



UNIVERSITI  
PENDIDIKAN  
SULTAN IDRIS  
اونيزوسيتي فنديديقن سلطان ادريس

SULTAN IDRIS EDUCATION UNIVERSITY

# **GUIDELINES TO DISSERTATION / THESIS WRITING**



**INSTITUT OF GRADUATE STUDIES  
SULTAN IDRIS EDUCATION UNIVERSITY**

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**APPROVED IN SENATE MEETING NO.5/2023 DATED 16 MEI 2023**

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# UNIVERSITI PENDIDIKAN SULTAN IDRIS

## 1. NAME

These guidelines are called Guidelines to Writing Dissertation / Thesis.

## 2. PURPOSE

The purpose of this guideline is to:

- a) Assist postgraduate students to write a dissertation/thesis in accordance with the standard formatting.
- b) Briefly describe the concept that should be in the writing dissertation / thesis.
- c) Provide guidance to supervisors and the Institute of Graduate Studies (IGS), thus providing the same viewpoint regarding the writing of a dissertation / thesis.
- d) Provide a standard template to be used by the students in the writing of a dissertation / thesis.
- e) A guide for writing the thesis but subjected to their respective fields of study.

## 3. DEFINITION

In this guidelines, the following are the details of the definition unless the context describes the meaning otherwise:

- a) **Thesis:** Academic research reports submitted by students for the fulfilment of the Doctorate program of study; Doctor of Philosophy and Doctor of Education.
- b) **Dissertation:** Academic research reports submitted by students to meet program requirements for Masters by Research and Masters by Research and coursework.
- c) **Project Paper:** Academic research reports submitted by students to meet program requirements for Masters by Coursework.
- d) **Candidate/Students:** A person who has registered for the Graduate Program at Sultan Idris Education University (UPSI).
- e) **Supervisor:** Academicians or industry experts proposed by the Faculty and approved by the Graduate Studies Committee to oversee the study by the students.
- f) **Dissertation/Completed Thesis:** Hardbound copies that have undergone the correction and improvement process.

## 4. ADDITIONAL INFORMATION

### Submission of Dissertation / Thesis

Candidates are required to submit a complete dissertation / thesis after the checking and correcting in accordance with the guidelines established by IGS.

- a) Degree Conferment Condition

Students are required to fulfil this condition to enable them to receive their respective degrees. University will not award a degree to a candidate that has failed do so.

b) Reserve of Dissertation/Thesis Copy

Three (3) hardbound copies of the dissertation / thesis and two copies of a compact disc (CD) in PDF format must be submitted by the student to the following parties:

- i. One softcopy that is uploaded in UPSI digital resipotory together with a hardbound copy to be kept in the University's library.
- ii. One softcopy to be stored in IGS.
- iii. One hardbound copy to be submitted to the Faculty.
- iv. One hardbound copy to be submitted to the Supervisor.

c) Plagiarism

Sultan Idris Education University provides the use of similarity index software (percentage); (for example Turnitin software) to help the students to tackle plagiarism. For the purpose of sending the draft dissertation / thesis for Viva Voce oral examination, candidates are required to send a copy of the plagiarism/similarity index result (not exceeding 30%) which had been approved by the supervisor to the Institute of Graduate Studies. Failure to do so will result in cancellation of Viva Voce oral examination from being carried out.

d) University's Property

All the dissertation / thesis will be permanently entitled to Sultan Idris Education University in which the copyright of the original copy will be owned by the University, and not by the author of the dissertation / thesis. Any publication which involves the dissertation / thesis or any part of it requires permission from the University beforehand.

**5. DISSERTATION /THESIS CONTENT IN GENERAL FOR EVERY CHAPTER**

**Generally, a dissertation / thesis contains five (5) chapters/sections, which are:**

- a) Introduction
- b) Literature Review
- c) Methodology
- d) Findings
- e) Discussion, Recommendations, Implications and Conclusions

**\*Number of chapters/sections subjected to the topic and field of study.**

**a) Introduction**

**Preface / Introduction**

This section is an introduction to the issues related to the study / research in general. Its descriptions should give an initial overview of the scope of the study which is to be carried out by the candidate.

**Background Research**

These sections describe in general about the study that will be carried out. Details and elaborations of this section become the trigger point of the research's ideas.

## **Problem Statement**

This section describes the issues / problems to be studied in the research. Candidates need to explain why those studies should be carried out based on the arguments and evidence related.

## **Purpose of the Study (if necessary)**

Describes in general of what is the purpose of conducting the study.

## **Objective of the Study**

The objective of the study should be specific, measurable, accessible, realistic and suitable with the duration of the study. Objective writing needs to be in the form of verbs, related to the field and their respective research level.

## **Research Question**

This section enlists the questions that need to be answered in the study. Research questions are usually created based on the objective of the study and must be related to the problem statement mentioned.

## **Research Hypothesis (if necessary)**

This part of the study states early expectations about the possible results of the study. One of the important characteristics of hypotheses is the ability to show the correlation between the variables in the study that are specific, clear and measurable.

## **Conceptual Framework of Research and/or Theoretical Framework of Research (if necessary)**

Explains the aspects related to theories and / or concepts that underlie study based on the resources that are reliable from scholars / experts / researchers in the field. If necessary, this framework could also be presented in the form of diagrams.

## **Operational Definition**

The operational definition / term definition explains the key concepts based on the context of the study.

## **Study Limitations**

This section describes the limitations of the study conducted.

## **Importance of Research**

This section will clearly describe in details of the study's impact and explain the benefits of the study's findings and results to multiple organizations, communities, countries, related agencies and also the development of knowledge in that particular field of study.

## **Summary**

This part formulates concepts, principles, and ideas included in the chapters.

## **b) Literature Review**

The literature review represents the critical and analytical writing about academic writings that had been published by scholars and researchers on the topics studied. The purpose is to enlighten the readers on the theories, concepts, and arguments that had been used in formulating the research procedures. It also discusses the strengths and weaknesses of the researches conducted on the related topic and scope of this study.

The literature review should be centred on the research questions formed. This part does not only list the research items obtained for the study or the compilation of previous studies alone. Instead, the candidate must demonstrate the synthesis of the results in the form of a summary of the researches that has been previously known and unknown, identifying controversies involving the field of study, and thus form the research questions that need further researching. The results of this literature review can be used to help form a rationale for your study, to identify the variables, and ultimately help in choosing appropriate research methodologies. It can also be linked to the findings of the study in the discussion section. Proposed writing on this sections consists of three (3) categories:

### **Introduction**

- Identify common topics, issues, or areas of focus, then provide the appropriate context for the literature review.
- Shows the overall trend ; or contradictions in the theories, methodologies, evidence, and conclusions; or gaps in research or the field; or a problem / new perspectives that interest researchers.
- Justify the reasons for the need of literature review; explain the criteria used for the analysis, compare and arrange materials from the literature, and state why certain literature are excluded, if needed (scope).

### **Main (Body)**

- Collecting materials for literature (research, reviews, theoretical articles, case studies and so on) based on categories / similar themes such as qualitative versus quantitative approach; author's summary; purpose or objectives; chronological order and etc.
- Summarizing research or articles in accordance with the relevance of references in the literature.
- Suggesting main ideas at the beginning paragraph and in other parts that are strategic to facilitate the readers in understanding the comparisons and analysis presented.

### **Summary**

- Formulate major contribution of the related researches and the materials referred for the study to be conducted. Candidates should focus on research questions mentioned in the introduction.
- Evaluate the latest trend of the field of study that has been researching on. Candidate needs to propose on the development of the main methodology referred, show the gap that exists in the study, theories and findings that are inconsistent and field or issue related to the research that is about to be studied.
- Make a conclusion by showing a relationship between the main topics in literature with the field to be studied.
- If necessary, this structure can be presented in a diagram.

## c) **METHODOLOGY**

This part is different between one dissertation / thesis with other dissertation / thesis depending on the field of study being researched about and it may not be available in theoretical based dissertation / thesis. This section contains information and justification towards materials, theoretical approach, experimental design and method (including statistical analysis) used to achieve the research's objectives. Materials and methods used in research need to be explained thoroughly and accurately. Reference for methods and procedure applied must be stated. Shown below is an example of methodology section written on social science research. The example below can be modified to suit the research areas being studied, such as Information Systems, Engineering, Science, Sports, and Science and etc.

### **Introduction**

Introduction in methodology chapter should discuss what was discussed in the chapter, briefly. For example, Parts One narrates on survey design while Part Two explains on the sample population and many others. It is also for the best if the methods used are also included according to the sequence of objectives of the study as stated in the first chapter.

### **Research Approach**

In research approach, a dissertation/thesis should contain these following information:

- Research approach, for example, qualitative or quantitative research, Mixed-Method, Design and Developmental Research (DDR), Design-based Research (DBR) and Action Research.
- Approach / Types, which could either be an experiment, case studies, surveys, action research, the basic theory (grounded theory), ethnography, text analysis and etc.
- Data collection method in which it could be one single method, mix-method or even multiple methods.
- Data collection could be current or long-term based.

### **Population and sample / participant / subject / case**

- Whoever that becomes / chosen as sample population that wants to be generalized by the study.
- Choosing samples from a population.
- How to choose a sample - random or selective, selection through field research.
- How participants or the case been chosen and why use those participants or case in this study.
- Why that method was used.
- How many subjects / participants / cases involved in the study.

### **Instruments**

- Method of development/adoption and modification instruments
- The process of validity and reliability of the instrument passed through:
  1. Validity of page and content
  2. Reliability
  3. Process of translation
- The instrument is a measurement tool to get / collect data.
- Data is information needed by the researcher to answer the research questions.

- Instrumentation is a combination between the instruments and procedures used in gathering data.
- An instrument that was created by self must go through a certain consideration in terms of its validity, reliability, objectivity (refer to subjective assessment), and usability.
- An instrument that is adapted or that uses existing instruments need to go through :
  - a. Acculturation process, for example, an instrument that was taken from overseas, must be adjusted to local socio-culture.
  - b. Translation process needs to go through face validity (confirmation by linguist and content expert) and back to back translation.
- Procedure for collecting data. How data are collected, for example, questionnaire distribution, in-field data collection , interview process, and observations.

### **Pioneer Study (if applicable)**

- Pioneer study's purpose – why or reasons to choose that particular sample; validity and reliability.
- When, where and who was involved in the implementation of the pioneer study.
- The results of the pioneer study - the validity, reliability and other related information (if any).
- Items that were to be dropped, added or to be modified (if any).
- Was the normality test analysis was conducted and what were the results.

### **Data Collection Procedures**

- Explanation of procedures and steps of research data collection.

### **Methods / Techniques of Analysing Data**

- Explanation of procedures and steps of analysing data according to the research objective / answering the question of study / testing the hypothesis of the study.
- Does Exploratory Data Analysis (EDA) (for example normality) being implemented and what is the result.
- The appropriate statistical software (if any).

### **Summary**

- Summarize what was written / discussed in this chapter.

## **d) FINDINGS**

### **Introduction**

The introduction in finding chapter should briefly discuss what is in the chapter.

### **Main (Body)**

This chapter presents and interprets the research data. The overall findings of the study and analysis can be presented in tables, figures, and statements to enable important discoveries to be highlighted. Each table should consist the introduction of the table, table and description of the table. The findings can also be written with more than one chapter. This section should be arranged according to the hierarchy of research questions to show that all questions are answered.



## **Summary**

Summarize what was written / discussed in this chapter

### **e) DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS**

This chapter should briefly summarize the research findings. Next, this chapter also discusses the study's findings by relating theories and past research discussed in the literature review. It is best if the study findings and discussion are written according to the sequence of objectives or research questions. These findings need to be discussed critically to symbolize how scholarly that certain study carried out. The findings are concluded in synch with research questions. The study also can suggest a new innovation or new ideas based on the findings. Significance and implications of the research conducted on the field of study must be stated. Suggestions for future research should also be included in this chapter.

# **DISSERTATION/THESIS FORMAT**

## 1.0 DISSERTATION/THESIS FORMAT

Each dissertation / thesis **MUST** follow the format that had been fixed by IGS.

### 1.1 Arrangement for the dissertation/thesis

Each dissertation / thesis contains several parts which are arranged as in Table 1.1.

No.	Subject	Status	Notes
01.	Title page	Compulsory	Numbered with small Roman numerals
02.	Certification Page (early dissertation/thesis)/ Certificate of Authentic Writing form (latest dissertation /thesis)	Compulsory	Numbered with small Roman numerals
03.	Appreciation page	Compulsory	Numbered with small Roman numerals
04.	Abstract i. Malay Language abstract ii. English Language abstract	Compulsory	Numbered with small Roman numerals
05.	Contents Page	Compulsory	Numbered with small Roman numerals
06.	Tables List page	Compulsory	Numbered with small Roman numerals
07.	Figures List page	Compulsory	Numbered with small Roman numerals
08.	Abbreviations / Symbols List Page	Compulsory	Numbered with small Roman numerals
09.	Reference	Compulsory	The page number is continued from the last page of dissertation / thesis
10.	Appendix	Optional	

### 1.2 Title Page

The title page contains information that is arranged as follows:

- i. Full title of dissertation/thesis
- ii. Student's full name
- iii. The name of the degree awarded
- iv. Faculty's name
- v. University's name
- vi. Submission year

**Please refer to APPENDIX A2**

### 1.3 Certificate of Authenticity

Certificate status of dissertation / thesis must be made by completing the Certificate of Authentic Writing form such as mentioned in Appendix B. This certificate requires confirmation from both the student and supervisor and needs to be signed. Candidates should always make sure that the form is the updated copy by constantly referring to the IGS website.

## 1.4 Declaration of Dissertation / Thesis Status

Certificate status dissertation / thesis must be made by completing Submission Confirmation Dissertation / Thesis form in Appendix C. If a dissertation / thesis is classified as confidential or limited, the library is not allowed to make a sale of the dissertation / thesis. If the author classifies a dissertation / thesis as not limited, the university will assume that that dissertation / thesis as unlimited and the Sultan Idris Education University has the right to use it for any purpose either for printing or for other needs. This form is not necessarily be placed within a dissertation / thesis but it must be submitted together with the dissertation / thesis given to the Tuanku Bainun Library. Candidates should always make sure that the form is the updated copy by constantly referring to the IGS website.

## 1.5 Appreciation

Acknowledge the individuals or organizations that have provided assistance directly or indirectly in the preparation of the dissertation / thesis. This page is limited to one (1) page only. An appreciation is written by using single spacing. Please refer to the example in **APPENDIX D**.

## 1.6 Abstract

Abstracts should contain the following items:

- i. Purpose / Objective of the Study
- ii. Methodology
- iii. Findings
- iv. Conclusion
- v. Implication / Contribution of Study

Uses one or two sentences for each of the matters specified above. The abstract should be no longer than 300 words, written in one paragraph and written in both Malay and English. For the dissertation / thesis written in Malay, the title, and abstract translation must be translated into English and vice versa . It must be written in single spacing. Please refer to the example of Malay abstract in **APPENDIX E1** and English abstract in **Appendix E2** for a thesis written in Malay.

Notes:

- For quantitative studies, findings that have specific values (such as validity coefficient values, reliability values, frequency values, or any value obtained) need to be stated according to the study.
- Abstract must not contain references. Example: Ahmad et al. (2023).
- Abstract must not contain footnotes and keywords.
- Sample of abstracts can be reviewed at the Institute of Graduate Studies website.

## 1.7 Table of Contents

The contents page contains a list of references for all the information in the dissertation / thesis granted under preliminary dissertation / thesis, chapters, and pages. Each prefix dissertation / thesis, chapter and page number shown in the page content must coincide with the beginning of the dissertation / thesis, chapter, and page number in the dissertation / thesis. Show the title of contents up to three levels only. Please refer to the example in **APPENDIX F**.

## 1.8 List of Tables

This page contains a list of all tables in the thesis. Information on the tables that needs to be stated are the numbers, table captions, and the number of pages where those tables are placed. The list must be written according to the order of the chapters. However, if the entire dissertation / thesis contains only one or two tables, the list of Table is unnecessary. Please refer to **APPENDIX G**.

## 1.9 List of Figures

All illustrations included in the text, such as maps, charts, drawings, graphs, printed images, diagrams, and photographs are referred to as 'figures'. List of figures contains all the number of figures, the title of the figures and the pages where these figures are included in the dissertation / thesis. List of figures must be written according to the order of the chapters. Please refer to **APPENDIX H**.

## 1.10 List of abbreviations

This page lists the symbols, abbreviations, nomenclature and terminology that are found in the text. The order of writing are as follows:

Roman Letter	-	alphabetical order
Greek Letter	-	alphabetical order
Superscript	-	alphabetical order
Subscript	-	alphabetical order

Please refer to **APPENDIX I**. To get more details on the spelling and abbreviations, students are encouraged to refer to 'Gaya Dewan Bahasa dan Pustaka'

## 1.11 Attachment list

This page lists all the attachments used by the students in completing the research. Please refer to **APPENDIX J**.

## 1.12 Text

The text of the dissertation / thesis must be divided into chapters with titles given and each of the titles must reflect the content of the chapter. Each chapter must begin on a new page. The chapters can be expanded into smaller parts with given sub-chapters. The titles and sub-headings should be numbered. Please refer to the examples in APPENDIX K1 and K2. The number of chapters in the dissertation / thesis is not limited. Generally, a dissertation / thesis will be structured as follows:

- i. Introduction
- ii. Literature review
- iii. Methodology
- iv. Findings
- v. Summary, Discussion, Recommendation, Implication and Conclusion

### 1.12.1 Reference in the text

All the information and ideas quoted from a source must be acknowledged in the text. Please refer to matter 3.4 and the latest APA style guide.

### 1.12.2 Tables in text

All tables are given a number and must refer to the chapter like Table 4.2 for the second table in chapter 4. Each caption is written on the left and with single spacing. The table's title is to be written on top of the table and written using Times New Roman, size 12 without a full stop at the end and written on the left as well. Please refer to APPENDIX L. If the table was taken from a specific source, the source must be stated at the end of the table. However, in writing, tables can only be placed referenced in the text. Please refer to the latest APA style guide and should be consistent in the overall writing of dissertation/thesis.

### 1.12.3 Figures in text

All figures are given numbers using figure direction. Numbers of those figures should refer to the chapter such as Figure 5.2 for the second figure in chapter 5. Each headline of figures is written on the top left of the figure followed by the figure. The headings are written using Times New Roman font, size 12, without the full stop at the end and written on the left. Please refer to APPENDIX M. If a figure is taken from a particular source, the source must be stated at the lower end of the figure. However, in writing, tables can only be placed after referenced in the text. Please refer to the latest APA style guide.

### 1.12.4 Equations / Formula Writing in Text

Equations / formulas should be numbered using the figure direction. Number of equations / formulas written at the end of the equation and referred to that particular chapter. For example, in chapter 2 for the equation / formula 1 and 2 and so on are as follows:

$$y = mx + c \quad (2.1)$$

$$z = 10x^2 + y^2 \quad (2.2)$$

## 1.13 List of references

UPSI dissertation / thesis uses only the reference list and not the bibliography. This list must be attached at the end of the dissertation / thesis, before the Appendices. Candidates cannot mix up a style of reference writing and it should be consistent. Please refer to the latest APA style guide and should be consistent in the overall writing of dissertation/thesis

# **TECHNICAL SPECIFICATION**

## 2.0 TECHNICAL SPECIFICATION

### 2.1 The title of the dissertation/thesis should be:

- i. short and able to convey the meaning/purpose of the research.
- ii. cannot exceed 15 words (the number of words does not include conjunctions such as "and", "this", "in", "as well as" and so on).
- iii. DO NOT use \*punctuation marks, word abbreviations and parentheses.
- iv. name of places, formulas or scientific names and special terms will be counted as one (1) word.
- v. numbers less than 10 must be spelled out.

\*Examples of punctuation marks:

Colon (:)

Apostrophes, quotes or double quotes (" ")

### 2.2 Dissertation / Thesis Length

Dissertation / thesis length depends on the program of study. However, the following guideline may be followed:

- Master's Degree program by Coursework: Between 10,000 to 20,000 words (subject to the declaration of JPS of Faculty, supervisor and field expertise). [171th Senate No.10/2018]
- Master's Degree program by Research and Coursework: Between 20,000 to 40,000 words (subject to the declaration of JPS of Faculty, supervisor and field expertise). [171th Senate No.10/2018]
- Master's Degree program by Research: Between 50,000 to 60,000 words (subject to the declaration of JPS of Faculty, supervisor and field expertise). [171th Senate No.10/2018]
- Doctor of Education: Not less than 50,000 words and not exceed 60,000 words.
- Doctor of Philosophy: Between 80,000 to 100,000 words (subject to the declaration of JPS of Faculty, supervisor and field expertise). [171th Senate No.10/2018]

### 2.3 Page Layout

Text page in dissertation / thesis should be presented in portrait format. Landscape shaped page layout can be used to presenting figures and schedules.

### 2.4 Paper Types

Only the white paper, sized A4 (210 x 297 mm) with good quality paper types such as similes weighing 80g, or which have almost the same qualities can be used to prepare the copies of the final dissertation / thesis. Copies of the dissertation / thesis must also be produced using similar quality paper.



## 2.5 Type and Size of the fonts in the text.

Text in the dissertation / thesis, including titles and pages must be produced using the same fonts letters. Type of fonts suitable for use in the dissertation / thesis is Times New Roman or Arial.

Font size options that can be used in the text are either size 11 for Arial font or size 12 for Times New Roman font. The size selected must be applied uniformly in the entire dissertation / thesis. Footnotes and text in the table could use a smaller font size but shall not be less than a size 8.

Italic writings are not allowed except for scientific names and terminology in different languages. Use bold writings for the chapter headings and subheadings without lines.

The chapter title should be capitalized and bolded. For sub-headings, only the first letter of the first word in the sub-chapter should be capitalized.

## 2.6 Frame

Top frame	: 2.921 cm @ 1.15 inch
Bottom frame	: 2.54 cm @ 1 inch
Left frame	: 3.81 cm @ 1.5 inch
Right frame	: 2.54 cm @ 1 inch

Certain frame specifications are intended to facilitate the process of bookbinding and editing of dissertation / thesis later. All information in the dissertation / thesis, including the title of the text, footnotes, diagrams and pages, must be within the scope of the text that has been set.

## 2.7 Align and Spacing

Text should be typed using left-right align (justify). The first line of the first paragraph should not be aligned to the right. For the second and subsequent paragraph, the first line of each paragraph should be aligned about 1.27 cm @ 0.5 inches from the frame on the left. However, a new paragraph cannot be started on the last line of a page.

Each line of text in the dissertation / thesis must use double spacing. This spacing must be applied uniformly in the entire dissertation / thesis.

Nevertheless, single spacing must be used for following circumstances:

- i. Footnote (if necessary);
- ii. Quotes containing three lines or more (must be justified and form a block of text);
- iii. References (unless requires double spacing between one entry with the others);
- iv. Titles of the tables and figures that contain more than one line;
- v. Appendices, such as questionnaires or letters; and
- vi. Topics or sub-topics.

Guide to using other spacing must cover the following items:

- i. The spacing distance between the top margin and chapter number is 2.54cm or equivalent to double spacing, down from the first line.
- ii. Four spacing are used between the chapter number and title, and between the title and the first line of text.
- iii. Double spacing used between sub-section of titles and the first line of text of that particular sub-section.
- iv. Double spacing is also used for the last line of text and tables, or diagrams, or illustrations.
- v. At least one-character spacing should be used between commas ',' or a full stop '.' and the first letter of the next sentence in the same paragraph. However, no spacing required between the last letter of the previous paragraph in the same paragraph with commas or periods.

The title of the chapter should be typed in the middle between the left and right borders. Each chapter must be started on a new page.

## 2.8 Page

Dissertation / thesis should be printed on side of the page only, on each sheet of paper. All the pages in the page dissertation / thesis should be numbered consecutively, including pages that contain tables, figures, and appendices. Page numbers should be placed at the right side on the upper ledge, namely 27.1 cm @ 0.5 inches from the top and 2.54 m @ 1 inch from the right side, using the Times New Roman font size 12 or Arial font size 11. The page number should stand alone without any use of parentheses '()', hyphen '/', a dash '-' or any decorative images.

Page numbering must be as follows:

- i. Early pages before Chapter 1 must be numbered in small Roman numbers (such as ii, iii and iv).
- ii. The title page should not be numbered even though it is recognized as the pages numbered i.
- iii. Every page which contains chapter heading also does not need to be numbered although the page number considered into account. For example, page 1 is the first page for Chapter 1: Introduction that does not need to have its page number.
- iv. Every appendix that needs to be attached has to be labelled with a letter, for example, Appendix A, or Appendix B and numbered according to the appendix letter. For example, Appendix A might include 10 attachments that are separate. So, it needs to be given a number page like A1, A2, A3 until A10.
- v. List of references page should be numbered and the numbering is continued from the last page of candidate dissertation / thesis. For example, the last page number of candidate dissertation / thesis is 224, so the page number for the first reference list page is 225.

## 2.9 Chapter Numbering and Sub-section

Each chapter and sub-section must be labelled and numbered. Chapter numbering must always use digits, such as Chapter 1, Chapter 2, Chapter 3 and so on.

Each subsection must be aligned and arranged neatly but should not exceed four levels (three decimal places) just like the following example:

5.1 Second level (sub-section Title)

5.1.1 The third level (sub-section, sub-section Title)

5.1.1.1 The fourth level (sub-section, sub-section, sub-section Title)

Note: In the above example, the entry level is 5, which is the first level (Heading chapter) but was not included in the sample in order to avoid confusion because the format for justifying and spacing the number and title of the chapter is different compared to other levels, according to the format as shown in Appendix K1 and K2.

If the length of chapter's heading or any level exceeds a line, double spacing will be used just like the spacing used between the lines in the text.

## 2.10 Binding

### 2.10.1 Copies for Evaluation

**Six (6) copies of dissertation/thesis for Master students and seven (7) copies of thesis for Ph.D. students** (binding with soft-cover) must be handed to at the Institute of Postgraduate Studies with the completed submission form of dissertations / theses.

After evaluation, the dissertation / thesis is returned back to the candidate. Candidates are required to make all the adjustments based on examiners and Viva Committee's reports and receive certification from the supervisor before binding the dissertation / thesis with a hardcover.

### 2.10.2 Last copies for the University

Before preparing a number of dissertation / thesis of hardbound copy as the last dissertation/ thesis copy, the student should ensure that all the University need had been filled and signature from certain parties had been collected. All pages must be in the correct and proper arrangement and proper.

### 2.10.3 Cover's Colour and Letter's Colour (Master's Degree / Ph.D.) - Name and Colour Code

If everything had remained in a satisfactory condition, dissertation / thesis should be bound in hardcover by certain colours according to their respective study programs. The letters that make up the information on the hardcover must be in gold.

Study Program	Hard Cover	
	Colour	Colour Code
Ph.D.	Black	585
Masters	Maroon	567

#### 2.10.4 Dissertation / thesis Cover

The statement on the cover must be printed using the capital letters that are fully gold coloured and requires hot stamping, with Arial or Times New Roman font, size 18 and should contain the following:

- i. Title of dissertation / thesis is organized in the form of an inverted pyramid;
- ii. Name of the student;
- iii. Name of the University; and
- iv. Submission year of the dissertation / thesis.

**Please refer to APPENDIX A1**

#### 2.10.5 Spine (dissertation/thesis)

The statement in the spine of the dissertation/thesis must be printed using the capital letters that are fully gold coloured and requires hot stamping, with Arial or Times New Roman font, size 18 and should contain the following:

- i. Student's name;
- ii. Name of Study program;
- iii. Initials of the University; and
- iv. Submission year of the dissertation / thesis.

There is a little difference in the description of the layout spine depending on dissertation /thesis thickness. Please refer example in APPENDIX N and O.

#### 2.10.6 Trimming

To ensure uniformity in size for copies of the dissertation / thesis at the University, trimming of dissertation / thesis must not involve more than 2.5 mm per side of A4 paper while binding is performed.

#### 2.10.7 Soft Copy (CD)

Students must also provide softcopy (CD) in PDF format to be sent along with the copies of the dissertation / thesis. The softcopy should be labelled with the following information: (Appendix P)

**WRITING  
CONVENTION AND  
REFERENCE  
WRITING**

### 3.0 WRITING CONVENTION

#### 3.1 Unit of Measurement

The use of standard measurement system, Standard International (SI) and its acronyms are encouraged. Some common examples are shown below:

2 litre(2L)  
10 millilitres (10 ml)  
15 kilograms (15 kg)  
7 grams (7 gm)  
9 kilometres (9 km)  
5 hectares (5 ha)  
25 tons (25 t)  
135 parts per million (135 ppm)  
50 Australian Dollars (AUD 50)  
2.7-ton metric/hectare (2.7 t/ha)

\* Take note of empty space between figures and units.

Numeral writing in the front of unit measurements cannot be spelled (written by 2L, and not two L), except when written in the beginning of a sentence or figure one (1).

#### 3.2 Usage of Figures / Digits

All figures / digits usage less than ten has to be spelled except for those with a unit of measurement (for example 7 g, 10 ml). The sentence that starts with figure has to be written with the word (for example, "Fifty respondents was interviewed" and not "50 respondents was interviewed). Another alternative is by compiling sentence sequence by using numbers into a numerical series as follows:

- i. The observed class has 1 table and teacher's chair, 25 benches and a table for the pupil, 4 fans, and 1 whiteboard.
- ii. Enrolment number of the pupil in grade 4 at Bangi SRK throughout the past three years are 125, 180 and 225.

#### 3.3 Usage of Percentage symbol

Symbol % or percent word can be used without white space between digits and symbol, for example, 10.5%. If it was written 10.5 percent (percent), that usage should be consistent throughout the thesis writing. Percentage (Pct.) short form can be used when naming column subject to symbolize percentage.

#### 3.4 Quotes in Text

Both quotations are made directly and indirectly in the text should be given acknowledgment. Failure to do so may lead to charges of plagiarizing the author's work. Usually, surname / father's name is used in the text to make reference. For example, Allen Luke inscribed as Luke in the text. For Chinese author, for example, Goh Hock Seng was written with the surname or the author name is located in the front. Malay author names can be written, for example, Ramlah Mailok written with the full name, surname or author's first name located in the front. Citations in the text should be in the reference list at the end of the thesis / dissertation.

### 3.4.1 Direct Quotation

Direct quotation less than three lines is shown using the quotes symbol. If more, the quotation should be aligned and written with its page number. The example below shows how various forms and quotation directly inserted into the text.

- a) Direct quotation using less than one sentence in the text.

Example:

According to Veldsman (2002, p. 21), the changing of organizations involve the organization's condition in two different locations, "in time or in space".

- b) Quoting directly in the form of complete sentences.

Examples:

This idea is shared by Veldsman (2002) in which organizational change is defined as "The difference in the state of an organization at two separate locations in time or in space". (p. 21).

- c) If the author's name is not included in the quoted paragraph.

Examples:

Some authors explain the change of the organization as a difference in "state of an organization at two separate locations in time or in space" (Veldsman, 2002, p. 21).

- d) The longer quotation is aligned on the left side only or both sides without the quotes.

Examples:

The typical educational reform movements in Malaysia have almost exclusively been initiated by the Minister of Education and then pass on down through the ranks. Teachers in school are seen as the implementer of the reform without any contributions upward to shape or decide on reform initiatives.

(Halliger, 2011, p. 14)

### 3.4.2 Indirect Quotation

- a) If the idea and not the original text of author is included in the text, write only the name and year published. Other information will be inserted in the reference index.

Example:

Veldsman (2002) explains on change concept in one's organization. Change in a certain organization involves the difference in two different locations (Veldsman, 2002).

- b) If the general statements are made by referring to few authors, the reference should be sorted by year, starting from the latest and isolated using the semi-colon.

Examples:

Effective change will not happen in the educational organization without principal involvement to lead the change process competently (Oplatka, 2003; Lakomski, 2001; Clarke, 2000; Hallinger & Leithwood, 1996).



Quoting directly from the author (less than 40 words)

Example:

Dalam membicarakan panduan asas fiqh wanita, Siti Nor Bahyah (2008) menyatakan bahawa "semakin tinggi ilmu yang dimiliki, bukan untuk bermegah tetapi untuk memandu seseorang itu meningkatkan amal kebajikan. Amal fardu kifayah dan amal fardu ain dapat dijadikan sebagai bekalan yang akan manusia bawa apabila telah mati kelak' (ms.152)

Do not tilt the words

Quoting directly from the author (more than 40 words)

Example:

Below is the statement quoted in the KBSR that shows the importance of mathematical thinking elements and problem solving in the teaching and learning mathematics:

←→ The learning of mathematics at all levels involves more than just the basic acquisition of concepts and skills. It involves, more importantly, an understanding of the underlying mathematical thinking, general strategies of problem-solving, communicating mathematically and including positive attitudes towards an appreciation of mathematics as an important and powerful tool in everyday life.  
(Curriculum & Malaysia, 2006, p.112)

Indent 0.5 inches. Double spacing for the entire passage. Do not italicise the passages. Ignore the "... " in the quotation.

Source citations, year and pages

## Writing text Sample

For common nouns, the usage of numeral after the noun is accepted.

**Jadual 1** menunjukkan jadual perancangan bagi sepanjang proses kajian tindakan dilaksanakan. Setiap perancangan telah ditetapkan tarikhnya supaya kajian ini berjalan dengan lancar. **Rajah 2** menunjukkan empat keping gambar yang di ambil daripada papan aktiviti responden sewaktu proses pengajaran dan pembelajaran berlangsung.

Seramai 15 orang responden terlibat dalam kajian ini. Mereka terdiri daripada tujuh orang responden lelaki dan lapan orang responden perempuan dari kelas 5 Amanah. Borang latar belakang (Lampiran G) disediakan untuk mengetahui serba sedikit latar belakang keluarga responden-responden ini dan pengenalan diri responden bagi memudahkan proses temu bual yang akan dilakukan kelak. Borang ini disediakan dalam bentuk jadual bagi memudahkan dalam bentuk jadual bagi memudahkan pengkaji untuk mengisi maklumat.

Numbers 10 and above should be written in a numeral.  
Example: 10, 11, 12, .....

Numbers 1 to 9 must be written in words.  
Example: one, two, ... ,

<b>A) Number written in Numeral</b>		
Number 10 and above	<ul style="list-style-type: none"> <li>• 12 cm</li> <li>• 25 years</li> </ul>	<ul style="list-style-type: none"> <li>• 13 list</li> <li>• 105 words</li> </ul>
Number which represents mathematical function	<ul style="list-style-type: none"> <li>• Times 5</li> <li>• Over 5% of the sample</li> </ul>	<ul style="list-style-type: none"> <li>• 3 times more</li> <li>• 0.33 from</li> </ul>
A number which represents time, date, score, and etc.	<ul style="list-style-type: none"> <li>• 1 hour 24 minutes</li> <li>• A score of 4 on a scale of 5</li> </ul>	<ul style="list-style-type: none"> <li>• 12.30 a.m.</li> <li>• Table 4</li> </ul>
<b>B) Number written in words</b>		
Any number of the beginning of a sentence, title	<ul style="list-style-type: none"> <li>• Forty percent of the samples showed an increase</li> </ul>	<ul style="list-style-type: none"> <li>• Twelve students showed an increase and 12 other students...</li> </ul>
Common fractions	<ul style="list-style-type: none"> <li>• Two-third majority</li> </ul>	<ul style="list-style-type: none"> <li>• One fifth of the class</li> </ul>
Usage that was generally accepted	<ul style="list-style-type: none"> <li>• Five Pillars of Islam</li> </ul>	<ul style="list-style-type: none"> <li>• The twelve Apostles</li> </ul>
<b>C) A combination of numbers and words</b>		
Situation to increase explanation	<ul style="list-style-type: none"> <li>• Ten 7-point scale</li> </ul>	<ul style="list-style-type: none"> <li>• two-way interactions</li> </ul>
<b>D) Another short form</b>		
<p>Be sure to use Latin abbreviations according to the situation:</p> <p>i.e. that is                                      cf. compare  e.g. for example                                et al..and others  etc.. and so forth                                viz..namely</p>		

### 3.5 References

Any reference dissertation / thesis either quoted directly or indirectly, should be listed in the references. For each source used, the candidate must have a reference. This is to certify the source used and allow the reader to keep track of everything that candidates have used. A complete reference can avoid allegations of plagiarism. The reference list is to be started on a new page and word REFERENCE is typed in capital letters. Writing of references uses latest APA style guide.

<b>Passage Type</b>	<b>First reference in text</b>	<b>Next reference in text</b>	<b>Bracket format, first reference in text</b>	<b>Bracket format, next reference marker in text</b>
One author	Walker (2007)	Walker (2007)	(Walker, 2007)	(Walker, 2007)
Two author	Walker and Allen (2004)	Walker and Allen (2004)	(Walker & Allen, 2004)	(Walker & Allen, 2004)
Three author	Bradley, Ramirez, and Soo (1999)	Bradley et al. (1999)	(Bradley, Ramirez, & Soo, 1999)	(Bradley et al., 1999)
Four author	Bradley, Ramirez, Soo, and Walsh (2006)	Bradley et al. (2006)	(Bradley, Ramirez, Soo, & Walsh, 2006)	(Bradley et al., 2006)
Five author	Walker, Allen, Bradley, Ramirez, and Soo (2008)	Walker et al. (2008)	(Walker, Allen, Bradley, Ramirez, & Soo, 2008)	(Walker et al., 2008)
Six or more author	Wasserstein et al (2005)	Wasserstein et al. (2005)	(Wasserstein et al., 2005)	(Wasserstein et al., 2005)
Organization (easily identified by the initials) as the author	Sultan Idris Education University (UPSI, 2013)	UPSI (2013)	(Sultan Idris Education University [UPSI], 2013)	(UPSI, 2013)
Organization (No abbreviation) as the author	Pittsburgh university (2005)	Pittsburgh university (2005)	(Pittsburgh University, 2005)	(Pittsburgh University, 2005)

## General Guidelines

### One Author

Last name / family's name is written first, followed by the first letters of the author's first name.

Example:

- a) Al-Attas, S.M.N (1980). *The concept of education In Islam*. Kuala Lumpur: ABIM.

### Two Authors

Last name / family's name is written first followed by the first letters of the author's first name.

Use the symbol "&" but not "and"

Example:

- a) Creme, P. & Lea, M. R. (2003). *Writing at University*. 2nd ed. Maiden: Open University Press.
- b) Wegener, D.T. & Perry, R.E. (1994). Mood management across affective states. The hedonic contingency hypothesis. *Journal of Personality & Social Psychology*, 66, 1034-1048.

### Three to Six Authors

Last name / family's name is written first followed by the first letters of the author's first name; comma in each of the author's name and the last name of the author use the symbol "&" but not "and".

Example:

- a) Kernis, M.H., Cornell, D.P., Sun, C.R., Berry, A., White, A., Ganster, D.C & Harlow, T. (1993). There's more to self-esteem than whether it is high or low: The importance of stability of self-esteem. *Journal Of Personality and Social Psychology*, 65, 1190-1204.

### More Than Six Authors

Insert the list of names of the first six authors followed with "et al.,". No dots after "et".

Example:

- a) Harris, M., Keraper, E., Stacks, G., Hoffman, D., DeNiro, R., Cruz, P., et al (2001). Writing labs and the Hollywood connection. *Journal of Film and Writing*, 44(3), 213-245.

### Malay Author Without Surname

Leave "bin" atau "binti"

Example:

- a) Asmah Binti Omar

Cited as:

Asmah Omar. (1991). *Kemahiran berbahasa*. Kuala Lumpur, Malaysia: Penerbitan Pustaka Antara.

### Chinese Author Without Surname

Surname followed by the first letters of the next name of author

Contoh:

- a) Chu Chin Ning

Cited as:

Chu, C.N. (1995). Simulated counter-current adsorption processes: A comparison of modelling strategies. *Chemical Engineering Journal*, 56,59-65

### **Chinese Author With English Name**

Surname followed by the first letters of the next name of the author.

Example:

- a) Vincent Foo Hiap Khian

Cited as: Foo, V.H.K (1983). Sarawak: Mini episodes of the past. Selangor, Malaysia: Fajar Bakti

### **Indian And Sikh Author (without surname)**

General form: leave d/o, s/o, a/l, a/p

Example:

- a) Narrayani a/p Jeganathan, cited as: Narrayani Jeganathan (2009)

### **Inherited Name**

Use the inherited name

Example:

- a) Raja Ahmad Niza, cited as: Raja Ahmad Niza. (2009).

### **Titles Given**

Leave titles like Datuk / Tan / Sri / Tun / Prof / Dr / Hajj

Example:

- a) Tun Mahathir Mohamad, cited as: Mahathir Mohamad

### **Agency, Association or Institution as Authors**

Use the official full name

Example:

- a) Pahang, Jabatan Alam Sekitar. (2009)

b) Kementerian Pelajaran Malaysia (2006). *Kurikulum Bersepadu Sekolah rendah: Spesifikasi kurikulum tahun 6*. Kuala Lumpur: Pusat Perkembangan Kurikulum.

### **Corporations**

Use the official full name

Example:

- a) Yayasan Sabah. (2009).

b) Committe of Bank Rakyat finance. Kuala Lumpur. DBP.

### **Organizations as Author**

Example:

- a) American Psychology Association. (2003).

### **Conference Name**

No need to enter the number/session

Example:

- a) Persidangan Fizik Asia Pasifik Ke Lima, dipetik sebagai: Persidangan Fizik Asia Pasifik

### **Unknown Author**

Use the title of the article to replace the author's name

Example:

- a) Developing a teamwork. (2006)

b) *Merriam-Webster's collegiate dictionary* (10th ed.).(1993). Springfield, MA: Merriam-Webster.

# **PLAGIARISM**

#### 4.0 PLAGIARISM

Plagiarism is the use of an idea, work or data taken from other people which are placed in the main text of the dissertation / thesis without giving credit to the original author and use that information as if it belonged to the candidate himself. Those works include :

- i. Words or ideas from printed materials such as journal articles, magazine articles, books, newspapers, websites, computer programs, and others.
- ii. Diagrams, tables, diagrams, illustrations, charts, maps, photographs or other visual material; and
- iii. Information from interviews and etc.

Candidate can be considered plagiarising if:

- i. Directly copy a sentence or paragraph from a reference obtained and write as if the result is the result of the students themselves; and
- ii. Using the original text from a source without using quotation marks (") or indent, although the source is acknowledged.
- iii. Paraphrasing without recognition / acknowledgement.

Plagiarism is a very serious crime in the world of academia and is not accepted by academic scholars. Therefore, if the dissertation / thesis candidate is found to have plagiarism, dissertation/ thesis will be considered as **FAILED** and the candidate will be terminated from the study program. Candidates are advised to always refer to the original author when using ideas or words from the work of the authors or others to avoid plagiarism.

A method for avoiding plagiarism is to make sure that the credit should be given when using the work of other authors. Candidates need to do this even if the original source had been paraphrased or summarized. When quoting a statement that was tele-casted even orally, it must be identical to the original and must be attributed to the original author.



## REFERENCE

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# APPENDIX

**1. PLEASE SET THE MARGIN**

- Top : 5.969 cm @ 2.35 inch
- The right edge : 2.54 cm @ 1 inch
- The left edge : 3.81 cm @ 1.5 inch
- The bottom edge : 5.969 cm @ 2.35 inch

**2. PLEASE SPECIFY THE FONT**

- *Times New Roman/Arial* size 18 gold colour  
(hot stamping)

5.969cm @ 2.35 inch

**LABORATORY CENTERED TEACHING METHOD IN  
THE TOPIC OF HUMAN DIGESTIVE SYSTEM,  
FORM FOUR OF SEKOLAH MENENGAH  
DANG ANUM, MELAKA**

3.81cm @ 1.15 inch

2.54cm @ 1 inch

**SITI NOR BAYA BINTI ABDULLAH**

**SULTAN IDRIS EDUCATION UNIVERSITY**

**2015**

5cm @ 2.35 inch

**PLEASE SET THE MARGIN AS FOLLOWS :**

Top : 5.969 cm @ 2.35 inch  
The right edge : 2.54 cm @ 1 inch  
The left edge : 3.81 cm @ 1.5 inch  
Bottom edge : 3.937 cm @ 1.55 inch

**PLEASE SPECIFY THE FONT**

*Times New Roman* size 12 / *Arial* size 11

Single spacing (*langkauan satu*)

5.969cm @ 2.35 inch

**APPENDIX A2**

LABORATORY CENTERED TEACHING METHOD IN TOPIC HUMAN DIGESTIVE  
SYSTEM, FORM 4, SEKOLAH  
MENENGAH DANG ANUM, MELAKA.

SITI NORBAYA BINTI ABDULLAH

3.81cm @ 1.15 inch

2.54cm @ 1 inch

THESIS STATEMENT / DISSERTATION / THESIS PRESENTED TO QUALIFY FOR A  
MASTER'S DEGREE IN EDUCATION / MASTERS IN SCIENCE / MASTERS IN ARTS  
/ DOCTOR OF PHILOSOPHY

\*\* (COURSEWORK MODE / RESEARCH AND COURSEWORK MODE / RESEARCH  
MODE)

\*\* – for Masters programme only , state one of the Mode taken

FACULTY OF SCIENCE AND MATHEMATICS  
SULTAN IDRIS EDUCATION UNIVERSITY

2015

5.969cm @ 2.35 inch



**Please tick (√)**  
 Project Paper  
 Masters by Research  
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 Signature of the student

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\_\_\_\_\_  
 Date

\_\_\_\_\_  
 Signature of the Supervisor



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Pind.: 00 m/s: 1/1

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(Tandatangan Pelajar/ Signature)

Tarikh: \_\_\_\_\_

\_\_\_\_\_  
(Tandatangan Penyelia / Signature of Supervisor)  
& (Nama & Cop Rasmi / Name & Official Stamp)

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Double spacing, start  
typing on the third row

**PENGHARGAAN (langkau 2 kali)**

Alhamdulillah, dengan izinNya disertasi ini berjaya disiapkan. Dalam usaha mengumpul bahan-bahan kajian, membangunkan perisian dan dokumentasi, penyelidikan telah mendapat bantuan secara langsung dan tidak daripada individu-individu berikut; Profesor Dr. Mohamad Ibrahim-Penyelia disertasi yang banyak memberikan panduan dan nasihat, guru-guru dan pelajar Sekolah Kebangsaan Tanjong Malim dan Sekolah Kebangsaan Datu' Kamarudin, Behrang Stesen yang terlibat di dalam kajian ini, para pensyarah Fakulti Seni, Komputeran dan Industri Kreatif yang telah memberikan ilmu dan tunjuk ajar, rakan-rakan sepengajian yang banyak memberi bantuan dan semangat dan tidak lupa juga kepada Ayah dan Bonda yang sentiasa memberikan sokongan dan kasih sayang yang tidak terhingga kepada diri ini.

3.81cm @  
1.15 inch

2.54cm  
@ 1 inch



2.54cm @ 1 inch

Double spacing, start  
typing on the third row

**ABSTRAK** (Double spacing)

3.81cm atau 1.15  
inch

One  
paragraph, no  
indents,  
single  
spacing and  
*Times New  
Roman* font,  
saiz 12 atau  
*Arial* font,  
saiz 11

Kajian ini bertujuan membina dan menilai kesan modul PBM BIO-SCORE berdasarkan pendekatan pengajaran berasaskan masalah (PBM). Pembinaan modul adalah berdasarkan adaptasi model Sidek & Jamaludin dan telah melalui proses pengesahan menggunakan pekali persetujuan Cohen's Kappa. Kajian juga menilai kesan modul terhadap pencapaian, pemikiran kritis dan hubungan pencapaian dengan tahap pemikiran kritis pelajar. Pendekatan kuantitatif dengan reka bentuk kuasi eksperimen telah digunakan dalam kajian ini. Pemilihan subjek kajian dijalankan secara persampelan bertujuan melibatkan 60 orang pelajar tingkatan empat aliran sains yang mengambil mata pelajaran Biologi di sebuah sekolah di Daerah Kuala Selangor. Subjek kajian terdiri daripada 30 orang pelajar kumpulan rawatan dan 30 orang pelajar kumpulan kawalan. Tiga jenis instrumen kajian digunakan iaitu modul PBM BIO-SCORE, ujian pencapaian bertajuk "Ekosistem Terancam" dan ujian pemikiran kritis Watson Glaser. Data dianalisis dengan menggunakan analisis deskriptif dan inferensi. Analisis deskriptif menjelaskan tahap pemikiran kritis pelajar, manakala statistik inferensi pula melibatkan ujian-t dan ujian korelasi Pearson yang menerangkan perbezaan serta hubungan antara pemboleh ubah kajian. Hasil kajian menunjukkan bahawa terdapat peningkatan pencapaian pada kedua-dua kumpulan rawatan dan kawalan, dengan kumpulan rawatan memperoleh peningkatan pencapaian yang lebih tinggi secara signifikan berbanding kumpulan kawalan. Dapatan kajian juga menunjukkan terdapat peningkatan tahap pemikiran kritis pada kedua-dua kumpulan rawatan dan kawalan dengan kumpulan rawatan memperoleh peningkatan pencapaian yang lebih tinggi daripada kumpulan kawalan secara signifikan. Analisis korelasi Pearson pula menunjukkan tiada hubungan yang signifikan antara tahap pemikiran kritis dengan pencapaian pelajar. Kesimpulan daripada kajian menunjukkan penggunaan modul pembelajaran berasaskan masalah (PBM BIO-SCORE) telah meningkatkan pencapaian dan pemikiran kritis pelajar. Implikasi kajian menunjukkan penggunaan modul pembelajaran berasaskan masalah (PBM) dapat meningkatkan keberkesanan pengajaran dan pembelajaran Biologi.

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**DEVELOPMENT OF PROBLEM BASED LEARNING MODULE (PBM BIO-SCORE) AND IT EFFECT TOWARDS STUDENTS' ACHIEVEMENT AND CRITICAL THINKING SKILLS (Double Spacing)**

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**ABSTRACT (Double spacing)**

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This study was aimed to develop and evaluate the impact of PBM BIO-SCORE module which employed problem-based learning approach (PBL). Development of the module was based on adaptation of Sidek & Jamaludin's model and underwent validation process using Cohen's Kappa agreement coefficient. The study also analyzes the effect of the module towards students' achievement and critical thinking skills. The relationship between achievement and students' critical thinking skills was also studied. Quantitative approaches with quasi- experimental design were used for this study. A number of 60 form four Biology students from a school in Kuala Selangor district were chosen using purposive sampling methods as studied subjects. The subjects were divided into 30 students for the treatment and control groups equally. Three research instruments were employed which are PBM BIO-SCORE module, a set of achievement tests called "Endangered Ecosystems" and a Watson Glaser critical thinking test. Data were analyzed using descriptive and inferential analysis. Descriptive analysis describes the level of critical thinking of the students while inferential statistics which involved a t-test and a Pearson correlation analysis to explain the differences and relationships between the studied variables. The findings showed that there were improvement in achievement for both treatment and control groups, where the treatment group has gained significantly higher achievement. The result also showed that there was increment in critical thinking level for both treatment and control groups with significantly higher increment in treatment group. Pearson correlation analysis showed that there was no significant relationship between students' performance and critical thinking skills. As a conclusion, problem-based learning module (PBM BIO-SCORE) has improved students' achievement and critical thinking skills. The study implicates that the use of problem-based learning module (PBL) can enhance the effectiveness of teaching and learning in Biology.

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**LIST OF ABBREVIATIONS (Double spacing)**

IPTA	Public Institutions of Higher Learning
KPM	Malaysian Ministry of Education
LPM	Malaysian Examinations Board
PBM	Problem Based Learning
SPSS	<i>Statistical Packages For The Social Science</i>

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- A Title Page
- B Declaration of Authenticity
- C Dissertation Status Verification Form
- D Example of Appendixes
- E Example of *Abstrak*
- F Example of Abstract
- G Example of Content Pages
- H Example of Table List
- I Example of List of Figures
- J Example of List of Abbreviations

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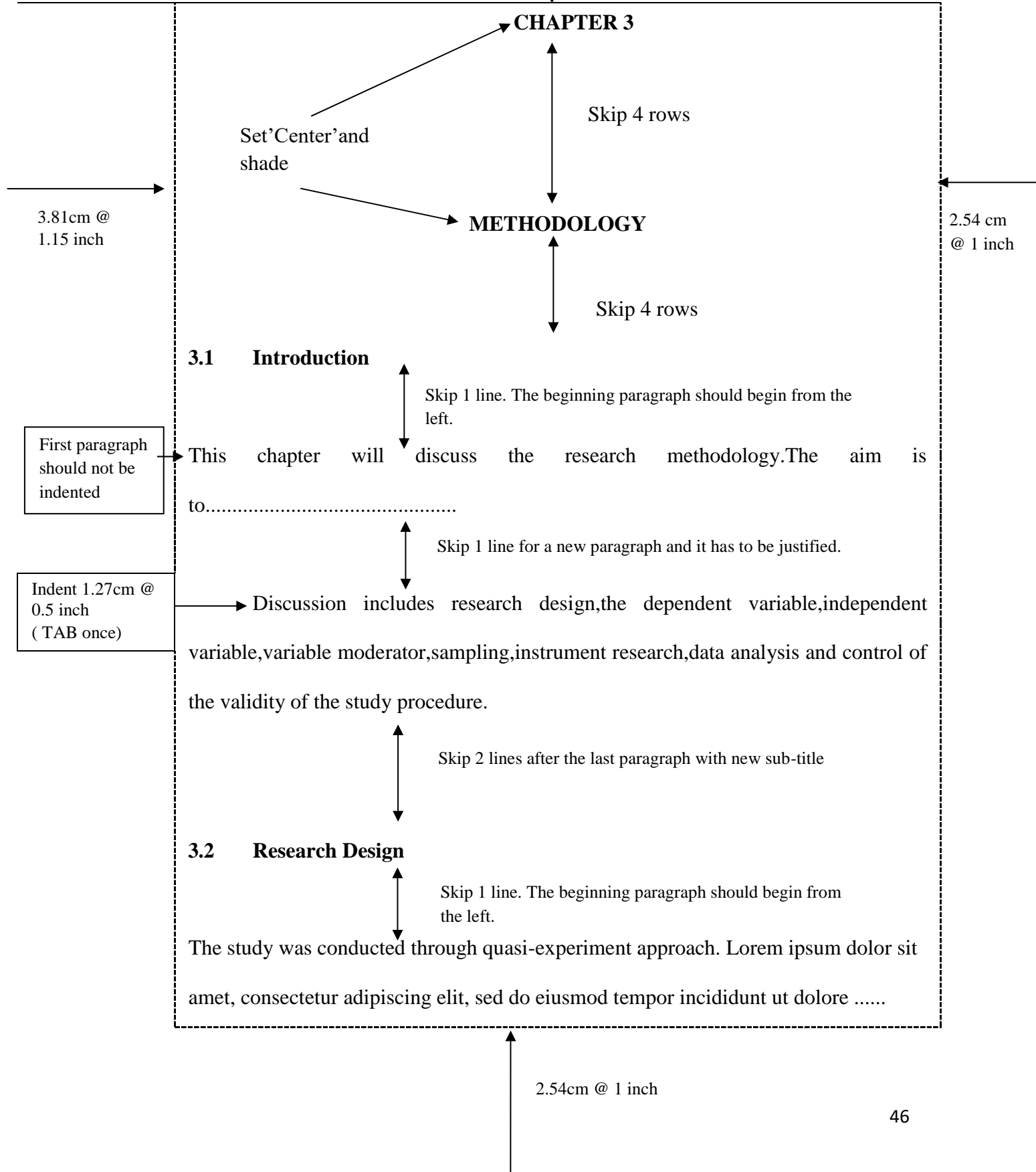
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		LL	UL
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Digit	31.8 (33.2)	21.2	42.4

*Note*, CI = Confidence Interval; LL = Lower Limit, UL = Upper Limit.  
Adaptation from *American Psychological Association (APA)*, 2010.

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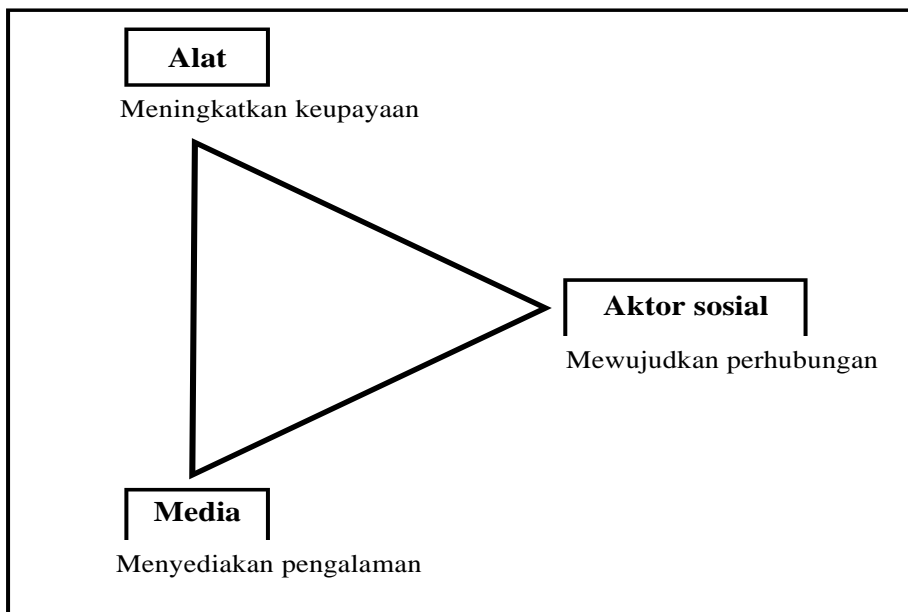


Figure 1.1. Triad Function. Adapted from B.J. Fogg, 1998

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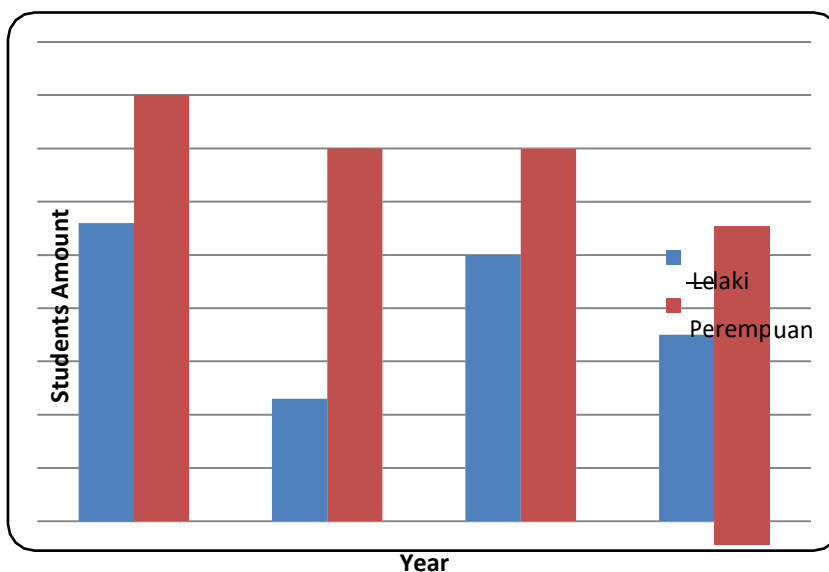
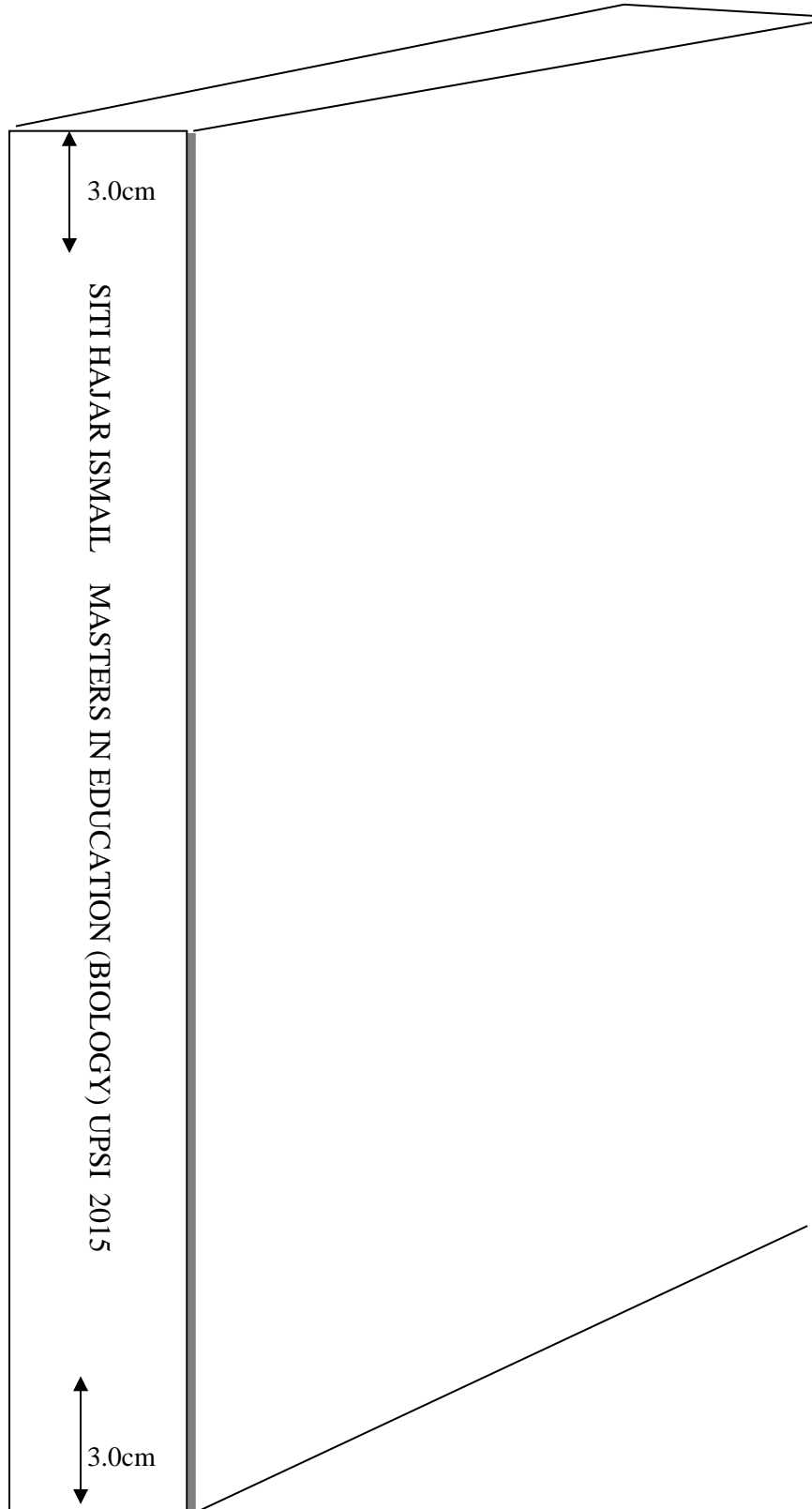


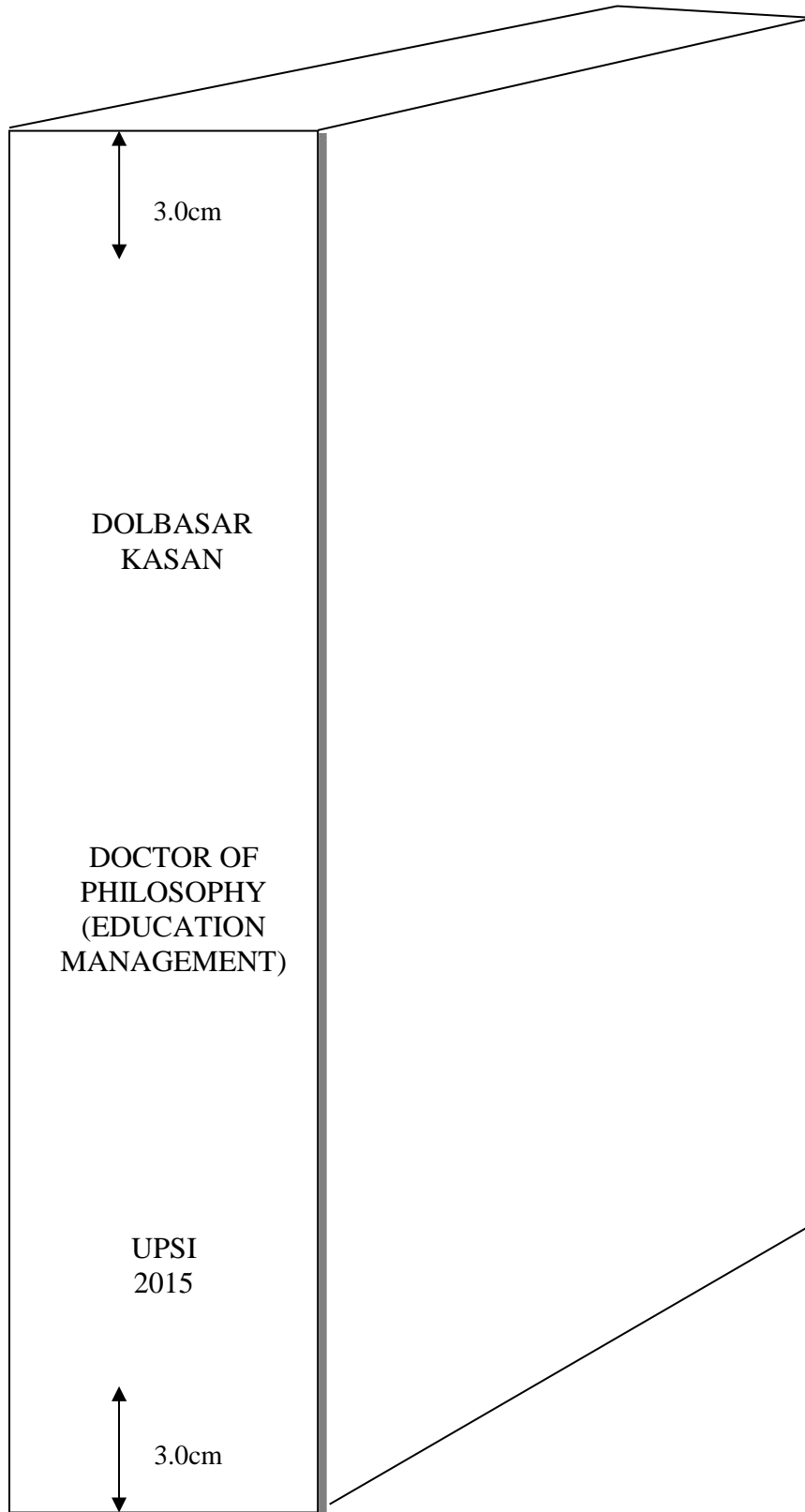
Figure 4.2. Students Enrolment from 2010 until 2013 in Sekolah ABC, Tg. Malim

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