Mechanics of Writing A Research Report

Unit: IV

Semester: II

Paper Code: GIS 10
Name of Paper: Research Methodology and Application of Remote Sensing and GIS Techniques in Research

PG Diploma in RS & GIS

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In this module we will understand the manner, significance, content and structure of a legal academic report. It will help to provide certain precautions and checklist to the researcher to create a more intensive and accurate research report.

Overview of The Steps in Research:

In every research process, following are the general steps involved:
- ✓ Defining problem
- ✓ Reviewing the available literature
- ✓ Formulation of hypothesis or research questions
- ✓ Creating a research design
- ✓ Collection of data with the help of various research tools
- ✓ Processing of the data collected
- ✓ Analysis and interpretation of the data
- ✓ Report writing

Meaning of A Report:

Every research leads to the creation of a research report. Report is the formal logical presentation of the research that has been conducted. The purpose of research report is to convey to the interested persons the whole result of study in sufficient detail and to determine the validity of the conclusions. The culmination of research is in the form of the research report which explains with clarity the various steps that have been undertaken to come to the conclusion. Writing of a research report requires not only technical skill but also thorough knowledge of the subject matter, perseverance and the right perspective on every aspect of the research problem. The ability to write effective report is one of the most useful skills a researcher can acquire. The arrangement of ideas and interpretations of the findings is of utmost importance. In this regard Briwn observes: "we say it as simply as we possibly can, and this that is, that a report is a communication from someone to another who wants to use that information. The report may be elaborately formal, it may be a letter, in great many organizations, it is memorandum; but it is always planned for use.

Significance / Objectives of A Report:

A well written report helps in knowledge building in the concerned area but also helps in future research. While all the necessary information is presented in the appropriate manner so that the targeted readers may be able to understand and utilize the same.

The objectives of a research report are:

1. Conveying of knowledge to the concerned people in the field of research
2. Proper presentation of the findings for further utilization of the recommendations.
3. Give impetus to research in the concerned knowledge area.
4. To re-examine the validity of generalizations drawn by the researcher after the report has been submitted.

Types of Report:

Reports are of different types depending upon its area, purpose and the approach.

Following are some illustrations of the various types of reports:

- ✓ Business report
- ✓ Project report
- ✓ Dissertation
- ✓ Enquiry report of a commission
- ✓ Thesis

Legal Research Report:

A report which deals specifically with a legal problem is said to be a legal research report. Such a report is not a complete description of the work done by the researcher. It is only a brief statement of the most significant facts that are necessary for the understanding the generalizations drawn by the investigator. Once all the data has been analyzed and interpreted, the last step to the entire research process is to write a research report. This report must be comprehensive and written in simple yet clear language so that it is adequately communicated to the concerned readers.

General Guidelines for Report Writing:

After the research process is over, many researchers face the difficulty of writing down the research. It is advisable that before starting the report writing, the entire research time frame, planning and organizing of the study material is done on the basis of the objectives and the hypothesis made. Following are some of the basic guidelines that a researcher may follow throughout the research so that report writing becomes lucid and manageable.

1) **Knowledge of the research material**

   The comprehensive and adequate knowledge of the research area by the researcher cannot be understated. It forms the backbone of the entire research process and is of vital importance at the time of analysis, interpretation and report writing.

2) **Organizing of research material**

   Material collected must be organized and the notes made on them manageable and properly arranged with sufficient information which may be required. The research information must be logically analyzed and represented in the correct sequence of time or occurrence.

3) **Continuous report reflective thinking**

   Researcher constantly reflects on the material and data collected for a more comprehensive legal research report.

4) **Rough drafts**

   Prepare rough drafts which will help him with research interpretation and generalizations to be more accurate and relevant to the research questions or hypothesis.

5) **Rewrite and polish the rough drafts**

   Careful revision of the drafts helps in checking the development of the arguments in the report, representation of the material as well as the cohesiveness of the entire report.

6) **Preparation of the final bibliography**

   It is essential that from the very beginning of the research, the researcher must maintain a bibliography of the literature read, consulted and incorporated in the research process. This bibliography is generally appended to the research project. It should be arranged alphabetically and be divided into various parts like name of the books, articles, reports and legislations consulted.

7) Footnotes and head notes

The researcher must whenever citing another author's work make due footnotes or endnotes to add authenticity and reference to the report. There are various methods of writing bibliography and footnotes like the blue book method, OSCOLA method etc.

Structure of A Report

Pauline V. Young summarized the contents of a good report as following:

A. Introduction

   I.   Clear cut statements as to the nature of the study,

  II.   Aims,

 III.   Sources of information

 IV.   Scope of study

B. Brief statement of the working hypothesis which guided the study.
C. Explicit definitions of the units of study
D. Brief statements of techniques used in study:

   I.   Types of observations used and conditions under which observations were made;

  II.   Types of schedules formulated and conditions under which information was secured;

 III.   Types of case history data secured, their sources, manner of presentation, and preliminary analysis made;

 IV.   Sampling procedures and conditions of selection and testing for appropriateness, representativeness, arte errors;

  V.   Statistical procedures, sources of statistical data conditions under which they were obtained;

 VI.   Types of scaling techniques used.

E. Brief description of experimental treatment of data and techniques in experiments.

F. Major findings.

G. Major conclusions reached about findings.

H. Special remarks:

Problems encountered in gathering the data, classifying them, analyzing them;

   I.   Possible discrepancies in the data collected;

  II.   Suggestions to subsequent investigators on same topics in same context.

 III. Bibliographical references found useful in study (with annotations).

 IV. Appendixes might include sample questionnaires, transcription sheets, sample interviews and the like.

A sound legal report must contain the following parts. They are discussed in detail henceforth:

1) Preliminary

In a legal report before the main content of the research report, certain preliminary sections are to be added:

   I.   **Title page:** The title page is the cover of the report and the first thing that the targeted reader come in contact with. It indicates the main theme or the title of the study. The title should be appropriate and attractive. The title page may also contain the name of the researcher and date.

  II. **Preface/ Acknowledgement:** This may contain the acknowledgement to all the people whom the writer is indebted for guidance and assistance.

 III. **Foreword:** The foreword involves a brief synopsis and importance of the content.

 IV. **Table of cases:** Contains the list of cases cited within the report

  V. **List of abbreviations:** Embodies all the abbreviations used in the report subsequently with their full form

 VI. **Table of contents:** This mentions the major division of the report and their respective page numbers.

VII. **Table of maps, diagrams, figures etc if required.**

2) Main Body of The Report

The main text provides the complete outline of the research report along with all details. Title of the research study is repeated at the top of the first page of the main text and then follows the other details on pages numbered consecutively, beginning with the second page. Each main section of the report should begin on a new page5. The main text of the report should have the following sections:

I. Introduction:

The purpose of an introduction is to give a background so as to make clear to the reader why the problem was considered worth investigating.

II. Methodology:

This represents the research design and method used in carrying out the research. It should give exact meaning of measurements or terms or variables used, selection of sampling, universe selected, tools of data collection, hypothesis etc.

III. Review of literature:

Here the report writer assesses the important and relevant already existing literature on the problem. The rationale of the review is to develop upon the conceptual framework and background of research which will become the source for formulation of the hypothesis.

IV. Analysis and interpretation:

This is the most crucial part of the report. In it the data which has been collected is processed, analyzed and interpreted and various generalizations and inferences are drawn. There must be clarity and continuity in the presentation of the text and result.

V. Findings and recommendations:

A detailed presentation of the findings of the study, with supporting data in the form of tables and charts together with a validation of results, is the next step in writing the main text of the report. This generally comprises the main body of the report extending over several chapters. All relevant results must find a place in the report. Toward the end of the main text, the researcher should again put down the results of his research clearly and precisely. He should, state the implications that flow from the results of the study. It should then state the recommendations.

VI. Conclusion/ summary:

The main text of the report must end with a summary of the report or the conclusions drawn from the findings.

3) References

Appendices should also be enlisted in respect of all technical data such as questionnaires, sample information, mathematical derivations and the like ones. A single appendix should be headed APPENDIX and centered on the page in capitals without punctuation and three single spaces below the heading. Each appendix is numbered and started on a new page. Appendices should be listed in the table of contents together with page numbers. Appendices may be placed between the final chapter and the bibliography or immediately after bibliography. At the end of a legal research report, all the consulted sources of data whether primary or secondary, reference books, articles, reports, unpublished material etc must be listed in a bibliography. The purpose of a bibliography is to provide cross reference and authenticity to the report. It should be in alphabetical order. The style of writing the bibliography depends upon whether there is already a prescribed form (as in the case of a dissertation and thesis) or the researcher can adopt any style. Some of the common ones are the bluebook and OSCOLA. Following are some of the common rules followed while writing the bibliography. They may be further read in THE BLUEBOOK: A uniform system of citation.

A. For an authored book

1. By a single author

Jain M.P., Indian constitutional law, Nagpur, LexisNexis Butterworth's Wadhwa, 2011

2. By two authors

Goode W.G & P.K, Hatt, Methods in Social Research, New York, Mc Graw-Hill, 1952.

3. By more than two authors

Stanely, William O, et. al., Social Foundations of Education; New York,the Dryden Press Inc, 1956.

4. By a woman author

Pauline V. Young, Scientific Social Surveys and Research; New Delhi, Prentice Hall of India Pvt Ltd, 1984.

B. For an article

Sujatha V, & Abraham L*., Medicine, State and Society*, Economic and Political Weekly Vol XLIV(16) (April 2009) , p.35–43., a*vailable at* http://www.epw.in(Last visited on Jan 3rd, 2013).

C. For unpublished works

Pandey, S.K., *An analysis of the tribal laws of India,* unpublished doctoral thesis, Punjab University, Patiala, 2008.

D. For citation of case laws

Kesavnanda Bharati v. State of Kerala, AIR 1962 SC 933

E. For websites

Information Technology Act 2000, India, available at: http://www.mit.gov.in/itbill. asp (Visited on July 29, 2003).

4) Proof Reading of The Final Draft of The Research Report

After the final report is ready, it is imperative to read each page carefully. The typing errors are best detected by this method. All corrections must be made after checking not only sentences but also formatting, spaces, spellings, grammar, symbols and numbering used. Once all has been proof read, the researcher should only then move ahead with printing and submission of the research report.

5) Precautions in Report Writing

Writing a research report is a form of communication to the readers the research findings in the most crisp and attractive manner. Following are certain precautions which the researcher must bear in mind while writing the report:

i. Length of the report:

The length of a report varies depending upon the nature and type of report. However, the researcher must keep in mind that the report must not be too long otherwise the readers may lose interest in it.

ii. Report must be interesting and engaging

The style and language of the report must be simple yet able to maintain the interest of the readers.

iii. Diagrammatic representations

Graphs, charts, tables must be used to represent various findings so that the reader is able to quickly discern them.

iv. Pre-planning of the report

Keeping the objectives of the research in mind, the researcher must pre plan the layout and the structure of the report for it to be in accordance with the nature, scope and findings of the research.

v. Grammatically sound

The report must be free from grammatical and punctuation errors. All footnotes, abbreviations etc must be clearly mentioned.

vi. Maintain logical flow throughout the report

It is necessary for the clarity and better communication of the report that there must be logical flow of the subject matter in the report without which it will be difficult for the readers to decipher it.

vii. Must be original

Every report must strive to be as original in its research findings, style of presentations and knowledge building. This contributes greatly to the further researcher work in the same field.

viii. Mention future implications of the report

Towards the end of the report, the researcher must mention the future implications of the said work like in the policy implementation, jurisprudential contribution etc.

ix. Bibliography must be comprehensive

Exhaustive bibliography must be mentioned at the end of the report.

x. Objectives, nature, techniques and limitations stated

In the introduction part of the report, the researcher must mention the objectives, scope, nature, techniques, tools as well as limitations of the research conducted. This makes the report more wholesome and accurate.

6) Conclusion

As mentioned above the entire research process culminates into report which communicates to the readers the research conducted by the investigator. The form of research varies depending upon the nature and field of research. In this module we have discussed the most basic components of a legal research report along with how the report must be made with certain point kept in the mind while doing the research as well as writing the final report. A legal report must be simple, coherent as well as adequately justify the area of research and the findings of the researcher.

7) Checklist for Report Writing

The following is a checklist which will help you in assessing the report that you are writing. It has been adopted from Maxwell 1992.

Content

1. Purpose of the study
Clearly indicated in the problem along with the apt research questions or hypothesis which the researcher intends to examine.
2. Background or context of the problem
All relevant literature is clearly discussed with logically and critical understanding leading to the problem being analyzed.
3. Significance of the study
Mention clearly the importance of the area of research
4. Research methods
Explain the type of research method chosen and the justification for the same.
5. Assumptions and limitations
Assumptions and the limitations are well recognized and laid down in the report itself
6. Definitions
Key terms explained
7. Description and analysis of data
Explanation, processing, analysis and interpretation of the data collected are detailed, clear, precise and logical to the problem at hand.
8. Conclusion
Relationships or the arguments are coherent and justifiable to the main findings as well as to the entireproblem being studied. Future implications of the research conducted or findings are to be mentioned.
9. References
A comprehensive reference in form of footnotes, bibliography, appendages is given.

Guideline to prepare PG Diploma in GIS Dissertation

This document provides guidelines for writing and evaluating the technical specifications for a PG Diploma in RS & GIS Dissertation. It is targeted toward individuals and organizations with limited remote sensing expertise. We will present some examples that could be used for a Mini-project. Not all specification possibilities will be covered but the intent is to provide a reasonable framework from which specifications for a remote sensing & GIS project could be developed.

Writing the specification

The purpose of the technical specification is to provide specific information about the how the project will be carried out with details about the products that will be delivered. The technical specification should include the following sections

Front Page
Page 1   Title Page
Page 2   Certificate
Page 3   Acknowledgement
Page 4   Contents
Page 5   Abstract
Page 6   List of Figures/ Tables/Screens
Page 7   Symbols & Abbreviations

CONTENTS
Abstract
List of Figures
List of Tables
List of Screens
Symbols & Abbreviations

1.1 Introduction

    1.1 Conceptual Frame work

    1.2 Define the "Research Problem & Research Motivation

    1.3 Objectives of the Present Study

    1.4 Research Questions and Hypothesis

2. Review of Literature

3. Study Area

3.1Physical Background of the study area

    3.1.1 Location and Extent

    3.1.2 Climate

    3.1.3 Geomorphology

    3.1.3.1 Soil

    3.1.4 Minerals

    3.1.5 Forests

    3.1.6 Water Resources

    3.1.7 Topography

    3.1.8 Flora and Fauna

3.2Cultural Background of the study area

    3.2.1 Distribution of Demography

    3.2.2 Density of population

    3.2.3 Literacy rate

    3.2.4 Sex ratio

    3.2.5 Economic composition of population

    3.2.6 General Land use land cover pattern

4. Materials & Methods

    4.1 Spatial Data

    4.2 Non- Spatial Data

    4.3 Instruments / Field Equipment/ Materials

    4.4 Software Used

    4.5 Data Processing

    4.5.1standardization of Data

    4.5.2data Processing in Gis

    4.5.2.1 Digitization or classification or some specific analysis

    4.5.2.2 Generation of Base Layers

    4.5.2.3 Generation Different Maps Related to Research

    4.5 Overall Research Methodology

    4.5.1 Steps In Analysis. Include A Flowchart (Required).

5. Field Work

  5.1 Field Trip
  5.2 Collection of Sample from Study Area /Collect GPS Point/Ground Truthing

6. Results and Analysis
  6.1 Final Report
  6.2 Presentations
  6.3 Present Summary Statistics, Maps

7. Discussions

8. Conclusion
  8.1 Overall Conclusion
      8.2 GIS Advantages and Limitations in the Application Area
      8.3 Future Developments

<div align="center">

REFERENCES / BIBLIOGRAPHY

</div>

1. Author Name, Title of Paper/ Book, Publisher's Name, Year of publication
2. Full URL Address

Typing and Binding of Research Project Report

Font

1. Chapter Names   -   16 TIMES NEW ROMAN (Bold) All Caps
2. Headings   -   14 TIMES NEW ROMAN (Bold) All Caps
3. Subheadings   -   14 TIMES NEW ROMAN (Bold) Title Case
4. Sub –Sub Headings -   12 TIMES NEW ROMAN (Bold) Title Case
5. Body of Project   -   12 TIMES NEW ROMAN
6. Text in Diagrams   -   12 TIMES NEW ROMAN (All Lower Case)
7. Diagrams / Table Headings / Fig. Headings   -   12' TIMES NEW ROMAN Title Case
8. If Any Text   12' TIMES NEW ROMAN (Title Case)

Spacing

1. Two (2) Line Spacing between Heading and Body Text.
2. Line Spacing In Body Text should be 1.5.
3. New Paragraphs Start With Single Tab.

Margins

Left 1.5'   Right 1.0'
Top 1.0'   Bottom 1.0'

Page Numbers

Position   Bottom, Middle
1. Front Pages   Small Roman Numbers
(Excluding Title Page, Certificate Page, Acknowledgement Page)

2. Body Pages   1, 2, 3 ……….
3. Annexure   1, 2, 3………..
(Separate For Each Annexure)

Pages: Bond Paper   **Size**: A4Paper   **Color:** White

Documentation: Spiral Binding

Project Report Should Not Exceed More Than 80 Pages

A Project Report

On

<<Title of the Project>>

In partial fulfillment for the award of the degree of

PG Diploma In GIS

In

<<Geoinformatics>>

<<Your Study Center Name In Caps>>

Submitted

To

DR. SHYAMA PRASAD MUKHERJEE UNIVERSITY

2020

Submitted By   Under the Guidance
<<Name of the Student>>   << Guide Name>>
 << Enrollment No >>   << Designation >>

15

BONAFIDE CERTIFICATE

This is to certify that the project report titled <<Project Title >> is being submitted by << student Name >>, Bearing << Enrollment No>>, in PG Diploma in GIS semester is record bonatide work carried out by them. The results embodied in this report have not been submitted to any other university for the award of any degree.

<< Supervisor>>   << Coordinator>>

Data Specifications

In This Section The Detailed Specifications Of Any Data, Such As Maps And Images, Are Laid Out. These Details Can Include the Following:

- Acceptable Cloud Cover In Original Imagery (Average Cloud Cover Over The Study Area Must Be Less Than 20%, However, The Study Area Must Be Cloud Free
- Projection Information (All Satellite Imagery Used During The Project And Final Maps Produced During The Project Will Be Delivered With Predefine Projection System Like (Utm Zone N /PolyconicUsing The Wgs 84 Datum)
- File Formats (All Imagery Must Be Delivered In Geotiff/.Img Format And Vector Data Must Be In Shapefile Format With Accompanying Projection [.Prj] File),
- Storage Media For Delivery (All Data Will Be Delivered On Dvd-R Disks),

Get free Satellite Image (Landsat) Download for Internet:-

1- USGS Earth Explorer

2-Global Land Cover Facility (GLCF)

3-USGS Global Visualization Viewer (Glovis)

USGS Global Visualization Viewer (GLoVis)
(www.glovis.usgs.gov/)

- [USGS Global Visualization Viewer](#) (Glovis) Is A Quick And Easy Online Search And Order Tool.

- The Viewer Allows User-Friendly Access To Browse Images From Various Satellites And Sensors.

- The User Can Select Any Area Of Interest And Immediately View All Available Images For The Specified Location.

- Glovis Offers Additional Features Such As Cloud Cover Limits, Date Limits, User-Specified Map Layer Displays, Scene List Maintenance, And Access To Metadata.

- An Ordering Interface Is Provided For Data That Have Processing Options Available.

- A Downloading Interface Is Provided For Datasets That Are Available At No Charge.

Download Free Vector / DEM Data

http://www.diva-gis.org/Data

1. Free Spatial Data Country Level

 Download Country Level Data For Any Country In The World: Administrative Boundaries, Roads, Railroads, Altitude, Land Cover, and Population Density.

2. Global Level

A New File with the (2011) Global Country Boundaries

3. Global Climate Data

See Worldclim or Diva-Gis Specific Data Here