



# HOW TO SUPERVISE (AND BE SUPERVISED) ON A RESEARCH DEGREE

*Tips and tools for supervisors and students*



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## **Chapter 2:**

### **The review of relevant literature**

Most PhD students start out with at least a superficial knowledge of the key issues in their chosen research topic. They will already have completed a relevant undergraduate degree to a high standard (usually a first-class or a 2:1) and may also have done a Master's degree in a related area. The working title of the student's research topic, and probably the primary research question, will also have been discussed. So where does the student actually start working? Quite frequently, the student exhibits one of two contrasting behavioural states. Either they are a bit stunned to find themselves actually doing a PhD and a bit overwhelmed by the task ahead, so they do not really engage with anything very constructive; or else they are so enthusiastic with the idea of research that they want to go out immediately to start collecting samples, or interviewing, or running an experiment! As is so often the case in life, the reality needs to be somewhere in between these two extremes.

As it is unlikely (possible, but unlikely) that your research student will invent a whole new epistemological discipline, a whole new branch of science or humanities, the supervisor needs to direct the student to obtain a good knowledge about what is already known about their research topic area. There are several ways of doing this, which we will come to later, but the guiding principle is firstly, to read widely and deeply. Starting with a few of the most important papers which have been published in the academic literature, the student needs to explore the subject, follow leads (some of which will be blind alleys) and take notes of the salient points. The temptation is to read a few papers then rush out to gather new data, but this would be a mistake. Many research students are surprised (some are delighted) when they are told to spend the first three or four months (at least) doing nothing but reading and taking notes of what they have read. Slowly, with a systematic approach, a picture will begin to build up. The student will develop a deeper understanding of the subject area, probably discovering whole new areas of subtle variations to consider, and by elimination they will discover the important areas of the subject that are less well-known.

This reading is not just for pleasure, and while it should start to tail off as the student becomes familiar with the academic landscape, keeping up-to-date with the academic literature is essential right up until submission of the dissertation. The first six months are the most crucial, as the seminal papers are identified, read, and critically summarised. This information forms the backbone of the literature review, which in turn is the foundation of the introduction to the research topic. Supervisors in some subject areas like their students to start the dissertation with a short background chapter and then do a literature review, but for others the literature review *is* the introduction to the topic, so it needs to be well-considered, well-structured, and reasonably comprehensive. Getting research students to begin their studies by immersing themselves in the literature for months at a time is actually no soft option; systematically done, it's a lot of hard but essential work.

## **Where to start reading?**

This sounds like a trick question, but in a similar way that a long walk, or a marathon, begins with the first step, so the

literature review begins with the first academic paper that the student reads. Normally, when starting out, the supervisor will direct the research student to three or four good papers which are especially relevant to the research topic under consideration. The student will read these, take notes, and then turn to the reference list at the end. As a guiding rule, the researcher should follow-up any and all of the references cited in the text of the paper which are in any way interesting, challenging, or crucial to the argument that is being made. From these first few papers, the research student will possibly discover half-a-dozen or more references in each paper, which now also need to be read. At this level of study there is an expectation that if the researcher is going to quote anything, or even make a reference to any previous academic work in context, they really need to have read the original article. It is not enough to say, 'As was noted (Bloggs in Somebodyelse, 2015) it is clear that...' because it may be that the way that Somebodyelse used the idea(s) of Bloggs was wrong, or not how Bloggs intended that data to be used. There is always the danger of misinterpretation. The student needs to read the original text and reach their own understanding.

Over a period of time, the student will read a lot of academic articles, track down the evidence which is cited in these articles, then read these follow-up articles too. And so on. From an initial 3 or 4 papers, the lines of follow-up investigation spread out like the roots of a tree. One of the signs that will tell the student when they are coming to the end of their required reading, is when they start to see the same papers crop up again and again. There will undoubtedly be some blind alleys, when the reading slips off in one particular direction or another that is not really useful to the current research project. This might be because the papers referred to are old and the knowledge has been surpassed in later years (this will vary between subject areas, such as fast-moving subjects in science, computing, or e-learning). In some subjects it will be necessary to reference much older publications, either because they set a marker in the development of the subject, or because you want to contrast them with contemporary methods and disciplinary thinking.

A good idea is to visit the college library collection of previous PhD dissertations to check for a similar or related

subject area. Our preference is to search EThOS (the British Library online index of UK PhD theses) which is free to access. This gives access to every PhD abstract that has been produced in the UK, and an opportunity to order a copy if a particularly interesting match is found. The object of seeking out a similar PhD is not simply to read about the subject area (which you will extend and surpass anyway) but also to get a feeling for the structure of the PhD dissertation, and to get a fast-track on the references that were used to provide the evidence for this thesis. In the old days, people used to talk about students 'reading for a degree in X' rather than studying it, and it is certainly true that the more effort that is initially spent on reading about the background and the latest information on the subject, the better placed the student will be to make informed decisions when they begin to gather their own research data.

## **Keeping track of articles**

One of the key skills in any research project is good organisation. This is especially true for a PhD research

project, which normally takes at least three years of full-time study, or up to seven years part-time. Students start off by reading two or three seminal articles relating to their research topic, but the field of reference will grow dramatically within the first six months, and citations will continue to be added to the reference list right up until the final version of the dissertation is submitted. Even then, the external examiner(s) might insist at the viva that the student needs to give more consideration to a particular area of the research which will require further reading. Without a careful system, it does not take long for this growing pile of references to become unmanageable!

Some researchers swear by the old 'traditional' system of individual index cards, alphabetically filed for each reference. This has the advantage of being able to add notes, summaries, questions etc., and also it is not dependent on technology, so does not require electricity or a battery. On the other hand, a file of cards is not very portable, can be a bit clumsy to sort, and not being digital, is less flexible to re-purpose. There are a number of software packages, both free and commercial, that allow



you to store and sort references on a computer. A product such as Refworks provides an online database to manage bibliographic data, and this type of software has numerous advantages, including being able to manipulate the data to display in different academic styles, create bibliographies for different publications, and also to access the data from different devices and locations. The university may subscribe to this product or some comparable service. Personally, we often use a simple word processed file. This does not have the flexibility of customised bibliographic management software, but it has the advantage of being easy to create and use without specialised training. To create a bibliography for a new article you simply cut-and-paste from your master list (not forgetting to keep back-up copies of the master-list in other locations!)

In addition, Mendeley <https://www.mendeley.com/> is free software for managing and storing references and pdf documents which can then be used to annotate the articles and share online with students and other colleagues. It is easy to use, (see the instructional videos on YouTube) and allows the creation of a personalised library collection,

enabling access from any internet connection. So, for example, a researcher could import an article, store it in a personalised online space, add comments and questions to the file, then share with an online social network that could include a research team, supervisors, or a cohort of students. Whatever filing system for research articles is used by a PhD student, it needs to be able to store, display and allow easy retrieval of anything that has been read over the entire duration of the study, which is not a simple task when this means five or six hundred individual references.

## **The need to know and the good to know**

There are two main purposes of the literature review of research, firstly to provide a background introduction to the chosen research area, and secondly to provide a justification for the research about to be undertaken by documenting how the topic under investigation relates to previous research. To do this, the researcher will need to cast a net widely and be open to an extensive range of prior research which is directly, or indirectly, relevant to their own specific research topic. This is where the first problem might

arise. How does a new researcher know if something is essential, or relevant, or simply something of tangential interest?

There is the 'need to know' information and the 'good to know' information, and both are required. The literature review can come in different styles, normally as the opening chapter to a dissertation, but the review could also be spread throughout several chapters, especially in a multi-disciplinary study. It is a bit like a detective story – the text has to let the reader know what the key issues are, how the research area has developed, and what has been tried before. In setting out the highlights of the history of the specific research topic, the reader needs to know the details of what is already known about that research topic, and consequently, what aspects are less well-known and might be the subject of the subsequent research by the student. We like to think of this as the 'landscape' of the proposed research – the high-points and the low-points, the obviously recognisable landmarks and perhaps some of the hidden depths. By the end of the literature review, the reader should have a good understanding of the main features of

the topic, why it is important, and what the academically contested areas are.

Then there is the 'good to know' information, and this can be more problematic. In the body of previous research, there will have been many false-starts and blind alleys. There will be respected academic literature which has investigated the topic, set out their results, and given an interpretation of the known facts, only to have been overtaken by subsequent research and shown to be wrong, or at best only partially informed. This is good information to know because it might save time by indicating a line of enquiry which has been tried and found to be fruitless, or perhaps a method of gathering data which has since been improved upon and might therefore be worth looking at again. The longevity and the depth of study required for PhD research means that the student has opportunities to explore the realms of the possible, the unusual or off-chance lines of investigation which just might lead to a breakthrough, or a new way of thinking about the research problem. As long as this 'off-piste' work is kept within reason, and not allowed to detrimentally influence the main

flow of the research thinking, it is to be encouraged, because there are many great discoveries which have started when someone thought, ‘What if I do this instead...?’ The evidential basis for many of these directional changes in thinking should be included in the review of the known academic literature. That is why it is good to read widely, read deeply, and read often.

## **Description versus critical review**

In constructing a literature review of any proposed research topic, especially for new arrivals to research, there is often a tension between giving a straight description of the relevant academic articles rather than providing a critical analysis. This is understandable. The main purpose of the literature review is to provide subsequent readers with an introduction to the subject area of the research, and this is done by constructing a narrative – a story – of the evolution of the subject area to the stage that we understand at present. This description describes the ‘landscape’ of the research subject area – the significant and salient points and the less well-known or contested points. The literature

review, however, needs to be more than just a simple description of each significant article, more than a sort of 'He said... then she said...' list of opinions.

The literature review, to be really useful, needs to critically evaluate the importance of each article, as well as providing a description of what was said, what methods were used, what degree of reliability the data has, etc. The reader has not only to understand the history of the development of the research topic, but to appreciate the relative merits of previous work. This is relatively easy at the start of the project, but by the end, juggling several hundred citations becomes a challenge.

A number of students and colleagues have drawn our attention to various computer software (or apps) which enable the compilation of a reference list very quickly. Once a (generally free) account has been created on the app, entries of citations for books, journal articles, and lots of other artefacts can be added easily, building up a library and/or a bibliography. This reference list can be built-up and accessed from any device with a web connection.

Reference lists can be divided into separate (or connected) lists for particular projects (articles, conferences) and each list can be exported to various formats, including a simple word document. Each citation can also be annotated, so using a simple set of phrases and tags, a critical reference list can be compiled in minutes. Some apps also allow citations to be input manually, which is required for older publications and those without a barcode, or by scanning with a mobile phone. (Some e-journal providers enable citations to be exported directly to your bibliography with just a click). There are several easily accessible referencing systems available at present, but the selection keeps changing and updating as new apps appear or merge. Do your own homework (either online and/or by consulting peers and colleagues) before you decide on your choice of referencing software).

Whichever method is used to compile the reference list, there are two golden rules to adhere to. Firstly, start early to compile the reference list and keep on top of it. As an article or book is read, and if you know it is going to be referred to in the text of the dissertation, it should be

immediately and accurately added to the reference list. Secondly, keep a note on each article, not simply the list of all the references. Copy the citation and add short notes on each reference so that you can remember easily what grabbed your attention when you first read it. Do not trust your memory to remember details such as page numbers (for direct quotations) and DOI numbers (for direct web access), or even for the key points of analysis and critique. As the numbers of citations begin to mount, the details begin to blur and disappear. Your notes should act as a memory jog, and also as a useful item to share with colleagues to discuss the merits and demerits of individual articles. As time progresses, because they are focussed on one specific research topic, the PhD student will discover relevant articles which the supervisor(s) may not have seen, and anyway, there is life after the PhD so you might want to refer to some of this material again, years down the line. Do not trust your memory!



## **Maintaining a balance**

A common question from research students, when the first self-indulgent spell of reading begins to weary them, is 'When will I know I have read enough?' Our answer usually is, 'You'll know!' This might not seem very helpful, but it is certainly accurate. The students start off with a few key articles, then extend their reading list by following up interesting-looking references cited in these early papers, and then systematically searching for relevant new articles using Google Scholar, online library search-engines, and journals with promising titles. Eventually, the circle begins to close, and most of the helpful articles being discovered are those that have already been mentioned (and read) in earlier articles. Within the broad area of the chosen research topic, the student will have identified a high percentage of the most relevant journal articles and books that will be needed to give a comprehensive description of the highs and lows of this research topic. But the question will still be asked, 'Is this enough?'

There are several answers to this. At its simplest, it is never enough. There will always be the possibility of missing important articles, either because they have been published in less well-known journals, or because they are older than a cut-off date (this is more important for fast-moving research areas), or simply because the keywords, meta-tagging, or article titles simply fail to attract the researcher's attention. So, if we accept that it is difficult to identify 100% of the relevant literature on a particular research topic, the supervisor can encourage the research student to do two important things. Firstly, to establish a clearer focus for their research by using their now-extensive knowledge of the relevant literature on their topic to define a tighter area of interest for further study. By now it will be obvious that the research could branch out in any number of new directions, but also obvious that this 'scatter-gun' approach is less likely to be effective, in time and effort, in obtaining any meaningful answers. To solve many complex problems it is normally necessary to identify a number of problematic research questions, and then investigate them one-at-a-time.

Secondly, and this is crucial, the supervisor now needs to encourage the research student to articulate their chosen research methodology, identify the best methods of gathering new data, and then make a start in gathering that data. The student can read and read and read, but at some stage they also need to jump into the unknown. There are only two common characteristics of all PhD research, regardless of the discipline or the research methods; firstly, the finished presentation (usually the dissertation) needs to be demonstrably the work of the student (students in a team need to clearly identify their own contribution), and secondly, it needs to make a contribution (however small) of original work to expand upon our understanding of the research subject. In reality, the student will continue to read and add relevant new citations right up to the moment of submission (and possibly afterwards, if the examiners require it!). However, there are also other critical tasks to attend to. The initial reading should provide a good baseline of understanding for the student to quickly move on to other stages in the research process. In addition to writing the literature review, understanding the significance of previous research will help in deciding on the data collection

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methods needed, in obtaining ethical clearance, and getting down to the exciting stage of breaking new research territory.