

Dissertation Writing for Master of Science Course

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*A good dissertation is a done dissertation
—ancient grad student proverb*



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Key Points

- Master's degree signifies that the degree holder has the skill to perform research in an independent manner.
- Time management is crucial for completion of MSc dissertation.
- A strong self-motivation and self-discipline will help the students to stay focussed on their work.
- Working along with a small group of students may kindle a positive competitive spirit.
- Good communication and presentation skills are as important as carrying out a good research work.
- The Guide is meant to facilitate the dissertation process and not to lead.
- The student is primarily responsible for the quality of the dissertation and his/her work will be evaluated prior to awarding the Master's degree.
- Aims of the study refer to what you plan to achieve, while the objectives tell how you plan to achieve them.
- The results should be presented in a logical manner with use of appropriate sub-headings and statistical tests.
- Conclusions should be directly based on the results of the study.
- Additional reference materials should be provided as appendices to illustrate the originality of the work.

Introduction

MSc dissertation is a substantial piece of work, but to successfully complete it, one should have a clear understanding of what is expected of a Master's student. Several queries may arise in the minds of MSc students during the process of writing a thesis, as this may be their first exposure to research [1]. Some of these queries may appear trivial to the guide, but to the student, it may be of serious concern.

While the undergraduate degree signifies that the candidate has a general knowledge about the subject the Master's degree indicates that the person has an advanced knowledge/understanding of the subject and also signifies that the degree holder has the skill to perform research in an independent manner [1]. Most of the Master's students succeed easily in advancing their knowledge about the subject but when it comes to the dissertation they feel really challenged to complete it

Most of the Master's students assume that their guide has the greater responsibility to choose an appropriate topic for research, plan and carry out the study, while their role as a student is mostly passive and they have to blindly write and do what they are being instructed by the guide. Sometimes even the guides have a similar mindset and assign their students certain pre-determined topics for research and utilize the student only to carry out the procedures involved in their dissertation, without guiding them how to plan, carry out and write up a dissertation. But what these students and guides are often forgetting is that the MSc student is expected to master the art of dissertation writing as a part of their curriculum and develop the

confidence to carry out independent research in future. The MSc student should be capable of identifying a research topic, framing a research question/hypothesis, performing literature review, carrying out research in par with established standards, analysing the data, drawing conclusions and making recommendations [2]. Successful completion of an MSc dissertation does not depend only on strict adherence to the rules and guidelines of the University, but largely depends on the active involvement of the candidate in the process of planning and performing dissertation work and his/her ability to understand how to write a dissertation. This chapter is intended to provide an overview of the process of dissertation writing and serve as a meaningful guide for the MSc students as well their supervisors/guides.

Steps in MSc Dissertation

MSc dissertation involves several steps as described in Fig. 1 [1, 3]. The initial steps including selection of appropriate topic, study design, methodology and the way the research was performed, primarily influence the quality of the dissertation work. Writing, reviewing and editing the dissertation are the last steps in the dissertation



Fig. 1 Steps in MSc dissertation

cycle. But one cannot ignore the importance of the art of writing a dissertation because if the Master's student lacks the ability to write up his/her work in a scientifically sound and lucid manner, the significance of the work can be underrepresented. So, gaining the skill to write a good dissertation is as important as carrying out a good research work.

Skills Required for Writing MSc Dissertation

Time Management

Time management is crucial for completion of MSc dissertation before the submission deadline. The students should be aware of the time when they are expected to submit the dissertation. Accordingly, they should plan their research work and allot sufficient time for writing the dissertation. Adequate time should be allotted for completing each of the individual sections and the student should strive hard to complete all the sections within the stipulated time [1, 3].

Self-motivation

The MSc students during their course may have several distractors such as parties, family functions, holiday trips, and other personal commitments. The supervisor/guide may not mind a student taking some time off for certain important functions or occasional party. But the student should learn to give more importance for completion of the dissertation. A strong self-motivation and self-discipline will help the students to stay focussed on their work and discourage them from getting deviated unnecessarily [1].

Organizing Support

The Master's thesis usually has a short time frame, so the students have to train themselves to work independently in order to concentrate and focus on their research work. However, working independently to complete the dissertation in time can make the students feel lonely. So, it would be beneficial for them to maintain contact with selected students working on related topics or research work [3]. Working this way as a small group may kindle a positive competitive spirit and encourage the students to complete their dissertation in time. Each of the members in the small group can share with each other their experience in tackling practical problems faced by them.

Communication Skills

It is desirable to develop good verbal and written communication skills. The MSc student should be capable of expressing his/her ideas in a simple and effective

manner when interacting with the supervisor/guide or their fellow students [1]. Good communication also requires active listening. Whenever the guide/supervisor asks the student to change the way he/she works, the student should understand there is some deficiency on his/her part and heed to the supervisors advise. Paying attention to the supervisors and correcting their ways may help the MSc students in succeeding in their task.

Presentation and Technical Skills

The MSc student should develop good presentation skills in terms of organising their contents and use of appropriate charts/figures/tables while writing the dissertation [1]. A brief discussion with their fellow students who have good presentation skills may be useful. The MSc student is also expected to learn the ways of gathering scientific information required for their dissertation from authentic sources. It is also important to develop the technical skills required for using the word processors, reference citing software and other related tools which may help in effectively writing a dissertation.

Roles and Responsibilities of the Student and the Supervisor

The successful completion of the MSc dissertation depends on both the student and the supervisor. Both of them should understand their roles and responsibilities and work in coordination to produce a significant piece of work known as Master's dissertation.

Role of the Supervisor/Guide

Each MSc student will be assigned a supervisor/guide who has the required expertise in the subject and also a good knowledge about performing research. The supervisor is primarily meant to facilitate the dissertation process and not to lead. The various roles of the supervisor include the following [2, 4]:

1. To advise the student in choosing the most suitable topic for research based on the feasibility, time frame and potential risks.
2. To assist in identification of relevant material to be included in the review of literature.
3. To assist in modifying the thesis protocol in view of the time or resource constraints.
4. To advise on appropriate study procedures/methodology including selection of suitable statistical tests for data analysis.
5. To monitor the progress of the thesis work and alert if there is undue delay or deviation from the proposed work.

6. To facilitate writing of the dissertation as per the Institute/University norms.
7. To review and edit the dissertation before submission mainly to assess if the study results have been appropriately represented and the conclusions and recommendations are based on the study findings.

Responsibilities of the Student

The MSc student should clearly understand that the dissertation is entirely his/her own work. The student should also be aware that he/she is primarily responsible for the quality of the dissertation and his/her work will be evaluated prior to awarding the Master's degree. The following are the responsibilities of the MSc student [2, 4]:

1. To maintain regular contact with the supervisor/guide and inform the progress of the dissertation work.
2. To discuss the challenges faced while carrying out the research work with their supervisor/guide in order to decide a suitable approach to tackle it.
3. To inform the supervisor/guide about any deviations from the proposed work.
4. To seek advice and obtain permission from the supervisor/guide if any extension is required for completing the dissertation due to some unavoidable reasons.
5. To obtain guidance from the supervisor while writing the dissertation.
6. To ensure that the writing style complies with the Institute/University guidelines, there are no grammatical or expression errors and the reference have been mentioned according to standard norms.
7. To incorporate the changes or corrections suggested by the supervisor/guide.

Writing the MSc Dissertation in a Structured Manner

General Instructions

Most Universities/Institute have well-written guidelines for writing MSc dissertation, with a detailed description of the word count, font type and size, line spacing, numbering style, margins, instructions for tables/figures etc [5]. It is mandatory that the students strictly adhere to these guidelines.

There may be certain differences in the structure of MSc dissertation across Universities. In general, the MSc dissertation includes the following sections [2, 5]:

1. Title page
2. Abstract
3. Acknowledgements
4. Abbreviations
5. Contents
6. Introduction
7. Review of literature

8. Aims and objectives
9. Materials and methods
10. Results
11. Discussion
12. Summary and Conclusions
13. References
14. Appendices

Title page

The title page should consist of the title of the dissertation, name of the student, name of the supervisors (guide/co-guides), name of the departments involved, and the month and year of submission. Usually, a standard template for title page will be provided by the University/Institute.

Abstract

A structured abstract is an important component of the MSc dissertation. An abstract is an independent, brief description of the dissertation work. It consists of a short introduction/background, aims of the study, methodology, results and conclusions [5]. It serves as an overview of the dissertation and helps the reader decide whether the dissertation is of interest to him/her.

Acknowledgements

A brief acknowledgement of usually one page should be included in the dissertation. It is intended to duly acknowledge the support or guidance received for carrying out the research work and writing the dissertation [2]. If many have contributed to the study, a general description of their roles would be sufficient [5]. The supervisors should be individually acknowledged for their contributions. It is mandatory to acknowledge the source of funding such as external funding agency and the Institute/University for the financial support received [5]. The acknowledgement page is usually signed by the student.

Abbreviations

It is customary to include a list of all the abbreviations used in the dissertation as an easy guide for the readers to understand the various abbreviations employed [5].

Contents

The contents page should list the title of the different sections of the dissertation. The abstract, acknowledgements, abbreviations should also be listed in the contents page without page numbers. The rest of the sections headers, such as introduction, aims and objectives, review of literature, methodology, results, discussion, conclusions and references should be listed with page numbers. The appendixes can be assigned individual numbers (preferably roman letters) and listed in the contents page [5]. A separate list of tables/figures may be provided along with the contents page [2].

Introduction

The introduction is a short section of the dissertation, which describes in 1 or 2 pages the background of the subject which is being studied. It is written in simple words without the use of unnecessary abbreviations to provide the reader with background information, make him/her understand the lacunae in the existing literature, describe the research problem and rationale for carrying out the study [2, 5]. The introduction usually ends with a short paragraph describing the aim of the study.

Review of Literature

The literature review is intended to critically present the available literature which is relevant to the research topic. The student should review and analyse the existing literature to provide a better understanding of the subject. It serves to showcase the depth of knowledge the student has about the topic and exhibit his/her skills to critically evaluate and present the currently available literature. It also describes the trends in the variables to be studied and the factors that can potentially influence the study parameters [2]. It will provide the background against which the thesis will be assessed to see what problem has been specifically addressed by the study and the information gathered as an outcome. It is desirable to summarize important information in existing literature as tables or figures [5].

The literature review is also important to justify the methods or procedures used in the study [2]. It provides the reader with a better understanding of the available methods, the advantages and limitations of those methods and their utility in specific settings. It helps in rationalising your choice of methods or procedures for the study.

The review of literature should be written in a logical order with appropriate use of subheadings to organize the contents [5].

Aims and Objectives

Although the aim of the study has been already mentioned briefly at the end of the introduction, it is necessary to describe the aims and objectives of the study in this section. The aims are general statements about the overall intended purpose or goals of the study. The objectives are the specific statements about how the aims are to be accomplished. In short, the aims refer to what you plan to achieve by this study, while the objectives tell how you plan to achieve them [2, 5].

Materials and Methods

This section should describe the study setting, study design, sample size calculation methods, study participants, the criteria for inclusion and exclusion, study procedures or methods. It is necessary to describe the way the study was carried out, the phases of the study, the roles of different personnel involved in the study and whether the study involved any blinding procedures if required to obtain unbiased outcomes. It is also mandatory to mention whether the approval from the Institute Research and Ethics committee and other relevant committees have been obtained. If the study involved human participants, the student has to mention whether consent was obtained or waiver of consent was approved by the Ethics committee.

There should be detailed description of the procedures used so that it can be replicated by others while undertaking similar studies. However, if previously well-established procedures were used, a brief description of the procedure would suffice with citation of the standard reference. If there was any deviation from the previously published methods, the modifications adopted in this study should be clearly stated [5]. The statistical methods used for data analysis should also be described.

Results

The results of the study should be presented in a logical manner with the use of appropriate subheadings in line with the objectives of the study. It is always desirable to mention the demographic details of the study participants before presenting the study results. This paves way for comparison of the study findings with the previously published or future studies involving similar study participants.

The data should be preferably represented as tables or figures or charts. Certain data can also be mentioned in a descriptive manner as text, but avoid repeating the information in the figures or tables in the text. The results of the statistical tests employed should be mentioned irrespective of whether the values indicate a significant association or not. Sometimes, the outcome of the study may be opposite of what was expected. Instead of trying to underrepresent such data, the student is expected to mention such contradictory data with the results of the statistical tests, so that the reasons for such findings can be discussed later in the discussion. Reference to the available literature or comparison to published studies should not be done in results [5].

Discussion

The discussion should follow a logical sequence, first beginning with a brief description of the advantages and limitations of the methods used, then discussing the important findings of the study and finally discussing the controversial or new findings [5]. It also makes sense to discuss related findings together.

The student should describe the interpretation of the study results and compare it with the previously published studies. It is necessary to provide a scientific explanation for the outcomes of the study. Although the reasons explaining the study findings are primarily the views of the student (as the primary author), it should be based on the results of the present study and/or aptly supported by the findings of other published studies [5].

The limitations of the study should be written in the last paragraph of the discussion. The limitations such as small sample size, inherent problem of the methods used and other factors that could have potentially influenced or biased the outcome of the study needs to be mentioned.

Summary and Conclusions

This section is intended to summarize the key findings of the study. It should be presented more as a general statement rather than repetition of the results. The student should be able to make appropriate conclusions directly based on the study findings [5]. This section should also describe the importance of the study results

and their clinical implications with potential applications. The need for further validation of certain study findings and the scope for further research based on the study outcomes should also be mentioned in this section [2].

References

The references cited throughout the dissertation should be listed here. The student should follow either the Vancouver or Harvard style for listing the references [2, 3, 5]. The in-text citation should be appropriate to the reference style used. Certain modifications in the bibliography style may be suggested by different institutes or universities, it is mandatory for the students to adhere to their institute or university guidelines.

Appendices

This section should be used for providing additional reference material to illustrate the originality of the work [2, 5]. Some of the supporting materials that can be included in this section are the master chart, study questionnaires, consent forms, research and ethics committee approval certificate, etc.

Case Scenarios

1. Your study was approved by the Institute Research and Ethics committee. But after that you come across a new guideline that recommends modification in the standard procedure for performing a test which is part of your study.
 - (a) Will you modify the study procedures based on the recent guideline?
 - (b) Whom will you inform about this recent change?
2. You observe an unusual finding in your study which is contradictory to the published literature.
 - (a) What will you do? Will you mention it in your dissertation or disregard it?
 - (b) If you decide to mention the unusual finding in the results, in which section of your dissertation will you explain the probable reasons for getting such conflicting results.

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