



GUIDE TO DISSERTATION WRITING

In Social Sciences

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Why write this guide?

The first draft of a dissertation poses numerous questions. What chapters? With what content? In what order? How to write? The simple fact that these questions are common to almost all dissertations was the motivation for writing this guide.

Who is this guide for?

The guide is for anyone in need of advice about writing a dissertation in social sciences. The content and format are aimed particularly at students at Masters, or post-Masters level. However, Ph.D. students may also find some useful information, as doctoral theses follow a similar format, only the depth of reasoning changes. Young researchers may also find it useful, as most of this advice applies equally to the preparation of a scientific article.

There is a bias towards psychology, and towards field work, rather than lab work. This is more the result of a bias in the training of the author than a deliberate choice. As there are more versions, the guide will try to be more tailored to the needs of different groups.

How is it organised?

The document is divided into two parts: first, *basic principles* are described, followed by an outline of the *structure* of a dissertation. In this second part, the various sections and the contents of a typical dissertation are described, and the following symbols are used:



An important point, or a problem to avoid.



A transition to the next section or sub-section.



Advice.

Where can I get it from?

You can download it (for free) in English and French from <http://www.crc.mines-paristech.fr/~besnard/>

About the author

Denis Besnard received his doctorate in Psychology (specialising in cognitive ergonomics) from the University of Provence in 1999. From 2000 to 2006 he was a Research Assistant in the Department of Computer Science at the University of Newcastle, United Kingdom.

From 2007 he has been a researcher at Mines ParisTech (formerly Ecole des Mines de Paris), at the Centre for Research on Risk and Crises, at Sophia Antipolis. His activities include research (in partnership with industry), teaching, and supervision of post-Masters and doctoral students.

BASIC PRINCIPLES

This section tackles the creation of a dissertation from several angles. From the moment the work begins, until the moment when it reaches its final form. A common theme, which strongly links together all the various pieces of advice, is the idea of optimising the time you spend working, taking into account the final objective. If you manage to follow the advice given here, not only will you produce a dissertation that is easy to read, but you will also make the best use of all your working time.

Just common sense

Choose a topic that interests you.

It is only later, in discussion with your supervisor, and given the data available, that you will shape your ideas into a realistic proposal.

Accept that you might have to change your topic

At the start of your work, you will have an idea of what it is you would like to do. But what do you do if it turns out not to be realistic? Prepare Plan B from the start and decide when, if necessary, it will be implemented.

Write a position paper.

Make this the first thing you do. Describe, in a maximum of four pages, the field or the business you will study, the question to be answered, why it is important, your methods and the expected results. Use this document as if it were a business card. Share it with your teachers, your colleagues and other researchers, and collect their feedback.

Delete everything that is not absolutely necessary.

Ask yourself what you absolutely must keep in order to make a solid argument. Get rid of the rest. Saint-Exupéry said: "*Perfection is found not when there is nothing left to add, but when there is nothing left to remove*".

Think about your readers.

Never forget that you are not writing for yourself. When you re-read your work, constantly ask yourself, "*If I was reading this paragraph for the first time, what would I think?*"

Take your reader by the hand.

Regularly remind your reader what it is you are trying to demonstrate, where you are in the argument, and what remains to be done. Maintaining this thread guarantees an easy read and helps your explanation.

Some writing rules

Describe the structure of each section.

Explain what is in the section, and how the contents relate to each other. Likewise, at the end of the section, write a transition into what will follow. Remind your reader of the big ideas, what they have learned, and describe the link with the following section. This recursive idea applies equally to sub-sections.

Make your titles work.

Rather than *Review of the Question* or *Literature Review* use a descriptive title such as *Risk Perception Paradigms*. Sub-titles follow the same rule. Although sections such as *Results and Discussion* are more difficult to rename!

Use short sentences.

Twenty words maximum. It is easier to read and will help you to decompose your ideas.

Use paragraphs.

Each paragraph contains an idea, an argument. A three-line paragraph is a little short. Could it be merged into the following paragraph? On the other hand, a twenty-line paragraph is a bit long. Is it really only one idea? Or can the content be divided up?

Avoid personal pronouns.

Avoid using *I* and *we* when you write. Rather than say “*In this dissertation, I will show...*” use an impersonal style such as “*This dissertation will show...*”. This is the style your readers are used to.

Use simple vocabulary and syntax.

Your ideas will be just as persuasive if you explain them simply. An argument is won by the rigour of the reasoning, not by style.

Be consistent in your terminology.

If you use the term *fatigue factors* to collectively describe ideas such as time pressure, effort and the burden of work, do not change it. These *fatigue factors* cannot become *dimensions of fatigue* in the next chapter.

Check your spelling.

Spelling mistakes don't make you look good.

Avoid using brackets.

If the idea is important, write a new sentence. Example. It is annoying (even irritating) to read something, sometimes (but not always) interrupted by useless brackets (often, you can do without).

Avoid footnotes.

With the exception of an explanation of acronyms, a date, or a point of detail, put your notes into the body of the document. Most important: do not put your bibliographical references into footnotes. They belong in the body of the text.

Don't mess around.

Do not play with changing margins, letter spacing or line spacing to shorten or lengthen your text. It will give a very bad impression of your writing skills.

Avoid exotic fonts.

They are not easy to read and sometimes do not print well. The proven recipe is, as here, to write the body of your text in a Serif font (e.g. Times New Roman) and use a Sans Serif font for the headings (e.g. Arial)

Tables and figures need a caption.

Captions appear before tables, but after figures.

Tables and figures need an explanation.

What is in the table or graphic? How is it organised? What are the important ideas or information to take from it? Why are these ideas or this information important? What does the table or graphic show, what is the message?

Tables and figures need an index.

Create an index of tables and an index of figures and insert it after the table of contents. If you use the styles built into your word processor to create the titles of the tables and figures the indices can be built automatically.

Technical terms? Create a glossary.

Collect together all your the technical terms in a page or two and define them. Place the glossary immediately after the table of contents and the indices.

Explain acronyms.

The first time you use an Expression That Has An Acronym (ETHAA), explain it and follow it with the shortened form in brackets. From that point on, you can use ETHAA in the text. Don't overuse acronyms, they slow down your reader.

Create styles for titles and sub-titles.

This enables you to automatically produce a table of contents. You will avoid numbering errors and make inserting new sections easy.

Begin new sections (not sub-sections) on a right-hand side page, leaving the left-hand side blank.

This is how books are written. Why not adopt standard practice?

Try not to exceed three levels of headings.

If you think you need more, ask yourself how your reader is going to understand the structure of your document.

Use cross-references.

They show your reader that an idea or an argument has already been discussed, or will be addressed in a later section. These cross-references (e.g. *Please see section 2.3 for further details*) reinforce the coherence of your text.

Number the pages of your dissertation.

For a final polish, number all the pages, up to and including your indices (preface, acknowledgements, summary, table of contents etc.) using lower-case Roman numerals (i, ii, iii, iv etc.). Begin the first page of your first section with Arabic numerals (1, 2, 3, 4 etc.)

Your dissertation will be bound.

Leave 5-8mm of space on the inside margin for binding. Word processing software will do this for you. Because of the binding you will have left-hand side, and right-hand side pages. The numbering must be even and aligned to the left on the left-hand side pages, and odd and right-aligned on the right-hand side pages.

Do not waste your time

Develop a compulsion for backing up.

Make regular copies of all documents relating to your dissertation. There is no such thing as too many copies. Re-doing work is nothing but a waste of time.

Write down your notes and ideas.

Right from the start. You will use them when it comes to editing.

Outline the entire structure of your dissertation before writing the content.

Begin with titles and sub-titles, which your software can transform into a table of contents. Think of it as a skeleton. You don't know which muscle to attach to which part of the body until all the bones are identified. The notes just mentioned will then become very useful to you.

Take notes when you read.

Notes you take today will gain you a lot of time when you need them tomorrow. Store them all in the same folder on your computer. You can then do a key-word search to find out which authors to cite for a particular idea.

Reference your notes.

Write down the bibliographical reference for each of your reading notes as you go along. Better: format the reference so that all you have to do is paste it into your *References*. Even better: use reference management software.

Ask non-specialists to read your dissertation.

When you have been working for many months or years on the same subject, written communication becomes difficult. When you are very familiar with the subject, explanations are no longer necessary, terms no longer need to be defined, and important points are not given enough explanation. If you listen to what non-specialists have to say about your work, you improve your chances that your writing will be clear.

STRUCTURE

This section of the guide describes the structure of a dissertation, from cover to cover. After reading this, you will have an insight into how a dissertation is put together and the techniques that make it coherent.

Cover page

The format of the cover page is usually fixed. Take advice from the institution you are studying at. Sometimes a back page is needed. Once again, ask advice.

Acknowledgements

No more than 1-2 pages. These pages are not numbered.

This section is for your personal thoughts and to name those whom you wish to thank. Obvious candidates are your supervisor and anyone (at work, or in the field) who has helped you during your project.

Summary

1 page maximum. This section is not numbered.

Here you outline the heart of your argument. The ideas expressed here must correspond to, and be in the same order as the sections of your manuscript. Therefore, you must talk about the context for your question, outline the big ideas found in the literature, present your hypotheses, explain your methods, detail your results and discuss them, and form a conclusion. Each of these sections must relate to the one following it.

To reinforce the point: your dissertation should resemble an action-packed thriller where the end of each section foreshadows the next episode.



Do not under-estimate the importance of the summary. It is the hook that will draw your readers in. While your jury probably won't need it to motivate them to read your work, it is crucial for any potential future reader, who may have to make a snap decision on whether to read your dissertation or not. Write it last.

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The table of contents is built using your word processing software. It is constructed automatically from your titles and sub-titles. Do not think about writing your dissertation any other way.



The table of contents allows you to visualise the structure of your document. Use it, from the moment you start writing.

1 Introduction and context

Length : 5 to 8 pages

Here is some typical content for this section:

- This is what we will focus on, this is the question to be studied.
- This is the context - the company or domain.
- Why is this an issue for *this* company in *this* field?
- How is it treated?
- What do we hope to discover?



Warning: the purpose of this part is only to provide context. Results should not appear here.

1.1 The business, the field

- Describe as applicable: the company, the branch, the site, the market sector, the personnel, etc.
- Give a quick overview of key figures, activities, history.
- What is special about the company, or the field, that led naturally to the problem being studied?

1.2 The question

- How does the problem manifest?
- Who is affected?
- What are the consequences?
- Why fix it?
- What do we need to know?
- What is the issue at hand?
- To discover what?
- What are the hidden issues behind this and how to respond?



Transition. Explain the outline of the dissertation, as if you were telling a story.



Don't be boring and inefficient. Avoid lines such as: "*First we will review the literature. Then we will present the methods used, etc.*" Instead, tell a story that shows the questions and answers presented as a quest, a journey.

2 Literature review (e.g. the concept of risk)

Length : 10 to 15 pages

- Who says what in the literature?
- Where are the differences of opinion?
- What are the main lines of argument, who are the leading authors?



In the literature, there are almost always several approaches to the same question. You can use these to your benefit by detailing the advantages and limitations of each. They can then be sub-parts of your literature review. See for example sections 2.1, 2.2 and 2.3 below.

2.1 The concept of risk from an ergonomic perspective

- Who are the major authors and what are their ideas or concepts?
- How do they differ from each other?
- Is there an evolution of ideas and concepts over time?
- What are the strengths and weaknesses of this approach?

2.2 The concept of risk from an economic perspective

Repeat the questions from section 2.1.

2.3 The concept of risk from a statistical perspective

Repeat the questions from sections 2.1 and 2.2.

2.4 The chosen approach

- To summarise; what is the most important data, which are the crucial points, who are the key authors, and what the essential ideas to be retain, and why?
- Is your chosen approach an aggregation of ideas from several sources or have you adopted an alternative (to be defined) method?
- Criticise and justify your position. What are the strengths and weaknesses of this approach?
- Why is the chosen approach most suited to the question that you studying?



This is an example of a transition: "We have seen substantive data from the business or field (insert a brief reminder of the key points). We have also discussed data from the literature (reminder of what this is). We can now refine the problem and create hypotheses. This is the content of the next section."



The structure of the literature review shown here is only one example. Rather than using a presentation organised by discipline (which is better suited to wide-ranging reviews of the question), you can opt for a structure guided by concepts, schools of thought, levels of granularity, etc. Whichever approach you take, the focus does not change: you showcase your knowledge of the domain and introduce ideas which the reader will need later.



The literature review should lead the reader into a funnel, from the general to the specific. Use the width-depth paradigm to outline different ways to approach the question you are studying; the various authors and disciplines that have something to say about your subject. Once this is in place, you can establish your angle of attack and discuss it in depth.



Your literature review must maintain a common thread. Imagine your reader in a corridor. There are doors on each side, and as you go along, you half-open these doors in order to discuss a concept related to your question. However, you should keep your reader in the hallway, so that they are always able to follow your line of reasoning, your argument.



Broaden your reading. Try to read material in languages different to your own. A diversity of sources will attest to your quest for rigour in your reading.



Take notes electronically on each book, and every article you read. Better: write a quick summary. If you don't, what will you still remember six months later?

3 Summary of the problem and hypothesis

Length : 3 to 5 pages

- An issue, a problem was identified in the business. A quick reminder of what it is.
- It is an important problem because...? And therefore needs to be studied in depth.
- The literature says various things... A reminder of the main themes identified at the end of section 2.
- Taking into account what has been seen on the ground, and what the literature says, the problem can be re-framed. Give it a new name, formalise it. The problem can be presented in precise terms, and you can associate one or many hypotheses with it. Here is an example:

The hypothesis defended here posits that the use of individual protection (e.g. wearing protective equipment) is linked to the safety performance at the site in question.

- In an experimental study, it also predicts the expected effects of variables. Here is an example:

The hypothesis defended here posits that the use of individual protection (e.g. wearing protective equipment) is linked to the safety performance at the site in question. The better the performance, the greater the probability that personal safety equipment is not used.



Here is an example of a transition. "In order to study the question [xyz], a number of hypotheses have just been put forward. Testing these hypotheses will help build knowledge, and find an answer to the question. In order to do this, we must deploy a methodology that will enable data to be collected. This data, once analysed, will support or reject the hypothesis. The techniques deployed for the collection of this data are explained in the next section."



A hypothesis is a bet you make about a phenomenon that you will investigate. It is a statement (not a question) that you are going to test the strength of, through the collection and analysis of data. A statement that is accepted at face value as true, and is not tested, is called a postulate.

If you can make a statement that begins with "*I bet that ...*", or "*I'll see if ...*", you are putting forward a hypothesis. Conversely, if your proposal can be preceded by "*I know from the outset that ...*", then this is a postulate.



Each hypothesis will be tested by measuring (qualitatively or quantitatively) a number of stated variables. The question is: *What must I measure in order to be able to test whether my hypothesis holds or not?*



Finally, note that hypotheses are never proven. The experimental approach in particular takes a very conservative position called *the rejection of the null hypothesis*. To put it more simply; you can only say that your results support, or do not support, the hypothesis.

4 Method and results

Length : 5 to 10 pages

Justify your choice of technique(s) for data collection, with a reminder of the question at hand, and what you expect to find. The question itself dictates the data to be collected, and consequently, the techniques deployed.

4.1 Population and/or the situation studied

What are the characteristics (demography, profession, training, level of competence, position in the hierarchy, etc.) of the people being interviewed or observed?

Here is a simple example:

The two populations studied are contract and permanent staff working at xyz. In the period under review (2000 – 2010), contract staff worked on site for an average of six weeks. All permanent staff were on site for a minimum of five years. All staff, permanent or contract had at least ten years' professional experience.

What are the characteristics of the site and/or the situations studied? For example, is it outdoors, a workshop, an office, a laboratory? Is it night or day? Are people working alone, or in a team? Is it noisy, cold, slippery, high risk, etc.?

4.2 Data collection techniques

List the techniques you have used (observation, interviews, etc.) and explain why you have chosen them. Define, where appropriate, the criteria used for the analysis of documents, the items included in check-lists, the themes that guided interviews, the type of questions used in questionnaires, etc.

Your knowledge of the literature and previous work will be very useful in identifying all these elements.

Name the authors who have influenced your decisions. For each of these data collection techniques, describe the data that you hope to collect, and its relevance to the question at hand. Alternatively you can describe the data collection technique(s) that you will use for each of your hypotheses, and the criteria for selection.



All of the effort that you put into data collection is aimed at throwing light on the question being studied. You will win over your readers if you are able to demonstrate that you have understood this point.

4.3 Variables

If you use a large number of variables, you can describe them one by one with an explanation of what they are designed to measure. Here is an example:

Variable 1: Change in the accident rate from 2000 to 2010. This variable is used as a measure of safety performance at the site.

...

Variable 7: Not wearing a hard hat from 2000 to 2010. This variable quantifies some of the practices relating to individual protection.

4.4 Results

Explain how you have analysed the data (e.g. a headcount, a qualitative analysis of the content, possible statistical analysis, use of a particular statistical technique) and explain why you have chosen this approach.

The presentation of the results must show the quantitative or qualitative value of each variable studied. One option is to present the results in a table which synthesises the variables and their corresponding values. This table must be accompanied by a textual explanation of the main findings.

Another option is to present your results in the form of text, which explains the values of the variable. Here is an example:

Variable 1: Change in the accident rate from 2000 - 2010. The data shows that the accident rate decreased from 2000 – 2010. In 10 years, the rate fell by 64%. The last record from [xyz] showed 1 accident in the whole of 2010.

...

Variable 7: Not wearing a hard hat 2000 – 2010. The data shows that contract staff wear a hard hat less often than permanent staff (19 instances for contract workers compared to 3 for permanent staff).

At this stage, any comments on the results should be kept very short. This is not the place for interpretation: that is the purpose of the discussion.

Once you have outlined the results, remind the reader of your hypotheses, and show how these results support, or reject it. This should be done without interpretation. All you are doing here is to compare the results obtained with what you expected to see and to give your verdict. Here is an example:

The hypothesis predicted that using individual protection (in this case, wearing a hard hat) is related to the safety performance of the site. The results show a more nuanced relationship. In the period studied, the sharp decline in the accident rate was accompanied by different behaviours in the populations studied. Permanent staff were more likely than contract staff to wear a hard hat. Therefore, the results only partially support the hypothesis.



Here is an example of the transition to the next section: “The main results show that [brief summary of the results]. However, certain aspects of the results need to be examined in order to understand the impact on, and relevance to, the original problem. That is what will be discussed in the next section.”



The choice of data collection technique is sometimes determined by the available information, or by external constraints (e.g. time). If this is the case, pay attention to the extent to which the data that you were able to collect answers the question being studied.



Collecting field data is a long and costly process. Taking into account such activities as making contacts and coordination meetings, the technical preparation for the collection and transcription of your data will be the most time-consuming part of your work.



Remember – the main methods of data collection are: document analysis, observation, interviews, questionnaires, and experiments. Do not improvise. Learn the ropes.



In field work (observation, and especially interviews) you enlist the help of staff and take up their time. Additionally, in this type of work, you will rarely have the opportunity to collect large samples of data. Therefore, target carefully the personnel from whom you will collect your data, and focus on the depth of analysis.



Recruit some guinea-pigs and use them to test, test, and test again your questionnaires, interview plans, experimental protocols etc. A dissertation is like painting a wall: you won't get a good finish without good preparation.



You do not have to follow to the letter the *structure* outlined in this section. However, the *content* of each sub-section (population, data collection techniques, variables, results etc.) must be present, in one form or another, in the Method.

5 Discussion

Length : 5 to 10 pages

This is where you discuss and interpret your results.

Introduce the content of this section. In particular, outline the various angles from which you will discuss your results, and what questions they raise. These angles will serve to structure your sub-sections.

Remind your reader of the original question, and the results obtained. Rather than present a flat list, consider writing a paragraph which summarises the main findings. How do the results obtained fit with the original hypotheses? Both the presence, and the absence of expected results must be explained. Here is an example:

The fact that, during the same period when safety improved, contract staff and permanent staff adopted different behaviours with respect to protection calls for several possible explanations.

On the one hand, it may be possible that the contract workers are very aware of on-site safety considerations, and adjust their behaviour to match the perceived level of risk. As the xyz site has a good safety performance, contract staff feel less exposed to risks. As a consequence, they are more likely than their permanent colleagues not to wear a hard hat. This explanation implies that permanent staff are insensitive to the safety performance of their site and their behaviour (they almost always wear a hard hat) is the result of a culture of personal protection.

Another explanation adopts a radically different perspective. It could be argued that it is the fact that the permanent staff do wear their hard hats that has contributed to the lower on-site accident rate. From this point of view, the actions of the contract staff could be seen as a potential factor in a possible degradation of safety performance.

To separate these two explanations requires work which is outside the scope of this study. On the other hand, looking at the results, it is clear that the response to the hypothesis is not binary. A population (or a condition) exists for which it does not work.

- Are the results in line with the literature? Yes? No? Which ones? Why?
- What is the significance of these results for the business or field studied?
- What has been demonstrated that wasn't known before?
- What else could have been done that wasn't? Why does it matter?
- What are the ways forward, possible applications, next steps, further work to be done?



A transition is not needed at this point. The demonstration is made.

Attention: everything that you use here to interpret your data must have already been presented or introduced in the literature review. The only exception is a completely unexpected result, which requires discussion of a new author, or a new concept.

6 Conclusion

Length : 3 to 5 pages

- What was the original problem?
- What question did it raise?
- What methods were deployed to answer the question?
- What was found?
- What is the added value of this work?

7 Bibliographical references

For a taught Masters degree there should be around 10-50 references. For a Masters degree by research, it will be difficult to have less than 50 references. By way of comparison, a doctoral thesis in psychology will have 150-300 references. Your supervisor will be able to guide you on this point.

In social sciences references are usually presented in alphabetic order. Specifically, in psychology (and related disciplines such as ergonomics) references follow the American Psychological Association (APA) convention.

Articles are formatted like this:

Besnard, D. & Greathead, D. (2003). A cognitive approach to safe violations. *Cognition, Technology & Work*, 5, 272-282.

Books like this:

Hollnagel, E., Woods, D. D. & Leveson, N. G. (2006). *Resilience engineering: Concepts and precepts*. Aldershot, UK: Ashgate.

Book chapters like this:

Besnard, D. (2006). Procedures, programs and their impact on dependability. In Besnard, D., Gacek, C. & Jones, C.B. (Eds) *Structure for Dependability: Computer-Based Systems from an Interdisciplinary Perspective*. London, Springer.

Conference papers like this:

Woltjer, R. & Hollnagel, E. (2007). The Alaska Airlines flight 261 accident: a systemic analysis of functional resonance. Proceedings of the *14th International Symposium on Aviation Psychology*, Dayton, OH.

And on-line resources like this:

Boeing (2009). *Statistical summary of commercial jet airplanes accidents. Worldwide operations 1959-2008*. On-line at <http://www.boeing.com/news/techissues/pdf/statsum.pdf> (last accessed on 15 July 2010).



Cross-check your references. Each item listed in the bibliography must appear in the text, and vice-versa.

8 Appendices

In principal, appendices can be as long as you want. However, consider the amount of time it will take you to prepare them, in comparison to their usefulness.

Put here everything that is not absolutely necessary to understand the question being studied, but which could provide more depth on a particular point (e.g. raw data, outlines of analysis or interviews, support documents, minutes of interviews, questionnaires, etc.).

Appendices can be numbered by grouping together similar documents.



Attention: no bibliographical references or results appear here.

The End.
Good luck and good writing.

Your comments and ideas are welcome, and will be used to improve future versions.
Please write to:
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