3.0 INTRODUCTION

If research findings are not reported and disseminated, the efforts put into the conduct of research are wasted. Therefore, every research activity is concluded by presenting the
results including major and minor recommendations. The reporting of a research study depends on the purpose with which it was undertaken — as a personal research, as an institutional project, as a project funded by an outside agency, or towards fulfilling the requirement for the award of a degree. While a personal research may be published in reputed journals of the discipline, projects and researches meant for the award of degrees are usually reported as a monograph (published or unpublished).

Research studies when reported follow certain standard patterns, styles and formats for maintaining parity in reporting and for easy grasp by others who are concerned with those studies. The present Unit is devoted to this aspect of educational research: How to write a research report? As a researcher at the Master degree level and beyond, the skills of good report writing would be an asset for you. So, we suggest you to carefully go through this unit that covers some important aspects of quality research reporting.

### 3.1 OBJECTIVES

After the completion of this Unit, you should be able to:

- State the reasons for writing a research report;
- List the three main components of a research report;
- Describe each component of a research report; and
- Write the final report of any research study conducted by you.

### 3.2 WHY AND HOW TO WRITE A RESEARCH REPORT

The least one expects out of a research work is a report. A research report is a precise presentation of the work done by a researcher while investigating a particular problem. Whether the study is conducted by an individual researcher or by an institution, the findings of the study should be reported for several reasons. The reasons are:

- People learn more about the area of study.
- The discipline gets enriched with new findings.
- Researchers and practitioners in the field can apply, test and retest the findings already arrived at.
- Other researchers can refer to the findings and utilize the findings for further work.
- Findings can be utilized and implemented by the policy makers or those who had sponsored the project.
- It adds to the growth and development of knowledge in the discipline.

It is important to understand as how to write a report. Your final report should be in accordance with the writing style required for the purpose. Whatever style you adopt, the content of the research report never varies.
The final report of a research exercise takes a variety of forms:

- A research report funded by an educational institution may be in the form of a written document.
- A research report may also take the form of an article in a professional journal.
- The research reports of students of M.Sc., M.Ed., MA(DE), M.Phil. or Doctoral programmes take the form of a thesis or dissertation.

In the following sections we shall discuss the main components of a research report. The entire research report is mainly divided into three major divisions — the beginning, the main body and the end (please see Box-1).

<table>
<thead>
<tr>
<th>Beginning</th>
<th>Main Body</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cover Page</td>
<td>Introduction</td>
<td>Bibliography and reference</td>
</tr>
<tr>
<td>Second Cover</td>
<td>Review of related literature</td>
<td></td>
</tr>
<tr>
<td>Preface</td>
<td>Design of the study</td>
<td></td>
</tr>
<tr>
<td>Contents</td>
<td>Analysis and interpretation of data</td>
<td></td>
</tr>
<tr>
<td>List of Table</td>
<td>Main findings and conclusions</td>
<td></td>
</tr>
<tr>
<td>List of Figures</td>
<td>Summary</td>
<td></td>
</tr>
</tbody>
</table>

Box 1: Components of Research Report

### 3.3 THE BEGINNING

The beginning of a report is crucial to the entire work. The beginning or the preliminary section of the research report contains the following items, more or less in the order given below:

- Cover or Title Page
- Preface including Acknowledgements
- Table of Contents
- List of Tables
- List of Figures and Illustrations
- Glossary

Let us describe in brief each of the above six items of the preliminary section of a report.

**i) Cover or Title Page**

The cover page and the second cover page, which is called title page is the beginning of the report. Though different colleges, universities and sponsoring institutions prescribe their own format for the title page of their project report or thesis, generally, it indicates the following in the downward vertical order:

- title of the topic,
- relationship of the report to a degree, course, or organizational requirement,
- name of the researcher/author,
- name of the supervisor/guide (if required),
Data Analysis

- name of the institution where the report is to be submitted, and
- the date of submission.

The title page should carry a concise and adequately descriptive title of the research study. Preferably, it should not contain more than 12 to 15 words. The title should briefly convey what the study is about. Researchers tend to make errors in giving the title by using too many redundant and unimportant words.

Here, we have drawn a list of a few titles of research reports and doctoral thesis:

a) A Critical Analysis of Textual Material for Principles of Accounting and its Translation for Distance Education
b) Developing Self-Instructional Material
c) Planning, Design and Development of one Self-Instructional Unit in Print
d) A Study of the Role of Distance Education in Zimbabwe in meeting the Manpower Training Needs of the Education System with particular reference to the Bachelor of Education, Educational Administration, Planning and Policy Studies Programme intake II, in Manica Land Province
e) The Zimbabwe Government Correspondence Primary School: A Case Study

Let us analyse few of the above titles.

In title (b), it is not clear at which level the researcher is developing self instructional material. Title (d) has 40 words, whereas we have stated earlier that the title should be brief and concise. On the other hand, the title of the project (e) is clear and precise.

The title should be written either in bold letters or upper-lower case and be placed in the central portion of the top of the cover page. Here, we have reproduced the cover page of a research report in Box-2.

THE ZIMBABWE GOVERNMENT CORRESPONDENCE PRIMARY SCHOOL: A CASE STUDY

A project submitted in part fulfillment for the Master of Arts in Distance Education Degree

By
S MANYUCHI

Supervisor
L E DAHWA

STRIDE
IGNOU
NEW DELHI, INDIA
December, 2011

Box-2: Example of the title page of a research report

Note the other points mentioned on the cover page. Also observe the placement of these points.
ii) Preface including Acknowledgement

Preface is not a synonym for either Acknowledgement or Foreword. A preface should include the reasons why the topic was selected by the researcher. Preface is your chance to explain to the reader, why the topic of the research was of interest to you. It may contain your experience of conducting the study, including interesting episodes in the process that have insights into the data gathered, the methodology adopted, and the results and findings. Acknowledgement as a separate page is normally given to sincerely record the help and support received during the period of the research study. The preface and acknowledgements can also be in continuation. This page follows the title page. The acknowledgement should be non-emotional and simple.

iii) Table of Contents

A table of contents indicate the logical division of the report into various sections and subsections. In other words, the table of content presents in itemized form, the beginning, the main body and the end of the report. It should also indicate the page reference for each chapter or section and subsection on the right hand side of the table. Two sample tables of contents are given in Box 3 and 4.

<table>
<thead>
<tr>
<th>TABLE OF CONTENTS</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>i</td>
</tr>
<tr>
<td>TABLE OF CONTENTS</td>
<td>ii</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>iii</td>
</tr>
<tr>
<td>Chapter 1 Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Chapter 2 Design of Study</td>
<td>14</td>
</tr>
<tr>
<td>Chapter 3 Origin of School</td>
<td>19</td>
</tr>
<tr>
<td>Chapter 4 Management and Operations</td>
<td>26</td>
</tr>
<tr>
<td>Chapter 5 Reasons for Continued Existence of Government</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Policy Regarding School</td>
<td></td>
</tr>
<tr>
<td>Chapter 6 Potential for Future Expansion</td>
<td>41</td>
</tr>
<tr>
<td>Recommendations</td>
<td>45</td>
</tr>
<tr>
<td>Suggestions for Further Studies</td>
<td>46</td>
</tr>
<tr>
<td>Conclusion</td>
<td>48</td>
</tr>
<tr>
<td>Reference</td>
<td>51</td>
</tr>
<tr>
<td>Appendices</td>
<td>53</td>
</tr>
</tbody>
</table>

Box 3: Sample table of the contents
You must have noticed that no chapter is titled as Result or Findings. The alternative chapterization could have been as follows:

- **Chapter 1** Introduction
- **Chapter 2** Review of Related Literature
- **Chapter 3** Design and Methodology of the Study
- **Chapter 4** Results
- **Chapter 5** Interpretation of Results
- **Chapter 6** Summary & Conclusion

**TABLE OF CONTENTS**

<table>
<thead>
<tr>
<th>Preface</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acknowledgements</td>
<td>(i)</td>
</tr>
<tr>
<td>List of Tables</td>
<td>(ii)</td>
</tr>
<tr>
<td>List of Illustrations</td>
<td>(iii)</td>
</tr>
<tr>
<td>Abstract</td>
<td>(iv)</td>
</tr>
</tbody>
</table>

**CHAPTER 1: INTRODUCTION**

1.0 Introduction
1.1 Background to the Study and Rationale for Distance Education in Zimbabwe
1.2 Statement of the Problem
1.3 Objectives of the Study
1.4 Hypotheses
1.5 Significance of the Study
1.6 Limitations of the Study
1.7 Delimitation of the Study
1.8 Operational Definitions
1.9 Conclusion

**CHAPTER 2: LITERATURE REVIEW**

2.0 Introduction
2.1 Origins of Distance Education in Zimbabwe
2.2 Objectives of the BEd (EAPPS) Programme
2.3 The target Group of the BEd (EAPPS) & Justification for Distance Education Mode of Learning
2.4 Cost-Effectiveness of Distance Education in Manpower Training
2.5 Distance Education and Growth with Equity
2.6 Importance of the BEd (EAPPS) Programme to Educational Administration
2.7 Distance Education and Quality Training in Manpower Development
2.8 Distance Education and Learner Characteristics
2.9 Other Research Findings on the Effectiveness of Distance Education
2.10 Conclusion

**CHAPTER 3: METHODOLOGY**

3.0 Introduction
3.1 Research Design
3.2 Sampling
3.3 Instruments Used in Data Collection
3.4 Research Procedures
3.5 Processing and Analysing Data
3.6 Conclusion

**CHAPTER 4: RESULTS AND DISCUSSION**

4.0 Introduction
4.1 Gender Distribution of Respondents among BEd (EAPPS) Students
4.2 Qualifications of Respondents among BEd (EAPPS) Students
4.3 Designation/Grade of Respondents among BEd (EAPPS) Students
4.4 Responses of BEd (EAPPS) Students on Likert Items
  4.4.1 Response Profiles of BEd (EAPPS) Students on Positively Stated Likert items on the role of Distance Education
  4.4.2 Response Profiles of BEd (EAPPS) Students on Negatively Stated Likert items on the role of Distance Education
4.5 Responses on Open Ended Question by BEd (EAPPS) Students and
Box 4: Sample table of the contents

iv) List of Tables

The table of contents page is followed by the page containing a list of tables. The list contains the exact title of each table, table number and the page number on which the table as appear in the report. We provide you in Box 5 an example of a list of tables.

List of Tables

<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SWOT Analysis of IEPT in India</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>Projected Growth of Primary Teachers with Alternative Growth Rates</td>
<td>14</td>
</tr>
<tr>
<td>3</td>
<td>Training Target of Teacher Educators and Guest Faculty</td>
<td>16</td>
</tr>
<tr>
<td>4</td>
<td>Training Target of Supervisory Staff</td>
<td>17</td>
</tr>
<tr>
<td>5</td>
<td>Total Training Target of All Categories</td>
<td>18</td>
</tr>
<tr>
<td>6</td>
<td>Training Material for Different Categories of Trainees</td>
<td>24</td>
</tr>
<tr>
<td>7</td>
<td>Exemplar Program Format for Primary Teachers</td>
<td>26</td>
</tr>
<tr>
<td>8</td>
<td>Exemplar Program Format for Teacher Educators</td>
<td>28</td>
</tr>
<tr>
<td>9</td>
<td>Exemplar Program Format for Supervisors</td>
<td>28</td>
</tr>
<tr>
<td>10</td>
<td>Institutional Mechanism for Certification</td>
<td>29</td>
</tr>
<tr>
<td>11</td>
<td>Nodes of the Proposed Network</td>
<td>33</td>
</tr>
<tr>
<td>12</td>
<td>Institutional Workload</td>
<td>34</td>
</tr>
<tr>
<td>13</td>
<td>Communication Requirements</td>
<td>44</td>
</tr>
<tr>
<td>14</td>
<td>Role of National Educational Institutions</td>
<td>54</td>
</tr>
<tr>
<td>15</td>
<td>Role of other Departments</td>
<td>55</td>
</tr>
<tr>
<td>16</td>
<td>NAP Activity Schedule</td>
<td>58</td>
</tr>
<tr>
<td>17</td>
<td>Cost of Staff/Personnel</td>
<td>60</td>
</tr>
<tr>
<td>18</td>
<td>Cost of Preparation of Instructional Material</td>
<td>61</td>
</tr>
<tr>
<td>19</td>
<td>Cost of Training</td>
<td>62</td>
</tr>
<tr>
<td>20</td>
<td>Cost of Technology</td>
<td>63</td>
</tr>
<tr>
<td>21</td>
<td>Miscellaneous Costs</td>
<td>63</td>
</tr>
<tr>
<td>22</td>
<td>Proportion of Costs and Cost Sharing</td>
<td>64</td>
</tr>
<tr>
<td>23</td>
<td>Year-wise Breakup of Costs during IX Plan</td>
<td>65</td>
</tr>
</tbody>
</table>

Box 5: Example of a list of tables

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In Box 5, you will notice that all the content words start with a capital letter.

v) List of Figures and Illustrations

The page ‘List of Figures’ comes immediately after the ‘List of Tables’ page. You will observe in the following example that the list of figures is written in the same way as the list of tables.

<table>
<thead>
<tr>
<th>List of Figures</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Existing IEPT Programs in a Jigsaw Puzzle</td>
<td>7</td>
</tr>
<tr>
<td>2. Conceptual Framework of Capacity Building in NAP</td>
<td>9</td>
</tr>
<tr>
<td>3. Network of Training Institutions</td>
<td>31</td>
</tr>
<tr>
<td>4. Digital Earth Stations in India</td>
<td>38</td>
</tr>
<tr>
<td>5. Interactive Distance Education Network</td>
<td>40</td>
</tr>
<tr>
<td>6. Distant Classrooms</td>
<td>41</td>
</tr>
<tr>
<td>7. Communication Network</td>
<td>43</td>
</tr>
<tr>
<td>8. Implementation of NAP: Role of Institutions</td>
<td>48</td>
</tr>
</tbody>
</table>

**Box 6: Example of a list of figures**


vi) Glossary

A glossary is a short dictionary, explaining the technical terms and phrases which are used with special connotation by the author. Entries of the technical terms are made in alphabetical order. A glossary may appear in the introductory pages although it usually comes after the bibliography. An example glossary is given in Box-7.

**ATM** (asynchronous transfer mode): A network technology for high-speed transfer of data. Packets of information are relayed in fixed sizes, enabling smooth transmission. ATM supports real-time voice and video as well as data and can reach speeds of up to 10 Gbps.

**Audience**: Those persons who are the receivers of a message, particularly of a mass media message. Also called receivers, readers, viewers or destination.

**Audiographics**: Computer-based technology that permits simultaneous transmission of voice and data communication and graphic images across local telephone lines in a way that is interactive between the instructor and all participants.

**Audio Tele-Conferencing**: Audio tele-conferencing, using either dedicated channels or normal telephone network, is generally used for tutorial/counselling purposes. Student groups located in different places are able to converse among themselves as well as with a distance academic counsellor simultaneously in real time in an audio teleconference. Such conferences can be a distance education equivalent of real classroom situations and have the potential to obviate the need for academic counselling sessions at individual study centers. However, audio teleconferencing presupposes the existence of a highly reliable and widespread telephone system. It also needs special equipment like the audio conference bridge, etc.
**Authoring Software**: Software application used to produce interactive learning materials that bring together all components of a course, such as text presentation, graphics, tracking, and links.

**Authoring Tool**: A software application or programme that allows people to create their own e-learning courseware. Types of authoring tools include instructionally focused authoring tools, web authoring and programming tools, template-focused authoring tools, knowledge capture systems, and text and file creation.

**Automatic Gain Control** (AGC): Automatic gain control is a device or a control which regulates the volume of audio and video levels automatically, eliminating the need for manual adjustment for getting the desired quality of the outputs.

**Box 7: Example of Glossary**

**(vii) List of Abbreviations**

To avoid repeating long names again and again, a researcher uses abbreviations. Since abbreviations are not universal, it is necessary to provide the full form of the abbreviations in the beginning. A list of abbreviation is given in Box 8 as example.

### Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIMA</td>
<td>All India Management Association</td>
</tr>
<tr>
<td>AIR</td>
<td>All India Radio</td>
</tr>
<tr>
<td>APPEP</td>
<td>Andhra Pradesh Primary Education Project</td>
</tr>
<tr>
<td>AVRC</td>
<td>Audio Visual Resource Centre</td>
</tr>
<tr>
<td>ATI</td>
<td>Administrative Training Institutes</td>
</tr>
<tr>
<td>BEL</td>
<td>Bharat Electronics Limited</td>
</tr>
<tr>
<td>BEO</td>
<td>Block Education Officer</td>
</tr>
<tr>
<td>BRC</td>
<td>Block Resource Centre</td>
</tr>
<tr>
<td>BSE</td>
<td>Board of Secondary/Senior Secondary Education</td>
</tr>
<tr>
<td>CABE</td>
<td>Central Advisory Board of Education</td>
</tr>
<tr>
<td>CBT</td>
<td>Computer Based Training</td>
</tr>
<tr>
<td>CEO</td>
<td>Circle Education Officer</td>
</tr>
<tr>
<td>CIET</td>
<td>Central Institute of Educational Technology</td>
</tr>
<tr>
<td>CRC</td>
<td>Cluster Resource Centre</td>
</tr>
<tr>
<td>CSS</td>
<td>Centrally Sponsored Scheme</td>
</tr>
<tr>
<td>DIET</td>
<td>District Institute of Education and Training</td>
</tr>
<tr>
<td>DIT</td>
<td>District Institute of Training</td>
</tr>
<tr>
<td>DD</td>
<td>Doordarshan</td>
</tr>
<tr>
<td>DOE</td>
<td>Department of Electronics</td>
</tr>
<tr>
<td>DoSpace</td>
<td>Department of Space</td>
</tr>
<tr>
<td>DOT</td>
<td>Department of Telecommunications</td>
</tr>
<tr>
<td>DPEP</td>
<td>District Primary Education Program</td>
</tr>
<tr>
<td>DPEPII</td>
<td>District Primary Education Program : Phase II</td>
</tr>
<tr>
<td>EFA</td>
<td>Education for All</td>
</tr>
<tr>
<td>EMRC</td>
<td>Educational Media Resource Centre</td>
</tr>
</tbody>
</table>

**Box 8: Example of Abbreviation List**
Activity
Take any report which has been prepared by your institution and check whether the title page contains all the essential information. If not, try to fill in the gaps.

........................................................................................................................................
........................................................................................................................................
........................................................................................................................................
........................................................................................................................................

Check Your Progress 1
List the major parts of the ‘beginning’ of a research report. Describe briefly the importance of each part.
Notes: (a) Space is given below for writing your answer.
(b) Compare your answer with the one given at the end of the unit.

........................................................................................................................................
........................................................................................................................................
........................................................................................................................................
........................................................................................................................................

3.4 THE MAIN BODY

The main body of the report presents the actual work done by an investigator or a researcher. It tells us precisely and clearly about the investigation/study from the beginning to the end. The methodology section of the final report should be written in the past tense because the study has been completed. The report should categorically avoid unnecessary details and loose language — we shall examine this point in detail in this section. At this stage, you may again look at the Box 1. You will find that the table of contents for the report outlined six sections/chapters in the main body. These are:

- Introduction
- Review of Related Literature
- Design of the Study
- Analysis and Interpretation of Data
- Main Findings and Recommendations
- Summary

Besides the logicality of sections/chapters in the main body there are certain other important aspects which need our attention. They are the style of writing, the design and
placement of references and footnotes, the typing of the report, and the tables and figures.

Let us elaborate these points in the following sub-sections.

### 3.4.1 Chapters and their Functions

We will discuss the chapterisation of a thesis or a research report under six heads as noted above. Let us begin with introduction which is usually the first chapter.

**Introduction**

This is the first chapter of a thesis or a research report. It introduces the topic or problem under investigation and its importance. The introductory chapter:

- gives the theoretical background to the specific area of investigation,
- states the problem under investigation with specific reference to its placement in the broader area under study,
- describes the significance of the present problem,
- defines the important terms used in the investigation and its reporting,
- states precisely the objective(s) of the study,
- states the hypothesis/hypotheses of the study that would be tested through statistical analysis of data, (however, in philosophical and historical research there is no need to formulate and test a hypothesis), and
- defines the scope and limitations of the investigations.

Although these sub-sections are common, it is not necessary to follow the given order strictly; there may be variations in the order of the sub-sections. Sometimes the review of literature related to the area under investigation is also presented in the first chapter and is placed immediately after providing the theoretical background to the problem. Many researchers use review to argue the case for their own investigation. In experimental research it becomes essential to review related studies to formulate the hypotheses. The introductory chapter should establish the rationale of the study and highlight the significance, including the possibility of further knowledge and understanding of the area of study.

**Review of Related Literature**

The second chapter of a research report usually consists of the review of the literature related to the problem under study. This includes the abstraction of earlier research studies and the theoretical articles and papers of important authorities in the field. This chapter has two functions. While selecting a problem area or simply a topic for investigation, the researcher goes through many books, journals, research abstracts, encyclopaedia, etc. to finally formulate a problem for investigation. The review of related literature is the first task for a researcher in order to decide on a specific problem for investigation. It also helps in formulating the theoretical framework for the entire study. Such a review helps the researcher to formulate the broader assumptions about the
factors/variables involved in the problem and later develop the hypothesis/hypotheses for the study.

Besides these, the review also indicates the understanding of the researcher in relation to the area under investigation, and thus his/her efficiency to carry out the study. While reviewing literature in the area concerned, you have to keep in mind that the (reviewed) literature has to be critically analyzed and summarized in terms of agreements and disagreements among the authors and researchers in order to justify the necessity for conducting your investigation. Researchers may make two types of errors in their review exercises — many simply report the findings of one study after another in sequential order without showing how the findings are connected with one another; and others report on studies that are at best only marginally related to their own hypothesis.

A comprehensive literature survey is a pre-condition for sophisticated research. Good research advances our understanding about the topic, and for that, it must tell us reasonably well all that has been already done in the past, and how the present work adds new knowledge to the already existing body of knowledge. Not doing so puts the researcher in a disadvantage position. A good review of literature accomplishes several important objectives (Boote, & Beile, 2005):

- It sets the broad contexts of the study;
- It clearly demarcates what is and what is not within the scope of the investigation;
- It justifies the decision taken to cover different constructs in the study;
- It reports on the claims made in the existing literature and provides a critique;
- It helps the researcher to distinguish between what has already been known and area left to be explored; and
- It synthesizes the body of knowledge to encourage theory development (perspective formulation).

While good research reviews are comprehensive and up-to-date, most often, it has been found that they are poorly conceptualized and written. We will see how literature reviews can be best presented in this section. However, it may be noted that literature reviews can be categorized according to a set of characteristics. According to Cooper (1988) they can be grouped into six groups: focus, goal, perspective, coverage, organization and audience. While the literature review can focus on the research findings, research methods, theories and application aspects of the research work, normally good research reviews tend to have more than one focus. Usually the goal of the research review is to integrate existing literature for articulating generalizations and resolution of conflict. It is also used to develop a critique on the topic of the study. A third goal of literature review is to identify central issues in a field of study. A third characteristic of review of literature is perspective that relates to the position taken by the researcher – neutral or espousal. The next characteristic is coverage that is normally expected to be exhaustive. However, some literature reviews are selective and representative in nature. The fifth characteristic of literature review is organization. One can take a historical (chronological) approach to
organization of review or present it in a more professional conceptual/thematic basis to align with the objectives, hypotheses and the variables in the study. The sixth characteristic is the nature of the intended audience – specialized researcher, general researchers, practitioners, policy-makers, and general public. The way reviews are presented would differ based on the target audience. A significant aspect of good literature review is the way literature was searched. What ‘search strategies’ and ‘databases’ were used by the researcher and what ‘subject descriptors’ were used to find out the list of candidate articles for review. How the scope and duration of the review was decided is also important. Therefore, the literature review chapter must include in brief the inclusion and exclusion criteria for literature search in the beginning.

We also recommend you to follow a conceptual review approach that helps in better synthesis of knowledge and discuss related concepts at one place. It is important to build the review constructively, though it is expected that you also critically analyze the findings of the articles reviewed. In the process, you may also critique previous research, but the tone of the criticism has to be academic so as to point at the error and argue to build your perspective. It may also be noted that criticizing is easy, and it does not add value to the overall discussion, then it is better avoided.

Another important point often asked by novice researcher is to use present or past tense while writing the review. Webster and Watson (2002) recommend the use of present tense, though both can communicate effectively. The use of present tense in review writing gives a greater sense of immediacy to the reader. They also say, when attributing a statement or idea to a person, it is better to use past tense.

Good reviews identify the variables and help in formulation of hypothesis. While writing literature review, you may consider the following to improve the quality of your writing:

- Justify the criteria for inclusion and exclusion in the review
- Distinguish between what has been done in the field and what needs to be done
- Position the topic in the context of broader scholarly debate in the domain
- Review the historical contexts of the field by going to the earliest work
- Articulate important variable and phenomenon
- Use the subject vocabulary correctly and contextually
- Demonstrate the emergence of a new perspective through synthesis of ideas
- Review methodological issues to justify the research techniques
- Write in a clear, systematic and coherent manner
- Use categories and mind-map for presentation of ideas

**Design of the Study**

The design of a study is usually described in the third chapter of the report. Broadly speaking, this chapter provides a detailed overview of “how” the study was
Data Analysis

conducted. The various sub-sections include:

i) description of the research methodology, i.e., “descriptive, experimental, etc.;

ii) variables: the dependent, independent and intervening variables with their operational definitions;

iii) sample: defining the population, and the sampling procedure followed to select the sample for the present study;

iv) listing and describing various tools and techniques used in the study, like questionnaires, attitude scales, etc., whether these have been adopted or developed by the investigator, their reliability, validity, item description, administration and scoring, etc. Tool development process needs to be explained clearly;

v) describing the statistical technique used in the analysis of data including the rationale of the use and method of data analysis. In philosophical and historical researches, for example, this type of sub-section may not be there.

Analysis and Interpretation of Data

This is the fourth chapter of the research report. It is the heart of the whole report, for it includes the outcome of the research. The collected data are presented in tabular form and analysed with the help of statistical techniques — parametric and non-parametric. The tables are interpreted and if necessary, the findings are also presented graphically. The figures do not necessarily repeat the tables, but present data visually for easy understanding and easy comparison. Data may be presented in parts under relevant sections. The analysis of the data not only includes the actual calculations but also the final results. It is essential that at each stage of analysis the objective(s) of the study and their coverage is taken care of. This chapter also presents the details about the testing of each hypothesis and the conclusions arrived at. This gives the reader a clear idea regarding the status of the analysis and coverage of objectives from point to point.

Main Findings and Conclusion

This is usually the fifth chapter in a research report. The major findings of the study analysed and interpreted in the preceding chapter are precisely and objectively stated in this chapter. The fourth chapter contains such presentations as only a specialist or a trained researcher can understand because of the complexities involved; but in the fifth chapter the major findings are presented in a non-technical language so that even a non-specialist such as a planner or an administrator in the field can make sense out of them.

The main findings are followed by a discussion of the results/findings. The major findings are matched against the findings of other related research works which have already been reviewed in the second chapter of the report. Accordingly, the hypotheses formulated in the first chapter are either confirmed or discarded. In case the null-hypotheses are rejected, alternative hypotheses are accepted. If the findings do have any discrepancy in comparison with those of other researches, or if the findings do not explain sufficiently the situation or problem under study, or if they are inadequate for generalization, explanations with proper justification and explanation have to be provided.
The next task in this chapter is to provide implications of the findings and their generalizations. The implications should suggest activities for and provide some directions to the practitioners in the field. Unless these implications are clearly and categorically noted, it becomes difficult for the practitioners to implement them on the one hand, and on the other research findings do not get utilized at all even if they have been recorded in a report.

The implications follow a presentation/listing of the limitations of the study on the basis of which suggestions are made to carry out further investigation or extend the study from where it has reached. Normally this chapter is divided into three parts: findings, recommendations and areas of further research.

Summary

Some researchers include a summary along with the research report (as the last chapter) or as a pull-out to the report itself. It sums up precisely the whole of the research report right from the theoretical background to the suggestions for further study. Sometimes researchers get tempted to report more than what the data say. It is advisable to check this tendency and be always careful to report within the framework provided by the analysis and interpretation of data, i.e., within the limits of the findings of the study. This is also used in the beginning, when the report is expected to be used for decision-making, and the audience is high profile with less time for reading the full report.

Check Your Progress 2
Comment briefly on the uses of (a) review of literature, and (b) conclusion in a research report.
Notes: (a) Space is given below for writing your answer.
(b) Compare your answer with the one given at the end of the Unit.

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3.4.2 Writing Style

The style of writing a research report is different from other writings. The report should be very concise, unambiguous, and creatively presented. The presentation should be
simple, direct and in short sentences. Special care should be taken to see that it is not dull
and de-motivating.

Statements made should be as precise as possible — they should be objective and there
should be no room for subjectivity, personal bias and persuasion. Similarly, over
generalisation must be avoided. There is no place for hackneyed, slang and flippant
phrases and folk expressions. The writing style should be such that the sentences describe
and explain the data, but do not try to convince or persuade the reader. Since the report
describes what has already been completed, the writing should be in the past tense.

In the case of citations, only the last name of the author is used, and in all cases academic
and allied titles like, Dr., Prof., Mr., Mrs., Ms. etc. should be avoided. Some authors
recommend that the use of personal pronouns like “I”, “We” etc., should be avoided.
There is, however, no hard and fast rule in this case. Similarly, a large number of research
reports use passive voice which is strongly discouraged by the linguists. Similarly,
abbreviations of words and phrases — like IGNOU, DDE, NIRD, etc. — should be used
to avoid long names repeatedly inside the text, as well as in figures, tables, and footnotes.
The first appearance of an abbreviation in the report should be used in expanded form.

Special care should be taken while using quantitative terms in a report, such as few for
number, less for quantity etc. No sentence should begin with numericals like “40 students”
instead it should start as “Forty students”. Commas should be used when numbers exceed
three digits — 1,556 or 523,489, etc.

Language, grammar and usage are very important in a research report. The Roget’s
Thesaurus and a good dictionary would be of much help. Word processing software
provides good support to

- Spelling and Grammar
- Thesaurus
- Auto Correct
- Auto Summarise

You are advised to use these features of the word processing software to make the report
error free. It is always advisable to show the report to learned friends or language experts
for correction before it is finally typed. Revision is an important feature of good report
writing — even experienced researchers with many publications revise their reports many
times before giving them for final typing.

3.4.3 Footnotes / In-text References

Articles, papers, books, monographs, etc. quoted inside the text should always accompany
relevant references, i.e., the author and the year of publication e.g., (Mukherjee, 1988). If
a few lines or sentences are actually quoted from a source, the page number too should
be noted e.g., (Mukherjee, 1988: 120-124). Besides, full reference should be placed in the Reference section of the report (see sub-section 3.5.1). The usual, though traditional style of giving references is to place them as the footnotes on the relevant page(s). The footnotes are serialized inside the text and in the footnotes of each chapter. These days, footnotes are usually avoided. However, they perform many functions. They provide ready reference on the page of the text itself to avoid botheration of consulting the references at the end of the report off and on. In certain cases, footnotes include explanatory statements, full form of the abbreviations, extra justifications with reference to a portion of the text that may be read by a reader if needed, i.e., if the text is not clearly understood. However, precision and necessity should be the main guidelines to bring in these types of footnote.

Footnotes, as noted earlier, may be serialised as 1, 2, 3, 4, etc., within a chapter or be inserted at the end of the sentence concerned in parentheses as (5:23) which implies reference number 5 and page number 23, the full reference of which is given at the end of the chapter or in the reference section at the end of the report. Footnotes are always double-spaced between each other, though each footnote is typed single-spaced.

*Ibid.* in the footnote refers to the same work and the reference that precedes it. For example, consider the following references:


4*Ibid.* p.146 (This indicates the same work and the same page as above)

5*Ibid.* p.148 (This indicates the same work as above but a different page).

*op. cit.* (in Latin means the work cited) is used in a footnote when another reference to the same work is made on the same page but not consecutively. Consider the following example:


5Kerlinger, *op.cit.*, p.258.

Reference ‘5’ is the same as reference ‘3’, except that the page references differ in the two cases.

In case there are more references to the text on the same page of the original text which has been listed once, they may be listed/entered by the abbreviation *loc. cit.*

Example: 6Campbell and Ballon, *loc. cit.*

Footnote is also a feature of word processing software. It allows serialization as well as customized footnote symbols.
In preparing the footnote references, another factor to be considered is the abbreviations of words and expressions and their right placement. While writing a research report, abbreviations may be used to conserve space in references or footnote references. If a researcher is not familiar with the abbreviations, he/she should consult the relevant literature as and when required. In the following table (Table 1) a comprehensive list of abbreviations has been given for ready reference (the Latin abbreviations have been italicised).

Table 1: List of some important abbreviations used in footnotes and bibliographies

<table>
<thead>
<tr>
<th>Words</th>
<th>Abbreviations</th>
</tr>
</thead>
<tbody>
<tr>
<td>About (approximate date)</td>
<td>c. (c.ireca)</td>
</tr>
<tr>
<td>Above</td>
<td>supra</td>
</tr>
<tr>
<td>And others</td>
<td>et. al</td>
</tr>
<tr>
<td>Article, articles</td>
<td>art., arts</td>
</tr>
<tr>
<td>Article, articles</td>
<td>infra</td>
</tr>
<tr>
<td>Book, books</td>
<td>bk., bks</td>
</tr>
<tr>
<td>Chapter, chapters</td>
<td>chap., chaps</td>
</tr>
<tr>
<td>Column, columns</td>
<td>Col., Cols.</td>
</tr>
<tr>
<td>Compare</td>
<td>ef</td>
</tr>
<tr>
<td>Division, divisions</td>
<td>div., divs</td>
</tr>
<tr>
<td>Editor, editors</td>
<td>ed., eds</td>
</tr>
<tr>
<td>Edition, editions</td>
<td>ed., eds</td>
</tr>
<tr>
<td>For example</td>
<td>e.g.</td>
</tr>
<tr>
<td>Figure, figures</td>
<td>fig., figs</td>
</tr>
<tr>
<td>Here and there (scattered)</td>
<td>passim</td>
</tr>
<tr>
<td>Illustrated</td>
<td>Ill</td>
</tr>
<tr>
<td>Line, lines</td>
<td>l. ll.</td>
</tr>
<tr>
<td>Manuscript</td>
<td>mss</td>
</tr>
<tr>
<td>Mimeographed</td>
<td>mimeo</td>
</tr>
<tr>
<td>No date given</td>
<td>n.d</td>
</tr>
<tr>
<td>No name given</td>
<td>n.n</td>
</tr>
<tr>
<td>No place given</td>
<td>n.p</td>
</tr>
<tr>
<td>Number, numbers</td>
<td>no., nos</td>
</tr>
<tr>
<td>Page, pages</td>
<td>p., pp</td>
</tr>
<tr>
<td>Part, parts</td>
<td>pt., pts</td>
</tr>
<tr>
<td>Paragraph in length</td>
<td>(....)</td>
</tr>
<tr>
<td>Paragraph, paragraphs</td>
<td>par., pars</td>
</tr>
<tr>
<td>Previously cited</td>
<td>op. cit</td>
</tr>
<tr>
<td>Revised</td>
<td>rev</td>
</tr>
<tr>
<td>Same person</td>
<td>idem</td>
</tr>
<tr>
<td>Same reference</td>
<td>ibid</td>
</tr>
<tr>
<td>Section, sections</td>
<td>sec., secs</td>
</tr>
<tr>
<td>See</td>
<td>vide</td>
</tr>
<tr>
<td>The place cited</td>
<td>loc. cit</td>
</tr>
<tr>
<td>Thus</td>
<td>sic</td>
</tr>
<tr>
<td>Translated</td>
<td>trans</td>
</tr>
</tbody>
</table>
3.4.4 Typing and Production

Typing of dissertations, research reports, project reports etc. needs greater care than other typed documents. In a research report, one does not expect overwriting, strikeovers, erasures and insertions.

Before typing the report, it is necessary to check whether the handwritten report, i.e., the manuscript is in a proper shape. Whether the manuscript of the report is typed by a typist or by the researcher himself/herself, a clear and comprehensible manuscript makes typing easy. Too many additions and corrections make the manuscript crammed, and a crammed manuscript makes typing difficult and time consuming. Only one side of the paper should be typed and typing should be double spaced. Space should be left on each side of the paper as follows:

- left side margin
- right side margin
- top margin
- bottom margin

If there is a lengthy quotation, it should be indented and typed in single space. At the end of each line, words should be divided as per convention. A dictionary which shows syllabification should be consulted if words are to be broken at all. Unlike the lengthy quotations, short quotations of three/four lines may be included in the text within quotation marks.

Subject to access to a computer and word processing software, it is better to prepare the report on a computer. It has several advantages, for example, you can

- edit time and again without incorporating new errors which is what happens when you use a manual typewriter,
- define your margin – top, bottom, left and right easily,
- define pages in landscape or portrait size, particularly for tables and diagrams,
- choose out of about 70+ fonts – shapes of letters and type sizes from the smallest 8 point to the large 72 point,
- check spelling, grammar, synonyms and antonyms,
- choose illustrations from the clip-art file, and
- can index (alphabetical order) the references automatically.

Graphs can be prepared using appropriate software and these can be inserted in the word processing file.

Finally, the computer output can be taken out in a Dot Matrix, Ink Jet or Laser printer. The Laser Printers are the current standard in the market. They produce quality printouts that make reading easy.
3.4.5 Tables and Figures

Tables: Preparation and appropriate placement of tables in the text are equally important. They need careful attention from the researcher. Tables help the readers to get a quick view of the data and comprehend vast data at one go. However, tables should be presented only when they are necessary. Too many tables may confuse the reader, instead of facilitating his/her reading. As such you need to be selective in placing tables in the report. If data are too complicated to be presented in one table, several tables may be used to give a clear picture of the data in proper sequential order. Tables, if small, may accompany the textual material, and if large, should be put on one full page without mixing them with the text. All the tables should be numbered serially in the text, so that they may be quoted or referred to with the help of those numbers conveniently.

If a table is large, it should continue on the next page with the table title repeated on the top of the next page; otherwise, tables can be typed in smaller fonts like 8pt. or 9pt. The table itself is centred between the two margins of the page, and its title typed in capital letters and is placed in pyramid size and preferably numbered. The title of the table should be brief but self-explanatory.

Figures: Figures are necessary when the data is to be presented in the graphic form. They include charts, maps, photographs, drawings, graphs, diagrams, etc. The important function of a figure is to represent the data in a visual form for clear and easy understanding. Textual materials should not be repeated through figures unless very necessary.

Figures should be as simple as possible and the title of each figure should precisely explain the data that has been presented. Usually, a figure is accompanied by a table of numerical data. Again, figures are presented only after textual discussion and not the other way round. The title design of figures should be followed consistently throughout the report. Every first letter of a word of the title should be in capitals, and figures should be numbered in Indian numerals like 1, 2, 3 etc. And the title, unlike for tables, is presented below the figure.

3.5 THE END

The end of the report consists of references and appendices. References come at the end after the last chapter of the report. The last section labelled references appears at the top of a new sheet of paper. The reference section is a list of the works that have been cited in the report/thesis. All references quoted in the text are listed alphabetically according to the last name of the authors. The works of the same author should be listed according to the date of publication with the earliest appearing first. It is different from a footnote in the sense that the latter is a specific reference to only one or more citations on a particular page.
3.5.1 Bibliography and References

Research reports present both bibliographies and references. Although many researchers use these terms interchangeably, the two terms have definite and distinct meanings. A bibliography is a list of titles – books, research reports, articles, etc. that may or may not have been referred to in the text of the research report. References include only such studies, books or papers that have been actually referred to in the text of the research report. Whereas research reports should present references, books meant for larger circulation may be listed in bibliographies that should include all such titles as have been referred to.

There are mainly two style manuals detailing general form and style for research reports. These are:


Style of Referencing

The style of reference as prescribed by the funding institution/journal/degree awarding body should be strictly followed. However, generally, author (date) style or author (number) style is followed for in-text reference, where author is the surname, date is year of publication, and number is a numerical in sequence. In the latter case, the references at the end are ordered according to sequence, while in the former, all the references are ordered alphabetically. We recommend you to follow standard style manual for giving reference to various categories of documents. However, we present to you, in brief, a generic style for giving reference in your research report.

For example, entries in a reference section may look like the following:


Referring Web Based Documents

Computers have brought revolution in all sectors of development including education. Computers were conventionally used for data storage, processing and retrieval. Now through Internet, information can be accessed from any part of the world. As researchers, reviewing the relevant literature related to the problem understudy is almost magnum opus. These days Internet is a rich academic and professional resource. World Wide Web (WWW) is the easiest and most popularly used browsing mechanism on the Internet. Here we will very briefly explain as how to write the references when you quote from any website and other Internet-based materials. Table 2 gives some examples.

Table 2: Example of references for Internet-based materials

<table>
<thead>
<tr>
<th>Type of documents</th>
<th>Reference example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal e-mail</td>
<td>Sharma, R.C. (<a href="mailto:sharma_rc@yahoo.com">sharma_rc@yahoo.com</a>). 10 Jun. 2002, Learning Management Systems. E-mail to S. Mishra (<a href="mailto:smishra@cemca.org">smishra@cemca.org</a>).</td>
</tr>
</tbody>
</table>
### 3.5.2 Appendices

Usually, the appendices present the raw data, the true copy of the tools used in the study, important statistical calculations, photographs and charts not used inside the text. These are ordered serially like Appendix-1, Appendix-2, or they can be serialized with capital letters (Appendix A, Appendix B) etc. to facilitate referencing within the text. The appendices provide reference facilities to readers and others interested in that particular field of investigation.

<table>
<thead>
<tr>
<th>Source: Mishra (2002)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>3.5.2 Appendices</strong></td>
</tr>
</tbody>
</table>
3.6 LET US SUM UP

In this Unit, we focused on research reporting as a professional activity. The purpose of writing the report depends on the reason behind undertaking the research study. It could be for obtaining a degree, or as a project report to be submitted to the funding agency, etc. Once submitted, the funding agency and the educational managers could utilize the findings and recommendations to achieve their objectives; other researchers may seek guidance from it; and lastly, the findings may be used for developing new theories in the discipline concerned.
A research report has three parts: the beginning, the main body and the end. The beginning includes: cover or the title page, acknowledgements, table of contents, the list of tables, and the list of figures. The main body normally contains an introduction, review of the relevant literature, objectives, hypotheses, research design (research methodology, population and sample, tools, procedure of collecting data), analysis and interpretation of data, the main findings and conclusion (that also includes its educational implications and suggestions for further studies). While discussing the main body, we have talked about the style of writing the report, style and placement of footnotes and references, the typing process and the format and placement of tables and figures. We closed the discussion with notes on the style, arrangement and placement of references and appendices which constitute the end of a research report.

### 3.7 CHECK YOUR PROGRESS: THE KEY

1. The major parts of the beginning of a research report are: cover/title page, acknowledgements, table of contents, list of tables, list of figures and list of abbreviations. The cover page gives us clear information about the subject/theme, author and the year of the research study as well as the organization for which or where the study has been conducted. Acknowledgements are words of appreciation from the researcher for those who have helped him/her while conducting the study. Table of contents indicates the main themes/areas studied, the methodology followed and the outcome of the study. List of tables, figures and abbreviations are useful as reference tools.

2. a) Review of literature helps the researcher to specifically define the problem for investigation, decide about the usefulness of the study and formulate his/her hypothesis.

   b) The conclusion of a research report sums up the findings, states what is new in the report concerned and indicates the direction for future studies as well as implications for implementation of recommendations, if any.

### 3.8 REFERENCES AND FURTHER READINGS


Data Analysis


