Report Document Overview
David McMurrey and Jonathan Arnett

Chapter Objectives

Upon completion of this chapter, readers will be able to do the following:

1. Explain the importance of effective report design.
2. Explain the purpose of a letter of transmittal.
3. Define when covers and labels are appropriate for reports.
4. Explain the purposes of and write a descriptive abstract and executive summary for a report.
5. Apply design principles of tables of contents and figures.
6. Apply basic design considerations on the body of a report.
7. Define the appropriateness of a conclusion, appendix, and information sources.

Report Design

Technical reports (including handbooks and guides) have various designs depending on the industry, profession, or organization. This chapter shows you one traditional design. If you are taking a technical writing course, make sure the design presented in this chapter is acceptable. The same is true if you are writing a technical report in a science, business, or government context.

Technical reports have specifications as do any other kind of project. Specifications for reports involve layout, organization and content, format of headings and lists, the design of the graphics, and so on. The advantage of a required structure and format for reports is that you or anyone else can expect them to be designed in a familiar way—you know what to look for and where to look for it. Reports are usually read in a hurry—people are in a hurry to get to the information they need, the key facts, the conclusions, and other essentials. A standard report format is like a familiar neighborhood.

When you analyze the design of a technical report, notice how repetitive some sections are. This duplication has to do with how people read reports. They don't read reports straight through: they may start with the executive summary, skip around, and probably do not read every page. Your challenge is to design reports so that these readers encounter your key facts and conclusions, no matter how much of the report they read or in what order they read it.

The standard components of the typical technical report are discussed in this chapter. The following sections guide you through each of these components, pointing out the key features. As you read and use these guidelines, remember that these are guidelines, not commandments. Different companies, professions, and organizations have their own varied guidelines for reports—you'll need to adapt your practice to those as well as the ones presented here.

Letter of Transmittal

The transmittal letter is a cover letter. It is usually attached to the outside of the report with a paper clip, but it can be bound within the report, as a kind of author's preface. It is a communication from you—the report writer—to the recipient, the person who requested the report and who may even be paying you for your expert consultation. Essentially, it says "Okay, here's the report that we agreed I'd complete by such-and-such date. Briefly, it contains this and that, but does not cover this or that. Let me know if it meets your needs." The transmittal letter explains the context—the events that brought the report about. It contains information about the report that does not belong in the report.

Use the standard business-letter format for cover letters. If you write an internal report, use the memorandum format instead; in either case, the contents and organization are the same:

- **First paragraph.** Cites the name of the report, putting it in italics. It also mentions the date of the agreement to write the report.
- **Middle paragraph(s).** Focuses on the purpose of the report and gives a brief overview of the report's contents.
- **Final paragraph.** Encourages the reader to get in touch if there are questions, comments, or concerns. It closes with a gesture of good will, expressing hope that the reader finds the report satisfactory.

As with any other element in a report, you may have to modify the contents of this letter (or memo) for specific situations. For example, you might want to add a paragraph that lists questions you'd like readers to consider as they review the
Cover and Label

If your report is over ten pages, bind it in some way and create a label for the cover.

Covers

Covers give reports a solid, professional look as well as protection. You can choose from many types of covers. Keep these tips in mind:

- The best covers use either a spiral (best) or plastic "comb" (second-best) binding and thick, card-stock paper for the covers. These bindings allow reports to lie open by themselves, are inexpensive, and add to the professionalism of your work. Any copy shop can make one for you.
- Three-ring binders (also called loose-leaf notebooks) are a decent second choice. They allow your report to lie flat, but they are often too bulky for short reports, and the page holes tend to tear. However, if the audience will want to remove or replace pages, then a three-ring binder is an appropriate choice.
- Three-hole binders that use brads to hold the pages together are a distant third choice. They are less bulky than three-ring binders, but they prevent the pages from lying flat, and readers must either weigh down or crease the pages. If you do use one of these, add an extra half-inch to the left margin to account for the "gutter" between pages.
- Clear (or colored) plastic slip cases with the plastic sleeve on the left edge are never appropriate for a professional report. These are like something out of grade school, and they are aggravating to use. They won't lay flat, so readers must struggle to keep them open, and they generate static electricity, which makes pages stick together.

Labels

Be sure to devise a label for the cover of your report. It's a step that some report writers forget. Without a label, a report is anonymous; it gets ignored.

The best way to create a label is to use your word-processing software to design one on a standard page with a graphic box around the label information. Print it out, then go to a copy shop and have it photocopied directly onto the report cover.

There are no standard requirements for the label, although your company or organization should have its own requirements. Common elements to include are

- the report's formal title
- the intended recipient
- the authors (or, often, the author's organization)
- a report tracking number
- the date of submission
Abstract and Executive Summary

Most technical reports contain a descriptive abstract or an executive summary, and sometimes both. Each element summarizes a report's contents, but they do so in different ways and for different purposes.

Descriptive Abstract

This brief paragraph provides a capsule overview of the report's purpose and contents. It's usually a single paragraph. In many report designs, the descriptive abstract appears at the bottom of the title page (not the cover page), as shown in the following example.
This report examines light water reactors as a possible alternative source of energy for Luckenbach, Texas. Both types of light water reactors are described, and an explanation of how each reactor produces electricity is presented. Safety systems and economic aspects conclude the main discussion of the report.

Descriptive abstract

Executive Summary

Another common element in a report's front matter is an executive summary, which also summarizes the key facts and conclusions contained in the report. Its purpose is to allow a busy executive to absorb the report's major findings without having to wade through pages of details. A typical executive summary runs from a half-page to two pages, but it can be longer if the report is very long.

Table of Contents and Table of Figures

Table of Contents

Any technical document of more than a few pages that includes distinct major sections should include a table of contents (ToC), and each major section should start on a new page.

The ToC should not include the title page or the cover letter/memo. If the proposal includes an abstract and/or executive summary, those sections should appear in the ToC, and it is customary to paginate them with lower-case roman numerals. The ToC should not include itself. Treat it as page zero.

Always include at least the top two levels of headings, but how many subheading levels you include in a ToC is up to you. A long, complex report with multiple subheadings may need a ToC entry for each subheading, but this approach may result in an extremely long and confusing ToC. A potential solution is to create two ToCs, one listing just the top two levels of headings and one listing all levels of headings.

One final note: Make sure the words in the ToC are the same as they are in the text. As you write and revise, you might change some of the headings—don't forget to update the ToC accordingly. See Figure 3 for an example of a ToC and executive summary:
Executive Summary

This feasibility report analyzes a recent study conducted on a 2,450 ft² residential home (referred to as SH or Standard Home) built in Ann Arbor, Michigan. The goal of the study was to determine the effectiveness of employing energy-efficient building strategies to minimize energy consumption and costs in a residential home. The study was done on a 2,450 ft² residential home (referred to as SH or standard home) built in Ann Arbor, Michigan.

The home was modeled using Energy-10, a software package capable of calculating the energy consumed during the use of the home over a 50-year period. While keeping the basic functional units (such as floor plan, occupancy, type and number of appliances, and internal volume) of the home consistent, SH was then modeled to reduce the energy consumption by employing various energy-efficient strategies (referred to as EEH or energy efficient home).

The total life-cycle energy consumption of SH was found to be 15,455 GJ, which consisted of space and water heating and cooling, lighting, ventilation, and appliances. The total life-cycle energy consumption of EEH was reduced to 5653 GJ. The purchase price of SH was $240,000 (actual market value) and was determined to be $22,801 more for EEH. The cost analysis performed found that despite a 9.5% increase in the purchase price of an energy-efficient home, lower annual energy expenditures make the present value nearly equal to the more energy-consuming version. The accumulated life cycle costs are higher in EEH until year 48 and are $1,054 (or 0.1%) less at year 50.

It was found that the most effective strategy for reducing overall annual energy costs is installation of a high-efficiency HVAC system. However, for reducing overall energy consumption, insulation was the most effective strategy followed by high-efficiency HVAC and air leakage control.

Downloadable example of executive summary

Table of Figures

The table of figures (ToF), sometimes called the "list of figures," has many of the same design considerations as the table of contents. Readers use the ToF to find the illustrations, diagrams, tables, and charts in your report.

Please note that tables and figures are different things. Strictly speaking, figures are illustrations, drawings, photographs, graphs, and charts. Tables are rows and columns of words and numbers; they are not considered figures.

For longer reports that contain multiple figures and tables, create separate lists of figures and tables. Put them on a separate page from the ToC, but put them together on the same page if they fit. You can identify the lists separately, as Table of Figures and Table of Tables.

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Introduction

In a technical report, the introduction prepares the reader to read the main body of the report. It introduces the report's purpose, specifies the report's intended audience, provides a limited description of the report's context and background, forecasts the report's scope, and previews the report's contents and/or organization.

Downloadable example of introduction

If the introduction, executive summary, and letter of transmittal strike you as repetitive, remember that readers don't necessarily start at the beginning of a report and read page by page to the end. They skip around: they may scan the table of contents; they usually skim the executive summary for key facts and conclusions. They may read carefully only a section or two from the body of the report, and then skip the rest. For these reasons, reports are designed with massive duplication so that readers will be sure to see the important information no matter where they dip into the report.
Major Design Considerations

This part of the chapter describes several design-related issues that you will likely need to consider when creating a report.

**Headings.** In all but the shortest reports (two pages or less), use headings to mark off the different topics and subtopics covered. Headings enable readers to skim your report and dip down at those points where you present information that they want.

**Bulleted and numbered lists.** In the body of a report, also use bulleted, numbered, and two-column lists where appropriate. Lists help by emphasizing key points, by making information easier to follow, and by breaking up solid walls of text.

**Symbols, numbers, and abbreviations.** Technical discussions ordinarily contain lots of symbols, numbers, and abbreviations. Remember that the rules for using numerals as opposed to words are different in the technical world. The old rule of thumb about writing out all numbers below 10 does not always apply in technical reports.

**Graphics and figure titles.** In a technical report, you're likely to need drawings, diagrams, tables, and charts. These not only convey certain kinds of information more efficiently but also give your report an added look of professionalism and authority. If you've never put these kinds of graphics into a report, there are some relatively easy ways to do so—you don't need to be a professional graphic artist.
Cross-references. You may need to point readers to closely related information within your report, or to other books and reports that have useful information. These are called cross-references. For example, you can point readers from the discussion of a mechanism to an illustration of it. You can point readers to an appendix where background on a topic appears (background that just does not fit in the text). And you can point readers outside your report to other information—to articles, reports, and books that contain information related to yours.
Page numbering. All pages in the report (excluding the front and back covers, title page, and ToC) are numbered. Use lower-case roman numerals to paginate material that appears before the ToC. Don't number the ToC; it's page zero. Use arabic numerals to paginate material that appears after the ToC.

Longer reports often use the page-numbering style known as folio-by-chapter or double-enumeration (for example, pages in Chapter 2 would be numbered 2-1, 2-2, 2-3, and so on, and pages in Appendix B would be numbered B-1, B-2, and so on). Similarly, tables and figures would use this numbering style. This style eases the process of adding and deleting pages.

If page numbers appear in a running header, don't display numbers on pages where a heading or title is at the top of the page (such as chapter or section openers).

Conclusions

For most reports, you'll need to include a final section in which you sum up the report's contents and provide a "takeaway" for the reader. When you plan this final section of your report, think about the functions it can perform in relation to the rest of the report.

Appendices

An appendix is an "extra" section that appears after the proposal's main body. Any useful content that you feel is too large for the main part of the proposal or that you think would be distracting and interrupt the flow of the proposal should go into an appendix. Common examples of appendix-appropriate material are large tables of data, big chunks of sample code, fold-out maps, background that is too basic or too advanced for the body of the report, or large illustrations that just do not fit in the main body.

Use separate appendices for each item or category of items, and label each one alphabetically, as "Appendix A: (descriptive title of contents)" and so on. If you've got only one appendix, continue the proposal's page numbering scheme. If you have multiple appendices, you can number each appendix's pages separately, as A-1, A-2, and so on.

Information Sources

If your proposal quotes, paraphrases, or summarizes information that came from outside sources, cite the sources appropriately in the main text and include bibliographic information in a separate section at the proposal's end. Use whatever citation format is appropriate for your audience's profession and field. Common formats include IEEE, MLA, APA, CSE, Chicago, and Turabian.
Chapter Objectives

Upon completion of this chapter, readers will be able to:

1. Recognize the standard components of a front cover, back cover, and title page.
2. Recognize the common front matter of a book including edition notices, disclaimers, trademarks, warranties, safety notices, and communication statements.
3. Recognize the common organization strategies of books including tables of contents, tables of figures, a preface, and body chapters.
4. Explain and apply typical book layout and design.

Book Design Overview

The following provides an overview of the typical components of a printed technical book and the typical content, format, style, and sequence of those components. Certainly, no single user guide, technical reference manual, quick-reference document, or other such document would actually have all of these components designed and sequenced in precisely the way you are about to read. Instead, this review will give an overview of the possibilities—let's say the range of possibilities.

Before you begin reading the following, grab a number of hardware and software books so that you can compare their content, style, format, and sequencing to what is discussed here.

For even more detail than you see here, consult these two standard industry resources:


Front and Back Covers

Product documents for paying customers usually have nicely designed front covers even if, on the inside, the book is bargain basement in terms of its quality. On the front cover, you will typically see some or all of the following:

- Company name
- Product name
- Product platform or operating system
- Product version and release numbers
- Book title
- Company or product logos
- Trademark symbols
- Artwork
- Book order number
- Company or product slogan

It can be challenging to figure out a good format for the company name, product name, and book title. Sometimes, these can amount to a whole paragraph of text! Companies are quite divided on whether to indicate version and release numbers on front covers—some do; some don't. Almost always, however, you'll see the platform indicated—whether the product is for the Macintosh, the PC, UNIX, and so on.

The back cover of hardcopy user guides and manuals is usually very simple. Typically, it contains the book order number, the name of the company with appropriate trademark symbols, a copyright symbol and phrasing as to the ownership of the book, and a statement as to which country the book was printed in. You'll also find bar codes on the back cover. See if your software can generate a bar code—you just access the bar code utility and type in the book order number, and the utility generates the bar code.
Title Page

The title page is typically a duplicate of the front cover, but with certain elements omitted. Typically omitted are the artwork, company or product logos, and slogans. Some technical publications omit the title page altogether because of the seemingly needless duplication. (And in a print run of 20,000 copies, a single page means a lot!)

Edition Notice

The edition notice is typically the first instance of regular text in a technical publication, although it is typically in smaller type. It occurs on the backside of the title page. If the technical publisher is taking the lean-and-green approach and eliminating the title page, the edition notice will appear on the backside of the front cover.

No one likes to read fine print, but take a look at the statements typically included in an edition notice:

- **Date of publication**: included not only is the year but sometimes even the month that the book was published.
- **Edition number**: whether the book is a first, second, or third edition.
- **Product applicability**: the edition notice typically indicates which platform, version, and release number of the product the book applies to.
- **Full title of the book**: shown in italics.
- **Disclaimers**: shockingly, product manufacturers will make statements to the effect that they do not guarantee the book is technically correct, complete, or free from writing problems or that the product is free from minor flaws or that it meets the needs of the customer. You’ll be able to find additional disclaimers beyond these as well.
- **Copyright symbol and statement**: you’ll see the circle-C copyright symbol © and some statement warning readers not to copy the book without permission.
- **Copyright permissions**: the high-tech world often moves so rapidly that instead of creating their own versions of a product component and its corresponding documentation, companies will simply buy the code or design and the rights to reprint the documentation as well. This usually entails copyright acknowledgement in the edition notice (although if a lot of borrowing has happened, publishers must get creative about where to put all these acknowledgements).
- **Reader responses**: sometimes, the edition notice will include some encouragement to customers to contact the company about product or documentation concerns. Instructions on how to contact the company are sometimes included in the edition notice. Included also is often a rather unfriendly statement that any customer communication becomes the property of the company.
- **Trademarks**: some technical publications list known trademarks in the edition notice. This includes both the company’s own trademarks and the trademarks of other companies referenced in the book. With the explosion of new products in the high-tech world, and thus the explosion of trademarks, some publications essentially throw up their hands and insert a simple statement that any references to trademarked product names are owned by their respective companies.

Disclaimers

See the previous section on edition notices, where disclaimers are usually tucked away. If a product or its publication needs a whole separate page for its disclaimers, I'm not buying it!

Trademarks

Although many companies do list their own and other companies’ trademarks in the edition notice, some prefer to list them on a separate page, just after the edition notice. These placement decisions are almost strictly the province of company attorneys; as a writer, you may have to comply no matter how bad the the decision is in terms of book design or writing style. Remember, you list only those trademarked product names that occur in that particular book.

You'll notice that some publications go to extreme measures with trademarks: they'll asterisk or footnote the first, or even every occurrence of a trademarked product name. But again, these are directives of company attorneys unto which technical writers must resign themselves, however sadly.

Warranties
These are the "guarantees" that the company will support concerning its product. Sometimes these are published in the front matter of the book; but, more appropriately from a book-design standpoint, they are printed on a separate card and inserted in the shrinkwrap of the book or the product. Again, as with edition notices, this is text you simply bring in as "boilerplate" and position in the right place within the book.

However, you should be aware that companies sometimes maintain multiple versions of edition notices, safety notices, warranties, communication statements, and other such. As a writer, you must make sure that you are using the right version (and, in finding out which is correct, you'll have a chance to get out and meet lots of new people in the company!). And whatever you do, don't change the text of these boilerplate items, however horribly they are written. Changes typically must be approved by company attorneys (who typically do so begrudgingly and only after many efforts on your part and after much time has passed).

**Safety Notices**

Hardware products typically have a section of safety notices at the front of their books. These may occur as a subsection of the preface, for example, or as a separate section in their own right. These sections typically bring together all of the danger, warning, and caution notices that occur throughout the book and arrange them in some sort of logical way. But even with this up-front alert, hardware books still place the individual notices at the points where they apply.

**Communication Statements**

Hardware books also require communications statements as stipulated by the governments of the countries to which these products are shipped. In the U.S., the FCC requires certain communications statements depending on the "class" of the hardware product. As a writer, you must be careful to use the right communication statement for the product you are documenting—and not to edit the statement in any way (holy legal words!).

**Table of Contents**

The table of contents (TOC) usually contains at least a second level of detail (the first-level headings in the actual text) so that readers can find what they need more precisely. Writers, editors, and book designers typically argue about the sequencing of the TOC. In terms of usability, it's much better to have the TOC as close to the front of the book as possible, if not at the very first of the book. In terms of legalities, however, people worry that all those communication statements, warranties, copyrights, trademarks, and safety notices should come first. In those places where usability wins out, books use every tactic they can to get this legalistic material out of the front matter: warranties are put on separate cards and shrink-wrapped with the book or product; warranties, communication statements, trademarks, and other such may be dumped in appendixes.

**List of Figures**

Technical manuals for ordinary users typically don't have lists of figures. In fact, the figures themselves typically do not have full-blown figure titles. But this isn't to say that a list of figures has no place in technical manuals. It all depends on the reader and the reader's needs—and the content of the book as well. If the book contains tables, illustrations, charts, graphs, and other such that readers will want to find directly, the figure list is in order.

**Preface**

The function of the preface is to get readers ready to read the book. It does so by:

- characterizing the content and purpose of the book
- identifying or even briefly describing the product the book supports
- explaining the type of reader for whom the book is meant
- outlining the main contents of the book
- showing any special conventions or terminology used in the book
- providing support and marketing numbers, and other such

In traditional book publishing, the preface comes before the table of contents; but as discussed previously in the table of contents section, technical publishing people want the TOC to come earlier in the book for usability reasons.
Body Chapters

Oh yes, and there is actual text in these books—it isn't all front matter! Little else to say here other than most technical books have chapters or sections, and, in some cases, parts.

Appendixes

As you know, appendixes are for material that just doesn't seem to fit in the main part of a book but can't be left out of the book either. Appendixes are often the place for big unwieldy tables. Some technical publications have things like warranties in the appendixes. In terms of format, an appendix is just like a chapter—except that it is named "Appendix A" or some such, and the headers and footers match that different numbering and naming convention (A-1, A-2, and so on for pages in Appendix A).

Glossary

Some technical publications include a section of specialized terms and their definitions. Notice that most glossaries use a two-column layout. Typically, each term and its definition make up a separate paragraph with the term lowercased (unless it is a proper name) and in bold, followed by a period and then the definition in regular roman. Notice too that definitions are typically not complete sentences. Multiple definitions are typically identified by arabic numbers in parentheses. Glossary paragraphs also contain See references to preferred terms and See also references to related terms.

Index

Indexes are also typically two-column and also contain See references to preferred terms and See also references to related terms.

Reader-Response Form

Before the rise of the Internet and social media, some technical publications contained a hardcopy form to enable readers to send in comments, questions, and evaluation of the book. Of course, it turns out that these forms more often elicit complaints about faulty function in the product that the book documents. With the rise of the Internet, these forms have gone online, and books merely point to their location online.

Book Design and Layout

Typically, user guides and manuals produced by hardware and software manufacturers are designed in a rather austere and spartan way. High-tech companies develop new versions and releases of their product sometimes every nine months. In this context, sophisticated design is just not practical. Here are some of the typical layout and design features you'll see:

- Page size is often determined by packaging considerations as well as by standard page sizes available with printing companies. When page size is not a constraint, some companies will use the 8.5 × 11-inch page size—this makes production much easier for writers.
- Pages are typically designed with alternating right and left pages. The footer for the left (even) page starts with the page number and ends with the title of the book. The footer for the right (odd) page starts with the title of the chapter and ends with the page number.
- Practice is mixed on whether page numbering is consecutive throughout the book or by-chapter.
- Unless pages are rather small, the hanging-head design of headings in relation to pages is quite common in technical manuals. The hanging indent is usually one inch to one-and-a-half inches.
- Fonts are often 12-point Times New Roman for body text and Arial for headings. Standard line spacing and word spacing are used.
- Margins are fairly standard, one to two inches all the way around. Typically, an extra half-inch is used on inside margins to allow for binding.
- Typically, color is not used in these manuals and guides, usually out of cost and efficiency considerations.
Page Design
David McMurrey and Jonathan Arnett

Chapter Objectives

Upon completion of this chapter, readers will be able to:

1. Explain and apply design guidelines for heading and list use in technical documents.
2. Explain and apply design guidelines for including notices in technical documents.
3. Explain and apply design guidelines for table and figure use in technical documents.
4. Explain and apply design guidelines for text highlighting and alignment in technical documents.
5. Explain and apply design guidelines for font and color in technical documents.

Common Page Design

Page design means different things to different people, but here it will mean the use of typography and formatting such as you see in professionally-designed documents.

Our focus here is technical documentation, which implies modest, functional design.

For even more detail than you see here, consult these two standard industry resources:


Headings

The following presents some of the standard guidelines on headings.

- Insert plenty of headings, perhaps one heading for every two to three paragraphs. Avoid overkill, though: lots of headings with only one or two sentences per heading does not work.
- Indicate a heading's level through design. Use type size, type style, color, boldness, italicization, and alignment to make a heading's level obvious. (“Levels” of headings are like levels in an outline: Level 1 corresponds to the large, capitalized roman numerals; Level 2 to the capital letters; Level 3 to the arabic numerals; Level 4 to the lower-case roman numerals; and so on.)
- Limit the levels of heading. Most documents only need three or fewer levels of heading; more levels can confuse your readers.
- Describe the sections' contents with specific language. Vague headings like "Technical Background" don't tell anybody anything.
- Use parallel phrasing. Parallel headings tell readers if the sections are similar to each other.
- Avoid "lone headings." If you have one heading, you should use a second. It's the same concept as having an "A" without a "B" or a "1" without a "2" in outlines.
- Avoid "stacked headings" (two or more consecutive headings without text in between).
- Don't use a pronoun to refer to a heading. If you have a heading like "Configuring the Software," don't follow it with a sentence like "This next phase..."
- Consider the "hanging-head" format for major headings. In this design, some or all of the headings are on the left margin, while all text is indented one to two inches. This format will make headings stand out more and reduce the main text's line length.
- Consider using "run-in" headings for your lowest-level headings. In this design, the heading "runs into" the beginning of a paragraph and ends with a period. You can use some combination of boldness, italics, or color for these headings. This format avoids the problem of lower-level headings blending in with each other.

Lists
Lists are useful tools for emphasizing important points, enabling readers to scan text rapidly, and providing more white space. The following presents some of the standard guidelines on lists.

- Use numbered lists to show sequence, order, or hierarchy. Use bulleted lists for items that can appear in any order.
- Use standard numbered- and bulleted-list formats. They are built into word-processing programs, and HTML has ordered- and unordered-list tags.
- Use parallel phrasing for lists’ contents.
- Introduce all lists with lead-in text; don’t start a list immediately after a heading.
- Unless your organization’s style overrides, punctuate list items with a period only if they are complete sentences or have embedded dependent clauses.
- Be consistent with using initial caps or lower-case letters on the first words of list items.
- Use different symbols for the second levels of nested lists. For numbered lists, use lowercase letters. For bulleted lists, use bolded en dashes or empty-centered circles. In either case, make sure that nested items align to the text of the previous level.
- Avoid using too many lists or overstuffing lists. Seven to ten items is generally about the maximum number of items.

Notices

Notices are specially-formatted chunks of text that alert readers to special points, exceptions, potential problems, or danger. The following presents some of the standard guidelines for notices.

- Make notices more prominent and noticeable as they become more severe. Consider using this standard hierarchy:
  - “Danger” for situations that could involve severe injury or death
  - “Warning” for situations that could involve minor injury
  - “Caution” for situations that could involve equipment damage, data loss, or a threat to a procedure’s success
  - “Note” for exceptions or situations that do not require the preceding tags
- Whatever notice design you use, avoid using long strings of bold text, italics, capital letters, or combinations of these. In addition to telling readers to do or not do something, explain three things:
  - under what conditions they should use the notice
  - what will happen if they ignore the notice
  - how to recover if they ignore the notice
- Make notices’ text succinct, but not at the expense of clear writing. Avoid telegraphic writing style (omitting articles like a, an, the) in notices.
- In numbered lists, align notices to the text of the list items they apply to. Put notices in two places:
  - before the step in which the potential problem exists
  - at the beginning of the entire procedure

Figures

Figures are illustrations, drawings, schematics, photos, and other visual materials. The following presents some of the standard guidelines on figures.

- In the text before each figure appears, provide a cross-reference to the figure.
- If you include a label and caption, place them below each figure.
- Omit labels and captions if they have no vital function and are not needed (for example, in instructions when the figures are closely related to the individual steps).

Tables

Tables are like lists, which were discussed previously, but are more structured and formal. In your text, look for repeating pairs, triplets, or quadruplets of items that can be formatted as tables. For example, a series of terms and definitions is a classic use for tables. The following presents some of the standard guidelines for tables.

- Look for repeating groups of items in your text that you can format as tables.
- In the text before each table appears, provide a cross-reference to the table.
- Include a table title unless the content of the table is utterly obvious and the table contains few items. Place the table title above the table, or make it the top row of the table.
• Use column and row headings (or both) to define the contents of the columns and rows. Consider highlighting these headings.
• Left-align text columns (unless the contents are simple alphabetic characters). Left-align text columns with their headings.
• Right-align or decimal-align numerical data, and center it under its heading.
• Put standard measurement units (ft, mm, gal.) in the column or row heading rather than with each item in the column or row.
• Briefly discuss the main trend in the table—what you want readers to notice.

Highlighting

Software documentation typically uses a lot of highlighting. Highlighting here refers to bold text, italics, alternate fonts, capital letters, quotation marks, and other typographical tricks used to call attention to text. The following presents some standard guidelines for highlighting.

• Establish a plan for using highlighting, and apply it consistently.
• Use highlighting for specific, functional reasons. Avoid too much highlighting, and avoid complicated highlighting schemes.
• Consider using this fairly standard highlighting scheme:
  o For simple emphasis, use italics.
  o Use bold for commands, on-screen buttons and menu options.
  o Use italics for variables for which users must supply their own words.
  o Use an alternate font for text displayed on screen or text that users must type in.
  o For screen and field names, use the capitalization style shown on the screen but no other highlighting.
  o Use an initial cap for key names but no other highlighting.
  o For extended emphasis, use the notice format.

Margins, Indentation, & Alignment

As mentioned in the section on headings, you may wish to indent main text one to two inches while leaving headings on the left margins. This style does two things: it makes the headings stand out, and it shortens the main text's line length.

Fonts & Color

Here are some suggestions concerning fonts and color:

• Limit the number of main fonts that appear in a document to two. For example, you might use Arial for headings and Times New Roman for body text.
• Use only one alternate font, at most two. For example, you might use Arial for headings, Times New Roman for body text, and Courier New for text that users will see onscreen or that users must type in.
• If you use color, use it minimally and consistently. For example, if you have black text on a white background, you might select another color for headings. You might use that same color for figure and table titles as well as the tags for notices (the actual "Note," "Warning," "Caution," and "Danger" labels on notices).
• Avoid unusual combinations of background and text colors. For example, purple or red text on a black background is unreadable. Stick with black text on a white or gray background unless there is a strong, functional reason for some other color combination.
Headings

David McMurrey & Cassandra Race

Chapter Objectives

Upon completion of this chapter, readers will be able to:

1. Identify the uses of headings.
2. Distinguish between the different levels of headings.
3. Evaluate the use of headings in technical documents.
4. Use the Styles tool in Microsoft Word to create custom headings.
5. Create and use headings in your own documents.

One of the most useful characteristics of technical writing is the use of headings.

Headings are the titles and subtitles you see within the actual text of much scientific, technical, and business writing. Headings are like the parts of an outline that have been pasted into the actual pages of the document.

Headings are an important feature of technical writing: they alert readers to upcoming topics and subtopics, help readers find their way around in long reports and skip what they are not interested in, and break up long stretches of straight text. They make text easy to navigate and enable the reader to find information they need quickly.

Headings are also useful for you, the writer. They keep you organized and focused on the topic. When you begin using headings, your impulse may be to slap in the headings after you've written the rough draft. Instead, visualize the headings before you start the rough draft, and plug them in as you write.

Take a look at this page from HealthyPeople.gov: Environmental Health

Examine the page, and observe how the use of headings makes the document readable and accessible. It's easy to see what each section is about, and you can quickly jump to sections that interest you.

"Well-designed headings can help not only readers but also writers understand the organization of a document."

General Guidelines for Headings

In this chapter, you are encouraged to use a specific style of headings. If you want to use a different style, contact your instructor. Here are some specific guidelines on headings (see the figures at the end of this chapter for illustrations of these guidelines):

- Use headings to mark off the boundaries of the major sections and subsections of a report.
- Until you become confident in the use of heading styles, use exactly the design for headings described here and shown in the illustrations in this chapter. Use the same spacing (vertical and horizontal location), capitalization, punctuation, and typography (bold, italics, etc.)
- Try for 2 to 3 headings per regular page of text. Don't overdo headings: for example, a heading for each of a series of one- or two-sentence paragraphs. (Also, you don't need a heading per paragraph; normally, an individual heading can apply to multiple paragraphs.)
- For short documents, begin with the second-level heading; skip the first-level.
- Make the phrasing of headings parallel. In the following illustration, notice that the second-level headings use the how, what, when, where, why style of phrasing. The third-levels use noun phrases. (Check out this tutorial on Parallel Structure from the Purdue OWL)
- Make the phrasing of headings self-explanatory: instead of "Background" or "Technical Information," make it more specific, such as "Physics of Fiber Optics."
- Make headings indicate the range of topic coverage in the section. For example, if the section covers the design and operation of a pressurized water reactor, the heading "Pressurized Water Reactor Design" would be incomplete and misleading.
- Avoid "lone" headings—any heading by itself within a section without another like it in that same section. For example, avoid having a second-level heading followed by only one third-level and then by another second-level. (The third-level heading would be the lone heading.)
- Avoid "stacked" headings—any two consecutive headings without intervening text.
- Avoid pronoun reference to headings. For example, if you have a third-level heading "Torque," don't begin the sentence following it with something like this: "This is a physics principle...."
- When possible, omit articles from the beginning of headings. For example, "The Pressurized Water Reactor" can easily be changed to "Pressurized Water Reactor" or, better yet, "Pressurized Water Reactors."
- Don't use headings as lead-ins to lists or as figure titles.
- Avoid "widowed" headings: that's where a heading occurs at the bottom of a page and the text it introduces starts at the top of the next page. Keep at least two lines of body text with the heading, or force it to start the new page.

Headings: Specific Format and Style

The style and format for headings shown in this chapter is not the "right" or the "only" one, just one among many. Many technical writers must write according to a "house" style. Most organizations expect their documents to look a certain way. Using the style and format for headings described here gives you some experience with one of the key requirements in technical writing—writing according to "specifications."

To see the "house style" for headings—the style and format for headings you will use—see the illustrations in this chapter. Pay close attention to formatting details such as vertical and horizontal spacing, capitalization, use of bold, italics, or underlining, and punctuation. Notice that you can substitute bold for underlining.

Headings occur within the body of a document. Don't confuse headings with document titles. Although titles may look like first-level headings in smaller documents, think of them as separate things. Now, here are the specifications for headings in this chapter.
Note: To make things less complicated, consider the document title as a title not a first-level heading. They certainly look the same, except that the title could be prefaced by a roman numeral. In short documents such as those you write for technical writing classes, use a centered title and then start with second-level headings in the body of the document.

First-Level Headings

First-level headings are for formal reports with multiple sections (or "chapters"). If you are writing a brief document, start with second-level headings in the body of the document. Follow these guidelines for first-level headings:

- Make first-levels all-caps.
- Use Roman numerals with first-levels.
- Bold the entire heading including the Roman numeral.
- Make first-levels centered on the page.
- Start a new page whenever you have a first-level heading.
- Begin first-levels on the standard first text line of a page.

Note: In short documents such as those you write for technical writing classes, use a centered title and then start with second-level headings in the body of the document.

Second-Level Headings

In smaller documents (such as a two-page set of instructions), first-level headings are too much. Start with second-level headings in the body of these smaller documents. Follow these guidelines for second-level headings:

- Make second-levels headline-style caps (every main word).
- Use bold on second-levels.
- Do not include outlining apparatus such as "A." or "B." or "1." or "2." with second-levels.
- Make second-levels flush left.
- Leave the equivalent of 2 blank lines between previous text and second-levels.
- Leave the equivalent of 1 blank line between second-levels and the following text.

Note: If you prefer to make third-level headings standalone like second-levels, they may not be visually distinct enough from second-levels. If so, put a top border on second-levels, as you can see in this chapter.

Third-Level Headings

Third-level headings are "run in to" the paragraph they introduce. Follow these guidelines for third-level headings:

- Make third-levels sentence-style caps.
- Use bold for third-levels including the period.
- End third-levels with a period, which is also bold.
- Do not include outlining apparatus such as "A." or "B." or "1." or "2." with third-levels.
- Either indent third-levels standard paragraph indentation, or just start third-levels flush left.
- Do not make third-levels a grammatical part of sentences that follow.
- Whether third-levels are indented or not, start all following lines flush left. Don't indent the entire paragraph.
- Use the standard spacing between paragraphs for paragraphs that contain third-levels.

Note: If you need a fourth level of heading, consider using italics instead of bold on the run-in heading format

Using Word-Processing Styles for Headings

If you manually format each individual heading using the guidelines presented in the preceding, you'll find you're doing quite a lot of repetitive work. The styles provided by Microsoft Word, OpenOffice Writer, and other software save you this work. You simply select Heading 1, Heading 2, Heading 3, and so on. You'll notice the format and style are different from what is presented here. However, you can design your own styles for headings. Here's a video tutorial that will show you quickly how to use the Styles feature in MicroSoft Word.

Styles in MS Word

Common Problems with Headings

When you design your own heading style, be careful about going overboard with fancy typographical elements. Also, continue to use the guidelines presented in this chapter; they apply to practically any design. And finally, use your heading design consistently throughout your document.
II. PRESSURIZED WATER REACTOR

This section of the report describes the key components of the pressurized light water reactor and explains their operation in the production of electricity.

Description of the Major Parts

In a pressurized water reactor (see Figure 1), the reactor cooling water entering the core is highly pressurized so that it remains below the boiling point. The water leaves the reactor to pass through steam generators where a secondary coolant is allowed to boil and produce steam to drive the turbine.

Figure 1. Schematic of a Pressurized Water Reactor. See V. A Guidebook to Nuclear Reactors, p. 78.

The key components in this process are the core, the reactor coolant system, the reactor vessel, the steam generators, and the pressurizer.

Core: The core is the active portion of the reactor providing the system. The core contains fuel assemblies that contain the fuel pellets.

Fuel: The fuel in the pressurized water reactor consists of slightly enriched uranium dioxide with a diameter of 0.325 mm. Special fuel pellets are designed to allow for thermal expansion [17, 2004].

Fuel rod: A fuel rod consists of a cylindrical tube made of Zircaloy, a steel-gray alloy that highly resistant to corrosion. The tube is 13.1 mm long with an outer diameter of 0.39 in and a 0.025-in thick wall. The tube is filled with fuel pellets and is sealed [10, 172].

OUTLINE

I. INTRODUCTION

II. PRESSURIZED WATER REACTORS

A. Description of the Major Parts
   1. Core
      a. Fuel
      b. Fuel rod
      c. Fuel assembly
   2. Control Rods
   3. Reactor Vessel
   4. Steam Generators
   5. Heat Exchangers
   6. Steam Drum
   7. Pressurizer

B. Production of Electricity
   1. Circulating water
   2. Separating steam
   3. Driving steam
   4. Producing electricity

III. THE NATURAL WEATHER PATTERNS

IV. THE MECHANISMS OF THE GREENHOUSE EFFECT

A. Natural Greenhouse Effect
B. Radiation Absorption by Carbon Dioxide and Water Vapor
C. Positive Feedback Mechanisms

V. HOW THE CARBON CYCLE WORKS

A. CO₂ from Fossil Fuel
B. Carbon Dioxide Produced by Different Fuels
C. Future Levels of Carbon Dioxide

IV. CLIMATIC EFFECTS OF INCREASED CO₂ CONCENTRATIONS

A. Changes in Local Weather Pattern
B. 1930s as Climate Analog
C. Drought
D. Increased Tropical Storm Activity
E. Sea Level Increase

V. REDUCING THE GREENHOUSE EFFECT

A. Natural Weather Patterns
B. Mechanisms of the Greenhouse Effect
C. Carbon Cycle
D. Climatic Effects of Increased CO₂ Concentrations
E. Ways to Reduce the Greenhouse Effect
A few more common heading problems: nonstandard capitalization, incorrect subordination, and "stacked" heads. There's nothing "wrong" about the caps style used in the first version; it's just not the "house" style. Subordination refers to the level of headings. "Stacked" headings occur when there is no text between two consecutive headings.

Want some more information on using headings? The Purdue OWL has a great guide on using APA style to create your headings. This style is also compatible with the styles noted for scientific journals. Check out the APA Headings page!

Practice what you've learned! Complete the following activities to reinforce what you have learned about headings.

Activity 1: Locate a professional journal in your chosen major field, and locate the guidelines for writers who want to submit articles to that journal. What format is given for the use of headings?

Activity 2: In that same journal (you may have to actually visit the library...or use the university's data base) examine the use of headings. Can you explain in your own words how the headings work to organize the article? See if you can find examples of headings that don't reflect the guidelines in this chapter.
Chapter Objectives

Upon completion of this chapter, readers will be able to:

1. Distinguish between different types of lists in technical documents and explain appropriate situations for using each.
2. Explain and apply general guidelines for formatting different types of lists.
3. Use Microsoft Word to style lists appropriately.

Bulleted and Numbered Lists

Lists are useful because they emphasize selected information in regular text. When you see a list of three or four items strung out vertically on the page rather than in normal paragraph format, you are likely to pay more attention to it. Certain types of lists also make for easier reading. For example, in instructions, it is a big help for each step to be numbered and separate from the preceding and following steps. Lists also create more white space and spread out the text so that pages don't seem like solid walls of words.

Like headings, the various types of lists are an important feature of professional technical writing: they help readers understand, remember, and review key points; they help readers follow a sequence of actions or events; and they break up long stretches of straight text.

Your task for this chapter is to learn about the different types and uses of lists and to learn their specific format and style.

"Lists emphasize important points and help readers follow a sequence."

Lists: General Guidelines

In technical-writing contexts, you must use a specific style of lists, like the one presented here.

- Use lists to highlight or emphasize text or to enumerate sequential items.
- Use exactly the spacing, indentation, punctuation, and caps style shown in the following discussion and illustrations.
- Make list items parallel in phrasing. See this tutorial from commnet.edu's Guide to Grammar and Writing on Parallel Structures.
- Make sure that each item in the list reads grammatically with the lead-in.
- Use a lead-in to introduce the list items and to indicate the meaning or purpose of the list (and punctuate it with a colon).
- When two items are alternatives, use a bulleted list (with or between). Do not use numbered lists for OR-ed items. For three or more alternatives, indicate that in the list lead-in.
- When a separate notice or explanatory paragraph follows a item, indent that separate material to the text of the parent list item.
- Avoid using headings as lead-ins for lists.
- Avoid overusing lists; using too many lists destroys their effectiveness.
- Use similar types of lists consistently in similar text in the same document.
- Use the "styles" function in your software to create vertical lists rather than constructing them manually.

Guidelines for Specific Types of Lists

It's difficult to state guidelines on choosing between the various kinds of lists, but here's a stab at it:
Most importantly, use numbered lists for items that are in a required order (such as step-by-step instructions) or for items that must be referred to by item number. Use bulleted lists for items that are in no required order.

With in-sentence lists, there are no conventions when to use letters (a), (b), and so on, as opposed to numbers (1), (2), and so on. If you are in a numbered list and need a sublist, use lowercase letters, to contrast with the numbers. Otherwise, there seem to be no widely agreed-upon guidelines—just be consistent!

Use vertical lists as opposed to in-sentence lists when you want the emphasis provided by the vertical presentation. In-sentence lists provide only minimal emphasis; vertical lists provide much more.

Within an individual report, use in-sentence lists and vertical lists consistently for similar situations. For example, if you have topic overviews for each section of a report, use in-sentence or vertical lists for the overview—but don’t mix them for that particular use.

Common Problems with Lists

Problems with lists usually include the following:

- Mix-up between numbered and bulleted lists
- Lack of parallel phrasing in the list items
- Use of single parentheses on the list-item number or letter
- Run-over lines not aligned with the text of list items
- Lack of a strong lead-in sentence introducing list items, and lack of a colon to punctuate lead-ins
- Inconsistent caps style in list items
- Unnecessary punctuation of list items
- Inconsistent use of lists in similar text
- Lists that have too many items and need to be subdivided or consolidated

Format for Lists

Use the following for specific details on the capitalization, typography (bold, underlining, different fonts, different types sizes), and spacing for each type of list.

In-sentence lists

Use these guidelines for in-sentence lists:

1. Use a colon to introduce the list items only if a complete sentence precedes the list. In this problem version, the colon breaks right into the middle of a sentence (how dare it!):

   **Example**
   
   | Problem: | For this project, you need: tape, scissors, and white-out. |
   | Revision: | For this project, you need tape, scissors, and white-out. |

   - Use both opening and closing parentheses on the list item numbers or letters: (a) item, (b) item, etc.
   - Use either regular Arabic numbers or lowercase letters within the parentheses, but use them consistently. (Do not punctuate either with periods.) Use lowercase for the text of in-sentence lists items, except when regular capitalization rules require caps.
   - Punctuate the in-sentence list items with commas if they are not complete sentences; punctuate with semicolons if they are complete sentences.
   - Use the same spacing for in-sentence lists as in regular non-list text.
   - Make the in-sentence list occur at the end of the sentence. Never place an in-sentence list introduced by a colon anywhere but at the end of the sentence, as in this example:

   **Example**
   
   | Problem: | The following items: tape, scissors, and white-out are needed for this project. |
   | Revision: | The following items are needed for this project: tape, scissors, and white-out. |

The purpose of the *How to Collect Minerals Guide* is to get you started without overwhelming you with too much information. You can begin mineral collecting after you have learned (1) how to identify the difference between minerals and rocks, (2) how to select mineral collecting tools, (3) how to identify different types of minerals, (4) how to identify a good mineral-collecting location, and (5) how to collect minerals.

No colon after “learned”—the sentence is completed by the list items.

Both sides of the parenthesis are used.

List items are parallel in phrasing. (They could have been “identifying..., selecting...,” and so on.)
Simple vertical lists

Use these guidelines for simple vertical lists:

1. Introduce the list with a lead-in phrase or clause (the lead-in need not be a complete sentence; the list items can complete the grammar started by the lead-in). Punctuate the lead-in with a colon.
2. Use simple vertical lists when the list items do not need to be emphasized and are listed vertically merely for ease of reading.
3. Use sentence-style capitalization on list items.
4. Begin run-over lines under the text of the list item, not the regular left margin. This format is called the hanging-indent style.
5. Use the equivalent of a blank line above and below vertical lists.
6. Either start list items flush left or indent them no more than half an inch.
7. Use "compact" list format if you have just a few list items only a single line each. In the compact format, there is no vertical space between list items. Use a "loose" format—vertical space between list items—if the list items are multiple lines long.
8. Punctuate list items only if they are complete sentences or verb phrases that complete the sentence begun by the lead-in (and use periods in these two cases).
9. Watch out for lists with more than 6 or 8 list items; for long lists, look for ways to subdivide or consolidate.
10. When possible, omit articles (a, an, the) from the beginning of non-sentence list items.

Now that you know the three types of rocks to look for, it's time to gather or purchase the necessary tools:

- Collecting bag
- Gloves
- Handheld rock pick
- Hand trowel
- Hard hat
- Safety goggles
- Rock chisel

Bulleted lists

Use these guidelines for bulleted lists:

1. Introduce the list with a lead-in phrase or clause (the lead-in need not be a complete sentence; the list items can complete the grammar started by the lead-in). Punctuate the lead-in with a colon.
2. Use bulleted lists when the list items are in no necessary order but you want to emphasize the items in the list.
3. Use asterisks or hyphens if you have no access to an actual bullet. Use your software’s list styles for these vertical lists.
4. Use sentence-style capitalization on list items.
5. Begin run-over lines under the text of the list item, not the bullet. This format is called the hanging-indent style.
6. Use 0.25 inches for the hanging-indent (between the bullet and the text of the list item).
7. Use the equivalent of a blank line above and below vertical lists.
8. Either start list items flush left or indent them no more than half an inch.
9. Use "compact" list format if you have just a few list items only a single line each. In the compact format, there is no vertical space between list items. Use a "loose" format—vertical space between list items—if the list items are multiple lines long.
10. If you have sublist items in a bulleted list, use a less prominent symbol for a bullet (such as a dash or clear disc), and indent the sublist items to the text of the higher-level list items. (It is certainly possible to have subnumbered items within a bulleted list, in which case indent them the same as subbulleted items.)
11. Punctuate bulleted list items only if they are complete sentences or verb phrases that complete the sentence begun by the lead-in (and use periods in these two cases).
12. Watch out for bulleted lists with more than 6 or 8 list items; for long bulleted lists, look for ways to subdivide or consolidate.
13. Avoid single-item lists. It’s just like traditional outlines: if you have a 1 or an a, you need a 2 or a b.
14. When possible, omit articles (a, an, the) from the beginning of list items.

Two of the utility-scale wind turbines sponsored by DOE are commercially available:

- Advanced Wind Turbines AWT-26
- Zoned Systems Z-40
- New World Power Technology Company
- New World Grid Power
- Flowind Corporation
Numbered lists

Use these guidelines for numbered lists:

1. Introduce the list with a lead-in phrase or clause (the lead-in need not be a complete sentence; the list items can complete the grammar started by the lead-in). Punctuate the lead-in with a colon.
2. Use numbered lists when the list items are in a required order (for example, chronological) or must be referenced from somewhere else in the text.
3. Type the number followed by a period; do not use parentheses on the number. Use your software's list styles for these vertical lists.
4. Use sentence-style capitalization on list items.
5. Use "compact" list format if you have just a few list items only a single line each. In the compact format, there is no vertical space between list items. Use a "loose" format—vertical space between list items—if the list items are multiple lines long.
6. Begin run-over lines under the text of the list item, not the number. This format is called the hanging-indent style.
7. Use 0.25 inches for the hanging-indent (between the number and the text of the list item).
8. Use the equivalent of a blank line above and below vertical lists.
9. Either start list items flush left or indent them no more than half an inch.
10. If you have sublist items in a numbered list, use lowercase letters, and indent the sublist items to the text of the higher-level list items. (It is certainly possible to have subbullet items within a numbered list, in which case indent them the same as subnumbered items.)
11. If you have sublist items, use a less prominent symbol for a bullet (such as a dash or clear disc) or a lowercase letter for subnumbered items, and indent the sublist items to the text of the higher-level list items.
12. Punctuate numbered list items only if they are complete sentences or verb phrases that complete the sentence begun by the lead-in (and use periods in these two cases).
13. Watch out for numbered lists with more than 8 or 10 list items; for long numbered lists, look for ways to subdivide or consolidate.
14. Avoid single-item lists. If you have a 1 or an a, you need a 2 or a b.
15. When possible, omit articles (a, an, the) from the beginning of list items.

Beginning a Basic Scan

Lead-in to the list punctuated with a colon

After accepting the default options for ScanDisk, begin your scan by doing the following:

1. Select the drive you want to check for errors by clicking once on the drive.
2. Select the type of test you want to run.
3. Click the Start button.

ScanDisk will begin checking your hard drive for errors and upon completion will display the results of your hard drive scan.

Vertical space above and below the list

List items end with periods; they are complete sentences

Two-column lists

Use these guidelines for two-column lists:

1. Use two-column lists when you have a series of paired items, for example, terms and definitions.
2. Introduce the list with a lead-in sentence that is a complete sentence. Punctuate the lead-in sentence with a colon.
3. Column headings are optional; if used, align them to the left margin of the text of the columns.
4. Either start list items flush left or indent them no more than half an inch.
5. Use "compact" list format if you have just a few list items only a single line each. In the compact format, there is no vertical space between list items. Use a "loose" format—vertical space between list items—if the list items are multiple lines long.
6. Use sentence-style capitalization for both columns.
7. Punctuate items in the columns only if they are complete sentences.
8. Left-align the items in both columns.
9. When possible, omit articles (a, an, the) from the beginning of list items.

Note: The best way to create a two-column list is to use a table and hide the grid lines. If you use tabs between the columns, you are in for a mess if the text changes at all.
Lists with run-in headings

One last little variation on lists is the vertical list with run-in headings or labels at the beginning of the items. This format is used extensively in this book. It's like another way of doing a two-column list.

You can use bold or italics for the actual run-in heading (italics is used in the figure).

**Stem Cell Development**

Stem cells are simply “primitive” cells occurring in an organism’s early developmental stages that give rise to other types of cells. There are three primary stem cell types:

- *Totipotent* – cells with the potential to form a complete organism or differentiate into any of its tissues or cells
- *Pluripotent* – cells with the potential to form many types of cells but not all needed for fetal development
- *Multipotent* – cells with the potential to develop into specialized cell types

**Nested lists**

A *nested* list contains two or more level of list items. Nested lists can contain every combination of list type: numbered list items (123...) with lowercase-letter sublist items (abc...), filled-disc bulleted list items with clear-disc or hyphenated sublist items; and other combinations of these.
7. Optionally, click **Delivery Options** and select one of the following delivery options:
   - Define the importance of a message
   - Confirm delivery of a message
   - Change the delivery priority of a mail message
   - Prevent copying or forwarding of a mail message
   - Spell check the message
   - Prevent receipt of out-of-office messages from others
   - Add a mood stamp to a mail message

8. Click **Send**.

Now here's another example of a nested list:

**Basic manicure steps.** Once you have these items at your workstation, you are ready to begin the manicure by following these steps:

*Note:* Unlike professional nail salons, MMD specialists do not cut the client’s cuticles during the manicure process. MMD abstains from this process for health and safety reasons, as it can cause the client pain as well as run the risk of infection or inflammation.

1. Remove old polish:
   a. Check to see if your client has any old polish on her nails; you need to remove this polish before you can begin the manicure process.
   b. Pour about 7 drops of acetone (from the acetone bottle) onto a cotton ball.
   c. Beginning at the base of the nail (the part that is farthest from you and closest to the client), press down with the cotton ball and pull it down to the tip of the nail. Repeat until you remove all polish from the nail.

Now that you are an expert on the types of lists you can use in your documents, check out this tutorial video for using features in your word processing program to create lists that are attractive and formatted appropriately.

Lists in MS Word
Special Notices
David McMurrey and Tamara Powell

Chapter Objectives

Upon completion of this chapter, readers will be able to:

1. Distinguish between the four most common types of special notices.
2. Explain and apply the appropriate use for each type of special notice.
3. Explain and apply standard format guidelines for each type of special notice.

Special Notices

Special notices are an important feature of professional technical writing: they highlight special information readers need to know to understand what they are reading, to accomplish what they want to do, to prevent damage to equipment, and to keep from hurting themselves or others.

Your task in this section is to learn the different types of special notices, their uses, and formats.

"Notices alert readers to the possibility of error, damage, or injury. They can also provide extra emphasis."

Guidelines for Specific Types of Notices

In this section, and in this course, you use a specific style of notices. If you want to use a different style, get with your instructor. Otherwise, follow these guidelines in planning and designing special notices—they are your "specs"!

1. Use special notices to emphasize key points or warn or caution readers about damage or injury.
2. Be careful to use the types of special notices precisely for their defined purposes. Use the four types of special notices in the following ways:
   - **Note**—To emphasize points or remind readers of something, or to indicate minor problems in the outcome of what they are doing.
   - **Warning**—To warn readers about the possibility of minor injury to themselves or others.
   - **Caution**—To warn readers about possible damage to equipment or data or about potential problems in the outcome of what they are doing.
   - **Danger**—To warn readers about the possibility of serious or fatal injury to themselves or others.

   Deciding on which type of notice to use is not an exact science. Don’t use a danger notice when a warning is more appropriate (the same as "crying wolf"). Also, use notices in a consistent way throughout a report. Do not create your own notices, such as putting "Important" in place of "Warning."

3. Place special notices at the point in text where they are needed. For example, place a caution or danger notice before discussing a step in which readers might hurt themselves.
4. Avoid having too many special notices at any one point in the text. Otherwise, the effectiveness of their special format will be lost. (If you have too many, combine them.)
5. Explain the consequences of not paying attention to the notice. State what will happen if the reader does not heed the notice.
6. Avoid all-caps for the text of any special notice. The examples in this section use bold or italics.

*Note:* Take a look around your garage or kitchen, and look at the special notices you see on products. You will see some variation, but these are likely to be dependent on specific industry standards.
Activity

Take pictures of the special notices around you and share them on the Padlet, below. Please remember that everything you share on the Padlet is public.

Access the Padlet

Format for Special Notices

Use the following for specific details on the capitalization, typography (bold, underlining, different fonts, different types sizes), and spacing for each type of special notice.

Note

Use the following format for simple notes:

1. Type the word "Note" followed by a colon. (Although the following examples use bold, consider using italics instead to prevent visual confusion with headings.)
2. Begin typing the text of the note one space after the colon. (But don't put the text of the note in bold or italics.)
3. Single space within the text of the note; skip one line above and below the note.
4. Start run-over lines on the regular left margin.
5. Align the note with the text to which it refers (as illustrated in the second example).
Testing the Drive

To test your new drive by reading a data CD:

1. Open the drive tray and place a CD on the tray.
2. Close the drive and wait a moment for the drive and CD to spin.
3. Click My Computer on your Windows desktop to view the available drives. You should see your new drive and drive letter.
4. Click the new drive to access the files on the CD.

*Note:* The drive letter you see as your new drive may vary depending on the number of hard drives installed on your system.

SEO Note Settings

To make general settings before you start working with SEO Note:

1. Open Settings > Settings from the menu. The General tab opens.
2. Define the standard format for your new notes: HTML, text, or RTF (Rich Text Format).
   *Note:* Because most word processors are able to read and write RTF documents, select RTF as standard note format. It allows you to insert HTML formatted text, web links and plain text.
3. Enable the three Auto save options. Your notes will automatically be saved when you switch to another application, minimize the window, or exit the application.
4. Enable Start with Windows if you want SEO Note to always start with Windows.

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Notes

Use the following format for multiple notes:

1. Use this format when you have so many notes that they would distracting to present individually.
2. Type the word "Notes" followed by a colon. Italicize the word "Notes," if possible.
3. Use a numbered list for the individual notes; in it, follow the rules for numbered lists. (Do not use bold or italics for the individual notes.)
4. Align the notes with the text to which they refer; skip the equivalent of one line above and below the notes.

5. Place the stage monitors center stage and facing the violinist.

6. Set up your microphones and microphone stands in front of the monitors where the vocalists will be standing.

   *Notes:*

   1. Avoid problems with the feedback by ensuring the vocalist is not placed in front of the speakers.
   2. Consider the length of your microphone cables and the location of your electrical outlets in the room.

Warning

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https://softchalkcloud.com/lesson/files/faNv0PgouhwsFO/4_SpecialNotices_print.html
Use the following format for warnings:

1. Type the word "Warning," italicize it, and follow it with a colon.
2. Either tab to beginning of the text of the warning, or use the hanging-indent format (which is much better). Try for 0.25 to 0.5 inches of space between the end of the warning label and the beginning of the text.
3. Use regular body font for the text of the warning notice (no bold, no italics, no all-caps, no color).
4. Align the warning notice with the text it refers to.
5. Skip the equivalent of one line above and below the warning notice.

---

**Prepare for New Brake Shoes.** To prepare the rear wheel assembly for the new brake shoes, perform the following tasks:

**Warning:** Wear a dust mask when cleaning brake components. Brake dust may contain hazardous materials and should not be inhaled.

1. Clean dirt and brake dust from backing plate and brake parts with aerosol brake cleaner.
2. Apply grease to the six flat friction points where the brake shoes touch the backing plate.

---

**Caution**

Use the following format for caution notices:

1. Type the word "Caution," follow it with a colon, and bold both the label and the colon.
2. Skip one line and begin the text of the caution aligned with the start of the caution label.
3. Singlespace the text of the caution; skip one line above and below the notice.
4. Align the caution notice with the text it refers to (in the preceding, the warning notice occurs within a numbered list and is indented accordingly).

1. **Pump the brake pedal until firm.**

2. **Check that the brake fluid level is between the maximum and minimum lines on the reservoir. Add or remove fluid accordingly.**

   **Caution:**
   Keep brake fluid from getting on painted surfaces as it can cause damage to the paint.

3. **Perform test drive.**

---

**Danger**

Use the following format for danger notices:

1. Type the word "DANGER" in all-caps. (Underline it, or use bold.)
2. Align the danger notice with the text it refers to.
3. Singlespace the text of the danger notice; skip one line above and below the danger notice.
4. Use bold on the text of the danger notice if you have it (but never all-caps).
5. If you have graphics capability, draw a box around the danger notice (including the label).
Lower the Vehicle. To lower the vehicle, perform the following:

1. Jack up rear of car with a hydraulic jack on a solid part of frame, remove the jack stands, and lower the car to ground.

   **DANGER:** Never work underneath a car that is only supported by a jack. Failure to support vehicle may result in death or severe injury if the vehicle falls from the jack.

2. Pump the brake pedal until firm.

3. Check that the brake fluid level is between the maximum and minimum lines on the reservoir. Add or remove fluid accordingly.

Other Formatting Issues

Here are some additional points to consider concerning special notices:

**Special alignment.** Special notices must align to the text to which they refer. For example, if you have a note that adds some special detail to something in a bulleted list item, you must align that note to the text of the bulleted item. Of course, if the note follows a bulleted list but refers to the whole list, then you can use the regular left margin.

**Single spaced text.** All of the examples and discussion in this unit are based on double spaced text. For single spaced text, use your document-design "eye" to decide on spacing. Leave either one blank lines between running text and special notices—depending on what looks best to you. (And of course both running text and the text of the special notices would be singlespaced.)

**Placement of special notices.** The standard rule is to place special notices before the point at which they are relevant. For example, you warn readers to back up all data before you tell them to reformat their hard drive. However, in practice this applies to serious special notices where great harm to data, equipment, or people is likely to ensue.

One technique used by very cautious writers (maybe those who have been burned) is to place all serious notices (warnings, cautions, and dangers) somewhere at the beginning of the document, and then repeat them individually where they apply.

**Multiple special notices.** You run into situations where you have three or four special notices, all jammed together in the same part of the text, each one following another. This is a problem because the whole point of the special formatting of the notices is lost: something is special because it is different from the surrounding. The solution to this problem is to create one identifying heading (for example, "Notes and Warnings"), and then list the notices (either bulleted or numbered) below it.

**Other important things to remember.** In any list, make sure your list is parallel. If you use bullets or numbers, make sure you have more than one bullet or number. That is, if you only need one bullet or one number in a bulleted or numbered list, you don't actually need a bulleted or numbered list.
Tables, Charts, and Graphs
David McMurrey & Tamara Powell

Chapter Objectives

Upon completion of this chapter, readers will be able to:

1. Distinguish between tables, charts, and graphs.
2. Identify chief characteristics of tables, charts, and graphs.
3. Identify and apply best practices in creating tables, charts, and graphs in technical communication.

Tables, Charts, and Graphs

One of the nice things about technical writing courses is that most of the papers have graphics in them—or at least they should. A lot of professional, technical writing contains graphics—drawings, diagrams, photographs, illustrations of all sorts, tables, pie charts, bar charts, line graphs, flow charts, and so on. Graphics are important in technical communication. We learn more from a document when graphics are included (Gatlin, 1988). In fact, people learn about 1/3 more from a document with graphics than without (Levie and Lentz, 1982). A recent study found that readers learn faster and are better able to use the information they learn when the text includes graphics (Große, Jungmann, and Drechsler, 2015). That does not, of course, mean that one should place graphics willy-nilly into every spot possible. On the contrary, graphics should be used carefully and correctly. The information below will help you to make informed decisions regarding graphic creation and placement that will help to make your documents more effective for your readers.

Tables

Tables, of course, are those rows and columns of numbers and words, mostly numbers. They permit rapid access to and relatively easy comparison of information. If the data is arranged chronologically (for example, sales figures over a ten-year period), the table can show trends—patterns of rising or falling activity. Of course, tables are not necessarily the most vivid or dramatic means of showing such trends or relationships between data—that's why we have charts and graphs (discussed in the next section).

Uses for Tables

The biggest use of tables is for numerical data. Imagine that you are comparing different models of laser printers in terms of physical characteristics such as height, depth, length, weight, and so on. Perfect for a table.

However, don't get locked into the notion that tables are strictly for numerical data. Whenever you have situations where you discuss several things about which you provide the same categories of detail, you've got a possibility for a table. For example, imagine that you were comparing several models of a laser printer: you'd be saying the same category of thing about each printer (its cost, print speed, supply costs, warranty terms, and so on). This is ideal stuff for a table, and it would be mostly words rather than numbers (and in this case, you'd probably want to leave the textual discussion where it is and "re-present" the information in table form).

Table Format

In its simplest form, a table is a group of rows and columns of data. At the top of each column is a column heading, which defines or identifies the contents of that column (and often it indicates the unit of measurement). On the left edge of the table may be row headings, which define or identify the contents of that row. Things get tricky when rows or columns must be grouped or subdivided. In such cases, you have to create row or column subheadings. This situation is illustrated here:
Traditionally, the title of a table is placed on top of the table or is the first row of the table. If the contents of the table are obvious and there is no need to cross-reference the table from anywhere else in the report, you can omit the title.

As for specific style and formatting guidelines for tables, keep these in mind:

- Refer to the table in the text just preceding the table. Explain the general significance of the data in the table; don't expect readers to figure it out entirely for themselves.
- Don't overwhelm readers with monster 11-column, 30-row tables! Simplify the table data down to just that amount of data that illustrates your point—without of course distorting that data.
- Don't put the word or abbreviation for the unit of measurement in every cell of a column. For example, in a column of measurements all in millimeters, don't put "mm" after every number. Put the abbreviation in parentheses in the column or row heading.
- Right- or decimal-align numbers in the columns. If the 123 and 4 were in a column, the 4 would be right below the 3, not the 1.
- Normally, words in columns are left-justified (although you will occasionally see columns of words all centered).
- Column headings are centered over the columns of numerical data (forming a T-shape); left-aligned with columns of text. The alignment of column headings to the actual columnar data is variable. If you have a column of two- or three-letter words, you'd probably want to center the column heading over that data, even though it is words not numbers. (Doing so, avoids an odd-looking L-shaped column.)
- When there is some special point you need to make about one or more of the items in the table, use a footnote instead of clogging up the table with the information.

### Producing Tables

Normally, you'll be borrowing information in which a good table occurs. If it's a simple table without too many rows and columns, retype it yourself into your own document (but remember to document where you borrowed it from in the figure title). However, if it is a big table with lots of data, you're justified in scanning, screen-capturing, or photocopying it and bringing it into your report that way.

If you use OpenOffice, Word, or WordPerfect, get used to using the table-generating tools. You don't have to draw the lines and other formatting details.

Occasionally, in rough-draft technical reports, information is presented in regular running-text form that could be better presented in table (or tabular) form. Be sure and look back over your rough drafts for material that can transformed into tables.

---

**Table 3. Energy production by major source from 1960 to 1980**

<table>
<thead>
<tr>
<th>Year</th>
<th>Total production (quad Btu)</th>
<th>Percent production</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Coal</td>
</tr>
<tr>
<td>1960</td>
<td>41.5</td>
<td>26.1</td>
</tr>
<tr>
<td>1970</td>
<td>62.1</td>
<td>23.5</td>
</tr>
<tr>
<td>1980</td>
<td>64.8</td>
<td>28.7</td>
</tr>
</tbody>
</table>

¹ Source: U.S. Energy Information Administration, Annual Energy Review
² Includes hydropower, nuclear power, geothermal power, and others.
Charts and Graphs

Charts and graphs are actually just another way of presenting the same data that is presented in tables—although a more dramatic and interesting one. At the same time, however, you get less detail or less precision in a chart or graph than you do in the table. Imagine the difference between a table of sales figures for a ten-year period and a line graph for that same data. You get a better sense of the overall trend in the graph but not the precise dollar amount.

Formatting Requirements

When you create charts and graphs, keep these requirements in mind (most of these elements are illustrated below):

- **Axis labels**—In bar charts and line graphs, don't forget to indicate what the x and y axes represent. One axis might indicate millions of dollars; the other, five-year segments from 1960 to the present.

- **Keys (legends)**—Bar charts, line graphs, and pie charts often use special color, shading, or line style (solid or dashed). Be sure to indicate what these mean; translate them in a key (a box) in some unused place in the chart or graph.
Example of a Graph

Notice that a figure title is placed beneath the graph.

- Figure titles—For most charts and graphs, you'll want to include a title, in many cases, a numbered title. Readers need some way of knowing what they are looking at. And don't forget to cite the source of any information you borrowed in order to create the graphic. The standard rule for when to number figures or tables is this: if you cross-reference the figure or table elsewhere in the text.
- Cross-references—Whenever you use a chart or graph, don't forget to put a cross-reference to it from the related text. With that cross-reference, provide some explanation of what is going on in the graphic, how to interpret it, what its basic trends are, and so on.
In recent benchmark tests performed by PC Magazine, all three of the systems compared here performed at or near the same levels [1: 116-118]. The Micron system comes out on top with slightly better average scores, as shown in Figure 5.

![Graph of system performance comparison](image)

**Figure 5. Benchmark ratings of system performance [1:116-118]**

It is important to note that the Gateway P5 system used in these tests was equipped with 256K Pipeline Burst cache—a feature not present in the basic configuration noted above (Figure 5). The lack of secondary cache in Pentium systems is widely regarded to result in a decrease in system performance of up to 30%.

- **Documentation**—When you borrow information to create a graphic, be sure to use the standard format to indicate the source. It does not matter how you import the graphic into your report—it is all borrowed information, which some brave and noble soul worked hard to develop and who deserves credit for that effort.

### Producing Charts and Graphs

As with illustrations, you have these options for creating charts and graphs: screen-capturing, scanning, photocopying, generating your own with software, and drawing your own. Helpful information regarding choosing what type of graph to use.

Helpful downloads to jumpstart your graph creation

### Documenting Tables, Charts and Graphs: Indicating Sources

As mentioned earlier, it’s perfectly legal to borrow tables—to copy, photocopy, scan, or extract subsets of data from them. But you’re obligated to cite your sources for tables, charts, and graphs just as you are for the words you borrow. Normally, this is done in either the table title or in a footnote just below the table. Check the example in the table shown previously.

### General Guidelines for Tables, Charts, Graphs

The preceding sections state a number of common guidelines that need to be stated all in one place. These are important!
• Watch out for areas in your text where you discuss lots of numeric data in relation to two or more things—that's ideal for tables or even charts or graphs.
• Watch out for areas in your text where you define a series of terms—that's ideal for tables.
• Always discuss tables in preceding text. Don't just throw a table, graph, or chart out there unexplained. Orient readers to it; explain its basic significance.
• Make sure your tables, charts, and graphs are appropriate to your audience, subject matter, and purpose—don't zap beginners with massive, highly technical constructions they can't understand.
• Use a title unless the table, chart, and graph is very informal. Remember that the title goes just above the table; for charts and graphs, below.
• Left-align words and phrases in table columns (including the column heading). Right-align numeric data in table columns (but center the column heading). A nice touch to put a bit of right margin on this right-aligned data so that it moves out into the center of the column rather than remaining jammed to the right edge.
• Some believe that it is easier for readers to compare vertically rather than horizontally. If you believe that, format your tables so that your columns contain the information to be compared. For example, if you were comparing cars, you'd have columns for MPG, price, and so on.
• Indicate the source of tables, charts, and graphs you have borrowed either part of or entirety. This can be done in the title or in a footnote.
• Indicate identifying measurement values in column or row headings—not in each cell.
• Cross-reference all tables, charts, and graphs from the preceding text. In the cross-reference, give the number (if it is a formal table with title), indicate the subject matter of the table, and provide explanatory information as necessary.


What are best practices for creating graphics? How can one mess up when adding a graphic to technical communication? This video will show you how to do things correctly and incorrectly.

Access the video

For more information and examples on how NOT to create graphs, please look at C.J. Schwarz’ "A Short Tour of Bad Graphs." Shared with permission.

Bibliography


Chapter Objectives

Upon completion of this chapter, readers will be able to:

1. Explain and apply the various uses of graphics in technical documents.
2. Create and format appropriate graphics for technical documents.

Graphics

One of the nice things about technical writing courses is that most of the papers have graphics in them—or at least they should. A lot of professional, technical writing contains graphics—drawings, diagrams, photographs, illustrations of all sorts, tables, pie charts, bar charts, line graphs, flow charts, and so on. Once you get the hang of putting graphics like these into your writing, you should consider yourself obligated to use graphics whenever the situation naturally would call for them.

Unlike what you might fear, producing graphics is not such a terrible task—in fact, it's fun. You don't have to be a professional graphics artist or technical draftsperson to get graphics into your technical writing. The Internet has advanced our sources for graphics immensely. And, if you are still living the 1970s, you can produce professional-looking graphics with tape, scissors, white-out, and a decent photocopying machine.

Overview

Before getting into details on creating, formatting, and incorporating graphics, consider the types and their functions. You can use graphics to represent the following elements in your technical writing:

- **Objects**—If you're describing a fuel-injection system, you'll probably need a drawing or diagram of the thing. If you are explaining how to graft a fruit tree, you'll need some illustrations of how that task is done. Photographs, drawings, diagrams, and schematics are the types of graphics that show objects.
- **Numbers**—If you're discussing the rising cost of housing in Austin, you could use a table with the columns marking off five-year periods since 1970; the rows could be for different types of housing. You could show the same data in the form of bar charts, pie charts, or line graphs. Tables, bar charts, pie charts, and line graphs are some of the principal ways to show numerical data.
- **Concepts**—If you want to show how your company is organized, the relationships of the different departments and officials, you could set up an organization chart—boxes and circles connected with lines that show how everything is hierarchically arranged and related. A concept graphic shows nonphysical, conceptual things and their relationships. In the figure to the right, see how Apple Computer illustrated the difference between 32-bit processors and 64-bit processors (these days, these are called infographics).
- **Words**—And finally graphics are used to depict words. You've probably noticed how textbooks put key definitions in a box, maybe with a different color. The same can be done with key points or extended examples. Not the sexiest form of graphics, but it still qualifies, and it's good to keep in mind as a useful technique.

Drawings, Diagrams, Photos
To depict objects, places, people, and relationships between them, you can use photos, drawings, diagrams, and schematics.

**Uses of Illustrations and Photos**

In the realm of illustrations and photographs, the types run from minimal detail to maximal. A simple line drawing of how to graft a fruit tree reduces the detail to simple lines representing the hands, the tools, the graft stock, and graft. Diagrams are a more abstract, schematic view of things, for example, a wiring diagram of a clock radio; it hardly resembles the actual physical thing at all. And of course photographs provide the most detail of all. These graphics, supplying gradations of detail as they do, have their varying uses. Here are some examples:

- In instructions, simple drawings (often called line drawings) are the most common. They simplify the situation and the objects so that the reader can focus on the key details. In the examples below, you can see a fully detailed photograph and a simplified, labeled diagram. Which would you prefer?

- In descriptions, you would want to use drawings, but in this case drawings with more detail, such as shading and depth perspectives.
- In feasibility, recommendation, and evaluation reports, photographs are often used. For example, if you are recommending a photocopier, you might want to include photos of the leading contenders.
Formatting Requirements

When you use an illustration in a report, there are several requirements to keep in mind (most of these are shown in this illustration):

The ionization chamber is a sealed unit with vents on the casing to allow air circulation. Inside the case are two metal plates separated by an air gap. A radiation source sits behind one of the plates, which has a hole in it to allow the radiation into the air gap (see Figure 2). A voltage is applied across the two plates, giving one a positive and the other a negative electrical charge. The radiation source used is usually a small amount (approximately 0.2 mg) of Americium-241 in the form of its oxide, AmO₂.


For an accessible version of the illustration above, click here: Formatting Requirements

- Labels—Just about any illustration should contain labels—words and phrases—with pointers to the parts of the things being depicted.
- Keys—if the illustration has certain shadings, colors, line styles, or other such details that have a special meaning in the illustration, these should be indicated in a key—an area in an unused corner of the illustration that deciphers their meaning.
- Titles—Except in special cases, illustrations should have titles, and these titles should be numbered (Figure 1, Figure 2, and so on). The exceptions are these: if you have lots of illustrations (for example, in certain instructions, there are illustrations practically after every paragraph) and if there is no benefit from the titles; if you only have one or two illustrations and they are not cross-referenced; and/or if you do not cross-reference your illustrations. In some of these cases, you might want to keep the title but discard the word "Figure" and the number following it.
- Cross-references—Almost all illustrations should be referred to from the relevant point in the discussion. And, do more than just tossing in a "(See Figure 2)"; discuss the illustration a bit—focus readers’ attention on the key details of the illustration.
- Location within the report—Ideally, you place illustrations just after the point where they are needed. However, sometimes because of the pagination (the way the text falls on the pages) and the size of the illustrations, this close placement is not possible. No problem—just put the illustration at the top of the next page; that is what the figure-numbering system is for.
- Size of illustrations—Again, ideally, you want illustrations to be between one-half to one-quarter of the vertical size of the page. You want them to fit on the page with other text. In fact, that's what you really want—to interperse text and graphics in a report. What you do not want is to append the illustration to the back of the report! When you have a large illustration, use your software or a photocopier to reduce it.
- Placement within margins—Make sure that your illustrations fit neatly and comfortably within standard margins. You don't want the illustration spilling over into the right or left margins. You want to allow the equivalent of at least one blank line above and below the illustration.
- Level of technical detail—And, rather obviously, you want illustrations to be at the right technical level for your readers. No chip circuitry diagrams for computer beginners!

Producing Illustrations

Now for the question we’re all waiting to ask—how to create graphics? There are several options: scanning, photocopying, using computer graphics, and hand-drawing. In all of these production methods, don’t forget that you must indicate the source of the borrowed graphic.
Scanning is the best way to pull graphics into your document files. Scanners are quite affordable now, especially those that include printing and faxing capabilities. Universities and colleges usually make scanners available to students and faculty. Print shops will scan for a fee. You copy your graphics to graphic-format files (such as .jpg or .png) then copy them into your document files.

Note: When you scan a graphic, trim off the title (caption) and other material from the original. Replace this material with words of your own.

Photocopying used to be the method. You photocopied graphics from print sources, trimmed them, left room for them as you typed text (yes, with a typewriter), taped in the photocopies, and photocopied the whole document. Done well, the result could look almost professional.

Using computer graphics With a little practice, you can create graphics like the ones show in the figure here in OpenOffice Writer or Microsoft Word (and of course GIMP and Illustrator). With a computer-graphics drawing like the keylock mechanism to the right, you are at the very edge of what OpenOffice Writer or Microsoft Word can do.

Hand-drawing may not be as out of the question as you might think. Take a blank sheet of paper and start sketching lightly with a soft-leaded pencil. Keep working until you have the drawing the way you like. Then use a black marker to ink in the lines that you want, and erase the stray pencil markings. Now, scan this drawing and follow the method described above.

Documenting Graphics: Indicating Sources

As mentioned earlier, it's perfectly legal to borrow graphics—to trace, photocopy, scan, or extract subsets of data from them. But you're obligated to cite your sources for graphics just as you are for the words you borrow. Normally, this is done in the figure title of the graphics.

Guidelines for Graphics: A Review

The preceding sections state a number of common guidelines that need to be stated all in one place. These are important!

- Use graphics whenever they would normally be necessary—don't wimp out because it seems like too much trouble! But at the same time, don't get hung up about creating perfect graphics (scans and photocopies work just fine for our purposes as long as you cite your source). This course is a writing course, not a graphic-arts course.
- Always discuss graphics in nearby text preceding the graphic. Don't just throw a graphic out there unexplained. Orient readers to the graphic; explain its basic meaning.
- If a certain graphic is difficult to produce, discuss the problem with your instructor (you might be able to leave a blank with a descriptive note in the middle).
- Make sure your graphics are appropriate to your audience, subject matter, and purpose—don't zap beginners with advanced, highly technical graphics they can't understand.
- Intersperse graphics and text on the same page. Don't put graphics on pages by themselves; don't attach them to the end of documents.
- Use figure titles for graphics (see the exceptions to this rule in the preceding).
- Indicate the source of any graphic you have borrowed—this includes tables, illustrations, charts, and graphs. Whenever you borrow a graphic from some other source, document that fact in the figure title.
- Include identifying detail such as illustration labels, axis labels, keys, and so on. For labels, use text boxes and turn off the borders.
- Make sure graphics fit within normal margins—if they don't, enlarge or reduce the copies. Leave at least one blank line above and below graphics.
- This guideline is for folks still operating in the 1970s. When you tape graphics in to your report, photocopy your entire report, not just the pages on which the tape-ins occur. Hand in the entire photocopied document, not the original and not a mixture of original and photocopied pages. Don't manually add color or other detail on the pages of the final copy that you intend to submit—in other words, don't draw on the final copy. Any details like these should be added before photocopying. If you must have color, use color photocopying equipment.
- Place graphics as near to the point in the text where they are relevant as is reasonable. However, if a graphic does not fit properly on one page, put it at the top of the next, and continue with regular text on the preceding
page. Don't leave half a page blank just to keep a graphic near the text it is associated with.

- Cross-reference all graphics from the appropriate text. In the cross-reference, give the figure number (if one is used), indicate the subject matter of the graphic, and provide explanatory information as necessary.
Help Desk: Creating an Index

In long technical documents, an index, or a list of almost everything in the document, is found at the end of the document. The index is a helpful tool for quickly locating information, and many readers expect it. There are several techniques for creating an index, but the most efficient and up to date is right at your fingertips.

Microsoft Word allows you to create an index for a single word, a phrase, or even a symbol. You can also create an index item for a topic that covers several pages or paragraphs, or one that refers to another entry, such as "Chihuahua. See Dogs."

After you have completed your document, consider what you think needs to be referenced in the index so the reader can find it quickly. You may need to brainstorm to make some decisions here, especially as to how detailed you want the index to be.

Then, get started! Open the References tab on your Word toolbar (see below).

In your text, go to the first word you want to go into the index and highlight it. Then, go to the Index tool in the References tab and click on "Mark Entry." The dialog box below will pop up, with your highlighted word in the main entry field. You may then choose to insert a subentry and then click "Mark" if you just want only this reference to the term listed, or "Mark All" if you want every instance the term appears in your document listed in your index.

After you mark all the index entries you want, you can choose an index design and build the finished index. Word collects the index entries for you, sorts them in alphabetical order, lists page numbers, finds and removes duplicate entries, and puts the index in the document.

Don't panic when your document begins to look strange. When you select text and mark it for an index entry, Microsoft Word adds a special XE (Index Entry) field that includes the marked main entry and any cross-reference information that you choose to include. The example below is from Support.Office.com.

When you are satisfied that you've gotten all the important stuff (and you can even include topic headings and illustrations in the index) its time to create the actual index!

Back to the Indexing tool...

Click where you want to add the index to your document. Now, click on "Insert Index." You will see a dialogue box like the one below. Unfortunately, it won't show your index in the preview page, but you can get an idea of how it works.

The preview will scroll so you can see how the whole thing will look, and under Formats just below the preview screen, you can choose from 4 different styles. You can also create your own style by selecting "From template" and choosing "Modify" in the bottom right corner of the box.

Click okay. Don't worry...you can always go back and update or edit if you need to by going to the Update Index button in the Index tool. If your document still has all the crazy looking markups, just go to the Paragraph tool in the Home tab and click on the little show/hide icon (¶) in the upper right hand corner.