



# HOW TO WRITE A THESIS

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## **1. BRIEF HISTORY**

A little dive into the etymology of the word “thesis” cognizes us with the fact that this word was initially associated with musical poetry. Better yet, it referred to an unaccented or a downbeat in a musical structure. Two centuries later, somewhere in the 1570s, the meaning of the word changed to “a formulation in advance of a proposition to be proved.” Finally, it was in the 1650s when the modern usage of the term laid its foundations – “dissertation presented by a candidate for a university degree.”<sup>1</sup>

Despite the fact that it has been nearly four centuries since the concept of an academic thesis was laid down, students and academicians still struggle to jot down an impactful thesis. This document is an attempt to guide the researcher into framing a fluid and flamboyant thesis, enough to fascinate the reader.

## **2. THE UTENSILS**

### **2.1 BURPEE CHECKLIST**

There are certain tools, documents and information that a researcher needs to be well-versed with before beginning to draft a research work. We recommend the mnemonic “BURPEE” in order to remember these points.

- **Backup of documents**

At every stage during your thesis research, you will have many documents that you might want to keep for future reference. This can include scientific articles pertaining to your research or documents that are crucial to your thesis submission. Apart from the hard copies, one should always store these documents in a storage device or on a cloud account.

- **University Guidelines**



A researcher must be well-versed with the guidelines of thesis writing and submission process according to the university where he/she is supposed to submit their thesis work. This also includes the types and number of certificates that are supposed to be attached by the researcher as a prologue to his/her thesis. If not adhered to these guidelines, it can result in rejection of the submitted work.

- **Reference Management Software**

While writing the article, the researcher has to cite a number of studies that he or she has referred to while drafting the thesis. In order to ensure that the references are numbered appropriately and written down in a consistent manner based on the recommended referencing style, the researcher must acquaint himself or herself with a reference management software (e.g., Zotero, EndNote, etc.)

- **Plagiarism and Grammar**

Plagiarism checker ensures that none of your content appears to be copied from any other source. A “plag-check” software (e.g., Turnitin, Advego, etc) is another mandatory feature to have as a high plagiarized content is one of the common reasons of rejections of a thesis work.

A grammar editing software helps by suggesting to the researcher about a better suggestion of structuring a sentence and rectifying any grammatical mishaps like misspellings and syntax errors.

- **Ethical committee clearance**

When applicable, the institute where the researcher is carrying out his or her research must grant an ethical clearance to the researcher following the proposal of his or her research work. In return, the researcher will get an ethics committee number, which must be a part of the reporting process in the thesis article. This will also help the researcher in future if the research work is supposed to be sent to a scholarly journal.

- **Equator Network**



Depending on the type of study design, the researcher has to write down key elements of the study following recommendations by the Equator Network ([equator-network.org](http://equator-network.org)). Following the recommendations helps in ensuring the fluidity of the document that is often sought after by the reviewers.

## **2.2 GERLIER'S PRINCIPLES**

We recommend the aspiring researcher to follow Gerlier's five principles that were given as "pillars" for documenting a scientific paper.<sup>2</sup> Every single concept and aspect of the research work must be reported by keeping in mind these five principles: Brevity, Precision, Relevance, Consistency, Concept.

**Brevity** – Avoid unnecessary lengthening and detailing of unwanted parts that are of little importance to your research work.

**Precision** – A key component of an impactful line is to ensure that the line contains all the necessary words which can draw the needful image in the reader's mind. The key words in that line or paragraph must be accurately placed in order to ensure this.

**Relevance** – Every sentence must be relevant to the research topic. The researcher must always fall back on this pillar after writing every statement.

**Consistency** – The reader must be constantly kept afloat around the research work that is being reported. This includes maintaining the level of grammar while simultaneously ensuring that the other principles are satisfied.

**Concept** – A conceptually flawed document is as good as a blank sheet of paper. Application of a culmination of the above principles helps in avoiding creating a conceptually flawed document.

## **3. THE SPICES**

Now that we have our utensils at hand, it is time to light up the stove and choose our ingredients. The key ingredients of a research work are usually highlighted as Introduction,



Materials & Methods, Results and Discussion. In a thesis, an added ingredient is the Review of Literature.

The simple trick to answering or structuring each of these headings is by keeping in mind the questions of Bradford Hill (BH).<sup>3</sup>

### **3.1 INTRODUCTION**

#### **BH Question: Why did you start?**

An introduction is meant to identify the data needs, spelling out our research question and formulating study objectives.

Data needs identification includes introducing the readers to the key subjects or elements of our research work. This can also be done by taking into consideration the “keywords” of our study and giving a brief description of each of them.

The writing style of introduction should be such that readers must be coaxed into the researcher’s area of interest. This is effectively done by a “Zoom In” approach which includes identification of known and unknown elements and gradually funnelling in towards the objectives of your research work.<sup>3</sup>

Once they are finely nestled against the title, the research question should be spelled out. This is better understood if the researcher has beforehand formulated his/her research outline in the form of PICO or one of its variants.

The termination of introduction should be done by letting the readers understand what study design was opted for in order to address or answer their research question.

In summary, mandatory questions that must be a part of this section include:

- Background
- Gap in knowledge
- Spelling out the research question
- Study design chosen



### **3.2 REVIEW OF LITERATURE**

A literature review lists down all the existing literature that is within the radius of your research work. This includes all the literary work that directly or indirectly influences your research work.<sup>4</sup> Literature reviews amount for the maximum pages in a thesis work. Organization of such a collective data thus becomes a challenge. There are two manners in which a review of literature can be framed.<sup>5</sup>

#### *Chronological*

The researcher can choose to review his or her literature based on the year of publication of each material that has been referred. This can help the readers in understanding the progression of a particular topic or subject and how the researcher's study contributes to the existing knowledge.

#### *Practical/Clinical Context*

The researcher can take into consideration the key intervention or outcome variable in question and subsequently place them as different sub-heading. Under each of these headings, the relevant literature can be placed; preferably in the chronological order.

### **3.3 MATERIALS & METHODS**

#### **BH Question: What did you do?**

The methods section is to be outlined into four parts: planning the analysis, data collection instruments, collecting the data and analysing the data.<sup>3</sup>

A better way to understand how this section is to be reported is by understanding the following subheadings (P.S.: The subheading to follow are only for educative purpose and must not be used as a format or template).

**Participants:** Mention the characteristics of the participants (age, gender, etc). Remember, samples should be explained, not labelled.



**Ethics:** Mention the ethical clearance number obtained from your institution for conducting the research work. State the type of consent obtained from the participants or institutes.

**Study settings:** Report where the study was carried out

**Study design:** Mention in detail the study design that was followed. Use a flowchart if possible.

**Sampling strategy:** Explain the sampling technique used for the study.

**Sample size:** Defend your total sample by reporting the method used for calculating the minimal sample size required.

**Study procedures:** Detail how the study was planned

**Operational definitions:** List all scales that were used by you for your research work. Explain the methodology involved in using these scales. Jot down the validity and reliability scores of each of the scales or measures that you used.

**Data Management:** List down all the tools and techniques that were used while collecting and tabulating the data.

**Analysis:** List down the statistical analysis carried out. Name the software with which the statistical tests were carried out. Further details like confidence interval, effect size, p-value determination can be written based on the type of statistical test carried out.

Here is a summary of the mandatory points that should be included in the methods section for the reader to better relate to it.

- What questions were being asked?
- What was being tested?
- How reliable was the measurement?
- Were the parameters recorded and analyzed correctly?
- Would a reader be able to repeat the same experiment?





### **3.4 Results**

#### **BH Question: What did you find?**

It is important to follow a particular sequence while writing the results. Firstly, describe or summarize the study population quantitatively. Next, begin with specific or key interpretations from the data analysis. At this stage, the results must not be explained with any reason or hypothesis. Moreover, no part of the results section must re-explain the methodology. It is reasonable and perfectly sound to mention “Data not shown” in areas that may be perceived as a void in the data.

Researchers need to expand their vocabulary when reporting results. A monotony may arise when phrases like “statistically significant” are used repeatedly. The researcher should be well-versed with the difference between significant/significance, correlation and random.<sup>3</sup>

Significant → Not caused by chance

Correlation → Strength of linear relation between two quantitative variables

Random → Each element has an equal chance of occurrence

### **3.5 Discussion**

#### **BH Question: What does it all mean?**

A common confusion during scientific writing is the lack of understanding between reporting elements that are categorized under Introduction and those under Discussion.<sup>6</sup> Apart from keeping the BH Questions in mind, one should remember that Discussion serves as a bridge between Methods and Results.

The four key components of a discussion include:

- Summarize the findings without quantified detailed results (as that is already done under Results section).



- Make key points and explain the results. If possible, link these with results from previous studies even if they have contrary results.
- Discuss the limitations of your study and if possible, the ways to rectify them.
- Give your own recommendations for the research topic at hand.

A discussion section should never concretely state the reason behind a significance or correlation unless and until a hypothesis testing has been done previously on the subject.<sup>5</sup>

### ***3.6 Conclusion***

Conclusions should be stated precisely while keeping in mind the objectives that were addressed at the start of the study. No extensive detailing should be done in this section.

### ***3.7 References***

All referred material, including the review of literature should be cited in the required format in the order in which it is presented in the final dissertation.

### ***3.8 Illustrations***

Tables and Figures are placed in appropriate sections. These should be succinctly described with appropriate footwork and captions. Graphical representations like bar charts, pie charts, box and whisker plots, etc must be labelled thoroughly with apt data presentation.

## **4. THE DELICACY**

### ***4.1 Consistency of Style***

Consistency of style is what makes your dissertation pleasing to the eyes. This involves maintaining a consistency in language, page margins, syntax, formatting, font style and size.



As small a point this may seem, consistency of style is what shows a research student's professionalism.<sup>7</sup>

#### **4.2 "Super"-visor**

Enhancement of your dissertation gets an impactful boost when you provide your supervisor or guide with constant updates about the development of your research.<sup>5</sup>

#### **4.3 Dissemination**

There is no better way of explaining dissemination than this passage by Quick and Hall (2015):<sup>8</sup>

*"Writing a dissertation is not the final step. In order to turn research into that piece of missing evidence, the work needs to be shared with a wider audience so that recommendations can be made or change implemented. Despite a large number of post-graduate students completing a dissertation each year, only a small number disseminate their work (Hardwick & Jordan 2002). Professional obligations of perioperative practitioners mandate the circulation of findings from research studies (RCN 2004, DH 2005). This can be achieved in a number of ways including local presentation, perhaps at an audit session, and writing a summary of the research for publication in medical, nursing and healthcare journals."*

#### **REFERENCES**

1. Thesis (n.) [Internet]. Etymology. [cited 2023 Mar 31]. Available from: <https://www.etymonline.com/word/thesis>
2. Gerlier D. Brevity, precision, relevance consistency and concept, five pillars to write an original and punchy PhD thesis. *Virologie (Montrouge)*. 2016;20(5):257–60.



3. Scientific writing in Health Research for Health and Allied Sciences [Internet]. National Institute of Epidemiology. Indian Council of Medical Research; 2021 [cited 2023Mar28]. Available from: [https://nie.gov.in/icmr\\_sph/Scientific-writing.html](https://nie.gov.in/icmr_sph/Scientific-writing.html)
4. Hardy S, Ramjeet J. Reflections on how to write and organise a research thesis. *Nurse Researcher*. 2005;13(2):27–39.
5. Duke T. How to do a postgraduate research project and write a minor thesis. *Arch Dis Child*. 2018 Sep;103(9):820-827. doi: 10.1136/archdischild-2018-315340. Epub 2018 May 26. PMID: 29804055.
6. Wyllie DJ. Thesis write-up and manuscript preparation: Related but distinct tasks. *The Journal of Physiology*. 2021;599(11):2771–5.
7. Cunningham SJ. How to write a thesis. *Journal of Orthodontics*. 2004;31(2):144–8.
8. Quick J, Hall S. Part Four: The research dissertation: Planning, producing and writing a thesis. *Journal of Perioperative Practice*. 2015;25(11):215–8.

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