

3

ADULT EDUCATION WORKSHOP NO. 2

HOW TO WRITE A THESIS



SRI LANKA FOUNDATION INSTITUTE

3

ADULT EDUCATION WORKSHOP NO. 2

தேசிய நூலகம்
10 JUN 1999
மாநகராட்சி மற்றும்
யாழ்ப்பாணம்

HOW TO WRITE A THESIS

1761

தேசிய நூலகப் பிரிவு
மாநகராட்சி நூலக சேவை
யாழ்ப்பாணம்

1064 (P) CC

© Sri Lanka Foundation Institute
First Edition 1997

ISBN 955-592-016-8

SRI LANKA FOUNDATION INSTITUTE
100 Independence Square
Colombo 07
Sri Lanka

INTRODUCTION

HOW TO WRITE A THESIS was the subject of two workshops held in October and November 1996 at the Sri Lanka Foundation Institute. They were organised as part of a series of workshops on Adult Education, which the SLFI conducted during 1996 in pursuance of its mandate to promote adult education and higher level training.

The first workshop in the series was on GUIDELINES ON MEETINGS, WORKSHOPS AND DISCUSSIONS and was held in June 1996. A publication on it is available. At two workshops on HOW TO WRITE A THESIS there were some thirty participants in each, drawn from diverse disciplines and occupations. Most such persons are either engaged in research as an institutional requirement or do so for personal advancement in their careers in their particular sphere of work.

The resource persons for both workshops were mainly teachers from the Faculties of Medicine of the Universities of Colombo and Kelaniya. Expectedly, their presentations were from a background of research methodology, writing and presentation based on their particular disciplines. However, there were also two other presentations from different disciplines. Each paper was followed by discussion, which served to complement the respective presentations. The papers are published here in their edited form.

If this publication serves to stimulate interest in the methodology of writing research studies, then the workshop would have made a useful contribution towards advancing the frontiers of knowledge in a small but significant way.

Victor Gunewardena
Editor

INTRODUCTION

The first part of the book is devoted to a general survey of the history of the subject. It begins with a brief account of the early attempts to explain the phenomena of life, and then proceeds to a more detailed consideration of the various theories which have been advanced from time to time. The second part of the book is devoted to a critical examination of the principal theories, and to a discussion of the evidence in support of each of them. The third part of the book is devoted to a consideration of the various applications of the theories to the phenomena of life, and to a discussion of the evidence in support of each of them.

The first part of the book is devoted to a general survey of the history of the subject. It begins with a brief account of the early attempts to explain the phenomena of life, and then proceeds to a more detailed consideration of the various theories which have been advanced from time to time. The second part of the book is devoted to a critical examination of the principal theories, and to a discussion of the evidence in support of each of them. The third part of the book is devoted to a consideration of the various applications of the theories to the phenomena of life, and to a discussion of the evidence in support of each of them.

The first part of the book is devoted to a general survey of the history of the subject. It begins with a brief account of the early attempts to explain the phenomena of life, and then proceeds to a more detailed consideration of the various theories which have been advanced from time to time. The second part of the book is devoted to a critical examination of the principal theories, and to a discussion of the evidence in support of each of them. The third part of the book is devoted to a consideration of the various applications of the theories to the phenomena of life, and to a discussion of the evidence in support of each of them.

The first part of the book is devoted to a general survey of the history of the subject. It begins with a brief account of the early attempts to explain the phenomena of life, and then proceeds to a more detailed consideration of the various theories which have been advanced from time to time. The second part of the book is devoted to a critical examination of the principal theories, and to a discussion of the evidence in support of each of them. The third part of the book is devoted to a consideration of the various applications of the theories to the phenomena of life, and to a discussion of the evidence in support of each of them.

Author's name
Title

CONTENTS

01. **How to write a thesis** 01
Professor H. J. de Silva
Professor of Medicine
Faculty of Medicine
University of Kelaniya
02. **Literature survey for research and thesis-writing** 05
Dr. Jayadeva Uyangoda
Senior Lecturer
Department of History and Political Science
University of Colombo
03. **How to access library resources** 17
Sumana C. Jayasuriya
Librarian
University of Colombo
04. **Do it in style** 27
Professor Colvin Goonaratna
Professor of Physiology
Faculty of Medicine
University of Colombo
05. **'Grantsmanship': Guidelines on writing a
successful research proposal** 37
Dr. Asoka S. Dissanayake
Senior Lecturer
Department of Physiology,
Faculty of Medicine
University of Kelaniya
06. **Guide to construction of a questionnaire** 41
Dr. Asoka S. Dissanayake
Senior Lecturer
Department of Physiology,
Faculty of Medicine
University of Kelaniya

07. **Presenting your results** 47
Professor H. J. de Silva
Professor of Medicine
Faculty of Medicine
University of Kelaniya
08. **How to prepare a curriculum vitae** 51
Dr. Asoka S. Dissanayake
Senior Lecturer
Department of Physiology
Faculty of Medicine
University of Kelaniya

How to write a thesis

Professor H. J. de Silva

A thesis for a research degree (eg. MSc, MPhil, PhD) must satisfy the examiners that

“the student possesses a good general knowledge of the particular field of learning which falls within the subject of the thesis, and that the research submitted in the thesis has made an original contribution to the advancement of knowledge in that field.”

HOW TO START

Choose the area of research, and acquire general knowledge of the area chosen. Bibliographical information may be obtained, for example, from the Index Medicus or the CD Rom Medline, which are medical research data retrieval systems.

Then write an essay to focus on the proposed area of research, the historical data available, the work done hitherto in that area, and the unanswered questions that remain thereafter, indicate what is to be tested (hypothesis).

Discuss your hypothesis with your supervisor to test its validity and the time factor for carrying out the research.

Arranging the Contents

The order of arrangement is as follows:

Title page: Title, etc.

Abstract: A summary of 300-400 words of the work included in the thesis, highlighting what is new.

The contents will comprise numbered chapters with headings and the numbers of the pages on which the chapters begin.

Publication acknowledgement: Reference to papers published on the work presented in the thesis.

Personal acknowledgements and dedications.

General Introduction: Review of previous knowledge regarding the subject. eg.: the essay.

Thesis plan: Aims of the studies presented in the thesis. eg.; the unanswered questions in the area of research which are chosen for testing.

Presentation of research: In the form of several chapters, about five or six. Usually, each chapter has enough material to be published as a research paper.

Each chapter must necessarily answer four questions as follows:

1. WHY DID YOU START? the answer would be in the INTRODUCTION, which will outline the answer of the research in that particular chapter.
2. WHAT DID YOU DO?
3. WHAT DID YOU FIND? while the METHODS used would be given in detail, the RESULTS would be confined to the important only.
4. WHAT DOES IT MEAN? The implications of your findings will be discussed here and the CONCLUSION you arrive at based on your research.

The above format is known as the IMRAD Structure. It has five steps or tiers.

1. The INTRODUCTION explains the aims of the study, directly and succinctly, but not as an historical review. It must be brief.

2. **MATERIALS & METHODS:** Explain how the materials were obtained, include definitions of subjects, the design/setting, duration of observation, scientific methods adopted and relevant statistics. Enable others to attempt to reproduce the work using the same methods.
3. The results should be relevant to the aim of the study. Descriptive data should be short, numerical results incorporated in the text. Heavy numerical data would be presented as tables. For comparative data and relationship use graphs and scatter plots.
4. Analysis.
5. Discussion should not be AN EXHAUSTIVE REVIEW, but a recapitulation of the MAIN FINDINGS. Discuss the METHODS used if they are interesting or unusual.

Discuss also the RESULTS OF OTHER WORKERS IN YOUR FIELD and whether your findings conflict with thesis or confirm them. Explain aims, differences and the implications of your findings.

Each chapter has the following format:

- Introduction – giving the aim of the research of that particular chapter.
- Materials and Methods used (in detail).
- Results (only the important results). You may write a text of the results, tabulating the data or presenting them in figure form. Light data can be part of the text. Heavy data will be in the form of tables and figures.
- Discussion in brief.
- Appendix to the chapter: details of results.

- Concluding 'chapter' can be a summary.

Alternatively, will have

- Introduction with Aims
- Materials and Methods
- Results
- General discussion combining the discussion of results of all chapters
- Common appendix of results.

Another format is that each chapter will have –

- Combined Materials/Methods
- Combined results
- General discussion combining the discussion of results of all chapters
- Common appendix of results

then follow:

References: In the style requested (Vancouver or Harvard for medical research thesis)

List of Abbreviations used in the text.

Binding: Usually three bound copies of the thesis have to be prepared.

Literature survey for research and thesis-writing

Dr. Jayadeva Uyangoda

What is expected of a Research Thesis

Let us begin by asking an elementary question. What do people called scholars, or scholars-in-the-making, actually do in conducting research and writing theses? Why is it that research is considered essential in academic or scholarly thesis-writing. There is a rather simple answer to this question: a thesis writer is expected to make an **original contribution** to the existing body of knowledge in the relevant field.

There are two ways of making an original scholarly contribution to a given field of knowledge.

- i. By presenting new and hitherto unknown information, data, findings etc., in a given field of inquiry.
- ii. By presenting an entirely new analysis and theorising on an already known phenomenon, either on the basis of new data or using the existing data. In this case, one should propound a new theory, provide a new interpretation or a new analysis of an existing problematic. Here, the originality of the contribution is in the realm of theory-building and conceptualisation.

Why search for literature?

In my encounters with many research students, I have noticed a marked reluctance to consult the relevant literature. Many appear to believe that writing a thesis is merely an exercise in writing a book. '*Potha Liyanava*' ('writing the book') is the common expression they use. Writing a thesis is more than a *potha livima*. Any literate person with writing skills can write a book, but only a scholar can write a thesis. Consulting literature is thus a scholarly exercise.

Lawrence Neuman (1994:80) provides a useful answer to the question, “why conduct a literature review?”:

“A literature review is based on the assumption that knowledge accumulates, that we learn from and build on what others have done. Scientific research is not an activity of isolated hermits who ignore others’ findings. Rather, it is a collective effort of many researchers who share their results with one another and who pursue knowledge as a community ... Today’s studies build on those of yesterday. Researchers read studies to compare, replicate, or criticise them for weaknesses.”

There are some valid and essential reasons for a scholar to consult literature, before writing a thesis or even before and during research. I can think of the following three reasons:

- i. A meaningful and successful research project should focus on a problematic which has not been inquired into before. To find out whether my research problem is a new and original one, I should know as much as possible the existing research in the area that I am interested. For this, I must read the available literature in my field. There is no point in repeating research which has already been done. Research will have meaning only when it enriches the existing body of knowledge by adding to it.
- ii. I may have ideas about the research theme, tentative hypotheses etc., that I feel original, but how should I prove to myself that my ideas are actually original? Only by examining the existing literature in the field will I know whether my present ideas are either original or stale. The moment I realise that my ideas have nothing new, I should begin to formulate ideas that are actually new.
- iii. In presenting new findings, new theories and new conceptualisations, I should define my own approach, concepts, theoretical framework, methodology etc., as against or in relation to the existing body of knowledge.

With some, I may agree and with some others I may disagree. In writing a thesis, I am presenting myself as a scholar. Therefore, I have responsibility to define myself *vis-a-vis* my peers and my predecessors. This I can do only by entering into a dialogue with their work. This is why the academic writing tradition insists on a 'literature review.'

Goals of a literature review

Also known as a literature survey, the literature review prior to a thesis has a specific set of objectives. The literature survey can best be defined by identifying its objectives. When you write the thesis, it is the culmination of your research, reflection, and analysis.

It is also in the body of the thesis that you formulate your own ideas, arguments and theorisation. Neuman (1994:80) identifies four goals of a literature review in academic thesis-writing:

- i. **To demonstrate familiarity with a body of knowledge** and establish credibility. A review tells the reader that the researcher knows the research in an area and knows the major issues. A good review increases a reader's confidence in the researcher's professional competence, ability and background.
- ii. **To show the path of prior research** and how a current project is linked to it. A review outlines the direction of research on a question and shows the development of knowledge. A good review places a research project in a context and demonstrates its relevance by making connections to a body of knowledge.
- iii. **To integrate and summarise what is known** in an area. A review pulls together and synthesizes different results. A good review points out areas where prior studies agree, where they disagree, and where major questions remain. It collects what is known up to a

point in time and indicates the direction for future research.

- iv. **To learn from others and stimulate new ideas.** A review tells what others have found so that a researcher can benefit from the efforts of others. A good review identifies blind alleys and suggests hypotheses for replication. It divulges procedures, techniques, and research designs worth copying so that a researcher can better focus hypotheses and gain new insights.

Let me add three more objectives of a literature review:

- i. The thesis writer must demonstrate his/her familiarity with the existing body of knowledge in the relevant field of study, or on the issue under research and analysis.
- ii. It is important to validate your own scholarly exercise by defining it in relation to the existing body of knowledge, as found in the literature.
- iii. The originality of your own findings, theories and concepts can be established only in relation to and by discussing the scope of the existing literature.

Stages of consulting literature

When doing research and writing a thesis, we have to study the relevant literature constantly. In doing so we might be so tempted by the literature that we may never get down to the job of doing the work at hand. Therefore, it is always useful to organise the literature survey through essential stages.

Stage 1: The first stage is the identification of the research problem, defining its contours. The best way to do this is to examine the existing literature. At this stage, it is eminently useful to prepare a bibliography of the relevant literature. I always tell my students that the first step in serious research is preparing a comprehensive bibliography.

Stage 2: Here we proceed to write the research proposal. I have to prove to myself, my peers and of course the supervisor that my research proposal defines its problematic in relation to the existing literature. Of course, this requires that I have a thorough familiarity with the literature that covers theory, concepts, methodology as well as empirical findings relating to my field of research interest.

Stage 3: While doing research I should also examine existing literature for very specific reasons. If my research entails collection of data and information from existing literature (so-called secondary sources), I have no option but to read, take down notes and reflect on them. Even when I do my field research, I should continue the habit of consulting literature because during research I might come across new ideas which I must ascertain is actually new. Field research is an excellent opportunity to acquire new knowledge, because it often demolishes one's pre-existing assumptions and conclusions and opens one's eyes to new realities and new dimensions of the reality. The challenge then is how to formulate the newly confronted realities in scholarly terms and to make sure that they are new formulations.

Stage 4: Writing the thesis is the most enjoyable part of research. In writing a thesis, you feel that you are actually grown up in your field of inquiry. For this, you have to maintain a constant encounter, a dialogue with those who have already written and published in your field. Reading, reflective reading and critical reading is most important at this stage.

How to identify relevant literature

In scholarly practice certain skills need to be cultivated. Identifying and locating literature is a crucial skill for a researcher and a thesis writer. There are many ways of locating literature depending on your requirements and the degree of familiarity you already possess with the literature.

- i. Consult a specialist in the field. Exploiting other people's knowledge, of course with due acknowledgement, is a

legitimate academic practice. A basic principle in the academic world is the notion that knowledge is democratic and it is to be shared and one has to be generous in sharing knowledge, although everybody may not practise this principle ! You can go to a person who is knowledgeable on the subject and seek his/her assistance in identifying the relevant literature.

- ii. An information science library is quite helpful in identifying the relevant literature. Libraries usually have author as well as subject catalogues. Computerised libraries are most user-friendly, because the stored bibliographical information has been annotated according to primary and secondary subject descriptors. The relevant command given to a computerised data base enables one to retrieve the particular information speedily.
- iii. Academic books and articles invariably have bibliographies and they are extremely useful. A good researcher will always pay close attention to the bibliography of a book/article.
- iv. Periodical articles are quite useful for researchers, because they contain the most recent knowledge in the relevant field. Any aspiring scholar should develop the habit of reading regularly – just like the habit of drinking morning coffee – the key periodicals in his/her field of interest. Academic periodicals generally have a book review section and reading such reviews keeps us up to date with what is new in the field.

Location literature

In Sri Lanka, location of literature is a formidable task because we do not have many well-equipped libraries. Even in the existing libraries the library staff may not be able to tell you right away whether a particular book or journal you are looking for is available or not. The usual search instruments is the card catalogue with subject and author information catalogued either

according to the Universal Decimal Classification System or the Dewey Decimal Classification System. In Sri Lanka, it is important to know that there are many libraries scattered all over, in the universities, in government establishments, in non-governmental research organisations and private homes. In the absence of a consortium of Colombo libraries, we do not have a centralised bank of library information. However, there are three islandwide networks of science and technology libraries in the country.

The largest network comprising over 50 participating libraries is the Sri Lanka Scientific and Technological Information Network (SLISTNET). The others are the Agricultural Information Network (AGRINET) and the Renewable Energy Information Network (RERINET).

Let me give you some brief information about the existing libraries.

- i. **University libraries:** The biggest libraries in Sri Lanka are in the universities, although they may not be very well stocked. As for me, I have developed the habit of visiting, depending on the requirement, the university libraries in the Western Province and Peradeniya. The library of the University of Peradeniya is one of Sri Lanka's legal deposit libraries and so receives a copy each of material printed and published in the country. It also has a collection of unpublished literature on Sri Lanka including theses submitted to the University. What you do not find in one university library, you are likely to find in another university library. But remember that the university libraries are not always well organised. Do not be discouraged when you do not find a particular book which should theoretically be found in a particular shelf because in Sri Lanka many library users, particularly in the universities, have a tendency to disarrange bookshelves. Universities also have specialised smaller libraries (for example CSHR, CEPRA and ISS project) at Colombo University. Sometimes, certain departments may have their own specialised collections, too.

- ii. **Government Document Collections:** The National Archives, the National Museum Library and the National Library, all located in Colombo 7 area, house valuable collections of documents and rare material. Each of them is a legal deposit centre. The Archives has manuscripts (including ola leaf manuscripts), government records, newspapers and periodicals published in Sri Lanka since the late 19th century, all government publications, copies of title deeds, first copies of books published in Sri Lanka, and many more. The Museum Library has an excellent collection of published and unpublished material of the 18th, 19th and early 20th century, including rare pamphlets. It is also an invaluable reference centre for publications in Sri Lanka. The National Library is an attractive resource centre for researchers interested in more contemporary material on Sri Lanka. Its collection of newspaper clippings is quite useful. The Lake House Library is also a useful resource centre.
- iii. **Government Departments and Institutions:** There are specialised libraries at such places as the Central Bank, Bank of Ceylon, People's Bank, CISIR, Labour Department, SLIDA, ARTI, MRI, RRI, CRI.
- iv. **Non-Governmental Libraries:** The Royal Asiatic Society Library is one of the oldest in this category and it is a very useful place for the researcher who wants to consult the 19th and early 20th century material on Sri Lanka. Among new centres are Marga (development studies), SSA (gender, economics, politics, ethnicity and culture), ICES (ethnicity, culture, politics, law, human rights), Nadesan Centre (human rights and law), CENWOR and WERC (gender and women's studies), J. R. Jayewardene Cultural Centre (politics), INFORM (human rights).
- v. **Resource Centres run by Foreign Missions:** The British Council is the most popular and biggest of the libraries affiliated to foreign missions. The USIS Library,

Russian Cultural Centre, the Library of the Indian High Commission, German Cultural Institute Library, Alliance Francaise and the FES are other useful libraries that may serve limited research purposes.

- vi. Libraries that are equipped with information storage and retrieval systems index the subjects of their material using standard terms such as are found, for example in Viet, *J Macrothesaurus for Information Processing in the field of Economic and Social Development*. New English edition, Paris OECD, 1978.

How to manage literature

One of the problems we regularly encounter is how to cope with the ever expanding and vast body of literature already available. This is where we have to learn the principle of discrimination. We should not waste our time in reading each and every book in the field from the beginning to the end. We should be able to judge what is useful and relevant and what is not.

Reading the introductory chapter of a book gives us a good clue to the book. If we want particular information from a book, the easiest strategy is to consult the subject index. Most academic books are indexed. The index is the guide to the subjects that occur in the book. And in the index, the page numbers where a particular subject figures are given.

How to organise a literature survey:

There are no specific rules on how to organise the literature review component of a thesis. Nevertheless, it is important to organise it in a manner that suits the overall structure of your thesis. Usually, a literature survey becomes necessary from the very beginning of the thesis, at the following points:

- i. **Introduction of the research problem (context review):** When you introduce the research problem, you have to do a few essential things. First, you have to state it, then you must define it. You also need to say why the

study of that research problem is important and how your own research problem arises through links to the existing and developing body of knowledge. All these require familiarity with the existing body of knowledge.

ii. **Review of theoretical literature (theoretical review):**

Usually, an academic thesis is written within a specific theoretical framework. Therefore, you have to present your own theoretical assumptions and postulates, which may be derived from the existing body of theoretical knowledge. Or they may also be modifications of the existing theories. This exercise has to be done convincingly because of your claim to be advancing the frontier of knowledge in the particular area. The reader, if necessary, should be able to test the validity of your claim. This requires a review of existing theoretical literature. This is done in summary form by discussing the relevant literature so as to indicate the development of knowledge in the particular field of study. In doing so, one indicates the rationale for one's own research.

iii. **Review of methodological literature (methodological review):**

In your research project, you also have a specific research methodology. By reviewing the literature on methodology, you not only refine your own methodology, but also convince the reader that your methodology follows the established protocol of research in your field.

iv. **Review of empirical literature (integrative review):**

Suppose your thesis contains some original empirical findings on a given problem. The originality of the findings can be established only by demonstrating the lacunae in the existing literature.

Writing the literature survey

A literature survey does not have to be of considerable length. You do not have to review each and every piece of writing you have come across in the process of your research. You select

only the important and relevant literature for review. Sometimes, literature can be grouped according to common characteristics and you can discuss the main representative work of those groups. Detailed bibliographical information can be comfortably given in foot/end notes.

However, it is useful to cite the author's name and year of publication so as to indicate different contributions to knowledge in an evolving manner. Similarly, you do not need to summarise all the literature under review. Present the basic argument, conclusions etc, in so far as they are necessary for your purpose. Very long literature reviews run the risk of being boring and unexciting; they can also harm the balance of the totality of your thesis.

BIBLIOGRAPHY

NEUMAN, W. LAWRENCE, 1994, *Social Research Methods: Qualitative and Quantitative Approaches*, Boston, London, Toronto: Allyn and Bacon.

The most comprehensive source for social and economic literature of Sri Lanka is

1. GOONETILEKE, H. A. I. *A Bibliography of Ceylon*. A systematic guide to the literature on the land, people, history and culture published in Western languages from the sixteenth century to the present day. Zug (Switzerland) Inter Documentation Company. Vols. 1 & 2 (1970 reprinted 1973), Vol. 3 (1976), Vols. 4 & 5 (1983), Vol. 6 (1986).

Other bibliographical sources are:

2. SRI LANKA NATIONAL BIBLIOGRAPHY, Published quarterly by the National Library Services Board. It is a record of current Sri Lankan publications in Sri Lanka in Sinhala, Tamil and English based on material deposited with the National Library Services Board for inclusion in the National Library.
3. THE SRI LANKA PERIODICALS INDEX published by the National Museum Library as a guide to the contents of current periodicals published in the country.
4. CURRENT ACQUISITIONS LIST compiled by the Centre for Development Information of the Ministry of Finance and Planning.

5. SELECT NEW ACCESSIONS LIST, Library of the University of Peradeniya.
6. DEVINSA - Development Information Network for South Asia (1986), a multidisciplinary, computerised database of bibliographic information on socio-economic development in South Asia.
7. US LIBRARY OF CONGRESS ACCESSIONS LIST for South Asia contains material published in English and in the languages of South Asia.

How to access library resources

Sumana C. Jayasuriya

How libraries can help research

The essence of successful research is that something is added to the store of knowledge either by the way of

- completely new discovery (life on Mars)
- rediscovery of something we have lost (ancient civilisations)
- giving a new interpretation to already existing phenomena.

It has been said that “to look in one book is reference, in two books is search, in three books is research”, but true research involves more than mere hunting.

How can libraries or information centres help the researchers in these endeavours? The level of participation of the librarians stays at finding material. This may extend to primary sources such as unpublished letters or diaries. It is for the research worker to evaluate such material, to investigate the evidence and form conclusions.

According to G. Chandler, information for an educational project, a dissertation or any other research investigation or a general inquiry can be obtained for one of the following sources:

- a. Books.
- b. Articles in encyclopedias, handbooks, etc.
- c. Yearbooks.
- d. Periodicals.
- e. Newspapers.
- f. Documents.
- g. Local experts and consultants.
- h. National experts, and consultants.
- i. International experts and consultants.
- j. On-line sources of information.

Inquiries:

There are several types of inquiries a researcher may make.

- a. *Author/title inquiries:* where the name of the author or the title is known,
- b. *Factual inquiries:* fact-finding, sometimes known as quick reference or ready reference,
- c. *Subject inquiries:* this can result in locating a subject bibliography or sometimes the researcher might find some information but there is more information which may be available,
- d. *Research inquiries:* In a research inquiry, the duty of the librarian is to guide the researcher in finding the material he needs. Why?
 - Only the researcher will know what he is looking for, and what can satisfy him
 - Only the researcher can refine the research query and continue searching
 - Only the researcher can evaluate the sources (as to its relevance, its authenticity, its currency etc.)

Reference process:

To get answers to these inquiries, one must understand the reference process. This will help the researcher in finding his way through the existing information sources.

- a. *Diagnosis:* Just as the doctor's first task is diagnosis, the first step in the research process is defining what the problem is or get a clear meaning of the question.
- b. *Analysing the subject:* It is essential to place the topic in its correct spot on the map of knowledge.
- c. *Search strategy:* deciding on the order in which each of the various sources available will be consulted.
- d. *The search:* Actual examination of available sources. These will vary from library to library.
- e. *The response:* Are you satisfied with the answer?

For some inquiries only one type of source needs to be consulted. For many inquiries where the researcher needs sufficient information more than one source will have to be consulted. Each of these sources has its own advantages and limitations. So one must consider these very carefully when consulting these sources. One must not take the information as accurate. It should be critically examined and verified with another source before accepting it as authentic information.

Four basic sources are common to libraries

- a. The library catalogue
- b. Bibliographical sources (including lists, indexes, and abstracts of periodicals)
- c. Reference materials (encyclopedias, dictionaries, yearbooks & directories)
- d. Literature in the field.

Organisation of information:

The key to all these sources of information may be in your local library, but you will not be able to find the information unless you know how your library is arranged and have some knowledge of how to use reference books.

Most libraries are now arranged according to the Dewey Decimal Classification (DDC) or by its extension the Universal Decimal Classification (UDC). The DDC divides human knowledge into ten classes, the main divisions being:

- 000 General Works
- 100 Philosophy
- 200 Religion
- 300 Social Sciences
- 400 Languages
- 500 Science
- 600 Technology
- 700 The Arts and Recreations
- 800 Literature
- 900 Geography, Biography and History

Each of these classes is sub-divided decimally to make way for new subjects. If there is no number for the specific topic, you should look under the name of the broad subject of which it forms a branch. The libraries usually provide a guide to the classification used in the library.

Library catalogue

The catalogue is an essential tool in any library. It is a list of the materials or items in a library, with the entries representing the items arranged in some systematic order. A catalogue may be held as a card catalogue, microfilm catalogue or as a computer data base. It allows the user to find out exactly what the collection contains, not limited to the stock which is available and evident on the shelves. Except for a few libraries in Sri Lanka, most libraries use the classified catalogue.

Classified catalogue

A classified catalogue is any catalogue arranged in systematic order, normally the order of the classification scheme (DDC, UDC etc.) used in the library. It generally consists of three sequences:

Structure

- Main sequence in the classified order;
- An author/title index;
- Subject index.

Classified order

The main entry is normally the classified entry, a class number being given either above the heading or on the left top corner if it is a card catalogue. All classification schemes have a notation representing subjects and filing order differs from one scheme to another. In most libraries the class number determines the shelf location of an item. Therefore in this classified sequence books on the main subject and related subject will be listed together. For each classmark a list of the works classified at that number is provided.

Main class entry

657.8635 Rogers, Peter
ROG Accountancy for veterinarians/by Peter Rogers. –
Oxford: OUP, 1987
167p.:ill., 23cm.

ISBN 0998754367

As can be seen from the examples given above, the classified catalogue will bring together items on a subject. There may only be one item at a particular classmark, there may be many. When there is more than one item having the same class number, it will be difficult to determine, the shelf sequence. Hence the first three letters of the heading, usually the author's surname or the title if there is no author is added to the classmark. With this information it is comparatively easy for the user to go with his or her classmark to the appropriate point on the shelves and find the document he seeks.

Author/title index

Author and title entries are usually filed together in one alphabetical sequence. The heading of the entry where it is the author or the title, will determine the filing order. Author/title catalogues commonly provide entries not just for the main authors and titles of a work, but also for additional authors, editors, translators, series titles, variant titles and so on. There will also be a system of references (*see references*) guiding the user from alternative forms of headings; from, for example, pseudonyms to the real name of the author.

Subject index

Most of the readers who come to the library are not familiar with the notation of the classification schemes used by the library. However, they will know the name of the subject and with the help of the subject index they can get the class number given to any specific subject. The alphabetical subject index will translate the user's normal language terms into the notation of the classification scheme.

தேசிய நூலகப் பரிந்துரை
மாநில நூலக சேவை

The subject entries in a catalogue consist simply of the names of subject and their class numbers, and these are arranged in one alphabetical sequence.

e.g.	Economics	330
	Electrochemistry	541.37
	Diseases	616
	Heart diseases	616.12
	Trees	582.16
	Veterinary medicine	636.80896

Readers' advisory work

The collective experience and accumulated knowledge of good staff are major assets in any library. All libraries have a reference librarian, who has to assist the reader in finding material. A reference librarian's familiarity with the sources of information should not be confined to those within the walls of one library. No library can ever be self-sufficient and outside sources need to be regularly drawn upon to satisfy the needs of researchers. The librarian will pass on or refer an inquirer to an outside source more able to solve a particular problem.

Bibliographical sources

Bibliographies

Bibliographies are of two types. National bibliographies record all literature in the country while subject bibliographies record most literature published in a particular subject field. A good example of a subject bibliography is the Bibliography of Ceylon compiled by H. A. I. Goonetilleke. A researcher who wants to conduct a literature survey must first consult these bibliographies to find out what is available in his field of interest.

Periodicals:

Recent information can be got from the articles in journals. There are lists of periodicals published in the world. (Ulrich's International Periodicals Directory). Because of the enormous

number published it is not possible to issue a yearly catalogue of all articles published in a particular country. Therefore, most indexes of periodicals are linked to a subject, but are worldwide in scope. Periodicals are primarily concerned with new developments which are of interest to specialists. To provide access to all the articles published in journals indexes are published. These indexes include Education Index, Engineering Index, Biological and Agricultural Index etc.

The need to summarize developments in certain scientific fields has led to the publication of many series of abstracts. Whereas indexing journals give only the bibliographical data, these abstracting journals provide condensed versions of important articles relating to fairly specific fields. Some of the popular ones are the Chemical Abstracts, Sociological Abstracts, Psychological Abstracts, and Excerpta Medica.

Indexes to theses are a very important source of information to the research worker. Most of the theses submitted to universities for higher degrees are in unpublished form and even the existence of these are not known to most interested parties. A very useful index is Dissertation Abstracts International, which is a guide to dissertations available in microfilm.

Reference materials

Encyclopedias

There is a saying that "the encyclopedia is the place to look if you can't think of a place to look". This suggests the importance of encyclopedias as a reference source. Encyclopedias combine the functions of a dictionary, a who is who, a compendium of knowledge, an atlas, a technical guide and a gazetteer. Contributors to articles include professors, Nobel Prize winners, research engineers, and experts of all kinds. Articles in these and handbooks are more up to date than many books, for they are being updated regularly. And they are also more authoritative since all articles are signed by the authors. Encyclopedia Britannica, Encyclopedia Americana, Chamber's Encyclopedia are some of them.

Local, National and International sources of information

There are certain societies, institutions, research associations, governmental agencies, international bodies which may have well issued documents containing the desired information or which may have relevant unpublished documents in their files. These may be very important for your research work. The directories provide information regarding these organisations. World of Learning, Commonwealth Universities Yearbook, are some of them.

Literature in the field

Books

Books are in many cases the most important sources of information, although they are very often necessarily out of date. Books are easily available in a local library or may be borrowed from other libraries.

Before accepting information published in a book, use a few minutes of your time to examine its structure, qualifications of the author, and his point of view, title and sub-title will give you an indication of the intention or scope of the work. The work is likely to be authoritative if it is published by a publisher who specialises in the subject of the book. The date of publication will give you an indication how current is the information given in the book. You can also go through the contents and the index. You must remember that every book is based on a combination of objective facts and subjective interpretation of them. The bibliography will reveal the author's sources and will indicate whether he is up to date and thorough in his approach.

On-line information services

There are various on-line information services which have developed rapidly in recent years. Although traditional search of printed literature remains necessary for many purposes, and will often be more economical, on-line information is quicker and easy to obtain.

On-line information services are accessed through terminals linked on-line with computers on which machine-readable data bases have been mounted in whole or in part. Although the cost is comparatively high, the computer can supply information more quickly and effectively than traditional manual searches of printed literature which are very labour intensive.

Chandler describes the on-line information services thus:

“The improvements in information services generated by on-line facilities may be grouped as : improved search systems; facilities to update and more speedily access data bases; ability to provide easy access to files of current information; capacity to extend indexing services to new areas which was not previously cost effective; ability to develop new numeric and factual data bases; easier capacity to combine literature and numeric data bases, ability to access a greater range of data bases from the same terminal; capacity to co-operate in the direct input of information into data bases; ability to construct private data bases”.

Of course, one must remember that most on-line information systems are on a commercial basis, DIALOG or ORBIT or ERIC and therefore expensive.

CD-ROM databases

CD-ROM (Compact Disk Read Only Memory) is one of the new inventions which has a greater potential in the developing world. On-line searching depends on a very efficient telecommunication system, but CD-ROM can be operated with a CD drive. Most of the commercial data bases are now produced in CD-ROM and libraries in Sri Lanka have already provided this service. NARESA, NIE, National Library, British Council and the USIS library are some of them. They have acquired some of the important data bases such as Dissertation Abstract, ERIC, Science Citation Index, etc.

Networks

Networks are formed by librarians and information scientists who have agreed to work jointly to serve their users. The users of these libraries get the benefit of utilising the resources of all libraries. Co-operative programmes are drawn up by the network to share, exchange and develop the resources, experiences and efforts. It avoids duplication, helps save unnecessary expenditure, and manpower while serving the needs of the users.

There are national and international networks which are devoted to specific subjects. In Sri Lanka, NARESA has developed Sri Lanka Scientific and Technical Information Networks (SLISTINET) to operate a co-operative acquisition plan for indexing and abstracting journals. There are several other networks such as AGRINET (Agricultural Information Network), HELLIS (Health Literature Library and Information Service), ENLINET (Environmental Library Network) which are operational now.

Internet facilities

With the introduction of Internet in Sri Lanka, the doors have been opened to researchers to access information available throughout the world. At present NARESA provides free searching facilities on Internet.

Document Delivery Services and Inter-Library Loan Systems

Most of the indexing and abstracting services as well as the on-line services will enable the user to find the information regarding a subject of his interest. To acquire the material would be difficult specially if it is available only in a foreign country. These systems increase the availability of library resources to patrons. However, if the article is available only in a foreign country the cost will be fairly high.

REFERENCES

- CHANDLER, G. *How to Find Out: Printed and On-line Sources*. 5th ed. Oxford: Pergamon Press, 1982.
- GROGAN, DENIS *Enquiries and the Reference Process*. London, Clive Bingley, 1987.

Do it in style

Professor Colvin Goonaratna

Three questions

In this essay I attempt to answer three questions – What is style? Does style matter? And, if style does matter, how may one become stylish?

The word 'style' may assume different meanings depending on the contexts in which it is used, but there are two meanings relevant to the writing and publishing of scientific articles, books and monographs.

The first meaning of 'style' refers to a manner of expression in language. It is hard to define or describe. Perhaps reading what masters of the English language have said might give you some idea.

Have something to say and say it as clearly as you can.
(Mathew Arnold).

. . . proper words in proper places make the true definition of style. (Jonathan Swift).

If any man were to ask me what I would suppose to be a perfect style of language, I would answer, that in which a man speaking to five hundred people, of all common and various capacities, idiots or lunatics excepted, should be understood by them all, and in the same sense which the speaker intended to be understood. (Daniel Defoe).

What appears to be a sloppy or meaningless use of words may well be a correct use of words to express sloppy or meaningless ideas. (Anonymous diplomat).

You will observe that the language of all four quotations is simple, clear, concise and precise. Every word in them is telling,

and there is not a single superfluous word in any one of them. They are not merely definitions of or advice about style of language; they are also perfect examples of style. Let me give you a few more.

As an example of the most effective use of just thirteen simple English words in all of English literature, I choose Shakespeare's description of what the morning sun does to serene English meadows and rivers.

Kissing with golden face the meadows green
Gilding pale streams with heavenly alchemy.

As an example of the deft use of twelve English words to clarify what must have been a singularly intractable dilemma for post-office staff I give you a notice that I observed in most post-offices in Farnham, Surrey in the 1980s. I longed then to meet the author of these words, but nobody knew his or her identity.

Postmasters are neither bound to give change nor authorised to demand it.

A child of ten years produced this gem in response to a question in a test that invited children to write an essay titled "A bird and a beast".

The bird that I am going to write about is the owl. The owl cannot see at all by day and at night is as blind as a bat.

I do not know much about the owl, so I will go on to the beast that I will choose. It is the cow. The cow is a mammal. It has six sides – right, left, an upper and below. At the back it has a tail on which hangs a brush. With this it sends the flies away so that they do not fall into the milk. The head is for the purpose of growing horns' and so that the mouth can be somewhere. The horns are to butt with, and the mouth is to moo with. Under the cow hangs the milk, It is arranged for milking. When people milk, the milk comes and there is never an end to the supply. How the cow does it people have not yet realised, but it makes more

and more. The cow has a fine sense of smell; one can smell it far away. This is the reason for the fresh air in the country.

The man cow is called an ox. It is not a mammal. The cow does not eat much, but what it eats it eats twice, so that it gets enough. When it is hungry it moos, and when it says nothing it is because its inside is full up with grass.

This little author has achieved style, perhaps unconsciously, for he had something to say and said it as clearly as he could. But why do we write when we are ten 'so that the mouth can be somewhere' and when we are writing a thesis at the age of thirty 'In order to ensure that the oral cavity may have positioned appropriately for ingestion and deglutition . . .' ? And why do we write when we are ten "How the cow does it people have not yet realised, but it makes more and more", but when we are thirty or so and writing a monograph "The multifactorial physiological mechanisms that determine the apparently prolonged lactational period in farm-bred ungulates are not definitively known"? Let us seek some plausible answers for this curious transformation.

So far we have considered only one meaning of 'style'. The other meaning relevant to our business today is easier to define as the "customs to be followed in spelling, capitalisation, punctuation, arrangement of text and display" – in short, house-style. Most famous journals have their own printed style-book. Sub-editors and editors use the style-book to improve authors' articles for clarity, brevity and precision. Others (e.g. Ceylon Medical Journal (CMJ)) follow one of the leaders. The information given to intending authors in various journals is a summary of journal's house-style.

The foreword to the Journal of the American Medical Association (JAMA). Stylebook asserts: ". . . a scientific journal should have a consistency of style and an accuracy of reporting on which readers have come to rely. The few rules a journal adopts should be simple, inviolable and encourage clear unambiguous writing". (Emphasis mine).

All institutions that grant postgraduate degrees for theses based on original research have or ought to have, their equivalent of journals' house-styles. These instructions and guidelines should be made available to supervisors of candidates working towards a degree by thesis. The instruction given should be followed by candidates when writing their theses, and supervisors must ensure that they are followed.

Here is an example of how not to write a scientific article

Approximately 200 g of boro-lithium activated charcoal (BLAC) are said to be needed in order to treat each severe case of *Amanita phalloides* poisoning at the present time (Smith and Jones 1984). Ford *et al* (1985) were of the same opinion but they anticipated that deactivator coated charcoal would be of assistance to a wider spectrum of patients at some future date.

After treatment commences the urine becomes black in colour comparatively frequently and a considerable proportion of patients demonstrate skin rashes due to the fact that BLAC still contains impurities. It may be noted from the literature that during the period of the rash the serum charcoal level is elevated in excess of 20 mg/100ml. It is also probable that the blood supply to the lower limbs is significantly decreased relative to the upper limbs in female subjects on contraceptive therapy.

In this situation it seemed to the present author that, as already stated, more sophisticated forms of charcoal therapy could be developed in the not too distant future. Experiments in which rats are sacrificed following charcoal dialysis would reveal novel insights into the interactions that may occur after such therapy. Already there is evidence that long term exhibition of charcoal therapy might conceivably predispose to a particular form of cardiac pathological entity.

The following words appear in the passage above. Their actual meaning is given in the NOTES, indicating their misuse in the passage.

Their misuse in the passage:

- (1) anticipate = expect, forecast, foresee, hope for, look forward to, predict, etc.
- (2) spectrum = a phenomenon related to light
- (3) demonstrate = display, exhibit, indicate, prove, testify, explain, illustrate etc.
- (4) literature = should it be used in this context?
- (5) significantly = ? inappropriate here
- (6) female subject = ? women, by any chance
- (7) sophisticated = what is meant here is 'advanced' or 'highly developed' or 'refined' not cultured, blasé, urbane, jet-set or cosmopolitan
- (8) reveal = expose to view, exhibit, uncover, unearth, unmask, unveil, let on, leak (information or secrets esp) divulge, disclose, etc.

- insight = intuition, judgement, perspicuity, perception, special acumen comprehension, vision, etc.

- sacrifice = offering, offer(verb), immolation, give up, forgo, lose, renunciation, surrender, etc.

The same passage could be written in clear, direct and simple prose as follows:

Smith and Jones (1984) recommended treating each severe case of *Amanita phalloides* poisoning with about 200 g of boron-lithium activated charcoal (BLAC). Ford *et al* (1985) agreed, but thought that deactivator coated charcoal would help a wider range of patients in future.

After treatment starts the urine becomes black often and many patients develop rashes because BLAC contains impurities. While the rash lasts the serum charcoal concentration rises above 20 mg/100 ml. The blood supply to legs probably decreases compared with the arms in women taking oral contraceptives.

I think that, more advanced forms of charcoal therapy could be developed in the future. Experiments in which rats are killed after charcoal dialysis would provide new facts about the interactions that may occur after such treatment. Already there is evidence that long-term treatment with charcoal may predispose to a kind of heart disease.

Some elementary rules of style

1. Keep it short. Avoid circumlocution, verbosity, pomposity, padding and affectation. If it is possible to cut out a word or sentence or paragraph always do so. "Now" is better than "at this moment of time" and "at this time period"; "agreed" is better than "came to the identical conclusion" and "was the consensus of opinion"; "I think" is better than "I am of opinion".
2. The longer the sentence the greater the likelihood of confusing. e.g. "The relatively short duration of action of SMS 201-995 when compared with omeprazole was also observed in our study since on the day after the five day course of treatment, serum gastrin levels were increased due to the prolonged action of omeprazole on gastrin release".

This author was probably trying to say "Our study also showed that the effect of SMS 201-995 was not as long lasting as that of omeprazole. Serum gastrin concentrations were still high the day after the five-day course of omeprazole".

3. Never use a long word when a short one will do. So do not use "underdeveloped" or "impecunious" if you mean "poor", and do not use "facility" if you mean "unit" or "ward".

4. Use the passive construction sparingly:

“The following experiments were performed by me to...” is a passive construction.

“I performed the following experiments to ...” is preferable.

5. Avoid foreign, technical or jargon words:

“Bifurcation” is not a more respectable word than “fork”, and “arms and legs” is preferable to “upper and lower extremities”.

Blood sugar level, full workout, the patient was ambulatory, profile, spectrum, ongoing, overall and sacrificed are other examples of overworked and nearly bankrupt words and phrases in current medical writing.

6. Put statements in the positive form. So write “He usually came late” in preference to “He was not very often on time”. Remember the sentence “The not so white rabbit ran across the not so green field not so late in the afternoon”. “The dirty rabbit ran across the muddy field in the early afternoon” is much better.
7. Avoid “noun-salads”. “Post-intern undergraduates’ maternity training programme volunteer participants” and “doctor workload reduction programme evaluation schedule” are examples. A wish to cut words must not obscure meaning.
8. Write with nouns and verbs, not with adjectives and adverbs. Rather, very, little, pretty, considerable and commendable etc. have been described as the “leeches that infest the pond of prose, sucking the blood of words”. “She is a little tall and pretty ordinary” is a useful sentence to remember.
9. Revise, rewrite and edit your own writing.

Padding is nearly always deletable. The following paragraph is an example of its use.

In addition it is perhaps worthy of note and relevant to mention that ascorbic acid does not increase urinary hydrion excretion adequately and in a reliable manner for the purpose of testing acidifying power.

The passage could have been better written as –

Ascorbic acid does not increase urinary hydrion excretion adequately and reliably for testing renal acidifying power.

Here are more examples of padding:

It should be noted that . . .

It cannot be over-emphasised that . . .

It should be mentioned that. . .

It should be pointed out here that . . .

It is interesting to note that . . .

It is important to mention that . . .

It may be recalled that . . .

It is also of importance to bear in mind the following conditions.

Serious consideration should be given to the possibility of putting into effect.

Here are some commonly used compound prepositions and suggested simpler equivalents:

as a consequence of (because of)

by means of (by, with, using)

by virtue of (by, under)

for the purpose of (to)

for the reason that (because)

in accordance with (by, under)

in addition to (besides)

in as much as (since)

in association with (with)

in case of (if)

- in excess of (more than, over)
- in favour of (for)
- in order to (to)
- in the absence of (without)
- in the course of (without)
- in the course of (during)
- in the event of (if)
- in the nature of (like)
- in the neighbourhood of (about)
- in the vicinity of (near)
- in view of (because of)
- on the grounds of (because of)
- on the part of (by, among)
- prior to (before)
- subsequent to (after)
- with a view to (to)
- with the exception to (except)

Buzz-word generator

Column 1	Column 2	Column 3
0. integrated	0. management	0. options
1. overall	1. organisational	1. flexibility
2. systematised	2. monitored	2. capability
3. parallel	3. reciprocal	3. mobility
4. functional	4. digital	4. programming
5. responsive	5. logistical	5. concept
6. optimal	6. transitional	6. time-phase
7. synchronized	7. incremental	7. projection
8. compatible	8. third-generation	8. hardware
9. balanced	9. policy	9. contingency

'Grantsmanship': Guidelines on writing a successful research proposal

Dr. Asoka S. Dissanayake

'Grantsmanship' has been described as the ability to write a Research Proposal in such a manner as to be awarded a grant to carry out the proposed research. In other words, the effective communication of the Research Proposal by its author or chief researcher or investigator to the award-granting institution must itself indicate the competence of the author. Thus, a well-written Research Proposal may be decisive in winning a grant to carry out the research.

Introduction

The Research Proposal must have a well-knit structure, beginning with an introduction, which would sketch the background to the proposed research and its significance. The Literature Survey which you would have carried out would enable you to evaluate critically the existing knowledge on the subject of study, identify the gaps in knowledge, which the project proposal seeks to fill. The project would have an overall goal as well as specific aims. It is advisable to confine yourself to a few aims and state the purpose of the research in the form of a hypothesis to be tested. Set this out as a Goal Statement.

Goal Statement

The Goal Statement must clarify the importance of the research project by relating to –

- Broad long-term objectives
- National goals
- International goals

The Goal Statement must be so presented that the grant award reviewer should be able to perceive the Research Proposal as being –

- important
- interesting
- and having a high probability of success

The reviewer would need to be satisfied that -

- the aims of the Research Proposal have been set out logically
- there is a valid hypothesis to be tested
- the tests of the hypothesis are feasible
- the Research Proposal is both significant and original.

Time-table

The Research Proposal must indicate a tentative time-table, phased according to the different stages of the research project. Some grant awards although approved in principle, the release of funds under the grant is dependent on the recipient adducing proof of satisfactory progress on each stage of the project. Periodical reports may therefore be called for by the awarding institution. The time-table would invariably be linked to a budget.

Budget

The budget would set out the cost structure of the research project, enumerating the various line items and the cost of each. The equipment to be used must be priced, whether it is to be bought specifically for the project or to be obtained on hire. Computer use, software, stationery, supplies, questionnaire survey costs, research and clerical assistance and other expenses must be itemised.

Methods of research project

The Research Proposal must describe adequately the methods the research would adopt. Such methods must be appropriate to accomplish the stated aims. A protocol or matrix should indicate the methods in relation to the choice of subjects. The procedures that would be adopted, including a questionnaire survey, must be spelt out very clearly and

succinctly. List the precautions that would be taken to guard against error.

Ethical aspects

Among the ethical aspects to be observed in writing a Research Proposal is the assurance to the grant-awarding institution that a grant had not been sought previously for the same proposal from that institution, nor has any component of the project been funded by another institution.

The methods to be adopted in the research project should be as close as possible to the state of the art. If it is a new method you must validate it to the satisfaction of the reviewer of your proposal. Be specific about the method and indicate the chance of its success. The reviewer in recommending your Research Proposal must be convinced that the grant funds will be well spent and be productive of the results that are envisaged.

Appearance

The Research Proposal must have an effective visual impact. You can achieve this by using a word processing programme and a good printer. Avoid gimmicry in the layout of the Proposal as well as in the choice of type face and font. For headings and sub-heads use a bold roman type of the same family of type. The font size would vary according to whether it is a main heading or a sub-head. For the former use 18 point and for sub-heads use 12 point bold. Use roman throughout. Italics must be used sparingly. The text may be set in 12 point Times Light Roman. The lines must be double-spaced. So also the paragraphs.

Times Roman is a serif type. Consequently, your headings must also be in serif type. On the other hand, if you use a sans serif body type such as Universe your heading type should be also sans serif.

Use the spell-check, punctuate logically and use capital and simple letters according to the rules governing their use. However, initial capital letters are permissible to emphasise

certain words. Be consistent in your use of type and in general presentation. White margins on either side of the page and double space between lines and paragraphs make for a good visual impact. Use only original diagrams. Should you use another's diagrams please give the source. Figures or other illustrations should be clear, attractive and simple to understand.

Guide to construction of a questionnaire

Dr. Asoka S. Dissanayake

1. Deciding to do a survey
2. Determining the questions to be asked
3. Structuring the questionnaire
4. Information about the study for respondents
5. Pre-testing of questionnaires

1. Deciding to do a survey:

State clearly the aims of the survey and define its scope. Your decision to do a survey would have been influenced by your –

- a. Literature survey
- b. Information gathered from other relevant sources
- c. Some idea of potential respondents
- d. Views of persons engaged in the area of research

2. Determining the questions to be asked:

Questions often elicit four types of responses:

Attitudes – What people say they want

Beliefs – What people think is true

Behaviour – What people do

Attributes – What people are

Attitudes: Tested on a *Likert scale* of 1 - 4 or 1 - 5

- | | |
|----------------------|------------------------|
| 1. Strongly agree | 1. Strongly agree |
| 2. Agree | 2. Agree |
| | 3. Not sure/Don't know |
| 3. Disagree | 4. Disagree |
| 4. Strongly disagree | 5. Strongly disagree |

Beliefs: Tested on a Likert scale of 1 - 6

1. Yes, always
2. Yes, usually
3. Sometimes
4. Seldom
5. Almost never
6. Never

Behaviour:

1. No
2. Yes

Attributes:

e.g. Are you currently married?

1. No
2. Yes

What is your present age?

- in years

Types of questions based on the degree of constraint:

- a. **Open-ended**
- b. **Closed-ended**
- c. **Partially closed-ended**

a. **Open-ended questions**

Advantages

Stimulate free thought
suggestions, probe memories
clarify positions

Good for exploratory studies

Not good for mail surveys

Disadvantages

Have to recall past, solicit
experiences, reorganise them
find terms to express them

Answers incomplete,
uninterpretable, irrelevant

b. **Closed-ended questions**

Answer choices –

Ordered

Unordered

Ordered answer choice:

Ask about – Behaviour

Attitude

Attribute

Belief

3. Structuring the questionnaire:

Attractive –

neat

balanced on the page

Convenient for use -

good quality paper

binding

use different type fonts to distinguish between information, questions and response alternatives

Easy to identify, code and store

Format

easy to follow

pleasing to the eye

4. Information about the study for the respondents:

The Covering Letter - **give it careful thought**

5. Pre-testing of questionnaires:

Evaluate the whole questionnaire including -

specific questions

format

sequence

instructions etc.

Questions addressed in a pre-test:

Is each question measuring what it is intended to measure?

Are all words understood?

Are questions interpreted similarly by all respondents?

Does each closed-ended question have an answer that applies to each respondent?

Do the questionnaire and covering letter create a positive impression?

Are questions answered correctly?

Is there any suggestion of bias?

Who should scrutinise the questionnaire?

Colleagues

Potential users of the information generated by the questionnaire

A cross-section of potential respondents

More than one pre-test may be needed

Covering letters should not exceed one page in length. Thus, each sentence must be carefully framed and serve a distinct purpose. The content of the letter should:

- 1st paragraph** (1) explain the purpose of the study;
- (2) attempt to convince respondent that the study is useful;
(Caution: if the study is being done by or for an organisation, focus on benefits to people served by an organisation or members of the organisation (respondent) rather than the organisation)
- (3) avoid any hint of bias;
- 2nd paragraph** (4) Make *respondent* feel important for the success of the study;
- 3rd paragraph** (5) include information regarding confidentiality of individual responses and anonymity of respondents, if applicable;

(6) re-emphasise the basic justification for the study;

4th paragraph (7) availability of the study results (may include offer of copy to respondents);

last paragraph (8) thank the respondent.

Writing good questions – a checklist

- (1) Are the words simple, direct and familiar to all?
- (2) Is the question as clear and specific as possible?
- (3) Is it a double question?
- (4) Does the question have a double negative?
- (5) Is the question too demanding?
- (6) Are the questions leading or biased?
- (7) Is the question applicable to all respondents?
- (8) Can the item be shortened with no loss of meaning?
- (9) Is the question objectionable?
- (10) Will the answers be influenced by response styles?
- (11) Have you assumed too much knowledge?
- (12) Have you assumed too much about the respondent's behaviour and/or the situation?
- (13) Is an appropriate time referent provided?
- (14) Can the responses be compared with existing data?
- (15) Does the question have several possible meanings?
- (16) Have you exhausted the response alternatives?

Presenting your results

Professor H. J. de Silva

The focus of this presentation is on how to present the results of your research other than in a thesis. The first premise is that the research is original. That is why you wish to communicate your findings. You may do so in writing in one of three forms. The first is a short presentation which could be a review article on your research. The second is a paper for publication in a relevant academic journal. The third form is a report.

Whichever form you choose, your presentation must be interesting, readable and logical. Bear in mind the constraint of the word limit you are required to observe. To be effective you must organise the content of your research findings cohesively so that the piece of writing has a beginning, a middle and an end. Each part must flow logically to the other.

Invariably, your writing would attempt to answer four questions as follows:

1. Why did I begin this research project? This would be answered in the Introduction.
2. What did I do?
3. What did I find? The answers to both questions would form the middle of the article or presentation.
4. What do the findings mean? This discussion must lead to the conclusion of the paper or article.

The IMRAD structure, which was explained in the course of another presentation in this workshop, is a useful model to follow. Basically, that structure has five components – i. Introduction; ii. Materials and Methods; iii. Results; iv. Analysis, and v. Discussion.

Two other integral features of this type of research presentation are – a. the Abstract, and b. the Title. The Abstract must be submitted with the paper and is a summary of it. It would answer in a few sentences each of the four questions that were examined.

The Title may be informative or very specific. On the other hand, you may choose a title that is easily retrievable (broadly belonging to a subject area).

Report Writing

Such reports are usually requested by the grant-awarding institution. They could take either of two forms –

1. Interim report
2. Final report

Interim report:

- (a) Description of research work done during a specified period
 - Data collected
 - Results
 - Discussion
- (b) Compare it with the programme of work set out in the research proposal (is it on schedule?)
- (c) If not, justify the time lag and indicate the steps taken to avoid a recurrence.
- (d) Plan of work for next specified time period.
- (e) Statement of accounts in relation to the Project Budget.

Final report:

This is a comprehensive report of

- all the work done
- results obtained
- discussion of results and problems encountered
- conclusions
- references
- list of publications or communications arising from the project
- abstract
- final statement of accounts.

How to prepare a curriculum vitae

Dr. Asoka S. Dissanayake

A curriculum vitae, resume or bio-data as it is currently called, is a very important document that should contain all relevant information when applying for a particular post. The final format varies depending on the speciality – Arts, Science, Medicine, Academic, Administrative, Technical etc. It should be concise, neat, comprehensive, informative and should avoid embellishments.

Most overseas institutions issue printed application forms which have to be completed, but in addition a curriculum vitae is usually necessary as a supplement as most forms do not provide sufficient space to fill in all details such as work experience, publications etc. A prerequisite is a good typewriter, preferably electric or a word processor with a good letter quality printer and of course an efficient secretary/typist. Avoid spelling errors and erasures.

There are several ways of preparing a c/v and the method given below is the most suitable for posts available to the medical profession. Whatever style is adopted, it should be neat and orderly with all important items included. Most applicants omit to give even their sex as they think it is not important. When such applications go to a foreign country the prospective employers have difficulty in determining whether the applicant is a male or a female, as from the name, or school attended they are unable to guess the sex.

TABLE 1 – Suggested format

1. Personal details:
 - Name in full:
 - Permanent address:
 - Age and date of birth:
 - Sex:

Nationality:
Religion:
Civil status:
Name of spouse:
Number of children with ages, sex:

2. Education:
 - (a) Pre-University education:
 - (b) University:
 - (c) Postgraduate degrees and speciality:
3. Scholarship awards:
4. Training:
5. Present position and name and address of employer:
6. Professional experience: (In reverse chronological order), Research experience, including instruments used:
7. Publications:
8. Papers read at scientific meetings:
9. Membership of learned societies:
10. Extra-curricular activities:
11. Health status:
12. Referees:

Guidelines

1. Generally the name is given in full with the surname or family name underlined. The address should be given in full and if different from the permanent address an alternative contact address must be given. If available include the post code, P. O. Box number, contact telephone number and fax/telex numbers for overseas jobs.

2. General education should include schools attended with dates, distinctions, scholarships, grades, prizes or medals won, if any. Similarly University career should give the name of University with dates of degrees obtained including distinctions, prizes, classification of degree. Postgraduate education should include name of institution, qualification obtained, date of award and class, speciality.

3. Scholarship awards – Name of awarding institution, speciality etc. Research/travel grants in case of academics and researchers.

4. Training – Any special training with details including type of training, duration and dates.

5. Present employer and post held: If it is a university or hospital, name of the institution, designation, and date of commencement.

6. Professional experience: giving all previous posts held in reverse chronological order (list last appointment first), with dates and institutions.

7. Publications: Give a list of publications with name of journal, year published, volume number underlined and page numbers (the Vancouver format should be followed). Include items “in press” but not in preparation or planned. For books, state author(s), title, publisher, date and place of publication.

8. Papers read at scientific meetings: Title of paper and name of scientific meeting with dates. Mention whether invited speaker.

9. Membership of learned societies – giving type of membership with dates and name of society.

10. Extra-curricular activities – including sports, hobbies, other interests.

11. Health status.

12. Referees: Names of the required number of referees (usually three), with qualifications, designations and full postal address, fax/telex or phone numbers, if available.

Referee's permission

Permission to use a referee's name should always be sought in writing or verbally before including his/her name in the c/v. Always give the referee details of when you knew him – he may have forgotten all about you. It is important to send the referee a copy of the c/v. (Wherever possible get a certificate from the referee and attach a photocopy to the c/v.)

If the application is for a consultant post or a clinical professorship/lectureship, full details such as category of hospital, e.g. teaching, post-graduate, specialist, bed/strength and staff/strength of hospitals served from the time of internship should be given. If any appointment was held in the General Hospital, Colombo, the fact that it is the premier teaching hospital of the Island should be stressed. These minor details will help the prospective employers to judge the standard of the applicant.

A covering letter should accompany the application, giving date of application and subject specialised in (Table 2). If requested a passport size photograph of applicant should be affixed to the first page of the c/v.

Post: Send the application by registered post/recorded delivery and ask receiving institution to acknowledge receipt.

For academic posts:

(1) Research interest and experience:

Include details of area of research, any research grants, collaborative work with other centres, visiting research workers.

(2) Administrative experience

Areas of experience, membership and chairmanship of committees.

(3) Teaching experience

Subjects taught, type of teaching, numbers of students, experience of curriculum planning.

TABLE 2 - Covering Letter

Dear Sir,

Reference your advertisement in the, I wish to submit my application for the post of (e.g. Professor/Associate Professor/Lecturer/Consultant) in University/Hospital.

I enclose a copy of my curriculum vitae for your consideration.

Yours faithfully,

Signature

Date:

TABLE 2 - Coexisting factors

[The table content is extremely faint and illegible due to the quality of the scan. It appears to be a multi-column table with several rows of data.]

