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lecture Notes On Technical Report Writing

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An Introduction to Report Writing

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1.1 Technical Writing in the Workplace.

You probably have chosen to study a technical field because you want to change the world and make it a better place in some small, practical, technical way. You'd like to design a building or mechanical system or make a disruptive computer system; perhaps you're thinking of developing medical technologies or sustainable systems.What appeals to you in any case is the idea of making real change in this world and seeing the results of your own work. What you probably don't want to do is to write about it. Unfortunately, there's no way to escape from writing in the technical workplace because you'll never work in total isolation, and there's always a need to communicate your ideas and your work, there's a need to write. But this don't have to worry you. Writing is a technical skill, not only a gift, which means that as a technical person, you are actually in an enviable position when it comes to learning how to write, regardless of English level and proficiency.

Writing is a must in the technical workplace because nothing will happen without good communication. Every project you work on involves teams of people working with you, often faraway across many offices, cities, or even countries. And every step of every project you working on requires documentation. For instance, to buy a software for a company you work with you have to make a request for proposals (RFP).
When a project started, the engineers participating in the project kept a project log (all related documents of the project) and write regular inspection reports, progress reports, quality test surveys, change orders, requests for proposals, environmental assessment reviews, and other documents required by the city, various ministries, managers, employees, and so on. This is why technical professionals in all fields spend between 20 to 40 per cent of their time communicating in writing on the job. A couple of hours per day might be spent on email alone. And the higher you move in your organization, the more time you'll spend writing and managing instead of designing and making calculations. For software designers' and developers, they spent most of their time in writing code, documenting it, writing instruction manuals for users of their software and many more.
Even when you are a student in a technical field, you have to do research during your study. Moreover, you have to write and document your graduation project. So, technical writing is a crucial skill for any technical field of study.

1.2 The Cost of Poor Communication in the Technical Workplace

Poor communication at any stage of the project is very costly. In fact, a proposal that took a team of engineers and staff weeks to make at great cost to their employer might fail. Because it is vaguely written and difficult to understand. In other words, it may fail not because of flaws in the design, but because of the way it is written. Indeed, according to a web poll by the Computing Technology Industry Association (CompTIA), poor communication is the main reason most IT (information technology) projects fail. But aside from its role in the failure of complete projects, poor writing also wastes time and causes frustration in daily communication. Poorly worded emails require long discussions or a chain of emails to clarify what should have been clear on first reading.
Thus, a misunderstanding due to a poorly written email may cause the reader to waste his own time going down the wrong route and then later have to redo the work. Often an email's tone is incorrectly perceived, simply because body language cannot be analyzed.

1.3 Why Technical People Can Master Technical Writing

Technical Writing is different from Literary Writing However, if writing was not your perfect fit in high school and if literature and poetry are not among your interests, don't be disappointed. Technical and business writing effectively is completely different from literary writing. Technical writing is a simple tool designed to get the task done, and that's to hand information to people who need it. It's not meant to be nice. It's meant to be clear and effective. This is not to convince you that writing well is easy. Like any craft, it requires discipline, conscious try, and more practice. But it does not require a gifted person. Instead, learning to write well plays to the strengths of a technical person. As a technical person, you should be good at working within structured systems that have rules and guidelines. You are used to work to specifications and to apply rules and best practices all the time. Whether you are designing a building, an electrical system, a hydraulic system, or a septic field; whether you are coding software or websites or creating a user interface, you do not rely on inspiration. Rather, you work according to a set of predefined procedures, following guidelines and rules, using previous designs as a starting point. You focus on usability and practicality; you don't add needless details or take poetic licence. In fact, the most amazing engineering solutions are the simplest ones.

Technical writing functions exactly the same way. This textbook will present a few rules that you need to follow and will introduce a number of guidelines and principles that you can adapt to writing. Initially, you may have to make a conscious effort to apply them. But with a little discipline, these rules and principles will become automatic and you'll find your writing improve not only in quality, but also in ease. You'll write more quickly, more confidently, and more clearly.

1.4 Attributes of Technical Writing

Documents are used as tools to convey specific information. Like any other tool, each technical document is tailored uniquely to achieve its purpose. There are, however, a number of attributes that all technical writing have. Technical writing must be:

clear: it must be understood by readers the first time they read it, without any ambiguity or the possibility of misunderstanding.

complete: it must provide all the information that the reader will need in order to understand the situation and the follow-up required.

concise: it must be as brief as possible while remaining clear and complete. The more words you take to say something, the longer it takes to read and the more verbiage there is in which readers may lose their focus.

accessible: it must be organized and formatted so that readers can find the specific information they need without having to go through the entire document.

In addition, of course, technical writing like all writing must be completely free of grammatical, mechanical, and factual errors. Grammatical errors can lead to misunderstandings and will, like any errors, make you look unprofessional. Factual errors will make you look unprofessional.

1.5 The writing Process

So how do you go through the process of crafting a concise, clear, and accessible professional document?

In any writing situation, whether your document is short or long, formal or not, you should begin by thinking about what you hope to achieve with your document (its purpose) and to whom you are writing (the reader).

1.5.1 Determine the Purpose

If there's no reason to write, don't do it. But if you need to accomplish something by writing, be specific and clear on what it is you hope to accomplish. Generally speaking, you're trying to inform readers or trying to get them to do something. Often we combine these goals, as when you inform someone of an incident or circumstance and then ask them to perform or authorize an action in response. For instance, you may send your construction manager an email informing him or her that your pump broke and that you've purchased a new one, attaching a copy of the invoice. Or you may have to ask for approval to spend the money if it exceeds a certain amount. Your purpose in the latter case would be to obtain a permission as quickly as possible to purchase a new pump.

1.5.2 Consider the Audience

The audience is the person or people to whom you're writing. If the audience is intimately familiar with the details of your project, you won't have to provide as much context. If the audience is a fellow worker, you won't have to define your terms. However, if your audience is an accountant with no real understanding of construction practices, you may have to explain why replacing the pump is necessary given the hydrology of your site, even if it runs counter to the accounting department's every miserly instinct. Of course, you'll also have to explain some terms. This is how audience and purpose define the content of documents. Ask yourself before you set a a pen to paper (or fingers to keyboard) what this particular reader will need to know and need to be told so that he or she understands what you're trying to say and will agree to what you're asking. While every writing situation is unique, it is generally useful to think of audiences as falling into a few broad categories: decision makers, experts, agents, and general readers.

1.5.3 Brainstorm the Content

With your purpose and audience clearly in mind, start brainstorming. At this stage, you are simply putting down all the information that may be relevant and useful for the reader, in no particular order. Just put ideas and elaborate on them a little. You could use various worksheets available online, the back of an envelope, or, most efficiently, your word processor.

1.5.4 Organize the Content

Once you're satisfied that you have got all the information that you'll need to include in your document, begin to organize it. You don't need to rewrite it;

save yourself some time by just numbering the items you've already written and drawing lines to connect them. If brainstorming on a word processor, rearrange your points with a few mouse clicks. In either case, what you're trying to do is to group the information into a specific sequence of categories. And there are two ways of thinking about this. You can think of your documents as one-way conversations with your reader or as stories you tell your reader.

1.5.5 Determine the Correct Writing Style

You have analyzed your audience and, based on that analysis and the purpose of the document, you have decided what content should be included. Now go one step further. Different audiences require different writing styles.

1.5.6 Write the First Draft

Once you have a clear outline, you already know what you're going to say and in what order you are going to write it. And if we think of correspondence as a one-way conversation, then imagine yourself sitting in front of your reader, take a deep breath, and say what you would in person. But type. Don't stop to second-guess yourself or you'll lose the thread. Do not bother to edit your sentences, to crack open a thesaurus, to tweak your grammar. Just write. You know how to speak. You make yourself understood in conversation all the time. So, just string together the ideas you already have on the screen in front of you: , with no fear of judgment. This will give you a good, first draft. Imagining yourself speaking to the reader should also help you set the proper tone.

1.5.7 Revise Your First Draft

When revising the first draft, do it in several easy stages, focusing on one type of revision at a time. Start with the large adjustments and make increasingly finer ones. First, adjust and reorganize the content. If in reviewing your first draft you find it does not quite organize information as logically as it should or that it omits information necessary to craft a full argument, reorganize the content and fill in the holes. Conversely, if you find that some information does't advance the purpose of the document, delete it or put it into a separate document with a different purpose. Next, edit for style. Once you're sure you've got all the pieces in their proper place, focus on making your sentences flow well and on ensuring that they convey information clearly and succinctly.

1.6 (Chapter summary)

1. introduces the notion of technical writing. It stresses that we all have natural communication capabilities that we can harness if we don't get too scared of the empty page and freeze up.

2. It introduces the notion of a natural, flowing, conversational writing and explains how the planning and editing can help achieve that.

3. The point that this chapter makes is that all writing benefits from a bit of thoughts and that all require editing. However, when we are actually writing, we should imagine ourselves sitting across the desk from our readers and write more or less the way we would like to speak to them.

Chapter 2

Preparation and Planning

Chapter objectives

1. **The importance of Planning**

2. **Set your objective**

3. **Assess your readership**

4. **Decide what information you will need**

5. **Prepare your skeletal framework**

6. **Test and revise your skeletal**

2.1 The importance of Planning

To fail to prepare is to prepare to fail. The importance of preparation and planning cannot be ignored. However, writers simply ignore this aspect or dismiss it as not worthwhile. As a result they hurry too quickly to the writing process itself and end up failing to achieve their potential. Anything you write to a paper before your overall plan has completed is likely to be wasted; it will be like starting to build the wall of a house before the architect has created the plans. Before you write a single word you must do as follows:

1. **Set your objective**
2. **Assess your readership**
3. **Decide what information you will need**
4. **Prepare your skeletal framework**
5. **Test and revise your skeletal framework**

Collectively these activities constitute the planning stage of report writing, and the amount of time and thought you spend on them will make a great difference to the effectiveness of all the work that will follow. So, planning will help the writer as follows:

1. **continually reminding you of your overall objective**
2. **making you constantly 'think readers'**
3. **ensuring you know what information you will need to gather**
4. **giving you clear guidelines to follow when writing each section**
5. **enabling you to rise above the detail and obtain an overview of the entire report at any time.**

2.2 Set your objective

It is important to establish your precise objective. You must first be sure of the purpose of your report. After that you can begin to think about what you are going to write and how you are going to write it.
A clearly defined objective has a number of important benefits as follows:

1. It helps you decide what information to include - and leave out.
2. It helps you write the report at the right level.
3. It makes it easier to write the report, by continually thinking about your objective - or Terms of Reference - can you expect to remain relevant throughout and ensure that everything that should be covered has been covered - and that everything that should not be covered has not been.

An objective is not what you intend to write, it is what you intend to achieve. Writing a research report is not an objective, it is a task. The objective is to extend the readers' knowledge by reducing their uncertainty and increasing their understanding of it.
Writing a trouble-shooting report is not an objective, it is a task. The objective is to locate the reason of some problem and then suggest ways to remove or solve it. Concentrate on the objective, not the associated task.
So what do you want to achieve? What results are you hoping for? What do you want to happen next? Only when you have identified this 'bottom line' can you begin to concentrate on getting your message across right.
Here are some possible objectives for a report writer:

1. to inform
2. to explain
3. to instruct
4. to evaluate (and recommend)
5. to provoke debate
6. to persuade.

But an objective to inform, describe or explain is general. You need to be more specific. The more closely you can identify your precise objective - preferably in just one sentence - the more useful your report is likely to be. There is a great advantage in setting a clear objective. If the report has been done, you can go back to the person who requested it and ask them to have a look at your objective to make sure they agree with it. If they don't, find out precisely

what they do expect from you. By taking just a few minutes to clear this up at the earliest time, you will avoid the risk of wasting time on unnecessary or irrelevant work.

2.3 Asses Your Readership

The next stage is to identify and assess your readership. In most cases, you know who will be reading your report and the detailed content, style and structure can then be matched to their level of knowledge and expertise. A list of things you have to do:

1. Concentrate on points they will care about.
2. Explain things they do not know.
3. Are the readers alike or mixed?
4. Are they used to reading and understanding reports?
5. How much time will they spend on this report?
6. What do they already know?
7. What else will they need to know?

However, finding the answers to these will always provide an excellent start to your target audience research. It is essential that you have a clear understanding of your readers while writing the report to focus on their needs and expectations. A report which is perceived as reader-friendly will always be better.

2.4 Deciding What Information You Will Need

For some reports, you will need to collect little information, while for others you will require a great amount. You will need to think of this carefully, either on your own or with others. It is often useful to discuss this with the person who responsible for the report and with expected readers, particularly decision makers. Are there any specific areas they would like covered? The very fact that people have been consulted at this early stage will involve them and, psychologically, this will greatly increase the likelihood of them accepting your conclusions and any recommendations you subsequently may make. You have already written down your specific objective. Take a second look at it and see what it tells you. For example, if you were asked to investigate the circumstances surrounding an accident in a canteen kitchen, your objective will be to be: To investigate how

an employee received injuries from a food mixer when working in the canteen. You will now draw up a general list of topics you will have to cover:

1. What happened?
2. What were the consequences of accident?
3. Was the employee trained properly?
4. Was the machine maintained properly?
5. Was accident avoidable?
6. Was a full service record maintained?
7. Was the machine in good working order?
8. Have any other problems been reported?

Consider everything, and check it against the objective to make sure it is relevant.

You can draw up your lists of general areas to be covered and specific questions that will need to be asked in any way. There are no specific rules. Use whatever method best suits your needs. Many writers use mind maps for information organization. Instead of starting at the top of the page and working down in sentences, lists or words, you begin at the centre with the overall topic of your report - and branch out as your information requirements become readily clear (see Figure 2.2. Mind mapping your total research needs has a number of significant

Now, the objective of the report is more clearly defined. All the facts that will be needed are clearly identified. Unnecessary facts will be excluded. The links between the key concepts and facts will immediately be recognisable because of the proximity and connection. The nature of the structure allows for easy addition of new thoughts and additional information. The open-ended nature of a mind map will enable your brain to make new connections. Expect to be surprised.

At this stage what matters is that a complete picture of all the information requirements is clearly defined. How far does the picture come naturally from the main objective? If a thought or fact or idea does not come, it will be difficult to make the report coherent and interesting. More importantly, it will not support your objective, so it has no place in the report.An example of a mind map is shown in figure2.2.

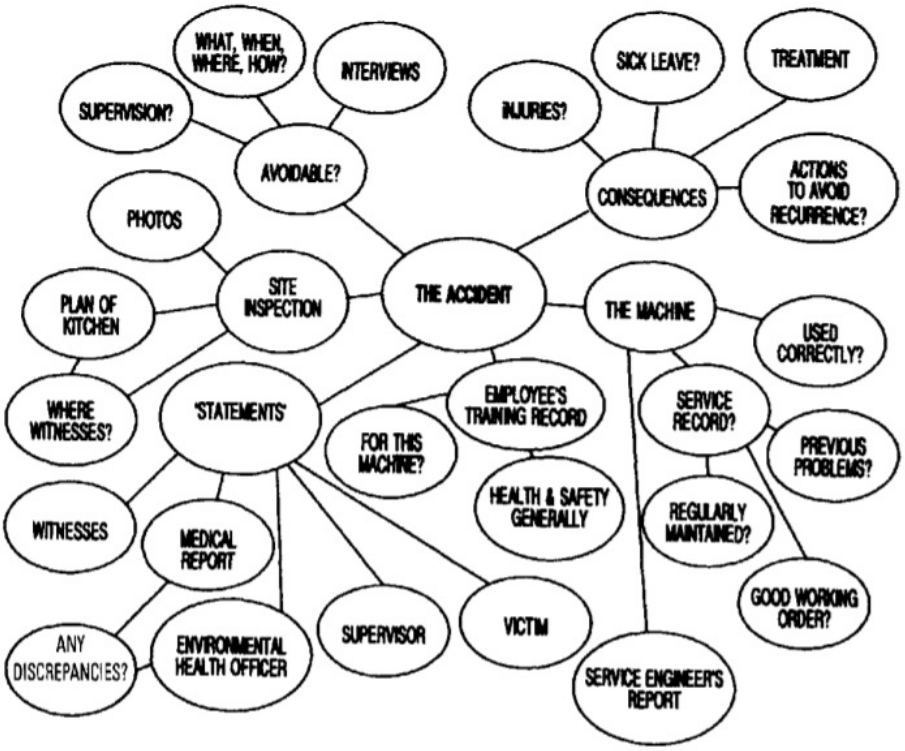


Figure 2.1: Mindmap[**?**]

2.5 Preparing Your Skeletal Framework

You are now in a position to think about **the overall plan of your report.** This is known as **the skeletal framework**. It is like drawing the plans for a house. Not only will it show its overall structure, it will also remind you of the (information) you will need to gather before the process of construction begin. A number of significant benefits will accrue in constructing a skeletal framework. In particular, it will enable the writer: to be sure there is no misunderstanding over the Terms of Reference to have an overview of the entire report to be reminded of what information must be collected, what is already available and what is not needed to order his or her thoughts before considering how they should be expressed to appreciate the significance of, and the relationship between the various items of information that will be gathered to identify any gaps in coverage or logic, and to maintain a sense of perspective while gathering this information and, later, when writing the report.

A well-planned skeletal framework is the key to effective report writing. **There are three stages involved in the preparation of a skeletal framework**:

1. Write a working title. The first step then is to write a working title, which defines the main subject of the document. The title must accurately describe what the text is about. For the planning phase, use a functional title rather than a creative, attention-grabbing title. A functional working title is helpful in continually reminding you of the document's objective. Save the more creative title for the final, publishable version of the report, possibly adding the working title as the subtitle.

2. Consider the overall structure of the report. The second step is to consider the overall structure. Reports come in a variety of shapes and sizes and are made up of a variety of sections, or components. If you can design a suitable framework everything else will then fall into place. Always remember this: tell them what you are going to say, then say it, then tell them what you said. it gives you the opportunity to highlight the most important parts of your report. Also, people tend to remember what they read first and last more than what they read in the middle of any document (this phenomenon is known as the effect of primacy and recent). So give them a beginning, a middle and an end.

3. Consider how information will be presented within the main body. It is your task to select the most suitable components to build up each of these sections.

2.6 Components of the Report

All reports have a number of common components:

1. **The beginning** Title page
   Foreword
   Preface
   Acknowledgements
   Contents page
   Summary or Abstract
   Introduction

2. **The middle** Main body, including substructures

3. **The end** Conclusions
   Recommendations
   Appendixes

References
Bibliography
Glossary
Index

Do not be worried about the large number of components that may be used; no report uses all of them. However, it is as well to know something about each of these components for two reasons: You can then choose the ones best suited to your report, and You may be asked to include one or more of them. Let us take a look at each of these components. We'll consider the beginning and end first before going on to the middle component, the main body of the report.

2.6.1 Title page

Every report should have a title page. This tells the reader what the report is about. A good title page will include the following information:

1. The title.
   The title should be clear, concise and relevant; restate your terms of reference in your own words. Do not choose a title which is similar to any other report title. Providing a subtitle can be a good way of keeping the title also provide more detail about its content. Make sure the title is more prominent than any headings that appear in the report.

2. The name and position of the person who authorised the report.
   Then say who authorized the report (for example, 'Produced at the request of. . .'). Names and dates

3. The name of the author(s).
   The decision about whether to give your first name and any qualifications you may have attained should be dictated by organisation. However, as a general rule, people within your His, her or their position within the organisation.
   organisation will not need to be reminded of your qualifications whereas relevant qualifications will add authority to a report which is distributed externally.

4. The name of the organisation.
   similarly, it is not necessary to say that you work for organisation name, if the report is for internal use only.

5. The date the report was issued.
   The date on the report should be the date it was issued, which is not

necessarily the date it was printed. Write this issue date in full to avoid possible ambiguities.

6. A reference number.
   The reference number of the report will depend on company practice. Some organisations number all reports sequentially; others do so by department and yet others add some personal reference (perhaps the initials of the author).

7. Copyright information, if necessary.
   Whether to refer to copyright depends on the nature of the report. For the report writer the main interest in the English law of copyright is its intention to prevent the copying of a 'substantial part' of any literary work without permission. The word 'literary' covers any work expressed in printing or writing, provided it is substantial enough to have involved some literary skill and labour of composition.

8. Its degree of confidentiality.
   You may decide to stamp your report 'Secret' or 'Confidential'. The latter is a particularly useful marking when the report is about a member of staff, as it would be a strong defence against any subsequent charge.

9. The distribution list.
   Finally, the title page should include the distribution list of the report. Ask the person who requested the report to tell you who should see it. Their names will generally be listed in order of seniority.

2.6.2 Foreword

This component is rarely used in a report. When it is included it is generally not written by the report writer but by some (other) expert in the field - perhaps the person who commissioned the report. A foreword should be very concise.

2.6.3 Preface

This is another uncommon component. It is used when a writer wishes to convey some personal background details behind the report's production.

2.6.4 Acknowledgements

This section is used to convey your thanks to people and/or organisations who helped during the preparation of the report. For example they may have provided information, help, finance, or even permission for you to use some copyright material.

2.6.5 Contents page

A contents page is essential for any report more than three pages. It should be on a separate sheet of paper and it should list the various sections of the report in the order in which they appear. The headings on the contents page must be identical to those used in the text, with the appropriate page (and/or paragraph) number alongside them. Numbering systems should be simple and consistent.

2.6.6 Summary or abstract or synopsis

This component is particularly useful when you have a diverse readership. It has two functions:

1. To provide a precis of what the recipient is about to read or has just read.
2. To provide an outline of the report if the recipient is not going to read the entire report.

A manager's reading speed is between 200 and 250 words per minute, and the comprehend only 75 per cent of this. So, it is important to highlight the salient facts and the main conclusions and recommendations. Keep it concise; it should never exceed one page. Do not introduce any matter which is not covered within the text of the report.
A summary could contain just 5 paragraphs including:

1. Intention (purpose and scope)
2. Outline (what was done and how it was done)
3. Main findings
4. Main conclusions
5. Main recommendations (if necessary).

Generally, the more senior the reader, the less detail he or she will require. For this reason a reader is sometimes sent a summary instead of the entire report. When this is done the covering letter should offer a copy of the full report, if required.

2.6.7 Introduction

This section sets the scene. While the title page gives a broad indication of the subject, the introduction tells the reader what it is all about. A good introduction will engage the readers' interest and include everything that they will

need to know before moving on to the main body of the report. It will contain certain essential preliminaries which would not be weighty enough individually to justify headings of their own. These may include the following:

1. Why was the report written? Who requested it, and when?
2. What were your terms of reference? Always refer to these in the introduction.
3. What resources were available to you? (For example, staff, time and equipment.)
4. What limitations, if any, did you work under? What were the reasons for this? (For example, 'The report does not analyse expenditure in June because the figures were not available.')
5. What sources of information did you use? How did you obtain information?
6. What were your methods of working? A technical report will require a technical explanation of methods used. (Some writers prefer to provide this information in an appendix.)
7. How is the report structured? Why did you choose this method of presentation? This explanation helps your readers find their way in the report and shows the logic of the layout.

In some reports the first two of these are called aims and the others are known collectively as scope.

2.6.8 Conclusions

Your conclusions should link your terms of reference (what you were trying to do, as stated in your introduction) with your findings (what you found out, as presented in your main body). They should flow naturally from your evidence and arguments; there must be no surprises. Conclusions should always be: clearly and simply stated objective and not exaggerated written with the likely impact on the reader clearly in mind.

2.6.9 Recommendations

Do not make any recommendations unless your terms of reference empower you to do. While conclusions refer to the past and/or the present, recommendations look to the future. Any comment not concerned with the future has no place as a recommendation. Your recommendations should follow logically from your

conclusions. Therefore, once again, there should be no surprises. Effective recommendations are concise and to the point. They are also specific. For example, management may need to know what should be done by whom to overcome a specific problem. Your recommendations must also be realistic.

2.6.10 Appendixes

The purpose of an appendix is to supplement the information in the main body of the report. It is a way of providing details for readers who require it without breaking the thread of the main body. But how do you know what information to put in appendixes, what to include in the main body and what to exclude from the report. Figure **??** is an example of an algorithm that help you decide to include appendix or not. Start at the top left.

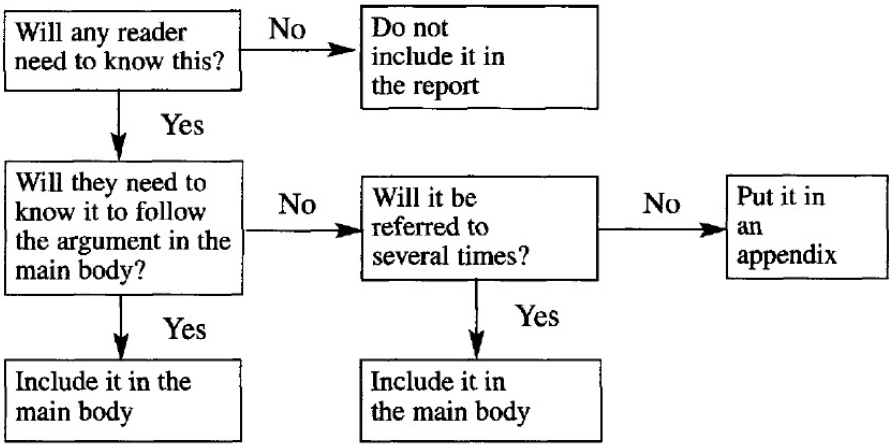


Figure 2.2: Appendixes inclusion algorithm[**?**]

Appendixes are useful as a way for:

1. Meeting the needs of a diverse readership - some people will need to refer to them while others will not.

2. Substantiating and/or amplifying findings in the main body.

3. Presenting documentary evidence to support arguments in the main body (for example, copies of memos, reports, correspondence, instructions, forms, standard letters, questionnaires, maps, charts and so on).

4. Providing detailed results of experiments or investigations.

5. Presenting summaries of results obtained elsewhere.

6. Presenting statistical or comparative information.

7. Illustrating relationships or relative proportions by means of charts and diagrams.

8. Explaining systems or procedures by flow charts and/or words.

2.6.11 References

This section provides full details of the books or journals which have been specifically mentioned in the text, or from which extracts have been quoted. They should be listed in the same order as referred to in the report.

2.6.12 Bibliography

A bibliography also gives full details of every publication referred to in the text. It may also include books and journals not referred to. A bibliography is useful when you have a diverse readership. So, you can provide separate lists for background reading, further reading and recommended reading. Details of publications are given in the same format as are references, but it is customary to list them alphabetically by the surname of the author.

2.6.13 Glossary

A glossary is important when you have used a good deal of specialised or technical vocabulary. It is another useful way to help meet the needs of a diverse readership, some of whom will be familiar with the terminology and some of whom will not be. Make sure your definitions are authoritative, precise and up-to-date (words come and go and some change their meaning over time). For this reason it is important that your dictionary or reference book is a current edition. List the words alphabetically and place the section towards the end of the report. However, if a large number of readers will need to familiarise themselves with the vocabulary before reading the report, it is better to place the glossary at the beginning.

2.6.14 Index

An index is necessary only for a large report. It should contain more entries than a contents page and it is perfectly acceptable for it to be presented in two or three columns. List items alphabetically and place the index at the end of the report. Facilities for providing at least a basic index should be found in most word processing software.

2.7 Main body

The final step is to consider how information should be presented within the main body of the report. If you have already organized the information you will need to obtain, you can now re-shape its material into a structure that your readers will find acceptable and informative.
The report on the accident in the canteen would be confusing if it simply recorded the supervisor's, doctor's and engineer's comments in turn.
An improvement would be to extract the related parts of their respective evidence and to record them together within appropriate sections, or categories of the report.
Different levels of category must be organised into a hierarchy, with the title at the top of the hierarchy. Level 1 categories are based on the broad areas that are to be covered.
Level 2 categories relate to the more detailed findings which collectively cover each of these broad areas:
Working title: Results of Investigation into the Canteen Accident at ABC Ltd.
Level 1 categories: The accident; The consequences; Condition of the machine; Employee training provided.
Level 2 categories: What it was; Where is occurred; When it occurred; How it occurred (collectively covering 'The accident'); Injuries sustained; Treatment required; Absence from work resulting; Actions taken to avoid recurrence (collectively covering The consequences') and so on.
In addition to the hierarchical organisation, each module, or group of categories must be put into a logical order. Categories can be considered as one of two types: verbs (relating to sequences, actions, events)
and nouns (relating to people, places, ideas).
Verb categories
describe actions, something that moves or changes over a period of time; they involve time-sequence information, such as when each of several events occurred or how to perform the steps of a procedure.
Noun categories tell about something at a specific point in time; they include such descriptions as who, what, why and where.
Verb categories are usually arranged chronologically according to order of occurrence: sooner before later (e.g. procedure 1 before procedure 2, cause before effect, stimulus before response, problem before solution, question before answer):
Noun categories are sequenced according to quantity (e.g. more before less), quality (e.g. better before worse), space (e.g. high before low), alphabet (e.g. A before B), or some other comparative or otherwise logical measure.

Once these three stages have been completed (working title; overall structure; order of information within the main body), the categories must be suitably numbered:

Results of Investigation into Canteen Accident at ABC Ltd.
1 Summary
2 Introduction
3 The accident
3.1 What it was
3.2 Where it occurred
3.3 When it occurred
3.4 How it occurred
4 The consequences
4.1 Injuries sustained
4.2 Treatment required
4.3 Absence from work resulting
4.4 Actions taken to avoid recurrence
5 Condition of the machine
5.1 Condition at the time of the accident
5.2 Previous service and maintenance record
6 Employee training provided
6.1 General health and safety training
6.2 Specific training relating to the operation of this machine
7 Conclusions
8 Recommendations
Appendixes
1 Plan of kitchen
2 Photographs of kitchen and machine
3 Report of Environmental Health Officer
4 Statement from accident victim
5 Statement from supervisor
6 Statement from Witness A
7 Statement from doctor
8 Statement from service engineer
9 Service record of machine
10 Training record of accident victim

2.8 Testing and Revising Your Skeletal Framework

At this stage, conduct the first test on each component and the other tests on each module, or group of categories within the main body, start from the Level 1 categories and then progressing module by module to the most detailed level of the hierarchy:

1. **Necessity test:** Is each component necessary? For example: Is the Title Page necessary? The answer must be 'Yes' because it identifies the report to the reader. Or: Is the Glossary necessary? If all your readers know (or at least are likely to know) the meaning of all the technical words used, the answer will be 'No'. In that case remove it from the skeletal framework since it would serve no value for purpose.

2. **Inclusion test**: Given the heading of the module, are all appropriate items included? If not, restrict the scope of the heading to fit the items that are present, or add the missing items.

3. **Exclusion test**: Given the heading of the module, are all inappropriate items excluded? If not, delete the inappropriate items, or expand the heading to fit all the items in the module.

4. **Hierarchy test**: Are the items in the module hierarchically parallel? Headings of similar rank should represent topics of roughly equal importance. If they are not, move the problem items to the appropriate level.

5. **Sequence test**: Are the items in the appropriate sequence. Determine whether the module is of the verb or noun type, and then decide whether the sequence is most appropriate for each module.

6. **Language test**: Are the items in the module grammatically parallel (e.g. all verb types ending in -ing or all nouns types ending with the word Department)'] If not, change the wording to achieve consistency.

7. **Numbering test**: Is the numbering system appropriate and consistent? Remember that the initial Level 1 category numbers will need to have been reserved for each component of the report that will appear before the main body (e.g. 1 Summary; 2 Introduction). Then you must ask yourself if all Level 1 categories are numbered consistently (3, 4, 5). Similarly, are all Level 2 categories numbered (3.1, 3.2, 4.1, 4.2, 4.3)?

These seven tests collectively provide a comprehensive, yet relatively simple writing tool. they ensure the structural soundness of the text they make the subsequent writing process much more straightforward they ensure that text will be easier to read and comprehend.

2.9 (Chapter summary)

1. It is crucial to prepare and plan your report carefully. This process will reduce the time and effort for writing and re-writing the report by: reminding you of the message you need to send in order to get the results you want, provide you with a logical and considered structure which will help identify any gaps enabling you to obtain an overview of the entire report, helping you to maintain a sense of perspective providing you with clear guidelines as you collect and handle the information, and then write the report.

2. Be clear about your objective. Why are you writing this report? What effect do you want it to have on readers?

3. Collect as much about your audience as possible. You will say different things, and in different ways, to help achieve your objective when addressing different audience of people.

4. Think carefully about the information you will need. Talk to the person who asked you to write the report and speak to any main readers. What would they like to see included? Don't include anything unless it is relevant and it helps you achieve your objective.

5. Spend as much time as is necessary in designing, testing and revising your skeletal framework. It is the key to effective report writing.

6. It should not only cover the structure and content of the report, but also the relative significance and relationship between the findings. It has been estimated that 75% of the time spent on effective report writing is devoted to planning, and 75% of that 75% is spent on preparing the framework for any particular report.

Chapter 3

Collecting and Handling Information

Chapter objectives

1. Locate sources of relevant information.
2. Obtain the information.
3. Sort and group your findings.
4. Evaluate your findings.
5. Prioritise your findings.
6. Check your findings.

3.1 Introduction

Once you have carefully planned your report, it is time to carry out the work that will be mandatory before you can actually write it. In other words, you are now ready to undertake your project or investigation. Your task is to collect and handle enough relevant information to enable you to fill in your skeletal framework. These are the stages your research should follow:

1. Locate sources of relevant information.
2. Obtain the information.
3. Sort and group your findings.
4. Evaluate your findings.
5. Prioritise your findings.
6. Check your findings.

It is quite possible to write a bad report even after doing good research, but it is impossible to write a good report after doing poor research. This is clear: good research is essential.

3.2 Locating Sources Of Relevant Information

By now you will have specified the information you need, bearing in mind:

1. the precise purpose of the report
2. the needs of your readers
3. your objective(s)
4. your resources
5. your skeletal framework.

There are four sources of information available to you:

1. People
2. Books and other publications
3. Information technology
4. Events and places.

The information you will need may be found under any or all of these categories, so you might consider each one.

3.2.1 People

You may be able to obtain the information you need from the local, national, or even the international community. Here are some:

1. your colleagues
2. members of the public
3. politicians
4. producers
5. manufacturers
6. retailers
7. federations unions
8. pressure groups
9. international organisations.

3.2.2 Books and other publications

Perhaps the information can be extracted from a printed source, such as:

1. encyclopedias
2. reference books
3. text books
4. guides
5. handbooks
6. journals and magazines
7. newspapers
8. maps and charts
9. previous reports
10. correspondence
11. minutes.

3.2.3 Information technology

The information that a computer can put at your fingertips is almost limitless. You can often have free on-line access to a huge amounts of information, providing you are prepared to put some time and effort into tracking down the facts and choose what you really want.

Information has a time value. Real-time stock prices from the London Stock Exchange, for instance, are worth more than prices that are an hour old, which, in turn, are worth more than those at the previous evening's close of business.

Information also has a value that depends on how specialised and detailed it is. A CD-Rom that contains comprehensive details of British Case Law in a searchable form will be very expensive because only a small number of customers would buy it.

Fortunately, for most report writers, plenty of useful information is available at low cost.

When computers and other communications equipment are connected a computer network is formed. The most famous of these is the Internet, which connects thousands of smaller networks and millions of users all around the world. The Internet was once the exclusive province of US government-sponsored research scientists and academics, but now almost anyone with a PC and modem can get Internet access.

It provides entry to a vast array of information from computer systems around the world.

3.2.4 Events and places

Perhaps the information you require is available at one or more events or places. Here is a small sample of some local, national and international possibilities:

1. libraries
2. learning resources centres
3. research institutions
4. exhibitions
5. museums
6. galleries
7. laboratories
8. theatres

9. concerts
10. talks.
11. Libraries

In addition to local, university and college libraries, many government departments and business organisations run libraries that are open to the public.

3.3 Obtaining the Information

Information can be gathered by one or more of these methods:

1. Experimentation
2. Reading
3. listening
4. Observation
5. Interview
6. Letter
7. telephone call
8. questionnaire
9. research on the Internet.

3.3.1 Experimentation

An experiment should be carried out by a scientist who will design and perform it in an acceptable way. The experiment should be written up as follows:

1. Begin with a dated heading stating clearly the objective of the experiment: To study ...', To find ...'.
2. Give a brief account of the theory underlying the experiment. Provide a hypothesis (suggested answer), if you have one.
3. Give a clear and full account of how the experiment was carried out. It is usually necessary to provide a diagram of the apparatus used.
4. Provide a complete list of the readings you obtained.
5. Provide a full statement of the final result, showing the estimated limits of error.

6. Conclude with a clear and concise statement of what your results lead you to infer or deduce about the problem posed. If you have a hypothesis, refer to it here. If you have any relevant views on the experiment or the result obtained, include these. Also, if you believe that the experiment could have been improved in some way, explain why and how.

3.3.2 Reading

The way you read should vary according to the complexity of the material and the reasons for reading. If you are reading to understand, absorb or master a topic you must read it slowly. If you are reading a novel for entertainment you can read it quickly. Try the **SQ3R** method of reading: Collecting and Handling Information as follows:

1. S Survey This is the preliminary review of the book or article. It involves **skimming** (glancing over the material and getting the feel of it) and **scanning** (looking at specific aspects of the publication - the title, the author, the date, the preface, the introduction, the contents, any chapter summaries and the index).
   In the case of a book, it is also a good idea to read the first and last paragraphs of potentially relevant chapters and the first and last sentences of a sample of paragraphs within these chapters. This scanning should give you an overall impression of the publication, such as:
   (a) Is it written at the right level?
   (b) Is it up to date?
   (c) Is the author a recognised authority in the field?
   (d) Is the book factual or based on opinion?
2. Q Question Then ask yourself these questions:
   (a) What would I expect to gain if I read some or all of this material?
   (b) Is some or all of the material directly relevant to my report?
   (c) Does some or all of it provide a useful background to my report?
3. R Read Once you have decided to read some or all of a publication, divide your reading into manageable segments, probably chapters or sections. Read any summaries or conclusions first. Next read the chapter or section quickly to get a grasp of the material. Finally, read it again, more slowly, and ensure you understand it.

4. Recall Think about the main ideas and facts you have been reading about and make notes of them.

5. Review Are you satisfied that you have gained what you expected through your reading? Have you gathered the information you will need to help put inside your skeletal framework?

3.3.3 Listening

Some research suggest that we function at only **twenty-five** percent efficiency and rarely remember what we have heard. In one investigation the proportion of information which was correctly transmitted from a senior director through middle and line management to operative staff was as low as twenty percent. Such ineffective listening can lead to the following:

1. Accidents at work.

2. Production breakdowns.

3. Lost sales and customers.

4. Poor morale.

5. Personality clashes.

6. Inaccurate communication.

So how can you improve your listening skills? **Do not**:
Assume that the topic is boring or irrelevant. A good listener sifts, screens and hunts for relevant information.
Criticise delivery or presentation; concentrate on the content.
Submit to emotional phrases. Do not allow the use of phrases which to reduce your listening capacity.
Become overstimulated. Do not try to think of 'clever' or embarrassing questions. Use your time positively, listening and structuring your thoughts.
Listen only to facts. Think also of the main ideas, concepts, structure and how the values, attitudes of the speaker affect the presentation.
Expect the speaker to structure the talk to suit your needs. As you take notes, follow the speaker's approach, otherwise your structure will not fit in with the concepts and ideas presented. You can rearrange your notes later.
Remain passive. Listening is an active process, so stay alert.
Tolerate distractions. If you cannot hear the speaker, or if you are too hot or too cold, then say so.
Listen to only what you want to hear. Be willing to consider arguments and

evidence which oppose your views.
Evade difficult subjects. Face problems head on.
Do: Run ahead of the speaker. What has been said? What might be said?
What is this all leading to? What are the implications of this message?
By asking yourself these questions you will improve your concentration.
Examine the evidence presented. Is it accurate, objective and complete?
Is it strong or weak?
Recap every few minutes in order to avoid day dreaming.
Remember that listening is an active process and is therefore very hard work.
You have two ears and one mouth. Try to use them in roughly the same proportion.

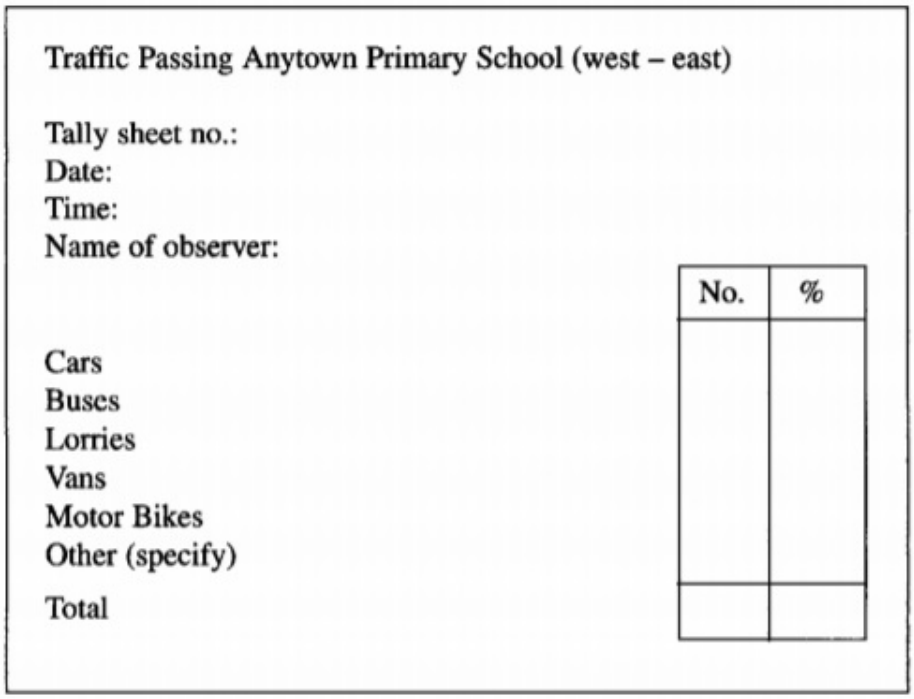
3.3.4 Observation

Sometimes the best way to find out is simply to observe. For example, you may be trying to find out how much traffic passes a town Primary School. According to your purpose you might need to break this figure down to the types of vehicle, specific days, and possibly to different times of year. The simplest way to record your results is to use a series of tally sheets like the one illustrated in Figure 3.1.

3.3.5 Interview

Interviewing is a skilled technique and few people do it well. While the interview should appear to be reasonably casual, it must be planned and structured. Follow these key steps:

1. Step 1: Greet the interviewee in a friendly manner. Avoid too much small talk and maintain a professional image.
2. Step 2: Explain the precise purpose of the interview. What do you want to find out? Let the interviewee know that his or her input will be valued.
3. Step 3: Ask your questions. Use open questions (who, what, when, why, where, how), and try to avoid yes/no answers. Listen and show you understand. Then follow up with secondary questions. Give the interviewee time to answer. Cover one topic at a time; try not to 'hop about'. Empathise - do not judge or be seen to take sides.
4. Step 4 Sum up the interview to check your understanding of facts, opinions and circumstances.



Traffic Passing Anytown Primary School (west – east)

Tally sheet no.:
Date:
Time:
Name of observer:

	No.	%
Cars		
Buses		
Lorries		
Vans		
Motor Bikes		
Other (specify)		
Total		

Figure 3.1: Tally sheet[**?**]

5. Step 5 Thank the interviewee for his or her co-operation.

3.3.6 Letter

If you decide to ask for information by letter, remember the following:

1. Name the person you are writing to and give his or her designation and organisation.

2. Give the letter a heading.

3. Explain the purpose of your report in the first paragraph. Courteously ask for the information you require. Keep it concise but comprehensive. If possible, draw a table where this information can be inserted. Send the letter as early as possible and tactfully request a reply within two or three weeks.

4. Enclose a stamped addressed envelope.

5. Conclude the letter by thanking the person in anticipation.

3.3.7 Telephone call

Sometimes you can obtain the information you need by making one or more telephone calls. However, this method is not recommended when the information is likely to be complex and there are figures involved. Telephone calls are most appropriate when you know the person and when your questions are straightforward (often requiring no more than yes/no answers). If you do decide to telephone, write down the questions you want to ask and have a pen and a few sheets of paper handy.
Then, follow these key steps:

1. Step 1 Give your name ('Good morning, I'm . . .').
2. Step 2 Ask for the right person ('May I speak to . . .?').
3. Step 3 Explain why you are telephoning. Emphasise that you are not selling anything! ('I'm phoning about a report I am preparing on...').
4. Step 4 Politely ask for the information you require. Let them know that their input will be appreciated ('I would be extremely grateful if you could help me on one or two points . . .').
5. Step 5 Thank the person by name. Speak distinctly, and more slowly than you normally do. Make your voice pleasant, cheerful and positive. Keep the conversation short.

3.3.8 Questionnaire

This method of information gathering involves questioning a sample of people (respondents). Questionnaires seek two kinds of information:

1. Factual. For example, 'How often do you buy Product A?'
2. Opinion. For example, 'What do you think of Product A?'

Such a survey is necessary only if the information sought for is not already available, or if the information is out of date. There are two important points to bear in mind when producing a questionnaire.
First, you will need to approach members of the public and they have no obligation to assist you, so ensure that your questions (and your general approach) are courteous.
Second, make sure that your questions are relevant to the subject of your report. Here is a checklist for a good questionnaire:

1. Does it have a title?
2. Does it have a reference or questionnaire number?
3. Does it record the name of the interviewer?
4. Is it well spaced?
5. Does it explain the purpose of the questionnaire?
6. Does it emphasise that all replies will be treated confidentially?
7. Is it clear and unambiguous?
8. Is it simple?
9. Is it logically developed?
10. Does it ask one question at a time (not two or more questions at the same time)?
11. Does it require definite answers?
12. Does it avoid leading questions? (Ask: 'What do you think of product A?' not: 'Product A is fantastic. Do you agree?'.)
13. Does it avoid an appeal for vanity? (Ask: 'Do you take regular exercise?', not: 'Most fit people exercise regularly. Do you?'.)
14. Does it avoid an appeal to sympathy? (Ask: 'Should the Health Service be better funded?', not: 'People are dying needlessly. Should the National Health Service be better funded?'.)
15. does it leave sensitive areas until last (for example, the age of middle-aged or elderly respondents)?
16. Is the questionnaire written in such a way that will make it straightforward to record and analyse your overall results?
17. Has the questionnaire been 'pilot tested' among a small number of respondents to highlight any obvious errors, omissions, ambiguities and other shortcomings before the survey goes live?

Once you have designed your questionnaire and amended it as necessary, you must decide on **sampling methods**. No strict rules can be for sampling. The methods used will depend on the circumstances of the case, but unless the methods are random the reliability of the results is no more than a matter of opinion.
The following are three common sampling techniques:

1. Simple random sampling This is a quick and simple method, by which every person or item has an equal chance of being selected. If you want to select 10 per cent of a population of 100, simply take ten names out of a hat containing the 100 names.

2. Systematic random sampling Again, every person or item has an equal chance of being selected, but the choice is made to a previous plan (though it is still random). For example, select every 100th name on the electoral register.

3. Quota sampling This is used to get a balanced view from people in the street based on age, sex and possibly social class. For example, select twenty males, aged 16-20; twenty males, 21-25; twenty males, 26-30; twenty females, 16-20; twenty females, 21-25; twenty females, 26-30.

Finally, you should be aware of errors that can occur owing to bias:
In questioning:

1. Do not vary the wording of your questions.

2. Do not ask leading questions.

3. Do not ask questions which appeal to some choice.

4. Do not ask questions which appeal to sympathy.

3.3.9 Research on the Internet

The Internet has made it possible to find quickly vast amounts of information on just about every subject. To use the Internet efficiently, however, you need to keep a clear idea of the exact information you are seeking.
It is all too easy to get side-tracked: The Internet can take up all your research time. Researching electronically can become an endless activity, and you might find that after a search you have found nothing of any value for your report.
Remember what you are trying to achieve. Skip material that is only loosely related to your specific requirements.
Beware of the need to evaluate information obtained on the Internet. Although there are many well-maintained and reliable websites, the quality and accuracy of statements on the Internet vary widely. Anyone can put up a website and can claim to be an authority. Content is frequently opinion-based or factually out-of-date. Before you begin your research do:

1. Write down the questions you hope to answer.

2. Spend time thinking about who would be likely to know the answers. The most efficient research method on the Internet is often simply to e-mail the appropriate person.

3. Develop a list of subtopics and synonyms that you can use as search terms.

Using a subject directory

One way to get plenty of information on your topic is to use a subject directory on the Web. The best known directory is Yahoo! (http://www.yahoo.coni), which contains tens of thousands of sites. Although it organises everything by categories, you can also search by keywords. Once you find your topic, Yahoo! gives you a list of Web addresses (URLs) and a short description of the sites.

Using metasearchers

If the subject directory does not yield enough relevant information, there are plenty of search engines which seek to catalogue the ever-growing content on the Web. Use a metasearcher, such as Dogpile (http://www.dogpile.com), Highway 61 (http://www.highway61.com) or Google (http://google.com).
These will utilise a number of search engines simultaneously and organise the results. Ask Jeeves (http://www.ask.co.uk) will actually search for you based upon the question you pose. The same query will bring up different results with different search engines, so from the metasearcher's results you may find that one search engine is best for your topic. Metasearchers also save you time because they modify your phrases according to the rules of each specific search engine.
For academic research, it is better o use scholar Google, as an academic search engine. It has all the published research papers.
Using various combinations of search terms. If there is no match for your request:
You may have misspelt one or more words.
You may have used the wrong symbols or phrases for that particular search engine.
You may need to try a different search engine.
You may have submitted too narrow a search. Try widening.

3.4 Sorting And Groping Your Findings

If the report has been well-planned, this process will be quite straightforward. Use the headings and sub-headings of your skeletal framework and make sure

you have gathered enough relevant information to complete each section and subsection.
If you need more information, gather it now - not once you have started to draft your report.

3.5 Evaluating Your Findings

There are two aspects to the evaluation:

1. How reliable are the findings?
2. How significant are the findings?

Consider each one of them in turn. There are four factors by which the reliability of information should be judged:

1. accuracy: Sometimes you can check the data supplied. For example, are the mathematical calculations accurate? If there are too many to check, remember Pareto's principle which states that eighty percent of what is important is represented by twenty percent of what exists. Concentrate on this twenty percent.
   Information may also be inaccurate if it is outdated. In experimental work, was current equipment used?

2. objectivity: When people have strongly held beliefs they will often see or hear things which support these beliefs, but they will ignore things which oppose them. For example, self-deception may cause results to be interpreted incorrectly.
   So ask yourself whether all the major or relevant points of view have been fairly represented. If the subject is controversial, the arguments for both (or all) cases should have been presented. At the very least, the person who provided the information should have made it clear that the views expressed are his or her own, and should then provide references to opposing viewpoints. Finally, be very wary of statements without supporting evidence.

3. completeness: In computer science some times, it is often extremely difficult to prove that information is complete or, more accurately, that it is not incomplete. For example, we know of many animals that once inhabited the world. But how can we prove that they were the only ones?

How can we prove that unicorns never existed? What you must ask yourself, therefore, is whether all relevant information has been provided and whether any attempt has been made to deceive or mislead by omission. Then look at it from the other side: is all the information provided relevant.

4. strength: Evidence is strong when:
   It can be verified or re-performed (for example, a scientific experiment).
   Independent observers have all come to the same conclusion.
   There have been a large number of consistent observations.
   It is in agreement with the general body of knowledge.
   Conversely, evidence is weak when some or all of these conditions cannot be satisfied. Always differentiate between fact and opinion, and remember that the former provides the far stronger evidence.
   How significant are the findings?
   You must now step back and assess the implications of your findings. How material are they? Many report writers simply list every piece of information they have gathered without any consideration of its relative importance.
   This is a mistake because it implies that each is of equal weight. It is important to recognise that there will be a variety of interconnected causes for, and consequences of, an event - and these will not be of equal importance.

3.6 Prioritizing Your Findings

What you must do is **highlight your most significant findings**, and be prepared to explain carefully why they are so important. You may find it useful to amend your skeletal framework so that these key findings will not get lost somewhere within the main body of the report or in an appendix.
But don't overdo it: the more things you highlight in the main body and summary, the less powerful each so-called 'highlight' will become.
At the other extreme, ask yourself whether everything you have found is worth recording in the report. Perhaps some findings should merely be placed in an appendix as evidence of work undertaken - or perhaps they should be omitted entirely.
As you prioritise your findings, continually remind yourself that your aim will be to tell your readers everything they need to know, but not to waste their time.

3.7 Checking Your Findings

Before you conclude your investigation or project, you must be sure that: You have collected and handled all the information you will need to write the report. You are satisfied that all this information is accurate and reliable. It is far better to fill in any gaps in your research now - or perhaps reperform an experiment, or refer to some further management statistics, or confirm your understanding of the way a system operates - while you can still amend.

3.8 (Chapter summary)

1. While it is possible to write a bad report after completing a good research or project, it is impossible to write a good report until you have successfully located, obtained, sorted and grouped, evaluated, prioritised and checked the right amount of relevant information. **Locating information** There are four sources of information available to you:

   (a) people

   (b) books and other publications

   (c) information technology

   (d) events and places.

   Obtaining information Information can be gathered from these sources by various methods, such as experimentation, interview and research on the Internet. **Sorting and grouping information** You can do this under the headings and sub-headings of the skeletal framework. Make sure you have gathered enough information to be able to complete each section and sub-section of the report. **Evaluating information** Critically evaluate the evidence and arguments. Are they:

   (a) Accurate?

   (b) Objective?

   (c) Complete?

   (d) Strong? How significant are your findings? Some will be far more important than others. As you review each finding ask yourself: So what?

   Prioritising information Highlight your most significant findings - but only your most significant findings. If necessary amend the skeletal framework to make your key findings prominent within the main body as well as in the summary. Use the rest of the main body and any appendixes to

tell your readers everything they need to know.

Checking information Before the project is completed, make one final check to ensure you have gathered enough accurate, reliable and relevant information to enable you to write the whole report.

Chapter 4

Writing and Revising Your Report

Chapter objectives

1. Pre-write.
2. Draft the main body and appendixes.
3. Review the main body and appendixes.
4. Draft the conclusions, recommendations, introduction and summary.
5. Check and amend the report.
6. Issue the report.

4.1 Introduction

If sufficient time and thought have been given to preparing and planning, and revising, the skeletal framework, and to collecting and handling the information, you will now have a practical structure for the entire report.
Writing will entail amplifying the points in each section. This chapter is concerned with the clinical process of ordering, classifying and sequencing. The order of writing and reviewing is important, and should be as follows:

1. Pre-write.
2. Draft the main body and appendixes.
3. Review the main body and appendixes.
4. Draft the conclusions, recommendations, introduction and summary.
5. Check and amend the report.
6. Issue the report.

4.2 Pre-writing

Take an overview of your report before you begin to write it. There are three aspects to this (five if you are making recommendations), namely:

1. Targeting. Remember your readers. It is all too easy to write for yourself and not for them.
2. Outlining. Remember your purpose and objective(s). Make sure your outline (general plan) is just wide enough to encompass them.
3. Structuring. Refer to your skeletal framework. Is it still the most suitable, or will it need to be revised, perhaps to highlight some particularly important finding?
4. Developing. What will you recommend to overcome problems identified?
5. Checking. Are you sure that these recommendations are practicable?

4.3 Drafting the Main Body And Appendixes

These components should be written first. Begin with the section or subsection of the main body, or with the appendix you feel most confident about. There are two important reasons for doing this:
For any writer there is no worse than the horror of facing that first blank page. By choosing to write what you find the easiest or most inviting, you avoid this initial Start by immediately getting down to writing.
The more difficult parts of a project seem easier once the easier ones have been accomplished.
In the back of your mind you will be aware that this draft is likely to be amended. This is not a reason to treat it lightly. The better your first draft, the better your final draft will be. So write as if this is your final draft.

4.4 Reviewing the Main Body And Appendixes

Once you have written your detailed findings, try to forget about them for a while.
Then come back with a fresh mind. Assess what you have actually written and how it comes across, rather than still thinking about what you had intended to write and get across.
Put yourself in your readers' position and be self-critical. As you read and re-read your draft, you should:
Assess whether the sub-structure of the main body (logical, sectional or creative) is really the most suitable one to present your facts and arguments.
Examine the layout and general appearance.
Determine whether the tone and balance are correct.
Review the use and format of tabulations and appendixes.
Check the accuracy of figures and calculations.
Check the use of English, punctuation and spelling.
This self-assessment should give you a good idea of whether it is necessary to re-structure your framework and/or re-write any of the main body or appendixes, in order to get your message across as you had intended.

4.5 Drafting The Conclusions, Recommendations, Introduction And Summary

These sections should not be written until the main body and appendixes have been completed, reviewed and, where necessary, redrafted. Each of these sections can now be directly related to what has actually been written in the main body and appendixes.
The first section can now be an accurate summary of the report. Another advantage of this approach is that it avoids the problem of writing the report twice: it is very easy for an introduction to develop into a report if the detailed findings have not been written first of all.
Most writers draft these sections in the order in which they appear above, namely:
conclusions
recommendations
introduction
summary.
Your conclusions must follow logically from your detailed findings.
Your recommendations must follow logically from your conclusions.
Your introduction should include everything your readers need to know before they read the rest of the report.

4.5.1 The summary

While these sections are all important, you must pay special attention to your summary. Make sure that the overall opinion is expressed accurately and unambiguously, and reflects the findings and comments given in the main body and appendixes.
It must be a true summary of the report and should highlight any areas requiring a particular emphasis. As already stated, the summary should stimulate the readers' interest by outlining:

1. The salient facts.
2. The main conclusions and recommendations.

Remember that it is intended to serve two overall functions:

1. To provide a summary of what the recipient is going to read, or has just read.

2. To provide an outline of the report if the recipient is not going to read any more of the report.

A summary must be interesting; if a reader finds it boring, the report will fail.

4.6 Checking And Amending The Report

Hold your report two weeks is a classic rule. For the report writer this may not be practical. However, once you have completed your first draft, try to forget about it for a few days - or at least a few hours. Then re-read it.
Does it flow? Are there adequate links and signposts for the reader? Can you justify everything that you have written? Finally, ask yourself whether you would be willing to say what you have written to the recipients, face-to-face. If you would not be willing to say it, do not write it.
Now print a copy of the document you have prepared on your word processor. It is usual for three people to be involved in checking and amending this first draft:
yourself
a colleague
your manager.

4.6.1 Your Check

Once again, read it very carefully. It is far easier to spot mistakes and other shortcomings on a printed document than on a manuscript. Look out for any factual or word processing errors, or instances of poor presentation, including unrequited or inconsistent:

1. variations in size or style of lettering
2. headings and sub-headings
3. numbering
4. highlighting techniques
5. margins and spacing.
6. Is every section, sub-section, paragraph, sentence and word really necessary?
7. Are they accurate? Do they convey the meaning you intended?

4.6.2 A colleague's check

However, by now you will have read and re-read the draft. So ask a colleague, who knows as much about the subject as your readers - but not much more - to give his or her comments on the amended report. It is far easier to detect flaws in other people's writing than in your own. Are there any obvious errors or ambiguities? What changes or improvements would they suggest? What impact is it likely to have on your readers? You have been too closely involved with the report to assess this objectively.

4.6.3 Your line manager's check

Now pass the further amended report to your line manager. As well as asking the same sort of questions about it as you and your colleague did, your manager will probably be considering wider aspects of the report like:
its technical content
its overall relevance
Question. Are all the facts, arguments, conclusions and recommendations accurate, complete, convincing and justified? Be prepared to face some very detailed questioning.
You should be given the opportunity to discuss the reasons for any changes made by your line manager. If this does not happen: You may feel that this is no more than unjustified criticism. You will not learn from the experience as you can only guess what was wrong with your version. You may conclude that there is no point in spending so much effort on subsequent reports if they are going to be re-written by superiors.
By now this draft will have so many comments and amendments on it that it will almost certainly need to be re-printed. This is likely to be the final draft. After three drafts it is probable that the report will not get better anyway. Re-writing to get it right is an excellent practice; re-writing as a matter of course is a very bad and wasteful practice.

4.6.4 Preparing the final version

You should be responsible for preparing the final version. There are three reasons for this: It will save your line manager's time. It will show that you have grasped any points of criticism. It will result in a report written in one style, rather than a patchwork from different hands. Proofreading It is essential that reports are carefully proof-checked before they are issued.

However much time and effort are put into researching and writing the re-

port, the required result will not be achieved without sufficient care being devoted to the process of proofreading. A poorly presented report, full of errors and inconsistencies in layout, has a damaging effect regardless of the quality of the content. Mistakes, therefore, must be identified and corrected; there really is no excuse for failing to do this properly.
Proofreading your own work is difficult and inefficient. Because you are so familiar with the report, you tend to race through and think of the bigger picture - the next report. Someone else who has not been working on the report can give it much fresher and more objective scrutiny. Here are some useful proofreading techniques:
Print out a copy of the report. Spell-checkers and grammar-checkers miss things, and people do not read text onscreen with the same diligence as they read from a page.
Use a ruler to slow down your reading and make yourself read line by line.
Read the report out aloud. This process slows down your reading and makes you listen to how it sounds.
Read the report backwards. Obviously it will not make sense but it is an excellent way to spot spelling mistakes.
Limit your proofreading to one small section at a time. Then take a short break before proceeding to the next small section.
Proofread when you are most fresh. This time may be early in the morning or whenever you feel the most alert.
Try to proofread when you know you will have peace and quiet and can avoid interruptions from the telephone or visitors.

4.7 Issuing The Report

In some organisations the report would now be issued. In others, the following final steps are taken:

1. Discussion. The writer discusses his or her findings with the key recipients and confirms the factual accuracy of significant points.

2. Clearing. Any corrective action is agreed and/or the report is amended in the light of any mistakes or misapprehensions shown to have occurred during the investigation.

3. Circulation. The revised report, clearly annotated 'Draft' on the cover and on every page, is circulated.

4. Agreeing. The findings are agreed.

5. Issuing. The final report is issued.

4.8 Some Suggestions for Good Style

A good style in report writing involves constructing sentences and paragraphs in such a way that the message you wish to convey is done accurately and quickly to the reader. This is far more difficult to achieve than many writers realise. Reports abound with sentences which their readers have to read two or three times before they can understand.

4.8.1 Achieving A Good Style

It involves the following points: **Selectivity of Words**
Careful choosing of words can enable you to convey many subtleties of meaning. You cannot find a word you have forgotten or do not know in a dictionary. Look up a word of similar meaning in a thesaurus and you will find a variety of words and expressions which should include the one in the back of your mind, or perhaps an even more appropriate one which you had not even considered.
Accuracy
Check that everything you write is factually accurate. The facts should be capable of being verified. Moreover, arguments should be soundly based and your reasoning should be logical. It is sometimes tempting to take short-cuts.
There is an old saying that liars must have good memories. In any case, it is much easier to write honestly and fairly. This makes for an enhanced personal reputation, and a growing confidence in the reliability of your findings, conclusions and recommendations.
Objectivity A report should not be an essay reflecting personal emotions and opinions. You must look at all sides of a problem with an open mind before stating your conclusions.
The role is similar to that of a sports referee or a High Court judge. In these situations, decisions are based on the results, the evidence, or an interpretation of the evidence - not on personal opinions and feelings.
Conciseness
A report may be brief because it omits important information. A concise report, on the other hand, is short but still contains all the essential details. To ensure you do not include material which can safely be left out, you should not ask: 'Can this information be included?' Rather, you should ask: 'Is it necessary for this information to be included?' In this way, you will be sure to put into your report only as much information as your readers need in order to respond as you wish them to.

Clarity and consistency
The best way to achieve clarity in your writing is to allow some time to elapse between the first draft and its revision. Try to leave it over the weekend, or at least overnight. If you are really under pressure and this is simply not possible, at least leave it over a lunch or coffee break.
It is essential to have a period of time, no matter how short, when you can think of other things. In this way, when you come back to the report, you can look at it with a degree of objectivity. You can, however, increase your chances of writing with clarity and consistency if you try to keep certain things in mind. Concentrate on a mental picture of your readers, and make sure you are writing for them and not for yourself.
Simplicity Usually, if your writing is selective, accurate, objective, concise, clear and consistent, it will also be as simple as it can be. You should guard against over-simplifying, for example to the point of missing out information which the reader needs to fully understand what you are trying to say. You should again keep your readers firmly in mind and keep asking yourself whether or not they will be able to follow the logic of your presentation.

4.8.2 Keeping technical writing simple

The problem of how to keep things simple is particularly acute for technical writers. The information they have to convey is difficult for nontechnical readers to understand. If they simplify their expression too much they may distort the meaning of whatever they are trying to say.
The readers, after all, are the really important people. If they do not understand, they will reject what the writer has to say.

4.9 (Chapter summary)

If sufficient time and thought have been devoted to preparing and planning, and revising, a suitable skeletal framework, and to collecting and handling the information required, writing the report will be straightforward. You will need to amplify the points in each section of the framework.
The order of writing and revising is important, and should be:

1. Pre-write (targeting, outlining, structuring, developing and checking).

2. Draft the main body and appendixes, beginning with a section, subsection or appendix you feel particularly confident about.

3. Review the main body and appendixes.
4. Draft the conclusions, recommendations, introduction and summary, in that order.
5. Check and amend the report with the assistance of a colleague and your line manager.
6. Issue the report, possibly after discussing, clearing, circulating and agreeing a draft report.

Chapter 5

Some Common types of Reports

Chapter objectives

1. Explain some Common Reports
2. Explain their definition, use and basic contents

5.1 types of Reports

there are many types of Reports as follows:

5.1.1 Accident reports

These reports hopefully will not be required on a regular basis.
What points should you bear in mind? Balance speed with accuracy. The reason for speed is so that all facts are accurately recorded before details are forgotten. The reasons for accuracy are to minimise the risk of any possible recurrence, to comply with the law and to be prepared to face a possible claim for damages. You will require accurate illustrations supplemented by statements from participants, witnesses and experts. **What would be a suitable format?** If you have no formal report form, use these headings:
1. What was the accident?
2. Where and when did it occur?
3. Who was involved?
4. Was any injury sustained? If so, what was it?
5. Who reported the accident?
6. What medical treatment was applied - when and by whom?
7. What caused the accident?
8. What has been done to correct the it?
9. What recommendations do you have to avoid a recurrence?

5.1.2 Agendas for committee meetings

An agenda is a list of items to be discussed during a meeting. It must be drawn up in advance. **What points should yo bear in mind?** An agenda may take various forms, according to the requirements and, in some cases, the kind of meeting to which it refers. Be sure you know precisely what is expected of you. Here are two common forms of committee agenda:
the standard agenda The standard agenda simply lists the subjects to be discussed, and the order in which they will be taken.
What would be a suitable format?
Standard agenda Suitable format for a standard agenda would be as follows:
1. Heading (including where and when the meeting will take place)
2. Apologies for Absence
3. Minutes of the Previous Meeting
4.Items requiring the attention of the committee
5. Any Other Business ('leftovers', not items that should have been discussed

within sections)
6. Date of Next Meeting (also give the time and location)
7. Papers Required for the Meeting (in the order that they will be needed).

5.1.3 Annual reports

An annual report lists the achievements and failures of an organisation. It is a progress report in which every department is accounted for.
What points should you bear in mind? The physical appearance of annual reports is crucial. For that reason they are usually prepared professionally. The cover and the first few pages must attract and then maintain the readers' interest. Make the cover attractive and eye-catching; keep the text well spaced and content not too heavy.
Begin with some simple facts about the organisation and what it does. Use short paragraphs with bold print to emphasise the key points. Include illustrations to attract interest and to break up overbearing columns of figures. When you use photographs of people, record their names. Too many reports give the name of their chairperson but then describe a member of staff as 'an engineer', or whatever. Workers, like chairpersons, have names.
As a general rule, the shorter the report the better the chances of attracting more readership. So make sure you gather relevant data from all parts of your organisation. Obviously every department will wish to emphasise its successes and gloss over (or simply ignore) its failures. For this reason the use of standard questionnaires is recommended. This will provide only the information you require, and it will be in a uniform format and style. Use this as the basis of the main body of the report.
Annual reports usually include a chairperson's statement. Most of these statements are far too long. Tactfully explain that all that is required is a resume and critical analysis of the past year's work, and an assessment of prospects. This section should pass logically from topic to topic. It should be informative, businesslike and balanced. It should also be concise - no more than 1,000 words (less if possible).

5.1.4 What would be a suitable format?

This depends on the nature of the organisation and the readership. Here is one possible format:

1. contents list
2. what the organisation does
3. some of the year's highlights
4. chairperson's statement
5. main body (possibly department to department, or task to task)
6. conclusions
7. appendixes.

A standard format is useful for year-to-year comparisons.

5.2 Audit reports

There are two types of auditor: the external auditor and the internal auditor. The role of the former is laid down by statute and in case law; that of the latter, while also affected to some extent by case law, is ultimately what management wants it to be. Therefore the structure of audit reports will depend on the type of audit work being undertaken.

External auditors are independent of the companies on which they report. They are required to report to the shareholders at general meetings on whether the final statements of a company give a 'true and fair view' of the state of the company's affairs.

If they are uncertain, or if they do not believe this to be so, they must say so in what is known as a **qualified audit report**. It is now normal practice also for external auditors to issue reports to management which are more akin to internal audit reports.

Internal auditors are concerned with the internal duties and the internal control of the business for which they are employed. The structure of their reports tends to be fairly consistent, but it is not defined by any Auditing Standards.

What points should I bear in mind?

In a few words the external auditor commits himself or herself to a high degree of responsibility. If the contents of the report do not reflect the care, skill and diligence expected of a qualified person, the auditor may be held liable for damages.

It is essential, therefore, that the report should be carefully prepared to reflect an opinion within the limits of the examination, and sufficiently clear as to leave no kind of misinterpretation by those whom it concerns.

The internal auditor does not face such an onerous responsibility because the report is not written for the same audience - it is for internal consumption (although the external auditor may decide to place some reliance upon it). However, like all report writers, the internal auditor must always strive for objectivity and accuracy.

5.2.1 What would be a suitable format?

The usual format for an external audit report on the financial statements of a company is as follows:
1. Introduction
2. Respective responsibilities of directors and auditors
3. Basis of opinion
4. Opinion.
An external auditor's report to management will include any or all of the following sections:
1. Weaknesses in internal control and recommendations on how they may be rectified.
2. Breakdowns in the accounting systems and any material errors arising.
3. Additional audit time required as a result of either section 1 or 2, or the client's failure to adhere to timetables.
4. Unsatisfactory accounting procedures or policies, and recommendations as to how they may be improved.
5. Suggestions as to how financial and accounting efficiency may be improved.
6. Constructive suggestions not necessarily related to accounting procedures but noted by the auditor during the course of his or her investigations, with the benefit of an outsider's viewpoint.

5.2.2 A suitable format for an internal audit report is as follows:

1. Contents page
2. Summary (the main findings, conclusions and recommendations)
3. Introduction (what broad subjects were audited, where and when)
4. Scope (what precisely was audited, and possibly what was not)
5. Main body (the findings, divided into logical sub-sections)
6. Conclusions (flowing naturally from the main body)
7. Recommendations (flowing naturally from the conclusions)

8. Appendixes.

5.3 Comparative testing reports

Its purpose is to select a number of standards, make comparisons of these standards from item to item, and then reach logical conclusions and recommendations about which are the best and/or which represent the best value for money.
What points should I bear in mind? It is essential to choose sensible standards and then to define them very carefully at the beginning of the report. Here are some standards important in any well-designed product:
Does it work properly?
Is it fit for its purpose?
Can it cope with the likely conditions of use?
Is it durable and easy to maintain for its expected lifespan?
Is it safe and easy to use?
Is it pleasing to look at and to handle?
Does it have 'style'?
Obviously the precise standards you choose will depend on the items being compared.
Here are some examples of standards important when choosing a telephone:
target price (comparing similar models)
colour options
features:
- last number redial
- number of memories
- a display
- battery back-up
- weight of handset
- maximum loudness of ring.

5.3.1 What would be a suitable format?

There are two basic ways of presenting these reports. The first is to define the first standard and then compare the performance of each item before moving on to the next standard.
The second is to name the first item and then record how it matches up to various standards, before moving on to the next item.
There are three customary formats for comparative testing reports, as follows:

Comparison by Standard - Format A
1. Contents page
2. Introduction
3. Explanation and description of items to be compared
4. Comparison by Standard:
Standard A
Item (i)
Item (ii)
Item (iii)
Standard B
Item (i)
Item (ii)
Item (iii)
Etc.
5. Conclusions
6. Recommendations.
Comparison by Standard - Format B
1. Contents page
2. Introduction
3. Summary of Standards and Data
4. Conclusions
5. Recommendations
6. Appendixes
(i) Explanation and description of items to be compared
(ii) Comparison by Standard A:
Explanation of Standard A
Comparison of items
(ii) Comparison by Standard B:
Explanation of Standard B
Comparison of items
Comparison by Items
1. Contents page
2. Introduction
3. Explanation of Standards
4. Comparison by items:
Item (i):
Standard A
StandardB
Standard C
Item (ii):

Standard A
Standard B
Standard C
5. Conclusions
6. Recommendations.

5.4 Feasibility reports

These discuss the practicality, and possibly the suitability and compatibility of a given project, both in physical and economic terms. They also discuss the desirability of the proposed project from the viewpoint of those who would be affected by it.
Report writers must come to a conclusion, and must recommend that some action is taken or is not taken and/or that some choice is adopted or is rejected.
What points should I bear in mind? You must be unbiased and your approach must be logical. Be sure that you know the precise purpose of the proposed project and also its scope. See also Systems Evaluation Reports.

5.4.1 What would be a suitable format?

This is a suitable format for a feasibility report:
1. Abstract
2. Summary
3. Contents list (including a separate list of illustrations)
4. Glossary
5. Introduction (purpose and scope)
6. Discussion (the main body providing the evidence - use appendixes if necessary)
7. Conclusions (flowing naturally from the discussion)
8. Recommendations (flowing naturally from the conclusions)
9. References (if necessary)
10. Appendixes.

5.5 Instructional manuals

Instructional manuals are written to explain how a job or process (or perhaps how a particular aspect of a job or a process) is to be performed.

What points should I bear in mind? Good instructional manuals and duty notes are written by people who know the job or process well. They know how much detailed instruction to include, and how much to leave out. Once you have drafted your instructions, try them out first on someone who is likely to use the report.
Be absolutely sure of your purpose before deciding on a suitable format.

5.5.1 What would be a suitable format?

This is a typical format for an instructional manual:
1. Contents page
2. Job/Duty/Process objective (a brief statement of subject, purpose and scope)
3. Theory or principles of the operation (the mechanics of the process)
4. List of materials and equipment needed
5. Description of the mechanism (an overview of the equipment, possibly breaking it into its component parts)
6. List and number of steps necessary to complete the job
7. Instructions for each step (the main body)
8. Precautions necessary (explain why)
9. Show what must be done (use illustrations to support section 7)
10. The degree of difficulty at each stage.

5.6 Interview reports

However, a brief discussion on the preparation of interview reports is appropriate.
What points should I bear in mind? Clear and adequate reports are essential to an interviewer who seeks a detailed and accurate recall and evaluation of interviewees (perhaps job applicants).
Interviewers who lack the technique of interview report writing will merely attempt to rationalise their decision. There are two types of interview report. The first is designed to ensure that an interview is well-structured, comprehensive, and that adequate and relevant notes are taken.
The second is used to evaluate the material gathered during the interview.

5.6.1 What would be a suitable format?

The following format provides a useful framework for an interview. There will also be several sub-subheadings which are not given here. However the framework must be used with discretion.
A Structured Interview Report
1. Interviewee, interviewer, reference, date, time and location
2. Physical:
First impression
Appearance
Speech
Health
3. Attainments:
Work
Educational
Extramural
4. Interests
5. Circumstances:
Family background
Domestic and social situation
6. Special aptitudes
7. General intelligence
8. Disposition.
After the interview the interviewer will need to evaluate the interviewees. This report format will be of assistance:
An Interview Evaluation Summary Report
1. Interviewee, interviewer, reference, date, time and location
2. Able to do
3. Willing to do:
Disposition
Motivation
4. Summary
5. Recommendation.

5.7 Process description reports

A process is a specific series of actions that bring about a specific result.
What points should I bear in mind? It is important not to confuse instructional manuals with process description reports. The former explain how a

process is to be performed; the latter help the reader understand that process.
Process description reports are used to describe the following:
how something is made
how something is done (for information, not instruction)
how a mechanism works
how a natural process occurs.
The report is essentially chronological or sequential and it is most commonly used within the world of business and industry. Almost every such report will include illustrations.

5.7.1 What would be a suitable format?

A suitable format for a process description report would be as follows:
1. Contents page (with a separate list of illustrations)
2. Introduction (identify the process; record its purpose and significance; give an overview of the steps involved)
3. Main body (discuss each step in turn)
4. Summary (concentrate on the purpose and importance of the actions or the significance of the facts).

5.8 Research reports or Scientific reports

The purpose of a research report is to extend our understanding of the world by reducing uncertainty and increasing our understanding of it.
What points should I bear in mind?
Results alone are never enough. As you will see from the typical format described below, you must be able to assess and then evaluate the reliability of the results. You must say precisely how the work was carried out, what methods were used to collect the data, and how it was analysed. Conclusions and recommendations must be drafted with great care.

5.8.1 What would be a suitable format?

This is a typical format for a research report:
1. Contents page
2. Introduction
Set the scene; give a clear statement of the objectives and scope of the research. What was known about the subject at the beginning of the research? Put the

project into its proper context.
Give the reason(s) for the research.
Discuss the events which led up to it.
Assess the importance of other, related work.
3. Work carried out
Describe the overall shape and design of the research.
Describe the methods used (for example, sampling methods).
Describe the actual work carried out, probably in chronological order.
Explain how the results were analysed (for example, input to a computer).
4. The Results
an academic report, give full results (with an interpretation in a separate section).
In a non-academic report, you can omit some results (or at least put them in an appendix) and emphasise significant results.
Concentrate on each objective of the research in turn.
Structure your results around these objectives.
Discuss the results; form links; build up an overall picture.
Distinguish 'facts' from interpretations, inferences, predictions or deductions.
5. Conclusions
Make sure they flow naturally from the results. Each one must be supported by your findings and/or other research.
If no clear picture has emerged, then say so. Do not see relationships that do not exist.
6. Recommendations
These should flow naturally from your conclusions, with no surprises.
7. Appendixes
Include items which would disturb the flow of the report (for example, survey forms and questionnaires).

5.9 Student project reports

Many students are required to undertake projects and produce reports. For example, they are an important part of many examination schemes.
What points should I bear in mind? Here are some points to bear in mind when carrying out a project:
Be aware of who will choose the topic. It may be chosen by your teacher, or by you, or through discussion between the two of you. The topic chosen must be acceptable to your examining group. So talk to your teacher and refer to your syllabus. Then select a suitable topic, preferably one that can be investigated

locally.
Decide what sources of information you will require.
Decide how you will gather this information.
Gather the information.
Analyse the information.
Write the report.

5.9.1 What would be a suitable format?

If your teacher tells you the required format, or if it is given in your syllabus, comply with it. If you have no such instruction or guidance, consider this simple format:
1. Contents page
2. Introduction Beginning
3. Main body Middle
4. Conclusions
5. Recommendations (where appropriate) End
6. Appendixes
7. Sources

5.10 Systems evaluation reports

A systems evaluation report serves one of these purposes:
To discover which system out of several alternatives is most suitable for a particular application.
To test an apparatus or system which it is intended to employ on a large scale, or with multiple applications, if the initial operation is deemed worthwhile.
To enquire into the causes of failures in an existing operational system.
The last of these is considered under Trouble-Shooting Reports.
What points should I bear in mind?
The purpose of the first two types of report is to inform those concerned with selection, implementation and utilisation about:
the requirements of the application
the criteria by which the systems should be judged
the features of available systems
data on their performance in the field
and recommendations or conclusions about the best course of action.
These reports are important - mistakes are costly. You must be independent; do

not rely on the word of manufacturers or suppliers. You probably will need to use supplementary text, footnotes, a glossary and illustrations (diagrams, flow charts and perhaps photographs).

5.10.1 What would be a suitable format?

A suitable format for a report with the purpose of discovering which system out of several alternatives is most suitable for a particular application is as follows:
1. Contents page
2. Preface (personal background: why have you written the report?)
3. System Requirements
4. Systems Available
5. Criteria for Selection
6. The Final Choice
7. Appendixes (System Data Sheets).

A report on the initial performance of an apparatus or a system could follow this format:
1. Contents page
2. Preface (personal background: why have you written the report?)
3. Apparatus/System Requirements
4. Apparatus/System Performance (use appendixes, if necessary)
5. Conclusions
6. Recommendation
7. Appendixes (to support section 4, if necessary

5.11 Technical reports

Technical reports are often written at an early stage in a production process. They are usually generated internally, either by the technical publications department of an organisation or by staff involved in this production process. Here are some examples of technical reports
: a technical proposal
a feasibility study
design and research reports
pre-production reports
evaluation documents

What points should I bear in mind?

These reports are often written by engineers who are not always familiar with

the techniques of effective writing. The advice given throughout this book, therefore, will be of assistance.

5.11.1 What would be a suitable format?

Every organisation will have its own format requirements. This is a typical layout:
1. Contents page
2. Aims (why it was written, its terms of reference and its general purpose)
3. Summary (the salient facts and a concise summary of conclusions, if any)
4. Main body (main discussion of the subject matter)
5. Conclusions (if necessary)
6. Bibliography (if required)
7. Index (in larger reports only

5.12 Trouble-shooting reports

These reports aim to locate the cause of some problem, and then suggest ways to remove or treat it. In the main they deal with people, organisations or hardware.

What points should I bear in mind? These reports highlight problems. When they are caused by people you must be especially careful to word the report thoughtfully. Be candid but be fair. Most of all, be accurate. When you are discussing problems caused by the structure of an organisation, you must expect to meet the objection: 'But we've always done it this way'. People are generally not keen on change. Reports on hardware are less complicated and often less contentious.

5.12.1 What would be a suitable format?

Here are four possible structures. Choose the one that best suits your needs:
Format A
1. Contents page
2. Present situation (the salient points)
3. Options for Change (the pros and cons of each option)
4. Recommendations (well-argued, clear, unambiguous and concise)
5. References (if required).

Format B

1. Contents page
2. Introduction (purpose and scope)
3. Evidence (concise, balanced and unambiguous - use appendixes, if necessary)
4. Arguments for (present all the pros logically and objectively and respond positively to weaknesses in your case)
5. Arguments against (list them and refute them in turn)
6. Recommendation (be clear, unambiguous and precise)
7. Appendixes (to support section 3, if necessary).

Format C

1. Contents page
2. Introduction (your purpose)
3. Summary of Recommendations (clear, unambiguous and precise)
4. Present Position (the salient points)
5. Scope (what work was done, and possibly what was not)
6. Observations on Recommendations (the main body - repeat each recommendation and give the main pros and cons for each - say why the pros prevailed)
7. Conclusion (keep it concise)
8. Appendixes (if required).

Format D

1. Contents page
2. The Problem

nature and cause

extent

effects (perhaps on safety or production)

3. The Need for Change reasons (perhaps labour problems or competition)
4. Proposed Solution

options available

details of proposed solution

previous experience of this scheme (perhaps elsewhere) advantages

disadvantages (and how they can be overcome)

effects (perhaps improved efficiency or sales prospects)

5. Time Factors

when can it be implemented?

6. Costs

for each option:

implementation costs

running costs

estimated savings, if applicable

7. Conclusion

for the chosen option:
overall effects
overall benefits
8. Recommendations
item by item, clear and unambiguous
9. Appendixes if required.

5.13 Chapter Summary

This Chapter presented some common kinds of reports.

Chapter 6

Academic phrase bank

Chapter objectives

1. Explain the academic phrases
2. Writing Introductions
3. Describing Methods
4. Reporting results
5. Discussions
6. Writing Conclusions

6.1 Writing Introductions

There are many ways to introduce an academic essay or assignment. Most academic writers, appear to do one or more of the following in their introductions:

- establish the context, background and/or importance of the topic.
- indicate a problem, controversy or a gap in the field of study.
- define the topic or key terms.
- state of the purpose of the essay/writing.
- provide an overview of the coverage and/or structure of the writing.

Examples of phrases which are commonly employed to do these functions are listed below. Note that there may be a certain amount of overlap between some of the categories under which the phrases are listed.

Introductory sections for research dissertations, are normally much more complex than this and, as well as the elements above, may include the following: a synopsis of key literature/current state of knowledge, synopsis of methods, lists of research questions or hypotheses to be tested, significance of the study, recognition of the limitations of the study, reasons for personal interest in the topic.

6.1.1 Establishing the importance of the topic:

1. One of the most significant current discussions in philosophy is .....
2. It is becoming increasingly difficult to ignore the .....
3. X is the leading cause of death in western industrialised countries.
4. X is a common disorder characterised by .....
5. X is an important component in the climate system, and plays a key role in Y.
6. In the new global economy, X has become a central issue for .....
7. In the history of development economics, X has been thought of as a key factor in .....
8. Xs are one of the most widely used groups of antibacterial agents and .....
9. Xs are the most potent anti-inflammatory agents known.
10. X is a major public health problem, and the cause of about 4% of the global burden of disease.

11. X is an increasingly important area in applied linguistics.
12. Central to the entire discipline of X is the concept of .....
13. X is at the heart of our understanding of .....

6.1.2 Establishing the importance of the topic (time frame given)

:

1. Recent developments in X have heightened the need for .....
2. In recent years, there has been an increasing interest in .....
3. Recent developments in the field of X have led to a renewed interest in .....
4. Recently, researchers have shown an increased interest in .....
5. The past decade has seen
6. The past thirty years have seen increasingly rapid advances in the field of.....
7. Over the past century there has been a dramatic increase in .....
8. One of the most important events of the 1970s was .....
9. Traditionally, Xs have subscribed to the belief that .....
10. X proved an important literary genre in the early Y community.
11. The changes experienced by Xs over the past decade remain unprecedented.
12. Xs are one of the most widely used groups of antibacterial agents and have been extensively used for decades to .....

6.1.3 Highlighting a problem in the field of study:

1. However, these rapid changes are having a serious effect .....
2. However, a major problem with this kind of application is .....
3. Lack of X has existed as a health problem for many years.
4. Despite its safety and efficacy, X suffers from several major drawbacks:

5. However, research has consistently shown that first year students have not attained an adequate understanding of .....
6. There is increasing concern that some Xs are being disadvantaged .....
7. Despite its long clinical success, X has a number of problems in use.
8. Questions have been raised about the safety of prolonged use of .....
9. Highlighting a controversy in the field of study:
10. To date there has been little agreement on what .....
11. More recently, literature has emerged that offers contradictory findings about .....
12. One observer has already drawn attention to the paradox in .....
13. In many Xs a debate is taking place between Ys and Zs concerning .....
14. The controversy about scientific evidence for X has raged unabated for over a century.
15. Debate continues about the best strategies for the management of ……
16. This concept has recently been challenged by ……. studies demonstrating …….
17. One of the most significant current discussions in legal and moral philosophy is .....
18. One observer has already drawn attention to the paradox in .....
19. In many Xs a debate is taking place between Ys and Zs concerning .....
20. The controversy about scientific evidence for X has raged unabated for over a century.
21. Questions have been raised about the safety of prolonged use of .....
22. The issue of X has been a controversial and much disputed subject within the field of .....
23. The issue has grown in importance in light of recent .....
24. One major theoretical issue that has dominated the field for many years concerns .....
25. One major issue in early X research concerned.....

6.1.4 Highlighting a knowledge gap in the field of study (for research)

:

1. So far, however, there has been little discussion about .....
2. However, far too little attention has been paid to .....
3. Most studies in X have only been carried out in a small number of areas.
4. The research to date has tended to focus on X rather than Y.
5. In addition, no research has been found that surveyed .....
6. So far this method has only been applied to .....
7. Several studies have produced estimates of X (Smith, 2002; Jones, 2003), but there is still insufficient data for .....
8. However, there have been no controlled studies which compare differences in .....
9. The experimental data are rather controversial, and there is no general agreement about .....
10. However, there is no reliable evidence that .....
11. X's analysis does not take account of ..... nor does he examine .....
12. Focus, aim, argument:
13. This paper will focus on/examine/give an account of .....
14. This essay seeks to remedy these problems by analyisng the literature of .....
15. The objectives of this research are to determine whether .....
16. This paper seeks to address the following questions:
17. This essay critically examines/discusses/traces .....
18. The purpose of this paper is to review recent research into the .....
19. This paper will review the research conducted on .....
20. to determine/examine .....
21. The aim of this study was to evaluate and validate .....

22. In this paper I argue that .....
23. In the pages that follow, it will be argued that ……
24. This paper attempts to show that .....

6.1.5 Outline of structure

: The main questions/issues addressed in this paper are: a), b and c).
This paper has been divided into four parts. The first part deals with .....
The essay has been organised in the following way.
This paper first gives a brief overview of the recent history of X.
This paper begins by ..... It will then go on to .....
The first section of this paper will examine .....
Chapter 2 begins by laying out the theoretical dimensions of the research, and looks at how .....
Chapter 3 describes the design, synthesis, characterization and evaluation of .....
The last chapter assesses the .....

6.1.6 General descriptions of the relevant literature

: A considerable amount of literature has been published on X. These studies .....
There is a large volume of published studies describing the role of ……
The first serious discussions and analyses of X emerged during the 1970s with .....
The generalisability of much published research on this issue is problematic.

6.1.7 Being Critical

As an academic writer, you are expected to be critical of the sources that you use. This essentially means questioning what you read and not necessarily agreeing with it just because the information has been published. Being critical can also mean looking for reasons why we should not just accept something as being correct or true. This can require you to identify problems with a writer's arguments or methods, or perhaps to refer to other people's criticisms of these. Constructive criticism goes beyond this by suggesting ways in which a piece of research or writing could be improved.

..... being against is not enough. We also need to develop habits of constructive thinking.

6.1.8 Identifying a study's weakness

(However,) the main weakness of the study is the failure to address how .....
the study fails to consider the differing categories of damage that .....
the research does not take into account pre-existing ..... such as .....
the author offers no explanation for the distinction between X and Y.
Smith makes no attempt to differentiate between various different types of X.
Jones fails to fully acknowledge the significance of .....
the paper would appear to be over ambitious in its claims
the author overlooks the fact that X contributes to Y.
what Smith fails to do is to draw a distinction between .....
another weakness is that we are given no explanantion of how .....
no attempt was made to quantify the association between X and Y.

6.2 Describing Methods

In the Methods section of a dissertation or research article, writers give an account of how they carried out their research.The Materials and Methods section should be clear and detailed enough for another experienced person to repeat the research and reproduce the results. Typical features with examples of this are listed below.

6.2.1 Describing different methods

To date various methods have been developed and introduced to measure X:
In most recent studies, X is measured in four different ways.
Radiographic techniques are the main non-invasive method used to determine ....
Different authors have measured X in a variety of ways.
Previous studies have based their criteria for selection on .....
A variety of methods are used to assess X. Each has its advantages and drawbacks.
Data were gathered from multiple sources at various time points during the 2007–2008 academic year.

6.2.2 Giving reasons why a particular method was adopted

The semi-structured approach was chosen because .....
Smith et al (1994) identify several advantages of the case study, ...
It was decided that the best method to adopt for this investigation was to .....
A case study approach was chosen to allow a .....
The design of the questionnaires was based on .....
The X method is one of the more practical ways of .....
It was considered that quantitative measures would usefully supplement and extend the qualitative analysis.
Many of the distributions were not normal so non-parametric signed rank tests were run.
The X approach has a number of attractive features: .....

6.2.3 Describing the process: other phrases expressing purpose

For the purpose of height measurement, subjects were asked to stand .....
For the purpose of analysis, 2 segments were extracted from each .....
For the estimation of protein concentration, 100 µL of protein sample was mixed with .....

6.2.4 Describing the process: typical verbs (note use of passive form)

Data management and analysis was performed using SPSS 8.0 (1999).
The experiments were carried out over the course of the growing period from .....
Injection solutions were coded by a colleague to reduce experimenter bias.
Drugs were administered by icv injection under brief CO2 narcosis;
The mean score for the two trials was subjected to multivariate analysis of variance to determine .....
The subjects were asked to pay close attention to the characters whenever .....
Prompts were used as an aid to question two so that .....
The pilot interviews were conducted informally by the trained interviewer .....
Blood samples were obtained with consent, from 256 caucasian male patients .....
Independent tests were carried out on the x and y scores for the four years from .....

This experiment was repeated under conditions in which the poor signal/noise ratio was improved.
Significance levels were set at the 1% level using the student t-test.
A total of 256 samples were taken from 52 boreholes (Figure..).

6.2.5 Describing the process: adverbs of manner

The soil was then placed in a furnace and gradually heated up to .....
The vials were shaken manually to allow the soil to mix well with the water.
The medium was then aseptically transferred to a conical flask.
The resulting solution was gently mixed at room temperature for ten minutes and .....
A sample of the concentrate was then carefully injected into .....
The tubes were accurately reweighed to six decimal places using .....
Describing the process: passive verb + using .... for instruments
15 subjects were recruited using email advertisements requesting healthy students from .....
All the work on the computer was carried out using Quattro Pro for Windows and .....l.
Data were collected using two high spectral resolution spectroradiometers.
The data was recorded on a digital audio recorder and transcribed using a .....
Semi-automated genotyping was carried out using X software and ....
Statistical significance was analysed using analysis of variance and t-tests as appropriate.
Comparisons between the two groups were made using unrelated t-tests.
Using the X-ray and looking at the actual X, it was possible to identify .....
Using an Anthos Microplate Reader were able to separate single cells into different .....

6.3 Reporting Results

The standard approach to this section of a dissertation is to merely present the results, without elaborate discussion or comment. This does not mean that you do not need any text to describe data presented in tables and figures. Writers usually comment on the significant data presented in the tables and figures. This often takes the form of the location or summary statement, which identifies the table or figure and indicates its content. This is normally followed by a statement or statements which point out and describe the relevant or significant

data. All your tables should be numbered and given a title.
More elaborate commentary on the results is normally restricted to the Discussion section. In research articles, however, authors may comment extensively on their results as they are presented, and it is not uncommon for the Results section to be combined with the Discussion section under the heading: Results and Discussion.

6.3.1 Statements of result (positive)

Strong evidence of X was found when .....
This result is significant at the p = 0.05 level.
There was a significant positive correlation between .....
There was a signifcant difference between the two conditions .....
On average, Xs were shown to have .....
The mean score for X was .....
Interestingly, for those subjects with X, ...
A positive correlation was found between X and Y.
The results, as shown in Table 1, indicate that ....
Further analysis showed that .....
Further statistical tests revealed .....

6.4 Discussions

The term discussion has a variety of meanings in English. In academic writing, however, it usually refers to two types of activity: a) considering both sides of an issue, or question, b) considering the results of research and the implications of these. Discussion sections in dissertations and research articles are probably the most complex in terms of their elements. The most common elements and some of the language that is typically associated with them are listed below:

6.4.1 Explanations for results

: There are several possible explanations for this result.
These differences can be explained in part by the proximity of X and Y.
A possible explanation for this might be that .....
Another possible explanation for this is that .....
The observed correlation between X and Y might be explained in this way. .....
Some authors 9,30 have speculated that .....
Since this difference has not been found elsewhere it is probably not due to .....

A possible explanation for some of our results may be the lack of adequate .....

6.4.2 Commenting on findings

However, these results were not very encouraging.
These findings are rather disappointing.
The test was successful as it was able to identify students who .....
The present results are significant in at least major two respects.
The results of this study do not explain the occurrence of these adverse events.

6.4.3 Suggestions for future work

However, more research on this topic needs to be undertaken before the association between X and Y is more clearly understood.
Further research should be done to investigate the .....
Research questions that could be asked include .....
Future studies on the current topic are therefore recommended.
A further study with more focus on X is therefore suggested.
Further studies, which take these variables into account, will need to be undertaken.
Further work is required to establish this.
In future investigations it might be possible to use a different X in which .....
This is an important issue for future research.

6.5 Writing Conclusions

Conclusions are shorter sections of academic texts which usually serve two functions. The first is to summarise and bring together the main areas covered in the writing, which might be called ”looking back”; and the second is to give a final comment or judgement on this. The final comment may also include making suggestions for improvement and speculating on future directions.
In dissertations and research papers, conclusions tend to be more complex and will also include sections on significance of the findings and recommendations for future work. Conclusions may be optional in research articles where consolidation of the study and general implications are covered in the Discussion section. However, they are usually expected in dissertations and essays.

6.5.1 Summarising the findings (research)

This study has shown that .....
These findings suggest that in general .....
One of the more significant findings to emerge from this study is that .....
It was also shown that.....
This study has found that generally .....
The following conclusions can be drawn from the present study .....
The relevance of X is clearly supported by the current findings. This study/research has shown that .....
The second major finding was that .....
The results of this investigation show that .....
The most obvious finding to emerge from this study is that .....
X, Y and Z emerged as reliable predictors of .....
Multiple regression analysis revealed that the .....

6.5.2 Limitations of the current study (research)

Finally, a number of important limitations need to be considered. First, ...
A number of caveats need to be noted regarding the present study.
The most important limitation lies in the fact that .....
The current investigation was limited by .....
The current study was unable to analyse these variables.
The current research was not specifically designed to evaluate factors related to .....
The current study has only examined .....
The project was limited in several ways. First, the project used a convenience sample that .....
However, with a small sample size, caution must be applied, as the findings might not be transferable to .....
The sample was nationally representative of X but would tend to miss people who were .....
A limitation of this study is that the numbers of patients and controls were relatively small.
Thirdly, the study did not evaluate the use of .....
However, these findings are limited by the use of a cross sectional design.
Our findings in this report are subject to at least three limitations. First, these data apply only to ….
An issue that was not addressed in this study was whether….
One source of weakness in this study which could hare affected the measure-

ments of was that ……
Several limitations to this pilot study need to be acknowledged. The sample size is .....

6.5.3 Recommendations for further work (research)

This research has thrown up many questions in need of further investigation.
Further work needs to be done to establish whether .....
It is recommended that further research be undertaken in the following areas:
Further experimental investigations are needed to estimate .....
What is now needed is a cross-national study involving .....
More broadly, research is also needed to determine .....
It is suggested that the association of these factors is investigated in future studies.
Further research might explore/investigate .....
Further research in this field/regarding the role of X would be of great help in .....
Further investigation and experimentation into X is strongly recommended.
A number of possible future studies using the same experimental set up are apparent.
It would be interesting to assess the effects of .....
More information on X would help us to establish a greater degree of accuracy on this matter.
If the debate is to be moved forward, a better understanding of ..... needs to be developed.
I suggest that before X is introduced, a study similar to this one should be carried out on .....
These findings provide the following insights for future research: .....
Considerably more work will need to be done to determine .....
Future trials should assess a full selective decontamination regimen including
More research is needed to better understand when implementation ends and .....
It would be interesting to compare experiences of individuals within the same … group.
A further study could assess ……
A future study investigating …… would be very interesting.
The issue of X is an intriguing one which could be usefully explored in further research.
Future research should therefore concentrate on the investigation of ……

Large randomised controlled trials could provide more definitive evidence.

6.5.4 Implications/recommendations for practice

These findings suggest several courses of action for .....
An implication of these findings is that both X and Y should be taken into account when .....
The findings of this study have a number of important implications for future practice.
There is, therefore, a definite need for .....
There are a number of important changes which need to be made.
Another important practical implication is that .....
Moreover, more X should be made available to .....
Other types of X could include : a), b). .....
Unless governments adopt X, Y will not be attained.
This information can be used to develop targetted interventions aimed at .....
A reasonable approach to tackle this issue could be to .....
Taken together, these findings do not support strong recommendations to .....

6.6 (Chapter summary)

In this Chapter, a collection of phrases are resented to help in academic writing.

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