

Writing a Literature Review



**Student Learning Development
University of Otago**

This booklet is an introduction to some of the skills and strategies that will help you successfully complete your studies at Otago.

Based on an original booklet developed by Dr Carol Bond and Carole Acheson for the Student Learning Development at the University of Otago.

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Introduction

Postgraduate students in many disciplines, especially Social Sciences and Sciences, need to be able to write a literature review. Whether they are writing a short review as part of an Honours assignment, or a full-length chapter in a PhD thesis, students consistently find it a struggle to turn the mass of diverse material found in a literature search into a well-organised critical discussion.

The literature on writing literature reviews is generally useful in three areas: describing the aims of the review; suggesting how the literature might be evaluated; and identifying common faults in reviews.

When it comes to explaining how to go about actually planning and writing the review, though, the literature tends to offer little guidance beyond vague advice, for example, that there should be “some kind of structure to the chapter” (Oliver, 2004, p.109). One guide depressingly takes it for granted that writing a review will be a messy, long-drawn-out and repetitive process: “Start the first draft of your review early in your reading. Many more drafts will be required before you have a coherent and ‘critical’ account” (Bell, 2005. p.111).

In response to all the students who wonder how to plan their literature review, or who are bogged down in multiple drafts with no end in sight, this study guide offers a practical, step-by-step approach to working efficiently and producing a professional result. The steps outlined have been trialed on willing University of Otago thesis students, and adapted according to their suggestions.

If you would like to offer feedback on this guide, especially good ideas to make writing a literature review less effort, please feel free to contact the Student Learning Development:

hcdc.studentlearning@otago.ac.nz

03 479-8801

hcdc.otago.ac.nz

Chapter 1: Functions of the Literature Review

What is a literature review?

A literature review has three key components:

1. A search of the literature available on a given subject area.
2. An evaluation of the literature, including its scope.
3. A well-structured and argued written account of the literature that provides an overview and critique.

Types of literature review

1. Coursework

A literature review could be:

- Part of an extended essay on a specific topic – to show a grasp of the subject area and provide a context for discussion.
- Part of an assignment intended to teach research skills e.g. as part of a hypothetical research proposal.
- A stand-alone essay, sometimes using material previously gathered for an annotated bibliography, to present a structured argument critiquing the literature on a particular subject.

2. Theses

The nature of the literature review depends on the academic discipline. If in doubt, please check with your supervisors before starting the review. It is also useful to look at some theses in your area (available in your department and online at <https://ourarchive.otago.ac.nz/>) to get an overview of what is required.

Typical Arts approach

Includes a substantial survey of the literature in the thesis proposal, to demonstrate the need for the research.

Generally reviews literature throughout the thesis as it becomes relevant to the topic under discussion. Students will be familiar with this method from their undergraduate degrees.

Typical Social Science and Science approaches

1. A complete chapter

A common thesis structure is to have the following chapters: Introduction, Literature Review, Method, Results, Discussion and Conclusion.

The Discussion chapter refers frequently to the Literature Review to consider the relationship between the literature and the research findings.

2. *A series of separate reviews*

Each chapter begins with a literature review relating to the focus of the chapter, so that the thesis is more like a series of essays developing the thesis topic.

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3. *Systematic reviews*

A systematic review, increasingly common in Health Sciences, is the subject of the whole thesis. The purpose is to “appraise, summarise, and communicate the results and implications of otherwise unmanageable quantities of research” (Green, 2005, p. 270).

Students undertaking a systematic review will probably be required to use a specific methodology designed for health professionals, such as that outlined by the Joanna Briggs Institute for Evidence Based Nursing and Midwifery, or The Cochrane Collaboration. These methodologies are not discussed in this study guide. The review might include a meta-analysis, a statistical synthesis of findings. Statistical meta-analyses are not discussed in this study guide.

The fundamental skills required for a systematic review, described by Green above as being to “appraise, summarise, and communicate,” are discussed in the following chapters.

The aims of a literature review for thesis writers, regardless of the type of review, are outlined in Table 1 on the next page.

Table 1: Aims of the literature review for thesis writers

To show a thorough professional grasp of the area	<ul style="list-style-type: none">• Identifies the relevant literature• Identifies key ideas, schools of thought, debates and problems• Shows understanding of main theories in area, and how these are applied• Evaluates previous research• Helps avoid unintentional replication of another study
To justify your research	<ul style="list-style-type: none">• Identifies gaps in current knowledge• Establishes the need for your research• Helps define focus and boundaries of your research
To justify your approach	<ul style="list-style-type: none">• Discusses previous approaches to topic, placing your study in context• Explains your choice of theoretical framework and methodology
To synthesise literature in the appropriate academic style	<ul style="list-style-type: none">• Provides a well-structured account that follows a logical progression• Provides a well-argued account that supports your research question• Provides a well-written account, meticulously referenced.

Producing a literature review is a complex task requiring a range of skills, from collecting material to writing a professional discussion of what you have found (see Table 1).

Subsequent chapters of this guide focus on methods of simplifying your search and the literature you find, to simplify and speeding up the process of planning and writing your review.

Although these chapters necessarily follow a logical order – the search, record-keeping, making notes, planning the structure etc. - **In practice, working efficiently means that that some or all of these processes are on-going, as this study guide explains.**

Chapter 2: Finding Literature

Information regarding searching strategies, databases and referencing guides can be found on the University Library website:

<http://www.otago.ac.nz/library>

You may also wish to explore the information directly relating to your particular subject area by accessing the relevant subject guide:

<http://otago.libguides.com/>

You could also ask your Subject Librarian for guidance. Go to the subject guides on the library website (<http://otago.libguides.com>) and then click on the link to your subject; you will see contact details for your Subject Librarian here: <http://otago.libguides.com/liaison>

Chapter 3: Keeping a Record and Evaluating the Literature

Previewing sources

Skim through the material you find to see whether the source is relevant before you read it in detail, or print it out. Table 2 shows the key areas to check quickly.

Recording full bibliographical details

For those writing an extended review, keeping a well-organised and full bibliographical record is essential so that you can keep track of sources found, whether or not you eventually include them. Much time can be wasted following up the same promising source twice because inadequate or inconsistent details were kept the first time. Problems often arise, for example, when deciding how to reference sources like websites. Your subject librarian or subject guide accessed from the library website can help with this.

When you decide on the sources to be included in your literature review, you will of course need their full bibliographical details for your bibliography or reference list, as well as citations in your text.

It is now common for those writing a thesis to learn to use a bibliographic software system like Endnote or Zotero to manage their references. Not only can references often be copied electronically from databases or ‘scraped’ from the Web, but lists of sources and in-text citations can be generated in the required referencing style. Training in Endnote is readily available from university librarians.

Table 2. A guide to previewing sources

Abstract	A summary available on electronic databases, and at the head of articles in most disciplines. A good starting point, but sometimes too compressed to be really helpful.
Preface and/or Introduction	Should explain the author’s topic and argument. Gives context.
Headings and Subheadings	Can be a useful guide to the structure and content.
Topic/argument sentences	Read through the first sentence of each paragraph for a quick summary of the content.
Discussion	This section in many science articles, examines the author’s findings in the context of previous research.
Conclusion	Usually sums up the writer’s argument and comments on its significance.

Keeping up with the reading

It is never too soon to start reading. Don't wait, for example, until you have final ethical approval for your research.

Don't limit your reading to fixed study times, when it's easy to lose concentration after an hour or two; it's useful to keep some material on hand to read as a break from looking at a computer screen, or to make the most of gaps during the day.

Managing hard copy

A cautionary note

It might seem efficient to print out relevant electronic articles as you find them, but you will end up with a great deal of paper, often for the sake of a brief reference in your review (see Chapter 4 on making notes).

Unread printed material also has a way of building up alarmingly, whereas the process of previewing and evaluation should be on-going, so that you come to each new source with increased knowledge of the field.

- Restrict collecting full articles for important items that you think you will want to refer to frequently as you research and/or write.
- For minor references make notes or print out one or two key pages (remembering to add full bibliographic details).
- If you obtain items on interloan it is helpful to keep a copy of key pages. The library will advise about restrictions on the amount you are legally permitted to copy.

Organising hard copy

The more material you collect, the more important it is to organise it efficiently. The simplest method is to print the author and year on the top right and store alphabetically in a ring binder.

Building your own database

It is extremely useful to build your own database from the start of your search so that you keep a running record of key aspects of the material you find (see Table 3). (See also Evaluation and Note-taking).

An adequate database can be constructed using the Table function in Word, as in Table 3, or in Excel. Bibliographic software systems offer the facility to organise a large database very quickly in conjunction with the bibliography/reference list.

Headings

These can obviously be decided and arranged to suit your thesis e.g. it might be useful to have a separate date of publication column to arrange entries in chronological order if you wanted to obtain a historical overview of how research has developed in your area.

The headings used in Table 3, apart from the obvious Author and Title, serve the following purpose:

1. Subject

Titles can be misleading, and it is useful to have a brief record of exactly what the item focuses on. If the material is irrelevant, make a note of why, but there is no need for further evaluation.

2. Argument

Defining the item's argument/conclusion is an important part of your evaluation.

3. Evaluation

Assessing relevance to your topic.

Assessing the strengths/weaknesses and overall significance of the item.

Evaluation is discussed more fully in Chapter 4.

Table 3. Example of a basic database

Topic: Academic skills training for adults returning to university for postgraduate professional development (PD).

Author	Title	Subject	Argument	Evaluation 1-4
Bethune & Jackling, 1997	Critical thinking skills: The role of prior experience	Nursing students before and after PG study – problems for students without prior university experience	Need to consider course materials/student learning	1 Focus on teaching critical thinking 20/10/09
Boud & Walker, 1998	Promoting reflection in professional courses	Looks at effective use of reflective activities	Social & cultural context has powerful influence over reflection	4 Questions use of reflection – not interested in critical reflection as skill 20/10/09
Candy, 2000	Reaffirming a proud tradition: Universities & lifelong learning	Identifies 4 areas of lifelong learning after graduation – includes continuing professional education	Need to use learning support services embedded in courses	3 V. broad statements – no discussion of skills required, how to embed 9/11/09
Cervero, 2000	Trends and issues in continuing professional education	Broad view of expansion of continuing professional education	Area expanding (profit + professional expectations), universities v. professional providers	3 V. general context 19/10/09 1 Provides background for much subsequent research 15/11/09
Curry, 1993	Educating professionals. Responding to new expectations for competence and accountability	Increasing pressure for PD, new qualifications etc	Same as Cervero (2000)	3 Very broad Useful quote on pressure p. 78 21/10/09
Daley, 2000	Learning in professional practice	Connections between practical experience and continuing education	Important for teachers to enable this	2 Doesn't consider academic skills, but use of prior experience – useful focus 19/10/09
Kell, 2006	An analysis of entry-level postgraduate students' readiness for student-centred, Masters Level learning	Focus on physio students - degree v. diploma (latter weaker)	Need for learning support	1 Highly relevant though focus limited - no discussion of actual support 5/11/09

Chapter 4: Evaluating the Literature and Making Notes

Working efficiently

It is very easy to waste time by reading all sources with equal care, and making detailed notes that will never be used in the review.

Always consider:

- How relevant and significant is the source?
- How much space (if any) will it warrant in your review?

These criteria determine how detailed or extensive should your notes be.

Evaluating sources

1. Relevance

A simple scale, as in Table 4, is a useful tool for assessing the relevance of the sources you find.

See Table 3 for examples of comments accompanying evaluation.

Table 4. Evaluation for relevance

1	Important e.g. Directly relevant to the topic. Key work frequently cited. Established basis for future research. Will need adequate notes (in database or separately for discussion in review).
2	Relevant e.g. Needs to be included, but probably brief reference. Useful for background material. Similar to other studies – can include in grouped references. Might be adequate to highlight useful background, make brief notes in database.
3	Borderline e.g. Somewhat peripheral – might be worth including. Potential relevance, depending on research findings. Unlikely to need more information than database notes.
4	Irrelevant e.g. Promising title or abstract, but content too distant from your topic.

Dating the assessment is useful, especially for thesis writers, because you might change your mind about relevance later, for example:

- You realise that an aspect of the topic you had not considered before should now be included.
- You discover as you read more widely that a source was a significant influence on other essential sources, and this must be discussed e.g. Cervero (2000) in Table 3.
- The focus of your argument changes in the light of your research findings, so that what originally seemed less relevant material becomes more important.

Dated notes leave a clear record of when and why your thinking changed. When research takes several years, as it does for a PhD, it is very easy to forget why you made certain decisions. Revisiting an efficient record can save time on further literature searches with a slightly different focus.

2. Strengths and weaknesses

Remember you are writing a literature review: you are expected to assess the quality of the material you include and comment where appropriate.

Undergraduate and Honours students are often set assignments requiring them to critique some literature, perhaps in considerable detail, and guidance is generally given about how to do that.

- The approach to a critique varies between disciplines, and it is important for you to be clear about what is required in your discipline before you start.
- A typical history critique, for example, would consider an author's interpretation of historical evidence, and how well the conclusions are supported.

A typical social science or science critique would consider whether the chosen method or theoretical basis is appropriate, whether the limitations of the study are discussed, and whether the conclusions are valid.

Research students sometimes find it difficult to evaluate the literature on a larger scale, where they need to consider not only individual items but the way the literature has developed e.g. which aspects of the subject are well-established, which are open to question and why, and which have not been considered adequately, if at all.

It is helpful to consider:

- Other people's literature reviews in the literature you read. What do they think about sources you have read? Do you agree?
- How different approaches, groupings, themes etc. are building up on your

database, and where there seem to be gaps. Using the database to identify these aspects of your review is discussed in Chapter Five.

As you read more widely, and develop expertise in the area you are reviewing, it becomes easier to draw conclusions about the literature in this area as a whole.

Making notes and the conventions of literature reviews

If you look at the literature review in an article, book or thesis you will see that:

- very few sources are described using more than a paragraph
- often a source is described and discussed in only one or two sentences
- it is common for several sources to be grouped together to support a point without there being any additional information about each one.

These conventions allow the writer to cover a good deal of ground very concisely. Making extensive notes, even on sources you think are very important, may therefore be inefficient. Consider the management of sources in the following excerpts from an article on ecotourism called ‘Exploring the predisposition of travellers to qualify as ecotourists’:

1. Example: Introductory survey

Studies of ecotourists typically have identified them based on the destinations they go to (e.g. National Parks), the behaviours in which they engage (e.g. wildlife viewing), the tours that they take (e.g. safaris), or in a few cases, self-identification by the travellers themselves (Ballantine & Eagles, 1994; Fennell, 1999; Saleh & Karwacki, 1996; Wight, 1996, 2001). On very few occasions and only recently, studies have begun to identify ecotourists based on their psycho-social personal makeup (Lemelin & Smale, 2007) of more stable and deeply ingrained character traits responsible for directing visitor motivations and behaviours (Ajzen, 1991; Fishbein & Ajzen, 1975; Lewis & Haviland-Jones, 2000)...However, the way in which ecotourists have been typically identified in the bulk of the literature is limited by relying too heavily on superficial markers of behaviour, destination, and/or circumstance (Nowaczek & Smale, 2010, pp. 45- 46).

- The opening sentences of this article provide background and context by giving a short survey of how ecotourists are ‘typically’ defined in the literature, with the only detail given being brief examples, like their destinations (‘e.g. National Parks’).
- In just over 8 lines, the authors have cited 9 references. As everyone who has conducted a literature search knows, these citations are likely to be a modest proportion of the amount of literature found, checked for relevance, read and evaluated.

- References supporting the same point have been grouped together instead of being discussed individually.
- The authors of this article needed to give only a very small amount of key information from each source to provide a basis for the final sentence, which argues that previous definitions are inadequate.
- Considering the space finally given to each source, if the authors had made pages of notes on every one, they would have wasted a good deal of time. What they needed for this paragraph was an overview of definitions of ecotourists to provide the context for their own research and discussion.

2. *Example: Narrowing focus*

In many early typologies, ecotourists were classified on the basis of setting, activity-based experiences, and group dynamics (Fennell, 1999). Laarman and Durst's (1987) study divided ecotourists along a continuum that measured the level of interest in natural history from dedicated to casual, and the level of physical rigour associated with the experience from difficult to easy. In another example, Kusler (1991) used their activities, settings, and group dynamics to typify ecotourists as *do-it-yourself ecotourists*, *ecotourists on tours*, *school groups*, and *scientific groups*. (Nowaczek & Smale, 2010, p. 47)

In Example 2, the authors go into more detail about typologies of ecotourists.

- Some detail is given about each of these sources to illustrate the nature of early typologies, but even so, the three examples above are discussed in only one sentence each.

3. *Example: Justifying the need for future research*

Juric, Cornwell, and Mather (2002) developed an Ecotourism Interest Scale with a focus on visitors' activity interests. Although exploratory in nature, the scale is used to identify tourists' desire for eco-friendly activities (i.e. a measure of ecotourism interest) and to predict their participation in selected tourist activities. By segmenting tourists based on their level of interest, different travel products could be created based on the level of interest they reported; as such, Juric, Cornwell, and Mather's scale is product-oriented and potentially reflects a view of, and orientation towards, ecotourism as a form of mass tourism (Weaver, 2001b) or simply a business opportunity (McKercher, 2001). (Nowaczek & Smale, 2010, p. 48).

In Example 3, the authors devote a paragraph to discussing one source.

- It is clearly important for them to critique Juric, Cornwell and Mather's (2002) ecotourist scale before going on to describe their own scale, which

- they argue resolves the issues they have raised in their literature review.
- There is still a very limited need for note-taking.

Before making notes, stop and think:

How much space (if any) will this source warrant in my review?

Alternatives to traditional note-taking

As you will often need only very brief notes, consider these alternatives:

- Use the database alone for brief comments about subject/argument/relevance (see Table 3).
- Note in the database when you have additional information stored, to refer to when you write about that source.
- With hard copy, highlight material you want to use and note points in a few words on a sticky marker, used to mark the page. This is a quick way of retrieving larger chunks of information.

Using a skeleton plan

Drawing up a skeleton plan of your review at an early stage can reduce note-making and sort material efficiently (see Table 5, next page).

Use the headings in the plan to:

- Put notes directly into the appropriate section, so that your material is sorted thematically as you go.

Use different coloured highlighting as a quick sorting tool e.g.,

- Background/context material in the database - green
- Green page stickers can mark relevant sections in hard copy, so you can quickly retrieve all the material for that area.

Chapter 5: Structuring an Outline of the Review as you Research

Many students do not think about planning and organising their literature review until they have finished their research. This approach creates the horrific task of eventually confronting a large amount of very mixed material, and trying to turn it into a concise and well-structured piece of writing.

A far more efficient and less nerve-wracking alternative is to plan the structure of your review as far as you can right at the beginning of your research, and extend the plan as you work. This process is described below, with an example in Table 5.

The skeleton plan

The ideas you have and the key words defined before starting a literature search provide a useful skeleton structure for organising the material you find.

- Before starting the search, list likely headings and subheadings in a logical order. This will be your master list.
- Copy the list into another document that will be a working draft of the review.

Expanding the plan

- Add notes and references under appropriate headings so that material is sorted as you research.
- Update the master list regularly as you change or sub-divide headings. Maintaining this overview of the structure keeps the structure under control and is also a good way to see the emergence of themes.
- Because material is being placed under the appropriate headings of the working draft, it is much easier to grasp and synthesise *what* the literature says about any specific area, and the topic as a whole.
- It is also much easier to critique the literature in each section, that is, consider *how well* the literature deals with each specific area, and with the topic as a whole.

Final analysis

Typical questions to ask about each section *and* of the literature as a whole are:

- Is there a clear line of development, or does the research branch off in different directions?
- Is there conflicting evidence? What do you think about that?
- Are there gaps in the literature? Why?
- If you are writing a thesis, how does your research contribute to the area?

Your conclusions will form the basis of the introduction to your review, and the introduction to each section.

Table 5. Example of developing a literature review plan for a thesis

Topic: Post-discharge coronary artery bypass graft (CABG) surgery: Self-reported outcomes (Caldwell, 2011).

Stage 1: Listing and sorting basics	→	Skeleton plan e.g.
<ul style="list-style-type: none"> • List key words for literature search. • List areas you think will need to be included. • Sort headings into logical order. 		CABG surgery <ol style="list-style-type: none"> 1. Definition. 2. Why common? 3. Early discharge trends. 4. Problems with recovery at home. Development of hospital telephone follow-up. <ol style="list-style-type: none"> 1. Use of phone call after discharge for patient support. 2. Patient feed-back: physical recovery (pain, wound, healing etc.); Psychological recovery.
Stage 2: Sorting material	→	Expanding plan e.g.
<ul style="list-style-type: none"> • Develop more headings and subheadings as required. • Add in brief notes and references under appropriate headings. • Note issues/themes emerging. 		Telephone follow-up. <ul style="list-style-type: none"> • Timing – how long after discharge patients phones (NB varied timing affects comparison studies). • Frequency of calls – patient preference, practicality. • Problems contacting patients • Recording patient feedback.
Stage 3: Analysis	→	Writing plan
<ul style="list-style-type: none"> • Develop overview, argument & discussion for each section and then for whole review. 		List in best order: <ul style="list-style-type: none"> • Each heading & overview/argument/discussion. • Points to be made under headings & supporting references grouped as appropriate.

The writing plan

It is well worth taking some time to refine the final writing plan, because it is much easier to do this than spend many hours cutting and pasting to change the order, only to find that some rewriting is necessary to avoid awkward transitions.

Some general planning principles:

- Move from the broad (e.g. background material, general surveys) to the particular (e.g. sources discussed in detail, case studies). This progression is demonstrated in Examples 1-3 in Chapter 4.
- Move from earlier to later material so that there is a clear sense of development in any specific area.
- There is sometimes conflict between these two principles: decide what will be clearest for the reader.

Introduction:

- Usually only one or two paragraphs, unless (depending on the size and nature of the literature review) the introduction also includes substantial background/context material.
- In an extended literature review there is usually some explanation of the focus and boundaries of the literature search.
- Offers a concise synthesis, or overview, of the literature, summing up what you have found and commenting on the conclusions reached (argument/discussion). In the introduction quoted in Example 4, overview comments have been put in bold.

4. Example: Introductory paragraph

Much of the current literature agrees that plagiarism is an increasing issue in higher education (Brimble & Stevenson-Clarke, 2005; Dawson & Overfield, 2006; Pittam et al., 2009; Youmans, 2011), **and this is commonly attributed to** the increasingly diverse student population as a consequence of the massification of higher education (Dawson & Overfield, 2006). **Because** much of the data collected on the prevalence of plagiarism is student self-reported, **there is no clear agreement** as to how frequently plagiarism actually occurs.

Despite this... undergraduate students are reportedly more likely to plagiarise than postgraduate students (Franklyn-Stokes & Newstead, 1995; Johnson & Clerehan, 2005; Perry, 2010; Power, 2009)... (Adam, 2011, p. 2).

Body:

- Sections and sub-sections are arranged logically.
- Each new section has a brief critical overview of the literature.
- Sources are cited to support a point, not merely listed or described without comment. Much of a literature review is factual, but it should be framed by discussion.
- Avoid repetition and verbosity by grouping sources that have similar findings.

Conclusion or summary:

- Concluding paragraph reiterates overall assessment of the literature.
- In a thesis, should discuss the gap or shortcomings in research that the thesis is intended to satisfy.

Chapter 6: Writing the Literature Review

With the detailed planning described in Chapter Five, drafting the literature review should be quite straightforward.

Accordingly, this chapter focuses on some important aspects of writing a successful review.

Starting a paragraph with an argument sentence

This technique

- Makes it clear to the reader what *conclusion* you have reached about the material in the paragraph
- Reinforces the fact that you are presenting a *review* of the literature, not merely a factual report

The argument sentence is then supported by the discussion of sources that follows.

Consider the series of sentences in Example 5, from an article about suicide:

- Each sentence quoted introduces a paragraph of literature review.
- Each sentence sums up the literature about a specific issue affecting suicide, indicating where the evidence is strong (bolded words in sentences 1-3) or uncertain (bolded words in sentences 4-5).
- Reading these opening sentences consecutively, there is a clear logical order to the review material, beginning with the most major and definite findings, then considering other possibilities.

5. Example: Argument sentences

1. The **most robust and compelling** finding for men and women who commit suicide is the high prevalence of psychiatric illness.
2. Depression is **highly prevalent** among women who die by suicide.
3. Among women who die by suicide, alcohol abuse is **also highly prevalent**.
4. **Whether** the risk of suicide is affected by economic status is an **area of extensive exploration**
5. Specific types of employment **may** confer greater suicide risk. (Chaudron & Caine, 2004, pp. 128-129).

Maintaining the argument

Ideally, comment and discussion should be maintained in the paragraph so that it is clear how you reached the conclusion argued in the opening sentence. Without such comment you are merely *describing* the literature, not *reviewing* it.

Students often feel there is nothing much to say about many sources beyond factual content. However, framing description or summary with a few words that indicate you have thought about a study not just as an individual publication, but assessed it in the context of other literature on the topic, makes a much stronger review.

Some typical examples are listed below, but it is a good idea as you read the literature to note how other writers have maintained their argument – or whether they are simply listing summaries:

Table 6. Examples of argument comments

The limitation of...	Green's (2008) study confirms...
This extensive survey...	An exception to...
There was little consensus between...	Only one study deals with...
The studies used different criteria to...	Overall, the evidence suggests...
This finding is consistent with...	Neither study can explain why...
These results contribute to the growing body of evidence that...	The validity of the data is flawed because...
A contrary position is taken by...	Conversely, Bates (2009) found...
Studies have documented a need for...	This evidence challenges...

Note that many of these examples involve the comparison of studies, rather than viewing each study in isolation.

If you find fault with a study, it is expected that you will do so in a professional manner, explaining your reasons formally and objectively rather than using emotive or sarcastic language.

An example of maintaining an argument throughout the paragraph is shown in Example 6, where comments have been bolded.

6. Example: Maintaining the argument

(Excerpt from a biochemistry article on ‘Insect circadian clock outputs’)

In spite of the impressive set of discoveries elucidating the cellular oscillator, **we still lack... a level of understanding** that would allow us to say ‘the activity in these cells is driving this particular behaviour now’... **Starting in the early 1990s, studies began to reveal** the circadian neural circuit in *Drosophila* [10-12]. These anatomical approaches **augured a shift to a more nuanced view** of how clock-cycling couples to circadian physiological outputs, from a cell-based focus to a circuit-based outlook. These anatomical studies **led to the correct prediction** that the neuropeptide PDF (pigment-dispersing factor), expressed solely by the LNV (ventrolateral neuron) anatomical subset of clock neurons, is a central circadian network modulator [11,13]. (Helfrich-Förster, Nitabach & Holmes, 2011, p. 90).

Providing adequate detail

There needs to be enough detail about the literature you are describing to support the conclusions you draw, and avoid misleading the reader.

Some typical issues are:

- Generalising on the basis of only one study, especially if it is very limited.
- Comparing studies without noting significant differences in, for example, the size and nature of the study population, the method, and any other relevant factors.

Avoiding a repetitive style

Avoid beginning every sentence with a citation e.g. Jones’ (2002) study found.... Green et al.’s (2004) research revealed.... Smith and Brown’s (2009) findings showed....

This style:

- is tedious to read
- encourages the descriptive listing of sources rather than review
- suggests the literature has not been adequately analysed
- lengthens the review, as sources are less likely to be appropriately grouped

Sentences that begin with a comment (see sections 1 and 2 above) are much more interesting to read, and guide the reader through a well-digested overview of the literature.

Limit your use of the passive voice

The active voice refers to sentences constructed in the following order: subject – verb – object e.g. The cat sat on the mat.

The *passive voice* uses the order: object – verb – subject e.g. The mat was sat on by the cat.

This very simple example shows clearly how the passive sounds more awkward and uses more words.

However, the passive is so common in academic writing, especially in the sciences, that many students use it consistently without thinking about it. We are just as likely to see:

The participants were surveyed by Jones (2002), and it was found that...(passive)

as

Jones (2002) surveyed the participants and found... (active)

Often the passive is used unnecessarily, as it is above, making reading slower and harder to understand quickly. There is a move by some leading journal editors to reduce the use of the passive by their contributors, and supervisors too prefer the brisker and clearer writing style of those who use the active voice as far as possible.

Plagiarism and paraphrase

“You plagiarise when you use knowledge that has been created elsewhere without indicating the source of that knowledge.” (University of Otago, 2015). It is very important that you understand what constitutes acceptable academic practice and the University rules around plagiarism. It is a good idea to review the University online guide which explains what plagiarism is, how to avoid it and where to seek advice:

<http://www.otago.ac.nz/study/plagiarism/otago006307.html>

It is also worth consulting the Student Learning Development tipsheet: Quoting, Paraphrasing and Summarising (or how to avoid plagiarising). This is available at <http://www.otago.ac.nz/hedc/students/digital> .

Chapter 7: Linking a Literature Review to Other Chapters in a Thesis

The type of thesis that discusses the literature in a separate chapter must nonetheless refer to the literature in several other chapters too.

You must therefore ensure that all discussion of the literature is consistent. This sounds easier than it is, given that a thesis is written over an extended period of time.

The introductory chapter

There is usually a progression from the general to the specific.

Very general background material, used to introduce the thesis topic, will probably not be referred to in the review.

Comments about previous research on the topic, indicating the present position and the need for your research, will need to be substantiated in more detail in the review.

Discussion of findings

The discussion of your results, and their significance, needs to be placed in the context of previous research so that it is clear what supports the literature, what differs, what is new, and what remains to be researched.

The chapter should not include new references not mentioned in the literature review.

The way you present some sources in the literature review might need to be changed in the light of your research findings e.g. a source given only a name/date citation might now need some discussion.

It is useful to read through your Discussion with a copy of the literature review beside you to ensure that your comments about sources are consistent.

Conclusion

As with the Discussion, literature should not be mentioned for the first time in the Conclusion, and any comment should be consistent with what you have said in the literature review.

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