulty with endless passive sentences is that the reader tends to lose sight of any agent and the writing becomes dominated by things. You may see passive voice dominating in published articles, but this is often for reasons of space. Do not be afraid to use active voice, especially in your discussion where it is sometimes important to indicate that it is you thinking certain things and having particular opinions.

If you are uncertain how to avoid both an over-personalised tone on the one hand, and too much passive voice on the other, you can use the following expressions to convey an impersonal tone (these examples are taken from physical chemistry):

- " **It is found that**, for a fixed amount of a pure material, the state is usually completely defined by any two of the three variables - pressure, volume and temperature."
- "In chemistry **it is generally more useful** to divide by the amount of substance *n*."
- "To define temperatures on this scale **it is necessary to select** two fixed points."
- "Thus **it is advantageous to introduce** a new temperature scale, the Kelvin scale. Eg If x is assumed to be..."
- " **It is further found** experimentally that the same value of parameter b is obtained using different gases."

There will also be occasions when you will need to use the passive, as for example in the Methods section, when the focus is on the process rather than the human agent performing the process. You may wish to refer to Strunk and White (1999:20) or Taylor (1989:48) on the uses of the passive and active forms.

Signalling importance/significance

Make it very clear to your reader where you feel the significance of your work resides. Do not be shy about this by playing down your achievements. Published scholars develop expertise, not only in showing off their work to best advantage, but also pointing out explicitly and precisely what is valuable about it.

Example: " *The value of this research project lies in its demonstration of the immense difficulties facing...* "

The limitations of your study

It is important to signal to your reader where the competence of your study ends. Theses are usually constrained by time, by difficulties with subjects or informants, by unavailability of evidence, by wisdom only gained in hindsight. Be candid about these where they affect results in a major way. Do not overplay them, however, as in the following sample:

" *With a view to this I have become aware of deficiencies in my methodology and I will discuss some of these below.* "

You do not want to **highlight** deficiencies to your examiner! Likewise, do not refer to extraneous hindrances (my supervisor got divorced, my hard disc caught fire, etc).

Integrating quotations

You will need to introduce the work of others to your reader, and you can do this in different ways. If you are not given specific standards to follow, follow those of a core journal in the field.

Example 1

Part paraphrase, part quotation
Kaplan and Ostler (1982), in a review of the literature, conclude that different languages have different preferences for certain kinds of discourse patterns. For instance, they argue that English expository prose has an essentially linear rhetorical pattern which consists of "a clearly defined topic, introduction, body which explicates all but nothing more that the stated topic, paragraphs which chain from one to the next, and a conclusion which tells the reader what has been discussed" (p. 14).

Example 2

> **Quotation**
>
> Kaplan more recently summarized the concept as follows:
> ....
> ....
>
> (Kaplan, 1987:10)

With *"as follows:..."*, no grammatical constraints apply to the ensuing quotation; whereas a lead-in to a quotation such as *"X (1987) can be criticized for comparing [...]"* must be followed by a noun/noun phrase.

Example 3

> **As part of your own text**
>
> a. (a) Where the **date** and the **author** are given prominence:
>   *"In 1987, Kaplan outlined his theory of cultural differences..."*
> b. b) Where the **information** is given prominence:
>   *"This result has since been replicated (Smith 1988; Jones 1990)."*
>   Note that more than one author is being cited.

If a work is cited more than once on the same page and the author is assumed to be known, the date of the text need not be repeated: just put the page number: e.g. *"(p.77)"*, or *"(Smith p.77)"* if there are any intervening authors.

In some cases you will need to modify the quote using square brackets [ ] to to make it follow grammatically by including a verb ending or by changing a pronoun, etc. Omitted information is indicated by [...].

Style standards

Following is a brief summary of key aspects of the American Psychological Association (APA) style guidelines. Refer to the Publication Manual of the APA for more information. Depending on the practice of your faculty/department, the MLA, CBE style manual, or other guide may be preferred.

Double quotation marks

1. Introduces a word or phrase used in a special or unusual way.
2. Reproduces material that is quoted verbatim. Note that if this material extends for more than 40 words, you should set it out as a block quotation indenting both left and right margin 5 spaces.

Abbreviations

Use abbreviations sparingly. Use them:

1. without explanation if they are used as word entries in the dictionary (e.g. *IQ*);
2. even if they are not in the dictionary but are frequently used in a relevant journal;
3. for standard Latin terms, statistics, and reference terms;
4. for metric units.

Any other abbreviations (or acronyms) you decide to use should be explained in a **List of Abbreviations and Acronyms.**

Numbers

1. Percentiles should be expressed in figures.
2. Use arabic rather than roman numerals. Use roman where convention calls for their use.
3. Use decimal notation instead of mixed fractions wherever possible.

Numbers expressed in words: (i) between zero and nine inclusive; (ii) to begin a sentence.

Numbers expressed in figures: (i) greater than or equal to 10; (ii) ages; (iii) times and dates; (iv) percentages; (v) ratios; (vi) fractions or decimals; (vii) scores and points on scales; (viii) sample or population sizes.

Seriation

Within a paragraph: indicate by lower case letters written in parentheses: *The five categories of words were (a) fruits, (b) animals, (c) nuts, (d) countries, and (e) oceans.*

Of paragraphs: indicate by Arabic numerals followed by full-stops: *"The experimenter used a three-step procedure:*

1. *The experimenter requested ...*
2. *A man was requested ...*
3. *The man was observed to be ..."*

Figures and tables

Label tables above the table and figures below the figure.

Refer to the table or figure in the text.

Tables and figures should be self-explanatory.

A table or figure from an outside source should be referenced like any other outside information.

Keep titles brief: you can include explanatory notes if needed as footnotes under the table or figure.

Appendices

Data presented in an appendix should be there: a) because if it were in the body of the thesis it would interrupt the flow, and b) because it contains information which is essential to the thesis.

Appendices may contain:

- documents,
- raw data,
- detailed experimental results,
- lengthy calculations.

Note: figures and tables in the appendices should still be labelled.

References

The References section of a paper contains an alphabetical list of the generally available references cited in the text of the paper. References to more than one work of the same author are arranged by order of date of publication, with earlier works listed first.

Here are some examples:

American Association for Purity in Writing. (1958). *Collected homilies.* Nantucket: AAP Press.

Clearly, I. C. (1989a). *The professional proofreader.* Los Angeles: Precision Press.

Clearly, I. C. (1989b). *The proofreader's tools.* Los Angeles: Precision Press.

Frearly, I. P. (1998). The importance of body hydration for cohesion in prose. *Cohesion and the body archive.* <http//www.mt.bladder.edu.niagara/files> (Retrieved 13 February 1999).

Gates, W. (1999). *Does the computer assist the writing process?* New York: Microsoft Digest.

Joyce, J., and Woolf, V. (1919). *The writer's handbook.* Dublin: Simplicity Publications.

Lix, P. R. O. (1975). Conciseness in academic writing (Vol I3). In Done, O. V. R. (ed) *The academic dissertation.* Honolulu: Redundancy Press.

Macdonald, R. J. (1998). *Nutrition and its effects on student concentration.* San Francisco: Extreme Press.

Ostrophe, A. P. (1998). *Perfecting punctuation.* NJ: Colon Press.

Passion, A. T. (1988). Rhetorical devices in the results section of the thesis. *English for emotive purposes*, 15, 63-68.

Portentous, I. (1995). *Encyclopaedia of the English language* (2nd ed.). London: Worldwide.

Toocheet, I. (ed.) (1998). *Avoiding plagiarism.* Sydney: Demidenko Press.

Buy or borrow the APA guide, Commonwealth Style Manual, or other approved style manual for conventions governing unpublished and electronic or other non-written material.

Revising your work

One of the least exciting - but more important - parts of writing your thesis is the revision process. After spending months writing your thesis, you will eventually grow to be very tired of looking at it. To revise well, though, you need to be able to look at your thesis with fresh eyes. Only be taking a break and getting some distance between you and your thesis will you be able to edit *<www.monash.edu.au/lls/llonline/writing/thesis-edit/4.2.xml>* and proofread *<www.monash.edu.au/lls/llonline/writing/general/thesis-edit/4.3.xml>* your work effectively.

Steps in the revision process

The objective here is to abandon your emotional commitment and switch to a reader's perspective.

1. Set your work aside for a day or more.
2. Think about the main points that you want to stay in the reader's mind.
3. Is all the material in the right sections?
4. Check for accuracy of data.
5. Read through, chapter by chapter.
6. Are any sections too long/brief?
7. Read each sentence carefully, reading aloud any parts you had trouble with or are unhappy about.
8. Check for clarity.
9. Spell-check your work, remembering that this will not pick up everything.
10. Check for remaining errors.
11. Ask a fellow student or other native speaker to read your work.

Editing

Paragraph doesn't read well?

Try taking the key words of each sentence and organise them into a tree diagram. Is the paragraph logically ordered?

Sentence doesn't read well?

Is the problem that it doesn't link well to the surrounding sentences? Check sentence linking by reading out loud. Try taking the key words and making sure that you are saying what you want to say about them.

Sounds too abstract?

See if you are overusing abstract nouns and underusing their verbal equivalents (e.g. *growth/ grow*, *production/ produce*, *identification/ identify*); this can have the effect of removing the dynamism from your text:

"Temperatures showed an increase during the day." compared to
"Temperatures increased during the day."

"Weights of the specimens were taken." compared to
"The specimens were weighed."

Try to choose the most appropriate and interesting verbs (verbs such as *be*, *have*, *get* are fairly content-free, i.e. they don't do enough work. Use *remains*, *develops*, *arises*).

'Filler' verbs may not be needed at all: *"we studied*" is better than *"we conducted a study*"; *"pressure improved*" is better than *"an improvement in pressure occurred*".

Stop and ask yourself 'What do I really want to say?'

Chapters/sections too long?

Check your paragraphs. Your reader should be able to glance at the first sentence of each paragraph in a section or chapter and this should constitute the framework of your logical argument. Have you elaborated these points more than is necessary?

Remove unnecessary words, clauses or sentences. Check if you are including more examples or quotations than are necessary to make your point. Replace lengthy descriptions with tables or figures.

Chapters/sections too short?

Say to yourself, 'the point I want to get across here is...'; then, 'the specifics of this point are...'. At this point, you can try asking who, what, when, where, why, and how: you are guaranteed to come up with more useful things to say. (This can also help with writer's block).

Check that you have introduced and concluded each chapter sufficiently. Make sure you have explained your methodology adequately. See if there are more references to include. Does all the Appendix material belong there?

Proofreading

Technicalities

- Format of headings and subheadings checked?
- Numbers, symbols, and abbreviations correct and consistent?
- Italicising/bolding consistent?
- Capitalisation correct and consistent?
- Punctuation consistent? (e.g. double/single inverted commas)
- Citations cross-checked with Reference List?

Have you spelt the same word in the same (correct) way throughout?

For example *focu* <u>ssed</u>, *operational* <u>ise</u>, *hon* <u>our</u>
vs. *focu* <u>sed</u>, *operational* <u>ize</u>, *hon* <u>or</u>

Use the spellcheck on your word processor, but be warned: it will not find everything, and it will usually recommend you American spelling.

Improve your spelling *<www.monash.edu.au/lls/llonline//lls/learning/Expand/2.5.3.html>*

Do subjects and their verbs agree in number?

This is important particularly when a long or complex subject precedes the main verb. (Pick the error:)
*The proteolytic **activity** of extracts of X from these organs ~~were~~ expected to reach a high level.*

Are participles attached to their subjects?

*Studying these examples, the conclusions were clear.*br /> The solution is to substitute an active or passive verb: *When we studied these examples...* OR *When these examples were studied...*

Do pronouns refer clearly to an antecedent?

In older strata the effect is different and may be found throughout the layers, but not in X. This is not a boundary, however, between two types of layer.
Is it clear what " *This*" refers to?

Have you included any meaningless phrases?

In this connection, we may say that ...
Studies some years ago by Phipps and Green (1981) is not as clear as>br /> ***the investigation*** by *Phipps and Green (1989) which showed ...*

Check for sentence fragments

For example sentences lacking a complete verb: (e.g. *For example, the increase in the cost of manufacturing.*

If your first language is not English, you may need to pay special attention to the following

Click on the highlighted **text to see the comments.**

Articles (*a*/ *an*/ *the*/zero article)

Remember that, for titles, the article is often omitted for the sake of brevity.

Delete or add articles where you think appropriate in the following titles and headings and write the corrected titles in the text fields below:

The Temperature Dependence of the Heats of Reaction

[_____]

The Solubility of Carbon Disulfide with the Methyl Alcohol

[_____]

Angular Distribution of the Orbitals

[_____]

The Effect of Inner Shells on Single Outer Electron

[_____]

[1]**Check your answer**

Countable/uncountable nouns

Normally, uncountable nouns cannot be pluralised in English:

information, *evidence*, *advice*, *knowledge*, *research*, *staff*, *work* (but not literary works), *software* and *hardware*. Note that *data* is plural and requires a plural verb.

Tense selection

Be consistent with tenses: Do not change tense if there is no logical reason to do so.

Parallel structures

What is the problem with this example?

The following actions were taken: advertising the product, improve quality control, and the retail price down.

Better: *The following actions were taken: the product was advertised, quality control was improved, and the retail price was reduced.*

Use of logical connectors

Such as *however*, *although*, *thus*, *as a result of*, *on the other hand*, *by comparison*.

Use of correct word forms

Use nouns, adjectives, verbs, and adverbs appropriately.

Be sure you are clear about the following:

- noun = the person, place, or thing
- adjective = word describing the thing
- verb = the process or action
- adverb = word describing the process or action

Complete the following table with the missing word forms.

Noun	Adjective	Verb	Adverb
graph	graphic/graphical	graph	graphically
difference	different	differ	differently
in/decrease	in-/decreased	in-/decrease	in-/decreasingly
explanation	explanatory	explain	--
defence	defended	defend	--
homogeneity	homogeneous	--	homogeneously
affect	affected	affect	--
effect	effected	effect	--
deferall/deference	deferred	defer	--

Subject / verb agreement

Make sure that plural nouns are always matched with plural verb forms, and vice versa.

Rewrite the following paragraph and correct any singular/plural errors and any examples of bad subject-verb agreement

Nitrifying bacteria are sensitive organism and extremely sensitive to a wide variety of inhibitor. A variety of organic and inorganic agent can inhibit the growth and action of these organisms. High concentration of ammonia and nitrous acid can be inhibitory. The effect of PH is also significant. A narrow optimal range between PH 7.5 to 8.6 exist, but system acclimated to lower PH condition have successfully nitrified. Temperature also exerts a tremendous influence on the growth of nitrifying bacteria. However, quantification of this effect has been difficult. Dissolved oxygen concentration above 1 mg/L are essential for nitrification to occur. If DO levels drop below this value, oxygen become the limiting nutrient and nitrification slows or cease.

Your answer:

Enter here...

[2]Check your answer

[1]

Articles in titles and headings

The corrected titles and headings are as follows:

1. Temperature Dependence of Heats of Reaction
2. Solubility of Carbon Disulfide with Methyl Alcohol
3. The Angular Distribution of Orbitals
4. Effect of Inner Shells on a Single Outer Electron

[2]

Subject-verb agreement

Nitrifying bacteria are sensitive **organisms** and extremely sensitive to a wide variety of **inhibitors** . A variety of organic and inorganic **agents** can inhibit the growth and action of these organisms. High concentration of ammonia and nitrous acid can be inhibitory. The effect of PH is also significant. A narrow optimal range between PH 7.5 to 8.6 **exists**, but **systems** acclimated to lower PH condition have successfully nitrified. Temperature also exerts a tremendous influence on the growth of nitrifying bacteria. However, quantification of this effect has been difficult. Dissolved oxygen concentration above 1 mg/L are

essential for nitrification to occur. If DO levels drop below this value, oxygen **becomes** the limiting nutrient and nitrification slows or **ceases.**

Further reading

- Barrass, R. (1978) *Scientists Must Write*. London: Chapman and Hall.
  Much of chapters 4-10 is relevant to all writers of theses, not just scientists.
- Cryer, P. (1996) *The Research Student's Guide to Success*. Buckingham: Open University Press.
  Useful for other aspects of thesis-writing as well.
- Fox, L. (1992) *Focus on Editing.* New York: Longman.
  A workbook designed for nonnative speakers of English.
- Lindsay, D. (1995) *A Guide to Scientific Writing.* 2nd Ed. Melbourne: Longman.
  Chapter 3. Good summary of what to aim for - and what to avoid - at the level of the sentence.
- O'Connor, M. (1991) *Writing Successfully in Science.* London: Chapman and Hall.
  Written for science students preparing for publication, but again relevant to all writers of theses.
- Strunk Jnr, W. and White, E.B. (1999) *The Elements of Style.* 4th Ed. Boston: Allyn and Bacon.
  Perhaps the best-known guide.
- *Style Manual* (1994) 5th Ed. Canberra: Australian Government Publishing Service.
  Standard Australian reference for style questions.
- Swales, J. and Feak, C. (1994) *Academic Writing for Graduate Students.* Ann Arbor: University of Michigan Press.
  Information and exercises on typical graduate writing tasks. Especially useful for students who are non-native speakers of English.
- Taylor, G. (1989) *The Student's Writing Guide for the Arts and Social Sciences.* Melbourne: Cambridge University Press.
  This is designed for students writing essays, but the detail and depth make much of it relevant to students undertaking theses.