

Designing the architecture of an undergraduate or master's evidence based practice health care dissertation.

A road map to success!

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Abstract

This paper details the steps that need to be taken for the successful completion of an evidence based practice healthcare dissertation. The individual architectural landscapes of the chapters making up a dissertation are fully discussed with appropriate examples to illuminate the process

Introduction

Health care dissertations come in many formats but all follow a similar format with undergraduate dissertations of up to 10,000 words and masters 20,000, words plus. Irrespective of the word count it is the architecture of the dissertation which is of prime importance when it is submitted for assessment by markers. Most evidence based practice dissertations (EBP) are configured as critical reviews of the literature. When dissertations are assessed the dissertation architecture is of great significance in allowing the markers to see the big picture of the student's dissertation journey. Dissertations are rarely written like a novel commencing with chapter 1 but should still read like a novel! I.e. with a plotline that takes the reader through the student journey in a way that allows full comprehension of the subject being studied. This will vary immensely and might range for example, from a critical review of the literature on the optimum methods of pain management in patients recovering from knee replacement surgery through to an evaluation of larvae therapy for varicose ulcer wound healing. Although the subject matter might change the basic architecture of how the dissertation is presented will not. While this paper is designed to help undergraduates and master's degree students write an EBP dissertation some doctoral students writing a thesis will find it useful for building the architecture of their early chapters. Full details of how to write



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an EBP health care dissertation can be sourced from Glasper and Rees (2013)

What is expected in a EBP dissertation

Undoubtedly the most important function of an EBP dissertation is to demonstrate that the writer has been able to demonstrate the ability to systematically search and critically appraise evidence including literature/primary research /systematic reviews / clinical guidelines using an appropriate critical appraisal framework(s). To do this the student needs to critically analyse practice and normally identify a clinically related issue for exploration. In interrogating published research about a particular subject it is important that the student is able to demonstrate a critical awareness and knowledge of the research methodology adopted by the researchers. This enables a reflection on the breadth of evidence that underpins a particular field of practice. Importantly in reviewing literature the student is able to show that they have developed the confidence to understand, manipulate, interpret and present both quantitative and qualitative data. Perhaps the most important aspect of the EBP dissertation is the opportunity it gives the student of considering ways in which styles of leadership and organisational culture impact on effective care delivery within a range of practice arenas and be able to critically discuss the barriers and behaviours which may undermine the achievement of excellent practice. In considering the ways in which barriers to evidence-based practice can be reduced the student is afforded the opportunity through the dissertation to critically evaluate the process by which evidence can be disseminated and to draw reasoned conclusions or to reach sustainable judgements about how to apply these to practice.

Formatting the dissertation

Although different universities may have slightly different rules concerning the administrative configuration of a dissertation, and readers should check with their own academic registry department first, the following is typical:

- The dissertation must be word processed using a standard font (e.g. Arial) in point size 12 with black ink only, on one side only with double spacing throughout and 1" margin on each side (A4 white paper). Dissertation writers are advised not to use exotic fonts or any other ink colour apart from black. Major headings should use 16 point in bold with subheadings in 14 point bold. Each should be consecutively centrally numbered at the foot of each page beginning with the Abstract page.

- The dissertation must be printed preferably using a laser printer (make sure it has sufficient ink and do not be tempted to use an older dot-matrix printer). Any figures, tables or illustrations need to be carefully printed to protect their integrity (hot tip: laser printers use heat and this distorts the paper. To avoid a ripple effect when later bound, laser print the 1st copy ensuring that all the pages have been printed and then photocopy. This will facilitate a perfectly flat dissertation; keep the laser copy as a loose bound master.)

- Normally 2 copies of the dissertation are submitted for examination. The dissertations must have soft binding and this should be preferably undertaken by a university or college bindery or an appropriate shop that offers print facilities. Subsequent to the assessment process successfully examined dissertations may be subsequently hard bound for posterity (something to show the grandchildren).

- Many student supervisors suggest the use of the decimal notation system sometimes known as civil service formatting for the writing of the dissertation and the individual chapters. The best way to understand how the decimal notation system is used is to visit the Department of Health website (<http://www.dh.gov.uk/en/index.htm>) and inspect a government policy document, many of which use this system (e.g The National Patient Safety Agency Annual Report and Accounts 2011/12 available via: (<https://www.wp.dh.gov.uk/publications/>

[files/2012/08/NPSA-Annual-Report-and-Accounts-2011-12-020812.pdf](https://www.wp.dh.gov.uk/publications/files/2012/08/NPSA-Annual-Report-and-Accounts-2011-12-020812.pdf))

An example of using the decimal notation system in a sample dissertation introductory chapter

- 1.1 Introduction to the topic (e.g. writer's disease)
- 1.2 What is writer's disease?
- 1.3 What is the prevalence of writer's disease (in your clinical area)?
- 1.4 The management of writer's disease in contemporary healthcare
- 1.5 The role of health policy in the management of writer's disease
- 1.6 The role of evidence based practice in the management of writer's disease

Dissertations are normally configured as follows (but readers are advised to check with their own university):-

- Title page containing: The full title of the University, followed by the faculty or school, as appropriate, the full name and number of student, followed by the title of course being studied e.g A dissertation in partial fulfilment of the requirements for BSc (Hons) followed by the title of the dissertation
- Contents page
- List of tables/figures
- Acknowledgements
- Abstract
- Introduction
- Literature review
- Critique of the identified empirical papers
- Critique conclusions and implications for practice
- Implementing evidence in practice

- Appendices
- References - using the Modified Harvard system (do check your own university regulations)
- Glossary of terms or abbreviations

The steps of building the dissertation

The abstract

Ironically this should be written last but it is the first page that marking assessors will look at in the sequential order of the dissertation. It is a very important page usually with a maximum of 500 word and should give a comprehensive summary or synopsis of the whole dissertation journey .The abstract where appropriate should give a brief background to the EBP study, the aim or literature search question should be clearly stated and the design of the EBP literature review should be clearly articulated as should the method(s) used to critique the sourced literature. Furthermore the abstract must briefly present the results of the literature critique and give a concise conclusion which details what the implications of the findings are for practice. As with the synopsis on the back cover of a holiday paperback novel, an academic abstract should tempt the reader into the main body of the dissertation where there should be no surprises!

The introduction chapter

In this chapter the writer (normally 1500-2000 words for an undergraduate but more for a master's student) should orientate the reader to the full parameters of the EBP subject being studied or investigated. Irrespective of the subject area which might originate from a range of fields of practice such as child health or learning disability nursing, the introductory chapter should draw on a range of historical, seminal and contemporary literature, health policy and grey literature to facilitate an appreciation of the subject matter. It is not necessary at this stage of the dissertation to give full details of empirical studies that might have been conducted in the area being studied. The introductory chapter should however highlight areas

where there is a deficiency in knowledge about the subject area as this paves the way to the literature search. Using the example from table 1, the dissertational architectural milestones might be configured as follows using the decimal notation system.

1. Writer's disease (NB indented subheadings can be used as appropriate)
 - 1.1. Origin of writer's disease
 - 1.2. Prevalence of writer's disease
 - 1.3 etc
 - 1.2 Management of writer's disease
 - 1.3 Complications of writer's disease
 - 1.4 Health Care Policy and writer's disease
 - 1.5 The role of evidence- based practice in the management of writer's disease
 - 1.6 The formulation of the PICO/ SMART literature review question

The introductory chapter normally ends with the posing of the EBP question

The literature search chapter (usually chapter 2)

Sourcing the best evidence has to be demonstrated by the student through the literature search and Boagy et al (2013) offer a clear and concise method of undertaking a comprehensive literature search. This chapter is usually 2000 words in length and a formulaic approach is advisable. Huang et al (2006) suggest the use of PICO to formulate clinically related questions in terms of the problem/population, intervention, comparison, and outcome. These aspects make up the PICO framework which many students and researchers find useful for interrogating the literature although other similar models are available. Glasper and Rees (2013) believe that the posing of a PICO question can help in focusing the literature search. Additionally the student should cite a particular literature searching model to provide structure to this chapter (e.g. Hek

and Langton 2000, Timmins and McCabe 2005). It is important that the literature search follows a highly structured step by step approach that will identify:

1. Primary sources of information i.e. papers containing original research
2. Systematic reviews by agencies such as Cochrane (<http://www.cochrane.org/cochrane-reviews>) and the Joanna Briggs Institute (<http://www.joannabriggs.edu.au/Systematic%20Reviews>) which attempt to identify, appraise and synthesize all appropriate empirical evidence from a range of sources to answer a specific research question. Such reviews are important and consider both quantitative and qualitative research to illuminate the quest to base health care on best evidence.
3. Secondary sources i.e. journal papers which draw upon or describe other peoples work as in a literature review paper.
4. Theoretical papers which describe explore or analyse the theoretical or conceptual underpinnings of a given subject.
5. Grey literature (a euphemism for literature not formally published in the usual publishing format such as text books or journals) can include government health care policy reports, local hospital protocols or care pathways, as well as professional organisation reports e. g., The Royal College of Nursing (<http://www.rcn.org.uk/>). The largest repository of grey literature is now the World Wide Web but caution should be used when obtaining material from the internet as many sites may not be kite marked i.e. have an official approval from an accrediting agency. The term kite marking derives from the British Standards Institution, which uses a kite shape logo to demonstrate that a product meets specific standards of quality and reliability. (<http://www.bsigroup.com/en-GB/our-services/product-certification/kitemark/>)
6. Anecdotal or professional opinion evidence. Although lowest in the hierarchy of evidence such

information may be generated by named individuals from specific organisations or clinical experts or key informants. Such information is useful where no specific evidence base exists for example a specific clinical management intervention.

Navigating the bibliographic data bases

There are a large number of data bases that can be searched by the student, and to facilitate effective searching it is important that the student uses Boolean logic, wild cards and truncations to optimally capture the full spectrum of publications available. Students studying for a doctorate will need to cast their net widely and consider data bases which might be particular to one country e.g. Thai data bases. Undergraduates may only be expected to consider English language data bases or just scholarly papers published in the UK. To help contain the parameters of the search within manageable boundaries it is common to use inclusion and exclusion criteria. In the literature search chapter examiners will expect to see a table with a justification for each of the inclusion criteria and exclusion criteria as applied by the student for the literature review.

Examples of data bases available for students to search

Although not exhaustive some of the following can be useful for health related research: N.B. The RCN has an excellent on line data base search facility available to members via (http://www.rcn.org.uk/development/library/elibrary/databases_to_search)

1. Clinical Trials .gov (<http://www.clinicaltrials.gov/>)
2. Trip (<http://www.tripdatabase.com/>)
3. AMED (The Allied and Complementary Medicine Database) (<http://www.ovid.com/webapp/wcs/stores/servlet/ProductDisplay?storeId=13051&catalogId=13151&langId=-1&partNumber=Prod-12>)
4. BNI (British Nursing Index) (<http://www.proquest.co.uk/en-UK/catalogs/databases/detail/bni.shtml>)
5. CINAHL (Cumulative Index to Nursing and Allied Health Literature) <http://www.ebscohost.com/biomedical-libraries/the-cinahl-database>
6. Embase (<http://www.embase.com/>)
7. HMIC Health management information consortia (<http://www.library.nhs.uk/help/resource/hmic>)
8. Medline and Pubmed (<http://www.ncbi.nlm.nih.gov/pubmed>)
9. PsycINFO (<http://www.apa.org/pubs/databases/psycinfo/index.aspx>)
10. Web of Science (http://thomsonreuters.com/products_services/science/science_products/a-z/web_of_science/)
11. ASSIA (Applied Social Sciences Index and Abstracts) (<http://www.csa.com/factsheets/assia-set-c.php>)

12. Index of Theses (A comprehensive listing of theses with abstracts accepted for higher degrees by universities in the United Kingdom and Ireland) (<http://www.theses.com/scripts/dtSearch/dtisapi6.dll>)

13. The Cochrane library of systematic reviews (<http://www.thecochranelibrary.com/view/0/index.html>)

14. The Joanna Briggs Institute. (<http://www.joannabriggs.edu.au/>)

15. Google scholar. (<http://scholar.google.co.uk/>) This search engine is very useful and freely accessible. Although Google Scholar will host papers from many peer reviewed journal it does not automatically allow full text downloads or printing, especially from publications available through subscription sites. Students must not rely solely on Google scholar as a way of bypassing a full and exhaustive search of the literature using the full array of bibliographical data bases. **NB** examiners will undoubtedly check, using Google scholar that the student has encompassed the most up to date papers in their critique of the literature.

It is very important that a literature search audit trail is included in this chapter as this allows examiners and future readers to appreciate the provenance of the findings. This should show clearly the search terms etc. used by the student.

	Search Terms		CINAHL	BNI	EM-BASE	MED-LINE
1	Diabetes Mellitus.mp.		33514	262	155545	107717
2	Diabet\$.mp.		46116	3364	189820	162807
3	Type 1.mp.		4347	244	69998	85809
4	Type 2.mp.		8122	542	54226	70288
5	Diabetes Mellitus, Insulin-Dependent/or Diabetes Mellitus, Non-insulin- Dependent		15733	0	65603	56734
6	Education.mp or education/or patient education/		207533	16030	180182	186398
7	Partnership\$.mp. or Nurse-patient relations/		19370	3451	6845	20168
8	Nurse\$/ or health care professional\$.mp		32959	375	15507	15050
9	Empowerment/or empower\$.mp.		7451	2701	3325	4939
10	Self monitor.mp		40	2	74	82
11	Self-manage\$.mp.		2385	377	2605	3026
12	1 or 2 or 3 or 4 or 5		43406	3387	244617	217177
13	6 or 7 or 8		252031	19392	196583	213653
14	9 or 10 or 11		9750	3016	5909	7946
15	13 and 14 and 15		680	105	516	701
16	Policy.mp. or health policy/		40501	3129	99075	71561
17	National service framework.mp		605	345	363	382
18	16 or 17		40942	3409	99371	71883
19	15 and 18		29	7	31	26

Table 1 a sample literature search of 4 data bases related to diabetes mellitus

At the end of the literature search process and after the application of inclusion and exclusion criteria the student should list the papers in a table using the full Harvard reference system or the reference system adopted by the host university .It is these papers which will be critiqued in the subsequent chapter. The dissertational architectural milestones for the literature search chapter using the decimal notation system might therefore include: 2.1 Literature Search, 2.2 Hierarchies of evidence (a table suggested by Evans (2003) listing the types of studies which are attributable to each hierarchal level may be utilized), 2.3 hand searching of literature, 2.4 using the World Wide Web, 2.5 grey literature, 2.6 the role of expert opinion, 2.7 using the Cochrane Centre and other eminent data bases, 2.8 the bibliographical data

bases (consider a table),2.9 using Boolean logic, 2.10 using inclusion and exclusion criteria (consider a table), 2.11 sourced paper shortlist for literature critique (consider a table using the full Harvard reference system in which the final selection are double stated**).

The EBP research critique chapter usually chapter 3 (but sometimes a separate part of the literature search/ review chapter)

In this chapter often the largest and typically 3000 words for an undergraduate and more for a masters student , the student must demonstrate that they have undertaken a full and critical analysis of the empirical literature sourced through the literature searching process. In the lit-

erature search chapter and after the application of inclusion and exclusion criteria, the student will have listed the empirical data driven papers which are to be subjected to critical appraisal. This can be in the form of a table. Undergraduates typically review 3 to 5 papers at one end of the scale with master's students reviewing significantly more. All students should use one or more recognised **critiquing models** to collate the strength and veracity of the evidence found within the papers being critiqued. The purpose of the critique is to accept or reject the PICO question posed prior to the literature search and review. Thus a critique of the literature will reveal any gaps in the knowledge base or evidence base pertinent to the subject. No changes in practice can be implemented in the absence of rigorous and critical

review of all the pertinent empirical literature. Hence EBP is built or amended only after a **full consideration** and critical analysis of the available literature on the subject which will identify any gaps in knowledge which might be amenable to changes in care delivery or organisation.

Glasper and Rees (2013) discuss the selection and use of health literature critiquing models/tools and how they can be used to critically interrogate empirical papers. There are many such tools available and

some such as CASP, the Critical Appraisal Skills Programme (<http://www.casp-uk.net/>) are designed to facilitate critical analysis of specific types of empirical paper for example Randomised Controlled Trials. Others are more generic in nature and Parahoo and Heuter for example give a blow by blow account of how to use the Parahoo model when critiquing a single empirical paper (Parahoo and Heuter 2013).

NB Before embarking on a full and critical

review of the identified papers some students find it helpful to summarise the key attributes of the papers they have sourced from the literature search using grids first described by Savage and Callery (2000). Such grids are useful in being able to see the strength of evidence across a number of empirical papers on similar topics.

Author (Year)	Aim(s) of study	Methodological Issues		Relevant/key findings
Country				
		Sample	Design, data collection and analysis, rigour/reliability and validity	

Table 2 Savage and Callery Grid

Critiquing models typically consist of up to 10 specific questions that allow the student critiquing the paper to conduct a full interrogation to attest the veracity of what they are reading .In EBP the use of critiquing models to review published research thus facilitates a search for the truth

The steps of the Parahoo model (Parahoo and Heuter 2013)

Title of study

Does the title convey the study clearly and accurately?

Abstract

Does the abstract give a short and concise summary of the following aspects of the study?

- Background
 - Aim
 - Designs
 - Results
 - Conclusions

Literature review/Background

- Is the importance of study justified?
- What is the context of this study?

- Does the literature review show the gap/s in knowledge which this study seeks to fill?

Aims/objectives/research questions/hypotheses

- Are the aims of the study clear?

Design of study

- What is the design of the study? Is it the most appropriate for the aims of the study?
- Are the main concepts (to be measured) defined?
- What are the methods of data collection? Are they constructed for the purpose of the current study or do the researchers use existing ones?

- Who collected data? Can this introduce bias in the study?

- In studies where there are more than one group, is there a description of what intervention/treatment each group receives?

- Is the setting/s where the study is carried out adequately described?

- Who was selected? From what population were they selected? What was the precise method of selection and allocation? Was there a sample size calculation?

- Was ethical approval obtained? Are there any other ethical implications?

Data analysis

- Was there a separate section in the paper that explained the planned analyses prior to the presentation of the results?
- Which statistical methods were relied on?

- Is it clear how the statistical tests were applied to the data and groups?

Results

- Are the results clearly presented?
- Are the results for all the aims presented?

- Are the results fully presented? Discussion

- Is it a balanced discussion? Has all possible explanations for the results given?

- Are the results discussed in the context of previous studies?
- Are the results fully discussed?
- Are the limitations of the study discussed?
- Are the results discussed in the context of previous studies?
- Are the results fully discussed?
- Are the limitations of the study discussed?

Conclusions/Recommendations

- Are the conclusions justified?
- Are there recommendations for policy, practice or further research?
- Are the results/conclusions helpful for my practice?
- Are the results generalizable?
- Funding
- Is there potential conflict of interest (if information on funding is provided)?

Practical steps to ensure an appropriate use of a critiquing model/tool

Some students like to use colour highlighter pens to identify parts of the papers being scrutinised and interrogated in order to match the specific question posed by the critiquing tool e.g. using a pink highlighter to identify aspects of the papers that concentrate on data analysis. After completion of the literature critique, the Savage and Callery grids and details of the critiquing process, including the model used, it is mandatory that the student demonstrates the full journey of the critique of the literature. Critiqued papers cited within this chapter should be referred to as numbers i.e. paper 1, 2, 3 etc. The following architectural milestones, again using the decimal notation system, might be helpful; what is critical appraisal? , critiquing tools/models, using (for example) the Parahoo model

(followed by a step by step appraisal of each component). **NB** when considering the aspect of the model dealing with **data analysis** it is important that the student demonstrates and understanding of the statistical methods that were relied on in the paper being critiqued. A simple table (table 3) can be used to explain this within

the chapter. Recognition that the test used was the most appropriate for the research design might also be advantageous.

Title of statistical test	Explanation
(e.g.) Cohens Kappa	This statistical test is used to assess measures of inter-rater reliability.eg Rice et al (2008) in a study to assess the effect of a preoperative education programme on perioperative anxiety in children, inter-observer reliability and a kappa test showed excellent agreement between the two observers used in the study.

Table 3 Statistical tests used within the critiqued papers (template)

Conclusion and Implications (chapter 4)

In this chapter often configured as 1500 words in an undergraduate dissertation, (more for a master’s student) the student is normally expected to offer conclusions which address the original PICO question and which are drawn from the presented argument. Importantly the student will review and debate if the evidence from the literature critique answers or rejects the question. Some students when discussing

the veracity of the evidence use a table (table 4) to explore the key strengths and limitations of each of the individual journal papers critiqued.

There are few architectural milestones in this chapter but 2 are suggested: discussion of evidence, and summary of evidence.

Study (full reference)	Strengths	Limitations
1.		
2.		
3.		
4.		

Table 4 Strengths and limitations of the critiqued journal papers (template)

Using evidence to change practice (chapter 5)

In this chapter (often the final) usually configured as 1500 words (more for masters students), the student discusses and presents a potential outline plan for implementing and disseminating the evidence revealed in the literature review and critique. Within this chapter the student is expected to offer a critical discussion and should demonstrate consideration of influencing factors such as the culture of the organisation, leadership styles and change management strategies best suited to achieve the plan. NB in situations where a PICO or similar question has been rejected on the basis of too little evidence the student should still consider the following chapter architectural milestones: change management, change management models, initiatives to assist the implementation of change (e.g. citing and using the “High Impact Actions for Nursing and Midwifery: The Essential Collection”, which spotlights 8 excellent case studies from around the UK that discuss how health care professionals have implemented change in practice), leadership (citing initiatives about leadership which have been widely implemented e.g. the Clinical Leadership Programme of The Royal College of Nursing (RCN 2005) or The Kings Fund charity which offers leadership teaching packages [Tr5yypLUCFe7MtAodzC8ACA\), barriers to change, developing a model for implementing change in practice \(e.g. the PDSA model -Plan, Do, Study, Act\), disseminating evidence \(e.g. giving a paper or presenting a poster at a conference, writing for publication, starting journal club or developing an EBP notice board\), reflecting on your dissertation journey.](http://www.kingsfund.org.uk/leadership?gclid=CKG-</p></div><div data-bbox=)

Final steps to the production of an EBP dissertation.

1. References: These must be accurate and follow university guidelines. Examiners take no prisoners for incorrect references.
2. Using appendices: sparingly and appropriately.
3. Using a glossary of terms or abbreviations: optional but helpful in many situations
4. Proof reading: **absolutely essential.**

Hot tips for anyone writing an EBP dissertation

- Use your supervision time wisely.
- Talk with your supervisory team at each step of the chapter configurations.
- Reflect upon and be responsive to constructive feedback offered by your supervisory team.

Conclusion

This paper has attempted to explain using a step by step process the development of the architecture of an EBP health care dissertation. Undergraduate or master's students writing any type of EBP healthcare dissertation should find this useful in developing a logical structure to their work.

Key points

1. Health care dissertations come in many formats, but all follow a similar structure.
2. Dissertations are rarely written like a novel commencing with chapter 1 but should still read like a novel! i.e. with a plotline that takes the reader through the student journey.
3. Many student supervisors suggest the use of the **decimal notation** system sometimes known as civil service formatting, for the writing of the dissertation and the individual chapters.
4. The veracity of the evidence base pertinent to the topic area has to be demonstrated by the student through the integrity of the literature search and critique.
5. Examiners take no prisoners for incorrect references and poor presentation.

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