Chapter Objectives

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

1. Summarize the basics of format and style in business correspondence.
2. Explain and distinguish between three common types of business letters.
3. Explain and apply basic guidelines for resume-writing.

Overview of Business Correspondence: Format and Style

The following is concerned with the mechanical and physical details of business letters. All of the components discussed in the following are illustrated in the following:

Common Components of Business Letters

**Heading:** The heading contains the writer's address and the date of the letter. The writer's name is not included; only a date is needed in headings on letterhead stationary.

**Inside Address:** The inside address shows the name and address of the recipient of the letter. This information can help prevent confusion at the recipient's offices. Also, if the recipient has moved, the inside address helps to determine what to do with the letter. In the inside address, include the appropriate title of respect of the recipient and copy the name of the company exactly as that company writes it. When you do have the names of individuals, remember to address them appropriately: Mrs., Ms., Mr., Dr., and so on. If you are not sure what is correct for an individual, try to find out how that individual signs letters or consult the forms-of-address section in a dictionary.

**Salutation:** The salutation directly addresses the recipient of the letter and is followed by a colon (except when a friendly, familiar, sociable tone is intended, in which case a comma is used). Notice that in the simplified letter format, the salutation line is eliminated altogether. If you don't know whether the recipient is a man or a woman, the traditional practice has been to write "Dear Sir" or "Dear Sirs"--but that's sexist! To avoid this problem, salutations such as "Dear Sir or Madame," "Dear Ladies and Gentlemen," "Dear Friends," or "Dear People" have been tried--but without much general acceptance. Deleting the salutation line altogether or inserting "To Whom It May Concern" in its place, is not ordinarily a good solution either--it's impersonal.

The best solution is to make a quick, anonymous phone call to the organization and ask for a name; or address the salutation to a department name, committee name, or a position name: "Dear Personnel Department," "Dear Recruitment Committee," "Dear Chairperson," or "Dear Director of Financial Aid," for example.

**Subject or Reference line:** As shown in the order letter, the subject line replaces the salutation or is included with it. The subject line announces the main business of the letter.

**Body of the letter:** The actual message, of course, is contained in the body of the letter--the paragraphs between the salutation and the complimentary close. Strategies for writing the body of the letter are discussed in the section on business-correspondence style.

**Complimentary close:** The "Sincerely yours" element of the business letter is called the complimentary close. Other common ones are "Sincerely yours," "Cordially," "Respectfully," or "Respectfully yours." You can design your own, but be careful not to create florid or wordy ones. Notice that only the first letter is capitalized, and it is always followed by a comma.

**Signature block:** Usually, you type your name four lines below the complimentary close, and sign your name in between. If you are a woman and want to make your marital status clear, use Miss, Ms., or Mrs. in parentheses before the typed version of your first name. Whenever possible, include your title or the name of the position you hold just below your name. For example, "Technical writing student," "Sophomore data processing major," or "Tarrant County Community College Student" are perfectly acceptable.

**End notations:** Just below the signature block are often several abbreviations or phrases that have important functions.

- **Initials:** The initials in all capital letters in the preceding figures are those of the writer or the letter, and the ones in lower case letters just after the colon are those of the typist.
- **Enclosures:** To make sure that the recipient knows that items accompany the letter in the same envelope, use such indications as "Enclosure," "Encl.," "Enclosures (2)." For example, if you send a resume and writing sample with your application letter, you'd do this: "Encl.: Resume and Writing Sample." If the enclosure is lost, the recipient will know.
- **Copies:** If you send copies of a letter to others, indicate this fact among the end notations also. If, for example, you were upset by a local merchant's handling of your repair problems and were sending a copy of your letter to the Better Business Bureau, you'd write something like this: "cc: Mr. Raymond Mason, Attorney."

**Following pages:** If your letter is longer than one page, the heading at the top of subsequent pages can be handled in one of the following ways:
If you use letterhead stationery, remember not to use it for subsequent pages. However, you must use blank paper of the same quality, weight, and texture as the letterhead paper (usually, letterhead stationery comes with matching blank paper).

**Business Letter Formats**

If you are writing a business letter, select one of the common formats as shown in the example letters listed below. These include the block letter, the semi-block letter, the alternative block letter, and the simplified letter.

Which of these formats to use depends on the ones commonly used in your organization or the situation in which you are writing. Use the simplified letter if you lack the name of an individual or department to write to.

**Style in Business Correspondence**

Writing business letters and memos differs in certain important ways from writing reports. Keep the following advice in mind when you write and especially when you revise your business letters or memos.

**State the main business, purpose, or subject matter right away.** Let the reader know from the very first sentence what your letter is about. Remember that when business people open a letter, their first concern is to know what the letter is about, what its purpose is, and why they must spend their time reading it. Therefore, avoid round-about beginnings. If you are writing to apply for a job, begin with something like this: "I am writing to apply for the position you currently have open...." If you have bad news for someone, you need not spill all of it in the first sentence. Here is an example of how to avoid negative phrasing: "I am writing in response to your letter of July 24, 1997 in which you discuss problems you have had with an electronic spreadsheet purchased from our company." The following shows an additional example.

**Link to problem version of a sample business letter**
**Link to the revised version of the previous business letter**

State the main purpose or business of the letter right away. The problem version just starts flailing away from the very outset. The revised version at least establishes the purpose of the letter (and then starts flailing).

**If you are responding to a letter, identify that letter by its subject and date in the first paragraph or sentence.** Busy recipients who write many letters themselves may not remember their letters to you. To avoid problems, identify the date and subject of the letter to which you respond:

Dear Mr. Stout: I am writing in response to your September 1, 19XX letter in which you describe problems that you've had with one of our chainsaws. I regret that you've suffered this inconvenience and expense and....

Dear Ms. Cohen: I have just received your August 4, 19XX letter in which you list names and other sources from which I can get additional information on the manufacture and use of plastic bottles in the soft-drink industry....

**Keep the paragraphs of most business letters short.** The paragraphs of business letters tend to be short, some only a sentence long. Business letters are not read the same way as articles, reports, or books. Usually, they are read rapidly. Big, thick, dense paragraphs over ten lines, which require much concentration, may not be read carefully—or read at all.

To enable the recipient to read your letters more rapidly and to comprehend and remember the important facts or ideas, create relatively short paragraphs between three and eight lines long. In business letters, paragraphs that are made up of only a single sentence are common and perfectly acceptable. Throughout this chapter, you'll see examples of the shorter paragraphs commonly used by business letters.

"Compartmentalize" the contents of your letter. When you "compartmentalize" the contents of a business letter, you place each different segment of the discussion—each different topic of the letter—in its own paragraph. If you were writing a complaint letter concerning problems with the system unit of your personal computer, you might have the following paragraphs:

- A description of the problems you've had with it
- The ineffective repair jobs you've had
- The compensation you think you deserve and why

Study each paragraph of your letters for its purpose, content, or function. When you locate a paragraph that does more than one thing, consider splitting it into two paragraphs. If you discover two short separate paragraphs that do the same thing, consider joining them into one.

**Provide topic indicators at the beginning of paragraphs.** Analyze some of the letters you see in this chapter in terms of the contents or purpose of their individual paragraphs. In the first sentence of any body paragraph of a business letter, try to locate a word or phrase that indicates the topic of that paragraph. If a paragraph discusses your problems with a personal computer, work the word "problems" or the phrase "problems with my personal computer" into the first sentence. Doing this gives recipients a clear sense of the content and purpose of each paragraph. Here is an excerpt before and after topic indicators have been incorporated:

**Problem:**

https://softchalkcloud.com/lesson/files/gEvmM2xKLR0hrb/2_1BusinessCorrespondanceResumes_print.html
I have worked as an electrician in the Decatur, Illinois, area for about six years. Since 1980 I have been licensed by the city of Decatur as an electrical contractor qualified to undertake commercial and industrial work as well as residential work.

Revision:
As for my work experience, I have worked as an electrician in the Decatur, Illinois, area for about six years. Since 1980 I have been licensed by the city of Decatur as an electrical contractor qualified to undertake commercial and industrial work as well as residential work.

List or itemize whenever possible in a business letter. Listing spreads out the text of the letter, making it easier to pick up the important points rapidly. Lists can be handled in several ways, as explained in the chapter on lists. For examples of lists in business correspondence, see the block-letter format in the preceding, the inquiry letter, and order letter.

Place important information strategically in business letters. Information in the first and last lines of paragraphs tends to be read and remembered more readily. These are high-visibility points. Information buried in the middle of long paragraphs is easily overlooked or forgotten. For example, in application letters which must convince potential employers that you are right for a job, place information on your appealing qualities at the beginning or end of paragraphs for greater emphasis. Place less positive or detrimental information in less highly visible points. If you have some difficult things to say, a good (and honest) strategy is to de-emphasize by placing them in areas of less emphasis. If a job requires three years of experience and you only have one, bury this fact in the middle or the lower half of a body paragraph of the application letter. The resulting letter will be honest and complete; it just won’t emphasize weak points unnecessarily. Here are some examples of these ideas:

Problem:
In July I will graduate from the University of Kansas with a Bachelor of Science in Nutrition and Dietetics. Over the past four years in which I have pursued this degree, I have worked as a lab assistant for Dr. Alison Laszlo and have been active in two related organizations, the Student Dietetic Association and the American Home Economics Association. In my nutritional biochemistry and food science labs, I have written many technical reports and scientific papers. I have also been serving as a diet aide at St. David's Hospital in Lawrence the past year and a half.

Revision:
In my education at the University of Kansas, I have had substantial experience writing technical reports and scientific papers. Most of these reports and papers have been in the field of nutrition and dietetics in which I will be receiving my Bachelor of Science degree this July. During my four years at the University, I have also handled plenty of paperwork as a lab assistant for Dr. Alison Laszlo, as a member of two related organizations, the Student Dietetic Association and the American Home Economics Association, and as a diet aide at St. David's Hospital in Lawrence in the past year and a half.

Problem:
To date, I have done no independent building inspection on my own. I have been working the past two years under the supervision of Mr. Robert Packwood who has often given me primary responsibility for walk-throughs and property inspections. It was Mr. Packwood who encouraged me to apply for this position. I have also done some refurbishing of older houses on a contract basis and have some experience in industrial construction as a welder and as a clerk in a nuclear construction site.

Revision:
As for my work experience, I have done numerous building walk-throughs and property inspections under the supervision of Mr. Robert Packwood over the past two years. Mr. Packwood, who encouraged me to apply for this position, has often given me primary responsibility for many inspection jobs. I have also done some refurbishing of older houses on a contract basis and have some experience in industrial construction as a welder and as a clerk in a nuclear construction site.

Find positive ways to express bad news in your business letters. Often, business letters must convey bad news: a broken computer keyboard cannot be replaced, or an individual cannot be hired. Such bad news can be conveyed in a tactful way. Doing so reduces the chances of an end of business relations with the recipient of the bad news. To convey bad news positively, avoid such words as “cannot,” “forbid,” “fail,” “impossible,” “refuse,” “prohibit,” “restrict,” and “deny” as much as possible. The first versions of the example sentences below are phrased in a rather cold and unfriendly negative manner; the second versions are much more positive, cordial and tactful:

Problem:
In your letter you ask for a good amount of information which I would like to help you locate. Because of my work commitments, however, I am going to be able to answer only a few of the questions....

Revision:
In your letter you ask for a good amount of information which I would like to help you locate. Because of my work commitments, however, I am going to be able to answer only a few of the questions....

Problem:
If you do not complete and return this advertisement contract by July 1, 19XX, you will not receive your advertising space in this year’s Capitol Lines. If we have not heard from you by this deadline, we will sell your advertisement space to some other client.
Revision:
Please complete the enclosed contract and return it to us by July 1, 19XX. After this deadline, we will begin selling any unrenewed advertisement space in this year's *Capitol Lines*, so I hope we hear from you before then.

Problem:
While I am willing to discuss changes in specific aspects of this article or ideas on additional areas to cover, I am not prepared to change the basic theme of the article: the usability of the Victor microcomputer system.

Revision:
I am certainly open to suggestions and comments about specific aspects of this article, or any of your thoughts on additional areas that you think I should cover. I do want, however, to retain the basic theme of the article: the usability of the Victor microcomputer system.

Focus on the recipient's needs, purposes, or interests instead of your own. Avoid a self-centered focus on your own concerns rather than those of the recipient. Even if you must talk about yourself in a business letter a great deal, do so in a way that relates your concerns to those of the recipient. This recipient-oriented style is often called the "you-attitude," which does not mean using more you's but making the recipient the main focus of the letter.

Problem:
I am writing you about a change in our pricing policy that will save our company time and money. In an operation like ours, it costs us a great amount of labor time (and thus expense) to scrape and rinse our used tableware when it comes back from large parties. Also, we have incurred great expense on replacement of linens that have been ruined by stains that could have been soaked promptly after the party and saved.

Revision:
I am writing to inform you of a new policy that we are beginning, effective September 1, 19XX, that will enable us to serve your large party needs more often and without delay. In an operation like ours in which we supply for parties of up to 500, turn-around time is critical; unscraped and unrinsed tableware causes delays in clean-up time and, more importantly, less frequent and less prompt service to you the customer. Also, extra fees for stained linens can be avoided by immediate soaking after the party.

Problem:
For these reasons, our new policy, effective September 1, 19XX, will be to charge an additional 15% on unrinsed tableware and 75% of the wholesale value of stained linens that have not been soaked.

Revision:
Therefore, to enable us to supply your large party needs promptly, we will begin charging 15% on all unrinsed tableware and 75% of the wholesale value of stained linens that have not been soaked. This policy we hope will encourage our customers' kitchen help to do the quick and simple rinsing and/or soaking at the end of large parties. Doing so will ensure faster and more frequent service.

Avoid pompous, inflated, legal-sounding phrasing. Watch out for puffed-up, important-sounding language. This kind of language may seem business-like at first; it's actually ridiculous. Of course, such phrasing is apparently necessary in legal documents; but why use it in other writing situations? When you write a business letter, picture yourself as a plain-talking, common-sense, down-to-earth person (but avoid slang). Check out the following examples for a serious dose of bureaucratese.

Problem:
The Capitol Improvements Project (hereinafter to designated as CIP) for the fiscal year 1982-1983 stipulated budget allocations in the amount not exceeding $20,000 to be designated for utilization by a program under the nomination of the 23rd Street Renaissance Market. The purpose and aim of the aforesaid program is to provide and permit basic pedestrian amenities and conveniences for a marketplace devoted to the commerce of arts and crafts to the maximum extent possible. In consideration of these disctates, the CIP has mandated that there be a geographical extension of the sidewalk no greater than 15 feet in a northerly direction. The said extension would continue to permit an opening of approximately 15 feet for the orderly flow and passage of vehicular traffic. The City Council in 1982 issued directives that mandated the temporary closure of the above named street for a period not to exceed one calendar year. In April of the ensuing year it was directed by the City Council that this closure remain in full effect for a period not exceeding an additional six months.

This is pompous, officious-sounding prose style. People in authority positions don't have to sound like this (they might get questioned).

Revision:
The Capital Improvements Program (CIP) in 1982-1983 included the amount of $20,000 for the 23rd Street Renaissance Market to provide sidewalks for an arts and crafts marketplace. The detailed plans of the CIP called for an extension of the sidewalk 15 feet north, with a 15-foot opening for automobiles.

In 1982, the City Council temporarily closed 23rd Street for a one-year period. In April of 1983, the council extended that closure for an additional six-month period which will end October 1983.
Avoid pompous, officious-sounding writing. Not only is the tone of the problem version offensive, it is nearly twice as long as the revised version!

**Give your business letter an “action ending” whenever appropriate.** An “action-ending” makes clear what the writer of the letter expects the recipient to do and when. Ineffective conclusions to business letters often end with rather limp, noncommittal statements such as "Hope to hear from you soon" or "Let me know if I can be of any further assistance." Instead, or in addition, specify the action the recipient should take and the schedule for that action. If, for example, you are writing a query letter, ask the editor politely to let you know of his decision if at all possible in a month. If you are writing an application letter, subtly try to set up a date and time for an interview. Here are some examples:

As soon as you approve this plan, I'll begin contacting sales representatives at once to arrange for purchase and delivery of the notebook computers. May I expect to hear from you within the week?

I am free after 2:00 p.m. on most days. Can we set up an appointment to discuss my background and this position further? I'll look forward to hearing from you.

### Inquiry Letters

This section focuses on the inquiry letter or inquiry e-mail; let's call it the inquiry communication. The *inquiry communication* is useful when you need information, advice, names, or directions. Be careful, however, not to ask for too much information or for information that you could easily obtain in some other way—for example, by a quick trip to the library or by an Internet search.

For related matters, see the section on general business-letter format and style.

**Inquiry Letters or E-mail: Contents and Organization**

1. Early in the letter or e-mail, identify the purpose—to obtain help or information (if it's a solicited communication, information about an advertised product, service, or program).
2. In an unsolicited letter or e-mail, identify who you are, what you are working on, why you need the requested information, and how you found out about the individual. In an unsolicited letter or e-mail, also identify the source that prompted your inquiry, for example, a journal article.
3. In the communication, list questions or information needed in a clear, specific, and easy-to-read format. If you have a number of questions, consider making a questionnaire and including a stamped, self-addressed envelope. If it's e-mail, just put the questions in the body of the e-mail or attach a separate questionnaire document.
4. In an unsolicited letter or e-mail, try to find some way to compensate the recipient for the trouble, for example, by offering to pay copying and mailing costs, to accept a collect call, to acknowledge the recipient in your report, or to send him or her a copy of your report. In a solicited letter or e-mail, suggest that the recipient send brochures or catalogs.
5. In closing an unsolicited letter or e-mail, express gratitude for any help that the recipient can provide you, acknowledge the inconvenience of your request, but do not thank the recipient "in advance." In an unsolicited letter or e-mail, tactfully suggest to the recipient will benefit by helping you (for example, through future purchases from the recipient's company).

### Complaint and Adjustment Letters

This chapter covers two closely related types of business letters: *complaint letters*, which request compensation for problems with purchases or services, and *adjustment letters*, which are the responses to complaint letters.

For related matters, see the section on general business-letter format and style.

#### Complaint Letters

A complaint letter requests some sort of compensation for defective or damaged merchandise or for inadequate or delayed services. While many complaints can be made in person, some circumstances require formal business letters. The complaint may be so complex that a phone call cannot effectively resolve the problem; or the writer may prefer the permanence, formality, and seriousness of a business letter. The essential rule in writing a complaint letter is to maintain your poise and diplomacy, no matter how justified your gripe is. Avoid making the recipient an adversary.

**Note:** Complaints by e-mail may not be as effective as those by regular mail, so that option is not included here.

1. Early in the letter, identify the reason you are writing—to register a complaint and to ask for some kind of compensation. Avoid leaping into the details of the problem in the first sentence.
2. Provide a fully detailed narrative or description of the problem. This is the "evidence."
3. State exactly what compensation you desire, either before or after the discussion of the problem or the reasons for granting the compensation. (It may be more tactful and less antagonizing to delay this statement in some cases.)
4. Explain why your request should be granted. Presenting the evidence is not enough; state the reasons why this evidence indicates your requested should be granted.
5. Suggest why it is in the recipient's best interest to grant your request; appeal to the recipient's sense of fairness or desire for continued business, but don't threaten. Find some way to view the problem as an honest mistake. Don't imply that the recipient deliberately committed the error or that the company has no concern for the customer. Toward the end of the letter, express confidence that the recipient will grant your request.

#### Adjustment Letters

**Note:** Adjustment communications by e-mail may not be as effective as those by regular mail so that option is not included here.

Repplies to complaint letters, often called letters of "adjustment," must be handled carefully when the requested compensation cannot be granted. Refusal of compensation tests your diplomacy and tact as a writer. Here are some suggestions that may help you write either type of adjustment letter:
1. Begin with a reference to the date of the original letter of complaint and to the purpose of your letter. If you deny the request, don’t state the refusal right away unless you can do so tactfully.
2. Express your concern over the writer’s troubles and your appreciation that she or he has written you.
3. If you deny the request, explain the reasons why the request cannot be granted in as cordial and noncombative manner as possible. If you grant the request, don’t sound as if you are doing so in a begrudging way.
4. If you deny the request, try to offer some partial or substitute compensation or offer some friendly advice (to take the sting out of the denial).
5. Conclude the letter cordially, perhaps expressing confidence that you and the writer will continue doing business.

Job Application Letters

This section focuses on the application letter (sometimes called a "cover letter"), which together with the resume is often called the "job package." You may already have written one or both of these employment-seeking documents. That's okay. Read and study this section, and then apply the guidelines here to the resumes and application letters you have created in the past.

In many job applications, you attach an application letter to your resume. Actually, the letter comes before the resume.

The role of the application letter is to draw a clear connection between the job you are seeking and your qualifications listed in the resume. To put it another way, the letter matches the requirements of the job with your qualifications, emphasizing how you are right for that job. The application letter is not a lengthy summary of the resume—not at all. It selectively mentions information in the resume, as appropriate.

Common Types of Application Letters

To begin planning your letter, decide which type of application letter you need. This decision is, in part, based on employers’ requirements and, in part, based on what your background and employment needs are. In many ways, types of application letters are like the types of resumes. The types of application letters can be defined according to amount and kind of information:

- **Objective letters**—One type of letter says very little: it identifies the position being sought, indicates an interest in having an interview, and calls attention to the fact that the resume is attached. It also mentions any other special matters that are not included on the resume, such as dates and times when you are available to come in for an interview. This letter does no salesmanship and is very brief. (It represents the true meaning of "cover" letter.)
- **Highlight letters**—Another type of application letter, the type you do for most technical writing courses, tries to summarize the key information from the resume, the key information that will emphasize that you are a good candidate for the job. In other words, it selects the best information from the resume and summarizes it in the letter—this type of letter is especially designed to make the connection with the specific job.

How do you know which to write? For most technical-writing courses, write the highlight letter. However, in "real-life" situations, try calling the prospective employer; study the job advertisement for clues.

Common Sections in Application Letters

As for the actual content and organization of the paragraphs within the application letter (specifically for the highlight type of application letter), consider the following common approaches.

**Introductory paragraph**—That first paragraph of the application letter is the most important; it sets everything up—the tone, focus, as well as your most important qualification. A typical problem in the introductory paragraph involves diving directly into work and educational experience. Bad idea! A better idea is to do some combination of the following:

- State the purpose of the letter—to inquire about an employment opportunity.
- Indicate the source of your information about the job—newspaper advertisement, a personal contact, or other.
- State one eye-catching, attention-getting thing about yourself in relation to the job or to the employer that will cause the reader to want to continue.

And you try to do all things like these in the space of very short paragraph—no more than 3 to 4 lines of the standard business letter.

**Main body paragraphs**: In the main parts of the application letter, you present your work experience, education, and training—whatever makes that connection between you and the job you are seeking. Remember that this is the most important job you have to do in this letter—to enable the reader see the match between your qualifications and the requirements for the job.

There are two common ways to present this information:

- Functional approach—This one presents education in one section, and work experience in the other. If there were military experience, that might go in another section. Whichever of these sections contains your “best stuff” should come first, after the introduction.
- Thematic approach—This one divides experience and education into groups such as “management,” “technical,” “financial,” and so on and then discusses your work and education related to them in separate paragraphs.

If you read the section on functional and thematic organization of resumes, just about everything said there applies here. Of course, the letter is not exhaustive or complete about your background—it highlights just those aspects of your background that make the connection with the job you are seeking.
Another section worth considering for the main body of the application letter is one in which you discuss your goals, objectives (the focus of your career) what you are doing, or want to do professionally. A paragraph like this is particularly good for people just starting their careers, when there is not much to put in the letter. Of course, be careful about loading a paragraph like this with "sweet nothings." For example, "I am seeking a challenging, rewarding career with a dynamic upscale company where I will have ample room for professional and personal growth"—come on! give us a break! Might as well say, "I want to be happy, well-paid, and well-fed."

Closing paragraph: In the last paragraph of the application letter, you can indicate how the prospective employer can get in touch with you and when are the best times for an interview. This is the place to urge that prospective employer to contact you to arrange an interview.

Background Details in the Application Letter

One of the best ways to make an application letter great is to work in details, examples, specifics about related aspects of your educational and employment background. Yes, if the resume is attached, readers can see all that details there. However, a letter that is overly general and vague might generate so little interest that the reader might not even care to turn to the resume.

In the application letter, you work in selective detail that makes your letter stand out, makes it memorable, and substantiates the claims you make about your skills and experience. Take a look at this example, which is rather lacking in specifics:

As for my experience working with persons with developmental disabilities, I have worked and volunteered at various rehabilitation hospitals and agencies in Austin and Houston [say which ones to inject more detail into this letter]. I have received training [where? certificates?] in supervising patients and assisting with physical and social therapy [which specific therapies?]. Currently, I am volunteering at St. David's Hospital [doing what?] to continue my education in aiding persons with developmental disabilities [which specific disabilities?].

Now take a look at the revision:

As for my experience working with persons with developmental disabilities, I have worked and volunteered at Cypress Creek Hospital in Houston and Capital Area Easter Seals/Rehabilitation Center and Health South Rehabilitation Hospital in Austin. I have received CPR, First Aid, and Crisis Intervention certificates from Cypress Creek Hospital. Currently, I am volunteering at St. David's Hospital assisting with physical therapy to persons with developmental disabilities in the aquatics department.
Early-Career Application Letters

In the preceding, you've seen some rather impressive application letters. But what if you don't have all that experience—how do you construct a respectable application letter?

- Cite relevant projects (both in academia and community) you've worked on, even if they are not exactly related to the career that you pursue.
- Spend extra time describing college courses and programs you have been involved in. What about team projects, research projects, or reports?
- Include volunteer work that has had any trace of technical in it. (If you've not done any volunteer work, get to volunteering!)
- List any organizations you have been a member of and describe any of their activities that have any trace of technical in them. (If you're not belonged to any technically oriented organizations, get to belonging!)
- As with the resume, you can use formatting to spread what information you have to fill out the resume page.

In the example student application letter below, notice that the writer describes his coursework and the applications that he used. His reference to a professional exposition shows an active interest in a particular technical area. Moreover, his visit with an employee of the company with which he seeks employment is a crafty form of name dropping. In general, the letter expresses enthusiasm about working in the VLSI area.

Early-career application letter. Use the strategies suggested here to fill your letter with good specific information.

Checklist of Common Problems in Application Letters

- Readability and white space—Are there any dense paragraphs over 8 lines? Are there comfortable 1-inch to 1.5-inch margins all the way around the letter? Is there adequate spacing between paragraphs and between the components of the letter?
- Page fill—Is the letter placed on the page nicely: not crammed at the top one-half of the page; not spilling over to a second page by only three or four lines?
- General neatness, professional-looking quality—Is the letter on good quality paper, and is the copy clean and free of smudges and erasures?
- Proper use of the business-letter format—Have you set up the letter in one of the standard business-letter formats? (See the references earlier in this chapter.)
- Overt, direct indication of the connection between your background and the requirements of the job—Do you emphasize this connection?
- A good upbeat, positive tone—Is the tone of your letter bright and positive? Does it avoid sounding overly aggressive, brash, over-confident (unless that is really the tone you want)? Does your letter avoid the opposite problem of sounding stiff, overreserved, stand-offish, blase, indifferent?
- A good introduction—Does your introduction establish the purpose of the letter? Does it avoid diving directly into the details of your work and educational experience? Do you present one little compelling detail about yourself that will cause the reader to want to keep reading?
- A good balance between brevity and details—Does your letter avoid becoming too detailed (making readers less inclined to read thoroughly)? Does your letter avoid the opposite extreme of being so general that it could refer to practically anybody?
- Lots of specifics (dates, numbers, names, etc.)—Does your letter present plenty of specific detail but without making the letter too densely detailed? Do you present hard factual detail (numbers, dates, proper names) that make you stand out as an individual?
- A minimum of over-reliance on information that is simply your opinions about yourself? For example, instead of saying that you “work well with others,” do you cite work experience that proves that fact but without actually stating it?
- Grammar, spelling, usage—And of course, does your letter use correct grammar, usage, and spelling?

Resumes

A resume is a selective record of your background—your educational, military, and work experience, your certifications, abilities, and so on. You send it, sometimes accompanied by an application letter, to potential employers when you are seeking job interviews.

A resume should be easily readable, effectively designed, and adapted to audience expectations. If you are taking a technical writing course, your instructor may be okay with your making up a few details in your resume to represent what you'll be when you graduate. However, if you're just starting your college education and have little work experience, why not try using the techniques and suggestions here to create a resume that represents your current skills, abilities, and background? Developing a decent-looking resume based on what you are now is a challenge that you have to deal with at some point—so why not now?

Resume Design: An Overview

Before personal computers, people used one resume for varied kinds of employment searches. However, with less expensive desktop publishing and high-quality printing, people sometimes rewrite their resumes for every new job they go after. For example, a person who seeks employment both with a community college and with a software-development company would use two different resumes. The contents of the two might be roughly the same, but the organization, format, and emphases would be quite different.

You are probably aware of resume-writing software: you feed your data into them and they churn out a prefab resume. You probably also know about resume-writing services that will create your resume for you for a hundred dollars or so. If you are in a time bind or if you are extremely insecure about your writing or resume-designing skills, these services might help. But often they take your information and put it into a computer database that then force it into a prefab structure. They often use the same resume-writing software just mentioned; they charge you about what the software costs. The problem is that these agencies simply cannot be that sensitive or perceptive about your background or your employment search. Nor are you likely to want to pay for their services every month or so when you are in the thick of a job search. Why not learn the skills and techniques of writing your own resume here, save the money, and write better resumes anyway?

There is no one right way to write a resume. Every person's background, employment needs, and career objectives are different, thus necessitating unique resume designs. Every detail, every aspect of your resume must start with who you are, what your background is, what the potential employer is looking for, and what your employment goals are—not with from some prefab design. Therefore, use this chapter to design your own resume, browse through the various formats, and play around with them until you find one that works for you.
Sections in Resumes

Resumes can be divided into three sections: the heading, the body, and the conclusion. Each of these sections has fairly common contents.

**Heading.** The top third of the resume is the heading. It contains your name, phone numbers, address, and other details such as your occupation, titles, and so on. Some resume writers include the name of their profession, occupation, or field. In some examples, you’ll see writers putting things like “CERTIFIED PHYSICAL THERAPIST” very prominently in the heading. Headings can also contain a goals and objectives subsection and a highlights subsection. These two special subsections are described later.

**Body.** In a one-page resume, the body is the middle portion, taking up a half or more of the total space of the resume. In this section, you present the details of your work, education, and military experience. This information is arranged in reverse chronological order. In the body section, you also include your accomplishments, for example, publications, certifications, equipment you are familiar with, and so on. There are many ways to present this information:

- You can divide it functionally—into separate sections for work experience and education.
- You can divide it thematically—into separate sections for the different areas of your experience and education.

**Conclusion.** In the final third or quarter of the resume, you can present other related information on your background. For example, you can list activities, professional associations, memberships, hobbies, and interests. At the bottom of the resume, people often put “REFERENCES AVAILABLE ON REQUEST” and the date of preparation of the resume. At first, you might think that listing nonwork and personal information would be totally irrelevant and inappropriate. Actually, it can come in handy—it personalizes you to potential employers and gives you something to chat while you’re waiting for the coffee machine or the elevator. For example, if you mention in your resume that you raise goats, that gives the interviewer something to chat with you about during those moments of otherwise uncomfortable silence.

**Resumes: Types and Design**

To begin planning your resume, decide which type of resume you need. This decision is in part based on requirements that prospective employers may have, and in part based on what your background and employment needs are.

**Type of organization.** Resumes can be defined according to how information on work and educational experience is handled. There are several basic, commonly used plans or designs you can consider using.

- **Functional design.** Illustrated schematically below, the functional design starts with a heading; then presents either education or work experience, whichever is stronger or more relevant; then presents the other of these two sections; then ends with a section on skills and certifications and one on personal information. Students who have not yet begun their careers often find this design the best for their purposes. People with military experience either work the detail in to the education and work-experience sections as appropriate, or they create separate section specifically for military experience at the same level as education and work experience.
Thematic design: Another approach to resumes is the thematic design, illustrated schematically in the preceding. It divides your experience and education into categories such as project management, budgetary planning, financial tracking, personnel management, customer sales, technical support, publications—whichever areas describe your experience. Often, these categories are based directly on typical or specific employment advertisements. If the job advertisement says that Company ABC wants a person with experience in training, customer service, and sales, then it might be a smart move to design thematic headings around those three requirements. If you want to use the thematic approach in your resume, take a look at your employment and educational experience—what are the common threads? Project management, program development, troubleshooting, supervision, maintenance, inventory control? Take a look at the job announcement you’re responding to—what are the three, four, or five key requirements it mentions? Use these themes to design the body section of your resume. These themes become the headings in the body of the resume. Under these headings you list the employment or educational experience that applies. For example, under a heading like “FINANCIAL RECORDS,” you might list the accounting and bookkeeping courses you took in college, the company-sponsored seminars on Excel you took, and the jobs where you actually used these skills.

Type of information. Types of resumes can be defined according to the amount and kind of information they present:

- **Objective resumes**: This type just gives dates, names, titles, no qualitative salesmanship information. These are very lean, terse resumes. In technical-writing courses, you are typically asked not to write this type. The objective-resume style is useful in resumes that use the thematic approach or that emphasize the summary/highlights section. By its very nature, you can see that the thematic approach is unclear about the actual history of employment. It’s harder to tell where the person was, what she was doing, year by year.
- **Detailed resumes**: This type provides not only dates, titles, and names, but also details about your responsibilities and statements about the quality and effectiveness of your work. This is the type most people write, and the type that is the focus of most technical-writing courses. The rest of the details in this section of this chapter focus on writing the detailed resume.

Layout and Detail Format in Resumes

At some point in your resume planning, you’ll want to think schematically about the layout and design of the thing. General layout has to do with the design and location of the heading, the headings for the individual sections, and the orientation of the detailed text in relation to those headings. Detail formats are the way you choose to arrange and present the details of your education and work experience.

**Layout.** Look at resumes in this book and in other sources strictly in terms of the style and placement of the headings, the shape of the text (the paragraphs) in the resumes, and the orientation of these two elements with each other. Some resumes have the headings centered; others are on the left margin. Notice that the actual text—the paragraphs—of resumes typically does not extend to the far left and the far right margins. Full-length lines are not considered as readable or scannable as the shorter ones you see illustrated in the examples in this book.

Notice that many resumes use a “hanging-head” format. In this case, the heading starts on the far left margin while the text is indented another inch or so. This format makes the heading stand out more and the text more scannable. Notice also that in some of the text paragraphs of resumes, special typography is used to highlight the name of the organization or the job title.

**Detail formats.** You have to make a fundamental decision about how you present the details of your work and education experience. Several examples of typical presentational techniques are shown below. The elements you work with include:

- Occupation, position, job title
There are many different ways to format this information. It all depends on what you want to emphasize and how much or how little information you have (whether you are struggling to fit it all on one page or struggling to make it fill one page). Several different detail formats are shown above.

**Special Sections in Resumes**

Here are some ideas for special resume sections, sections that emphasize your goals or qualifications.

**Highlights, summary section.** In the illustration below, you'll notice the "Highlights" section that occurs just below the heading (the section for name, address, phone number, etc.) and just above the main experience and education sections. This is a popular section in resumes. Resume specialists believe that the eye makes first contact with a page somewhere one-fourth to one-third of the way down the page—not at the very top. If you believe that, then it makes sense to put your very "best stuff" at that point. Therefore, some people list their most important qualifications, their key skills, their key work experience in that space on the page. Actually, this section is useful more for people who have been in their careers for a while. It's a good way to create one common spot on the resume to list those key qualifications about yourself that may be spread throughout the resume. Otherwise, these key details about yourself are scattered across your various employment and educational experience—in fact, buried in them.

**Objectives, goals.** Also found on some resumes is a section just under the heading in which you describe what your key goals or objectives are or what your key qualifications are. Some resume writers shy away from including a section like this because they fear it may cause certain employers to stop reading, in other words, that it limits their possibilities. A key-qualifications section is similar to a highlights section, but shorter and in paragraph rather than list form.

**Amplifications page in a resume.** If you have lots of detail about what you know, this approach on page 2 of the resume may work. On the first page of this resume, the writer divides the presentation into experience and education sections and takes a chronological approach to each. On the first page, he only provides company names, job titles, dates, and discussion of duties.

**Early-Career Resumes**

If you are at the beginning of your career, all the advice and examples to this point may seem fine and good, but what if you have very little experience? Careers must start somewhere—and so must resumes. You can use several strategies to fill out your resume so that you appear to be the promising entry-level candidate that we all know you are.

- Cite relevant projects (both in academia and community) you've worked on, even if they are not exactly related to the career that you pursue.
- Spend extra time describing college courses and programs you have been involved in. What about team projects, research projects, or reports?
- Include volunteer work that has had any trace of technical in it. (If you've not done any volunteer work, get to volunteering!)
- List any organizations you have been a member of and describe any of their activities that have any trace of technical in them. (If you've not belonged to any technically oriented organizations, get to belonging!)
- Use formatting to spread what information you have to fill out the resume page.

In the student resume shown below, notice how much space that details about education take up. This resume writer could have included even more: Descriptions of key courses and projects could have been provided under a heading such as "Essential Coursework."
Early-career resume. Use the strategies suggested here to fill out your resume with good information.

Notice too that the resume above includes plenty of co-op and part-time work. The bulleted-list format extends the length of the resume so that it fills up the page. At the bottom of the resume, the writer lists awards and organizations. These too could be amplified if necessary. Details as to what the award is about, why this writer received it, and what those organizations are—all are examples of good information that could be added, if necessary.

Subtle changes in format can also help make your resume fill a page. Top, bottom, left, and right margins can all be pushed down, up, and in from the standard 1.0 inch to 1.25 inches. You can add extra space between sections. To do so, don't just press Enter. Instead, use the paragraph-formatting feature of your software to put 6 or 9 points, for example, below the final element of each section. Line spacing is another subtle way to extend a resume. If your software by default uses 13.6 points of line spacing for Times New Roman 12 point text, experiment with changing the line spacing to exactly 15.0 points.

Resume Checklist

As you plan, write, or review your resume, keep these points in mind:

- **Readability:** are there any dense paragraphs over 6 lines? Imagine your prospective employer sitting down to a two-inch stack of resumes. Do you think she's going to slow down to read through big thick paragraphs. Probably not. Try to keep paragraphs under 6 lines long. The “hanging-head” design helps here.

- **White space.** Picture a resume crammed with detail, using only half-inch margins all the way around, a small type size, and only a small amount of space between parts of the resume. Our prospective employer might be less inclined to work through that also. "Air it out!” Find ways to incorporate more white space in the margins and between sections of the resume. Again, the “hanging-head” design is also useful.

- **Special format.** Make sure that you use special format consistently throughout the resume. For example, if you use a hanging-head style for the work-experience section, use it in the education section as well.

- **Consistent margins.** Most resumes have several margins: the outmost, left margin and at least one internal left margin. Typically, paragraphs in a resume use an internal margin, not the far-left margin. Make sure to align all appropriate text to these margins as well. Avoid unnecessary multiple margins: they give your resume a ragged messy look.

- **Terse writing style.** It's okay to use a rather clipped, terse writing style in resumes—up to a point. The challenge in most resumes is to get it all on one page (or two if you have a lot of information to present). Instead of writing "I supervised a team of five technicians..." you write "Supervised a team of five technicians..." However, you don't leave out normal words such as articles.

- **Bold, italics, different type size, caps, other typographical special effects.** Use special typography, but keep it under control. Resumes are great places to use all of your fancy word-processing features such as bold, italics, different fonts, and different type sizes. Don't go crazy with it! Too much fancy typography can be distracting (plus make people think you are hyperactive). Also, whatever special typography you use, be consistent with it throughout the resume. If some job titles are italics, make them all italics. Avoid all-caps text—it's less readable.

- **Page fill.** Do everything you can to make your resume fill out one full page and to keep it from spilling over by 4 or 5 lines to a second page. At the beginning of your career, it's tough filling up a full page of a resume. As you move into your career, it gets hard keeping it to one page. If you need a two-page resume, see that the second page is full or nearly full.

- **Clarity of boundary lines between major sections.** Design and format your resume so that whatever the main sections are, they are very noticeable. Use well-defined headings and white space to achieve this. Similarly, design your resume so that the individual segements of work experience or education are distinct and separate from each other.

- **Reverse chronological order.** Remember to list your education and work-experience items starting with the current or most recent and working backwards in time.

- **Consistency of phrasing.** Use the same style of phrasing for similar information in a resume—for example, past tense verbs for all descriptions of past work experience.

- **Consistency of punctuation style.** For similar sections of information use the same kind of punctuation—for example, periods, commas, colons, or nothing.

- **Translations for "inside" information.** Don't assume readers will know what certain abbreviations, acronyms, or symbols mean—yes, even to the extent of “GPA” or the construction “3.2/4.0.” Take time to describe special organizations you may be a member of.

- **Grammar, spelling, usage.** Watch out for these problems on a resume—they stand out like a sore thumb! Watch out particularly for the incorrect use of its and it's.
Types of Technical Documents
David McMurrey

Chapter Objectives

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

1. Identify common types of technical documents.
2. Summarize the purposes and formats of common types of technical documents.

Types of Technical Documents

For the final report in some technical-writing courses, you can write one of (or even a combination of) several different types of reports. If there is some other type of report that you know about and want to write, get with your instructor to discuss it.

This chapter briefly defines these different report types; some are covered in full detail elsewhere in this book; the rest are described here. But to get everything in one place, all the reports are briefly defined here, with cross-references to where their presentations occur:

Standard operating policies and procedures

These are the operating documents for organizations; they contain rules and regulations on how the organization and its members are expected to perform. Policies and procedures are like instructions, but they go much further. Standard operating procedures (SOPs) are more for procedures in which a process is performed—for example, taking a dental impression.

Recommendation, feasibility, evaluation reports

This group of similar reports does things like compare several options against a set of requirements and recommend one; considers an idea (plan, project) in terms of its “feasibility,” for example, some combination of its technical, economical, social practicality or possibility; passes judgement on the worth or value of a thing by comparing it to a set of requirements, or criteria.

Technical background reports

This type is the hardest one to define but the one that most people write. It focuses on a technical topic, provides background on that topic for a specific set of readers who have specific needs for it. This report does not supply instructions, nor does it supply recommendations in any systematic way, nor does it report new and original data.

Technical guides and handbooks

Closely related to technical report but differing somewhat in purpose and audience are technical guides and handbooks.

Primary research reports

This type presents findings and interpretation from laboratory or field research.

Business plans

This type is a proposal to start a new business.

Technical specifications
Types of Technical Documents

Technical Background Reports

The technical background report is hard to define—it's not a lot of things, but it's hard to say what it is. It doesn't provide step-by-step directions on how to do something in the way that instructions do. It does not formally provide recommendations in the way that feasibility reports do. It does not report data from original research and draw conclusions in the way that primary research reports do.

So what does the technical background report do? It provides information on a technical topic but in such a way that is adapted for a particular audience that has specific needs for that information. Imagine a topic like this: renal disease and therapy. A technical background report on this topic would not dump out a ten-ton textbook containing everything you could possibly say about it. It would select information about the topic suited to a specific group of readers who had specific needs and uses for the information. Imagine the audience was a group of engineers bidding on a contract to do part of the work for a dialysis clinic. Yes, they need to know about renal disease and its therapy, but only to the extent that it has to do with their areas of expertise. Such a background report might also include some basic discussion of renal disease and its treatment, but no more than what the engineers need to do their work and to interact with representatives of the clinic.

One of the reports is an exploration of global warming, or the greenhouse effect, as it is called in the report. Notice that it discusses causes, then explores the effects, then discusses what can be done about it.

Typical contents and organization of technical background reports. Unlike most of the other reports discussed in this course guide, the technical background report does not have a common set of contents. Because it focuses on a specific technical topic for specific audiences who have specific needs or uses for the information, it grabs at whatever type of contents it needs to get the job done. You use a lot of intuition to plan this type of report. For example, with the report on renal disease and treatment, you'd probably want to discuss what renal disease is, what causes it, how it is treated, and what kinds of technologies are involved in the treatment. If you don't fully trust your intuition, use a checklist like the following:

- **Definitions**—Define the potentially unfamiliar terms associated with the topic. Write extended definitions if there are key terms or if they are particularly difficult to explain.
- **Causes**—Explain what causes are related to the topic. For example, with the renal disease topic, what causes the disease?
- **Effects**—Explain what are the consequences, results, or effects associated with the topic. With the renal disease topic, what happens to people with the disease; what effects do the various treatments have?
- **Types**—Discuss the different types or categories associated with the topic. For example, are there different types of renal disease; are there different categories of treatment?
- **Historical background**—Discuss relevant history related to the topic. Discuss people, events, and past theories related to the topic.
- **Processes**—Discuss mechanical, natural, human-controlled processes related to the topic. Explain step by step how the process occurs. For example, what are the phases of the renal disease cycle; what typically happens to a person with a specific form of the disease?
- **Descriptions**—Provide information on the physical details of things related to the topic. Provide information about size, shape, color, weight, and so on. For the engineering-oriented report, this would mean size, power requirements, and other such details about the treatment technologies.
- **Comparisons**—Compare the topic, or some aspect of it, to something similar or something familiar. With the renal disease example, you could compare renal disease to some other disease; the treatment to some other treatment; the functions of the kidney to something familiar (an analogy); or even the treatment to something familiar, for example, the filter system for a swimming pool.
- **Applications**—Explore how some aspect of your topic can be used or applied. If it's some new technology, what are its applications?
- **Advantages and disadvantages**—Discuss the advantages or disadvantages of one or more aspects of your topic. In the renal disease topic, for example, what are the advantages of one treatment over another?
- **Economic considerations**—Discuss the costs of one or more aspects associated with your topic. How much does treatment for renal disease cost? How much does the equipment and personnel cost?
- **Social, political, legal, ethical implications**—Explore the implications or impact of your topic or some aspect of it in relation to social, political, legal, or ethical concerns. The renal disease example doesn't lend itself much to this area, but imagine the possibilities with a topic like cryogenics—suspended animation of human beings. Often, new technologies have profound impact in these areas.
- **Problems, questions**—What problems or questions are there associated with your report topic or some aspect of it?
- **Solutions, answers**—What solutions or answers can you offer on those problems or questions raised by your topic or some aspect of it?
We could add many other categories to a checklist like this, but maybe this is enough to get you started planning the contents of your technical background report. And remember that each of these checklist items may represent a full section in the report—not a sentence or two.

As for the organization of these parts of the report, again, your intuitions are in order. Some subtopics logically come before others.

Typical format of technical background reports. Remember that in most technical-writing courses, you are expected to use a format like this exactly and precisely—unless you work out some other arrangements with your instructor.

### Technical Guides and Handbooks

There's a distinction to be made between reports, on the one hand, and guides and handbooks, on the other. However, it's difficult to distinguish between the two latter types. A report, as the preceding section explains, is simply a collection of information on a topic—its background. For example, your boss might call you in and bark out this order: “Jones, our architectural firm needs to catch up with this green roof thing. See if you can pull some basic information together for me. How about in two weeks?”

A guide or handbook, on the other hand, has a somewhat different purpose. A guide would "guide" its readers in determining the feasibility of a green roof, planning, and constructing one. A handbook might contain little or no guidance but have lots of reference information about green roofs: associations supporting them, case studies, specifications, vendors, government ordinances, and so on.

But, frankly, the distinction between these two is difficult. And, in terms of format, style, and structure, there is very little difference. The abstract and executive summary have no logical place in a guide or handbook. If you are taking a technical writing course, check with your instructor about whether you still should include an abstract or executive summary.

### Primary Research Reports

Primary research report is our name for that kind of report that presents original research data—no matter whether that data was generated in a laboratory or out in the "field." A secondary research report then would be a report (such as the technical background report) that presents information gained largely from printed or online information sources or from other sources such as interviews or direct observation.

You're probably already familiar with this type of report as the "lab report." The contents and organization of this type of report have a basic logic: you present your data and conclusions, but also present information on how you went about the experiment or survey. In other words, you enable the reader to replicate (the fancy scientific word for repeat) your experiment, or at least, visualize quite specifically how you went about it.

One of the examples is an experiment to see whether production of rainbow trout can be increased by varying water temperature. While there is not a one-to-one correspondence between the typical sections in primary research reports and the sections you see in the actual rainbow trout report, you'll find that most of the functions are carried out. Instead of a full paragraph, sometimes all that is needed is a single sentence. And sometimes certain functions are combined into a single sentence.

Contents of primary research reports. To enable readers to replicate your experiment or survey, you provide information like the following (each normally in its own section):

- **Introduction**—The introduction to the primary research report needs to do what any good introduction to a report needs to do—get readers ready to read the report. It may provide some background, but not more than a paragraph. Common elements, such as background, can be handled in the introduction. If they require a lot of discussion, however, they may need their own sections.
- **Problem, background**—One of the first things to do, either in the introduction, or in a separate section of its own, is to discuss the situation that has led to the research work. For example, you may have noticed something that contradicts a commonly accepted theory; you may have noticed some phenomenon that has not been studied, and so on. Explain this somewhere toward the beginning of a primary research report.
- **Purpose, objectives, scope**—Also toward the beginning of this type of report discuss what you intended to do in the research project—what were your objectives? Also, explain the scope of your work—what were you not trying to do?
- **Review of literature**—After you've established the basis for the project, summarize the literature relevant to it—for example, books, journal articles, and encyclopedias. If you are doing a study on speech recognition software, what articles have already been written on that subject? What do they have to say about the merits of this kind of...
Types of Technical Documents

Software? All you do is summarize this literature briefly and enable readers to go have a look at it by providing the full bibliographic citation at the end of your report. In the context of this type of report, the review of literature shows where the gaps or contradictions are in the existing literature.

- **Materials, equipment, facilities**—Remember that one of your goals in writing this type of report is to enable the reader to replicate the experiment or survey you performed. Key to this is the discussion of the equipment and facilities you used in your research. Describe things in detail, providing brand names, model numbers, sizes, and other such specifications.

- **Theory, methods, procedures**—To enable readers to replicate your project, you must also explain the procedures or methods you used. This discussion can be step by step: "first, I did this, then I did that...." Theory and method refer more to the intellectual or conceptual framework of your project. These explain why you used the procedures that you used.

- **Results, findings, data**—Critical to any primary research report is the data that you collect. You present it in tables, charts, and graphs. These can go in the body of your report, or in appendices if they are so big that they interrupt the flow of your discussion. Of course, some results or findings may not be presentable as tables, charts, or graphs. In these cases, you just discuss it in paragraphs. In any case, you do not add interpretation to this presentation of data. You merely present the data, without trying to explain it.

- **Discussion, conclusions, recommendations**—In primary research reports, you interpret or discuss your findings in a section separate from the one where you present the data. Now's the time to explain your data, to interpret it. This section, or area of the report, is also the place to make recommendations or state ideas for further research.

- **Bibliography**—The ideal of the primary research report is build upon or add to the knowledge in a particular area. It's the vehicle by which our knowledge advances for a specific topic. Your primary research report rests on top of all the work done by other researchers on the same topic. For that reason, you must list the sources of information you used or consulted in your project. This list occurs at the end of the report.

As for the organization of a primary research report, the typical contents just listed are arranged in an actual primary research report in just about the same order they were just discussed. Loosely, it is a chronological order. First, you discuss set-up issues such as the problem and objectives, then you discuss the procedures, then the data resulting from those procedures, then your conclusions based upon that data.

Typical format of primary research reports. In most technical-writing courses, you should use a format like the one shown in the chapter on report format. (The format you see in the example starting on page is for journal articles). In a primary research report for a technical-writing course, however, you should probably use the format in which you have a transmittal letter, title page, table of contents, list of figures, and abstracts.

**Technical Specifications**

Specifications are descriptions of products or product requirements. They can provide details for the design, manufacture, testing, installation, and use of a product. You typically see specifications in the documentation that comes in the package with certain kinds of products, for example, CD players or computers. These describe the key technical characteristics of the item. But specifications are also written as a way of "specifying" the construction and operational characteristics of a thing. They are then used by people who actually construct the thing or go out and attempt to purchase it. When you write specifications, accuracy, precision of detail, and clarity are critical. Poorly written specifications can cause a range of problems and lead to lawsuits.

Outline and two-column style used to present information in specifications. Graphics, tables, and lists are heavily used, but some details can only be provided through sentences and paragraphs. For these reasons then, specifications have a particular style, format, and organization:

- Make every effort to find out what the specific requirements are for format, style, contents, and organization. If they are not documented, collect a big pile specifications written by or for your company, and study them for characteristics like those described in the following.
- Use two-column lists or tables to lists specific details. If the purpose is to indicate details such as dimensions, materials, weight, tolerances, and frequencies, regular paragraph-style writing may be unnecessary.
- For sentence-style presentation, use an outline style similar to the one shown in the illustration above. Make sure that each specification receives its own number–letter designation. In sentence-style specifications, make sure each specific requirement has its own separate sentence.
- Use the decimal numbering system for each individual specification. This facilitates cross-referencing.

Graphics and tables used to present information in specifications.

- Use either the open (performance) style or the closed restrictive style, depending on the requirements of the job. In the open or performance style, you can specify what the product or component should do, that is, its performance capabilities. In the closed style, you specify exactly what it should be or consist of.
• Cross-reference existing specifications whenever possible. Various government agencies as well as trade and professional associations publish specifications standards. You can refer to these standards rather than include the actual specifications details.
• Use specific, concrete language that identifies as precisely as possible what the product or component should be or do. Avoid words that are ambiguous—words that can be interpreted in more than one way. Use technical jargon the way it is used in the trade or profession.
• Test your specifications by putting yourself in the role of a bumbling contractor—or even an unscrupulous one. What are the ways a careless or incompetent individual could misread your specifications? Could someone willfully misread your specifications in order to cut cost, time, and thus quality? Obviously, no set of specifications can ultimately be “foolproof” or “shark-proof,” but you must try to make them as clear and unambiguous as possible.
• For specifications to be used in design, manufacturing, construction, or procurement, use "shall" to indicate requirements. In specifications writing, "shall" is understood as indicating a requirement. (See the outline-style specifications in the first illustration on specifications for examples of this style of writing.)
• Provide numerical specifications in both words and symbols: for example, "the distance between the two components shall be three centimeters (3 cm)."
• Writing style in specifications can be very terse: incomplete sentences are acceptable as well as the omission of functions words such as articles and conjunctions that are understood.
• Exercise great caution with pronouns and relational or qualifying phrases. Make sure there is no doubt about what words such as "it," "they," "which," and "that" refer to. Watch out for sentences containing a list of two or more items followed by some descriptive phrase—does the descriptive phrase refer to all the list items or just one? In cases like these, you may have to take a wordier approach for the sake of clarity.
• Use words and phrasing that have become standard in similar specifications over the years. Past usage has proven them reliable. Avoid words and phrases that are known not to hold up in lawsuits.
• Make sure your specifications are complete—put yourself in the place of those who need your specifications; make sure you cover everything they will need.

Contents and Organization of Specifications. Organization is critical in specifications—readers need to be able to find one or a collection of specific details. To facilitate the process of locating individual specifications, use headings, lists, tables, and identifying numbers as discussed previously. But a certain organization of the actual contents is also standard:

• General description—Describe the product, component, or program first in general terms—administrative details about its cost, start and completion dates, overall description of the project, scope of the specifications (what you are not covering), anything that is of a general nature and does not fit in the part-by-part descriptions in the following.
• Part-by-part description—In the main body, present specifications part by part, element by element, trade by trade—whatever is the logical, natural, or conventional way of doing it.
• General-to-specific order—Wherever applicable, arrange specifications from general to specific.

Graphics in specifications. In specifications, use graphics wherever they enable you to convey information more effectively. For example, in the specifications for a cleanroom for production of integrated circuits, drawings, diagrams, and schematics convey some of the information much more succinctly and effectively than sentences and paragraphs.

**Literature Reviews**

A literature review summarizes what is known about a specific research topic, narrates the milestones of the research history, indicates where current knowledge conflicts, and discusses areas where there are still unknowns.

A literature review can be a standalone document or a component of a primary research report (as discussed previously). Research journals often contain articles whose sole purpose is to provide a literature review. As a component of a research report, a literature review can be as long as a whole chapter in book, only a paragraph in a research article, or as short as a few sentences in an introduction. In all cases, the function of the literature review is the same: to summarize the history and current state of research on a topic.

As you know from the preceding section, a primary research report (such as those in engineering research journals) focuses on a question: for example, the effect of weightlessness on growing vegetables. The literature-review section of that report would summarize what is known about this topic, indicate where current knowledge conflicts, and discuss areas where there are still unknowns.

A well-constructed literature review tells a story. It narrates the key events in the research on a particular question or in a particular area:
1. Who were the first modern researchers on this topic? What were their findings, conclusions, and theories? What questions or contradictions could they not resolve?

2. What did researchers following them discover? Did their work confirm, contradict, or overturn the work of their predecessors? Were they able to resolve questions their predecessors could not?

You narrate this series of research events in a literature review. You can consider this research as similar to the thesis–antithesis–synthesis process. You start out with a thesis, then along comes an antithesis to contradict it, and eventually some resolution of this contradiction called a synthesis is achieved, which is actually a step forward in the knowledge about that topic. But now the synthesis becomes a thesis, and the process starts all over again.

Hilton Obenzinger of Stanford University in "How to Research, Write, and Survive a Literature Review?" calls this type of literature review a "road map." He identifies several other types, most importantly those that review the methodology of the research as well as or instead the the research findings. Obenzinger emphasizes that the literature review is not just a passive summary of research on a topic but an evaluation of the strengths and weaknesses of that research—an effort to see where that research is "incomplete, methodologically flawed, one-sided, or biased." In any case, as the following examples show, a literature review is a discussion of a body of research literature not an annotated bibliography. Notice in the following examples that literature reviews use standard bracketed IEEE textual citation style and end with a bibliography (called "References").

Consider the following excerpt, which shows the beginning of the review of literature, found in "Face Recognition: A Literature Review:"

Face recognition, in addition to having numerous practical applications such as bankcard identification, access control, mug shots searching, security monitoring, and surveillance system, is a fundamental human behavior that is essential for effective communications and interactions among people. A formal method of classifying faces was first proposed in [1]. The author proposed collecting facial profiles as curves, finding their norm, and then classifying other profiles by their deviations from the norm. This classification is multi-modal, i.e., resulting in a vector of independent measures that could be compared with other vectors in a database.

As you can see, the first paragraph establishes the topic and its importance; the second paragraph goes back to the beginning of modern research that provided a foundation for computer-based face recognition. This literature review moves on to the current status of research in this field:

Progress has advanced to the point that face recognition systems are being demonstrated in real-world settings [2]. The rapid development of face recognition is due to a combination of factors: active development of algorithms, the availability of a large databases of facial images, and a method for evaluating the performance of face recognition algorithms.

Notice how this next excerpt describes an important advance in the research on this topic, but then points out its deficiencies:

The literature review of face-recognition research examines many different methods used in computer-based face recognition. For each, it summarizes the method, the results, and the strengths and weaknesses of that method. This example is not so much the thesis-antithesis-synthesis pattern mentioned above but rather a collection of efforts all striving toward a common goal, increased accuracy of computer-based face recognition. Here's how the summary of that process ends in this literature review:

In [83], a combined classifier system consisting of an ensemble of neural networks is based on varying the parameters related to the design and training of classifiers. The boosted algorithm is used to make perturbation of the training set employing MLP as base classifier. The final result is combined by using simple majority vote rule. This system achieved 99.5% on Yale face database and 100% on ORL face database. To the best of our knowledge, these results are the best in the literatures.

References

Chapter Objectives

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

1. Explain the purpose of a business plan.
2. Identify and define common sections of business plans.
3. Navigate and apply the format of business plans.

Business Plans

A business plan is a document used to start a new business or get funding for a business that is changing in some significant way. Business plans are important documents for business partners who need to agree upon their plans, government officials who need to approve that plan, and of course potential investors such as banks or private individuals who may fund the business.

A business plan is very much like a proposal, except for at least one big difference. The business plan seeks to start a new business or significantly expand an existing business. A proposal, on the other hand, seeks approval to do a specific project. For example, a business plan might seek funding to start a software company to create computer games. A proposal, on the other hand, might bid to do the development work for some specific computer game.

Caution: In a technical writing course, treat a business-plan project as a writing project, not as a real-world business plan. This chapter should not be viewed as a definitive guide for writing a real-world business plan.

Common Sections in Business Plans

Many of the elements of the plans resemble those of the proposal—particularly the qualifications and background sections. Remember that these sections are only typical and not necessarily in any required order. For your plan, you'll need to think about the best sequencing of the sections and about other sections that might also be necessary.

<table>
<thead>
<tr>
<th>Common Sections in Business Plans</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product or service to be offered</strong></td>
</tr>
<tr>
<td>One of the most important sections of the business plan is the description of the actual product or service to be offered. If it is a description of a product—a physical object—you need to use the techniques for technical description. If a service is to be offered, explain it and take readers on a step-by-step tour of how the service will be handled.</td>
</tr>
<tr>
<td><strong>Technical background on the product or service</strong></td>
</tr>
<tr>
<td>If your product or service involves technologies or technical processes potentially unfamiliar to your readers, explain these. Remember that business plans often go to nonspecialists who, despite their lack of technical expertise, have the investment funds or the legal understanding to get your business going.</td>
</tr>
<tr>
<td><strong>Market for the product or service</strong></td>
</tr>
<tr>
<td>Critical also to any business plan is the exploration of the existing marketplace into which your product or service fits. What other companies exist that offer the same thing you plan to offer? How much business do they do? How are they different from each other? How will your business differ from them?</td>
</tr>
<tr>
<td><strong>Process by which the product or service will be produced</strong></td>
</tr>
<tr>
<td>If applicable, explain how the product or service will be produced. Explain how the proposed business will operate on a day-to-day basis.</td>
</tr>
<tr>
<td>Service is produced</td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

In planning your business plan, remember that you try to provide whatever information the audience may need to consider your idea. Your goal is to convince them you have a good idea and to encourage them to invest in it (or to approve it in some way). It's okay to provide marginal information—information you're not quite sure that readers will want. After all, you section off the parts of a business plan with headings; readers can skip over sections they are not interested in.

### Format for Business Plans

You can use the format for the formal report, the format for proposals, or some combination of the two.

Business plans, even those for small operations, can run well over 15 pages—in which case you'll want to bind the plan (see the suggestions in the chapter on formal reports). You'll also need a cover letter—examples of this are also in the chapter on report formatting.

As you plan the format of your business plan, think about designing it so that readers can find and read essential information quickly. This means setting up an abstract, but calling it "Executive Summary."

Also plan to group similar sections. In the preceding section that lists the various kinds of information to include in a plan, some of suggestions should be combined—for example, the sections on financial aspects of the proposed business.

And finally, make use of appendixes for unwieldy, bulky information. Enable readers to quickly find the main sections of the plan, without having to wade through tables and charts that go on for pages and pages.
Resources for Business Plans

Here are some additional resources on business plans:

- Starting a Business and Writing a Business Plan. Lots of good detail and links. From DiscoverBusiness.us
- Small Business Resource and Communication Guide. From ShoreTel Sky.
- Business Plan Archive. A partnership that archives business plans from the Dot Com Era.
- bplans.com. Samples available.
- Business Plan Guide. Made available by Miller consulting, this site contains good information on business plans plus numerous links to other sites on the same topic.
- Teneric Business and Marketing Plans. This is a commercial venture that wants to write business plans for you or teach you how, but it does include a sample business plan and a template for business plans.
Proposals
David McMurrey and Jonathan Arnett

Chapter Objectives

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

1. Explain the purpose of a proposal.
2. Identify and explain the different types of proposals.
3. Navigate and apply the format and structure of a proposal.

Proposals

This chapter focuses on the proposal—the kind of document that gets you or your organization approved or hired to do a project.

Some Preliminaries

As you get started, make sure you understand the definition we're using for proposals.

What proposals do

A proposal is an offer or bid to do a certain project for someone. Proposals may contain other elements—technical background, recommendations, results of surveys, information about feasibility, and so on. But what makes a proposal a proposal is that it is a persuasive document that asks the audience to approve, fund, or grant permission to do the proposed project.

If you plan to be a consultant or run your own business, written proposals may be one of your most important tools for bringing in business. If you work for a government agency, nonprofit organization, or a large corporation, the proposal can be a valuable tool for initiating projects that benefit the organization or you the employee-proposer (and usually both).

A proposal should contain information that would enable the proposal's audience to decide whether to approve the project, to give you money for the project, or to hire you to do the work, and maybe all three. To write a successful proposal, put yourself in the place of your audience—the recipient of the proposal—and think about what sorts of information that person would need to feel confident about you doing the project.

It's easy to get confused about proposals. Imagine that you have a terrific idea for installing some new technology where you work and you write up a document explaining how it works and why it's so great, showing the benefits, and then end by urging management to go for it. Is that a proposal? No, at least not in this context. It's more like a feasibility report, which studies the merits of a project and then recommends for or against it. All it would take to make this document a proposal would be to add elements that ask management for approval for you to go ahead with the project. Certainly, some proposals must sell the projects they offer to do, but in all cases, proposals must sell the writer (or the writer's organization) as the one to do the project.

Types of proposals

Consider the situations in which proposals occur.

Sometimes proposals originate through a formal process. A company may send out a public announcement requesting proposals for a specific project. This public announcement—called a request for proposals (RFP)—could be issued through newspapers, trade journals, Chamber of Commerce channels, or individual letters. Firms or individuals interested in the project would then write proposals in which they summarize their qualifications, describe schedules and costs, and discuss their approaches to the project. The recipient of all these proposals would then evaluate them, select the best candidate, and then work up a contract.

But proposals also come about much less formally. Imagine that you are interested in doing a project at work (for example, investigating the merits of bringing in some new technology to increase productivity). Imagine that you visited with your supervisor and tried to convince her to buy the new technology. She might respond by saying, "I like your idea, but I can't approve a purchase that large. Write me a proposal. I'll present it to upper management." You would then write a proposal in which you describe the problem, explain why it needs to be solved, introduce your intended solution, describe schedules and costs, and ask for permission to bring in the new technology. Your supervisor would then forward the proposal to upper management, who would either deny the request or release funds to make the project happen.

As you can see from these examples, proposals can be divided into several categories:

<table>
<thead>
<tr>
<th>Proposal Categories</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal/External</td>
<td>A proposal to someone within your organization (a business, a government agency, etc.) is an internal proposal. With internal proposals, you might omit certain sections (such as qualifications) or not need to include as much information in them. An external proposal is one written from a separate, independent organization or individual to another such entity. The typical example is an independent consultant proposing to do a project for another firm.</td>
</tr>
<tr>
<td>Solicited/Unsolicited</td>
<td>A proposal that comes in response to an RFP is a solicited proposal. Typically, a company will send out RFPs through the mail or publish them in some news source. But proposals can be solicited in person, as well. For example, if you are</td>
</tr>
</tbody>
</table>
Proposals

explaining to your boss what a great thing it would be to install a new technology in the office, your boss might get interested and ask you to write up a proposal that offered to do a formal study of the idea. An unsolicited proposal comes even though the recipient has not requested proposals. With unsolicited proposals, you sometimes must convince the recipient that a problem or need exists before you can begin the main part of the proposal.

| Research/Goods-and-services | A research proposal is one in which the recipient requests permission or funding (and sometimes both) to study something and write a report about the findings. A goods-and-services proposal is a classic business-type proposal, in which one party offers to sell a product or service to another party. |

Format of Proposals

You have many options for the format and packaging of your proposal. Two of the most common formats are listed here.

Cover letter or memo with separate proposal

In this format, you send a cover letter or cover memo along with the proposal, but the letter or memo does not appear inside the proposal’s main body. They are distinct documents, and the letter or memo should follow standard professional format. If the proposal is printed in hard copy, the letter or memo is often paper-clipped to the front cover.

Consolidated business-letter or memo proposal

In this format, you consolidate the entire proposal within a standard business letter or memo. You include headings and other special formatting elements as if it were a larger, formal document. (This consolidated memo format is illustrated in the left portion of the following illustration.) Use the memorandum format for internal proposals and the business-letter format for external proposals.

To: Fernando dos Marias, Dir.
San Marcos Photovoltaic Systems, Inc.

From: Lorenzo Messi, Planner.
San Marcos Photovoltaic Systems, Inc.

Date: June 6, 2015

Subject: Proposal to install new technology

The following is a proposal to design and build a new facility for Empresa de Distribuição de Energia (EDEL) in Luanda, Angola. Following is a discussion of the benefits of the system installation process, our company’s qualifications, and the cells system in two other provinces.

Photovoltaic Systems: Benefits

Like many other areas in Africa, Luanda is rich in solar resources. This proposal will go a long way toward reducing this problem.

Mr. Fernando dos Marias
EDEL – Luanda
1214 Saidanana
Luanda, Angola 2442335437

Subject: Proposal to add photovoltaic cells to the EDEL distribution system

Dear Mr. Dos Marias,

The following is a proposal that will guide your staff in the addition of photovoltaic cells to the Empresa de Distribuição de Electricidade (EDEL) system. As an electrical engineer working in Luang, I observed the need for photovoltaic systems. Like many other areas in Africa, Luang experiences frequent power shortages. The system outlined in this proposal will go a long way toward reducing this problem.

The following proposal describes the benefits of using photovoltaic cells for the production of electricity, the installation process, output projections, and costs. Included is a schedule of completion and my company’s qualifications.

Please feel free to contact me at 517-000 0000. I appreciate your time and consideration.

Sincerely,

Helena Senao
Attached: proposal
Common Proposal Structure

The following is an outline of the internal structure you'll commonly find in proposals. It is not an absolute structure, so you can reorganize, cut, or add sections as necessary, but it is the most common sequence and should serve you well as a basic framework, whether your proposal is a single page or a multi-volume stack of bound paper.

Front Matter

Cover letter: A proposal that is longer than a few pages often contains a brief “cover” letter or memo (depending on if the proposal is external or internal, respectively) that is paper-clipped to the proposal itself. This cover letter or memo briefly announces that a proposal follows and outlines its contents. In fact, the contents of the cover letter or memo are often much more detailed than the introduction section. This redundant content is because the letter or memo may get detached from the proposal, or the recipient may not even bother to look at the letter or memo and just dive right into the proposal itself.

Binding, section tabs, cover, label: Consider packaging the document in a professional-looking way, especially if you are preparing an external proposal in hard copy. Use a spiral or comb binding, insert tabs for major sections (on long proposals; short documents are easily navigable without tabs), and prepare a label for the cover that includes at least these four pieces of information:

- the proposal's formal title
- the intended recipient
- the authors (or, often, the authors' organization)
- the date of submission

Title page: A proposal that is longer than a few pages usually includes a title page. On this page, you should include the same basic information that appears on a cover label. You may also wish to include a descriptive abstract at the bottom. (See the next section, Abstract / Executive summary.)

Do not include a running header or page number on a title page.

Abstract—Executive summary: These two elements are superficially similar, but they serve different purposes. An abstract is a capsule summary of the proposal's high points; it's usually a single paragraph, and its purpose is to clue a reader in to the document's purpose and general contents. An executive summary is a more-detailed summary that includes all the important points in the proposal; it will contain multiple paragraphs and is significantly longer than an abstract, and its purpose is to allow a busy executive to decide whether reading the entire proposal is worthwhile.

Long proposals may contain both an abstract and an executive summary. Short proposals most likely contain an abstract but no executive summary.

There is no hard limit on an executive summary section's length; it can vary from a half-page to as long as needed. On a very long and complex proposal (for example, a proposal written for the federal government about a multi-billion dollar project), the executive summary can be a short book. However, a good rule of thumb is to limit an executive summary to two pages.

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 number of subheading levels you include in the ToC is up to you. A long, complex proposal with multiple subheadings may be more navigable if every subheading has its own ToC entry, but a relatively short proposal may only need its major headings to appear in the ToC.

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.

Table of figures: If your proposal contains more than one figure or table, list them in a table of figures (ToF), sometimes called a "list of figures."

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 for each. 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.

Main Body

Introduction: Plan the introduction to your proposal carefully. Make sure it does all of the following things (but not necessarily in this order) that apply to your particular proposal:

- Indicate that the following document is a proposal.
- Refer to some previous contact with the recipient of the proposal or to your source of information about the project.
- Include one brief motivating statement that will encourage the recipient to read beyond the introduction and to both consider doing your project (if it's an unsolicited or competitive proposal) and consider hiring you to do the project.
- Give an overview of the proposal's contents.

Take a look at the introductions in the first two example proposals listed at the beginning of this chapter, and try to identify these elements.

Background on the problem, opportunity, or situation: The background section discusses why the project is necessary or desirable—what problem exists, what opportunity there is for improving things, and/or what the basic situation is. For example, managers of a chain of daycare centers may need to meet state licensing requirements by ensuring that all employees know CPR. An owner of pine timber land in east Texas may want to harvest saleable timber without destroying the local ecosystem.
If your proposal's audience knows the problem very well, this section might not be needed. Writing the background section still might be useful, however, in demonstrating your particular view of the problem. And, if the the proposal is unsolicited, a background section is almost a requirement—you will probably need to convince the audience that a problem or opportunity exists and that it should be addressed.

**Benefits and feasibility of the proposed project:** Most proposals discuss the advantages or benefits of doing the proposed project. This section acts as an argument in favor of approving the project. Also, some proposals discuss the likelihood of the project's success. In the forestry proposal, the proposer recommends that the landowner make an investment; at the end of the proposal, he explores the question of the potential return on that investment. In an unsolicited proposal, this section is particularly important—you are trying to "sell" the audience on the project.
Description of the deliverable (results of the project): Most proposals need to describe the deliverable—the finished product that the audience will receive after hiring you to complete the project. If you are writing a research proposal, the deliverable will be a report. If you are writing a goods-and-services proposal, the deliverable will be an object or action.

Method, procedure, theory: In some proposals, you'll want to explain how you'll go about doing the proposed work. This section acts as an additional persuasive element; it shows the audience you have a sound, well-thought-out approach to the project. Also, it serves as the other form of background some proposals need. Remember that the background section (the one discussed above) focused on describing the problem or need that brings about the proposal. However, in this section, you discuss the technical background relating to the procedures or technology you plan to use in the proposed work. For example, in the forestry proposal, the writer gives a bit of background on how timber management is done. Once again, this section gives you, the proposal writer, a chance to show that you know what you are talking about and to build confidence in the audience.

Schedule: Most proposals contain a section that shows not only the projected completion date but also key milestones for the project. If you are doing a large project spreading over many months, the timeline would also show dates on which you would deliver progress reports. If you can't cite specific dates, cite amounts of time for each phase of the project.

If you are writing a research proposal about a potential project, you should divide the Schedule section into two separate parts. One subsection should address the schedule for researching and writing the report. The other subsection should address (at least in general terms) the schedule for the major project that you are researching. For example, in the forestry proposal, the timber land owner would have two major questions about time: when would your report arrive, and how long would it take to harvest the pine timber in an ecologically responsible way? You'd need to address both these questions in the Schedule section, but you'd need to keep them in separate subsections.

Costs, resources required: Most proposals also contain a section detailing the costs of the project, whether internal or external. With external projects, you may need to list your hourly rates, projected hours, costs of equipment and supplies, and so forth, and then calculate the total cost of the complete project. For internal projects, you will still need to list the project costs: for example, hours you will need to complete the project, equipment and supplies you'll be using, assistance from other people in the organization, and so on.

If you are writing a research proposal about a potential project, you should divide the costs/resources section into two separate parts, just like the schedule section. One subsection should address the costs for researching and writing the report. The other subsection should list the costs and necessary resources (or at least reasonable estimates of them) for the major project you are researching. Again with the forestry example, the timber land owner would want to know how much you'd charge to research and write a report about eco-friendly ways of logging his land. Likewise, the land's owner would want to know that he can afford the ecologically-sound logging project. If harvesting the timber in the most eco-friendly way will cause him to go broke, there's no point in hiring you in the first place. You need to address both these issues in the costs-and-resources section, but keep them in separate subsections.

Qualifications: Most proposals contain a summary of the proposing individual's or organization's qualifications to do the proposed work. It's like a mini-résumé contained in the proposal. The proposal audience uses it to decide whether you are suited for the project. Therefore, this section lists work experience, similar projects, references, training, and education that shows familiarity with the project.

Conclusions: The final major section of the proposal should do two things:
- refocus the audience's attention on the positive aspects of the project
- urge the audience to contact you with their approval

You can also encourage the audience to get in touch to work out the details of the project, remind them of the project's benefits, and put in one last plug for you or your organization as the right choice for the project.

Back Matter

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.

**Glossary**: It's always a good idea to define specialized terms in the document's main text, but if your proposal contains a significant number of terms that are unfamiliar to your audience, you may need to include a glossary.

**Index**: Long, complex proposals may need to include an index so that readers can find the specific word or topic that interests them.

**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.

**Proposal Pre-writing Strategy**

When you develop a proposal, go through this checklist and think about these issues. Make a list of your thoughts on them so you (and if you are working in a group, all your coworkers) have a master document you can refer back to.

**Audience**: Describe the intended audience of the proposal and the proposed report (they may be different) in terms of the organization they work for, their titles and jobs, their technical background, their ability to understand the report you propose to write.

**Situation**: Describe the situation in which the proposal is written and in which the project is needed: What problems or needs are there? Who has them? Where are they located?

**Deliverable type**: Describe the deliverable that you are proposing. If you are writing a research proposal, will you give your client a technical background report? A recommendation report? A feasibility report? If you are writing a goods-and-services proposal, what object or service will you provide?

**Information sources**: If you are writing a research proposal, make sure you know that there is adequate information for your topic. List specific books, articles, reference works, interview subjects, field observations, and other kinds of sources that you think will contribute to your report.

**Graphics**: List the graphics you think your report will need according to their type and their content. Odds are, you'll need at least one figure or table.
Chapter Objectives

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

1. Explain the purpose of a progress report.
2. Navigate and apply the format and structure of a proposal.
3. Explain common components of a progress report.

Progress Reports

You write a progress report to inform a supervisor, associate, or customer about progress you've made on a project over a certain period of time. The project can be the design, construction, or repair of something, the study or research of a problem or question, or the gathering of information on a technical subject. You write progress reports when it takes well over three or four months to complete a project.

Functions and Contents of Progress Reports

In the progress report, you explain any or all of the following:

- How much of the work is complete
- What part of the work is currently in progress
- What work remains to be done
- What problems or unexpected things, if any, have arisen
- How the project is going in general

Progress reports have several important functions:

- Reassure recipients that you are making progress, that the project is going smoothly, and that it will be complete by the expected date.
- Provide recipients with a brief look at some of the findings or some of the work of the project.
- Give recipients a chance to evaluate your work on the project and to request changes.
- Give you a chance to discuss problems in the project and thus to forewarn recipients.
- Force you to establish a work schedule so that you'll complete the project on time.
- Project a sense of professionalism to your work and your organization.

Timing and Format of Progress Reports

In a year-long project, there are customarily three progress reports, one after three, six, and nine months. Depending on the size of the progress report, the length and importance of the project, and the recipient, the progress report can take the following forms:

- Memo—A short, informal report to someone within your organization
- Letter—A short, informal report sent to someone outside your organization
- Formal report—A formal report sent to someone outside your organization

Organizational Patterns for Progress Reports

The recipient of a progress report wants to see what you've accomplished on the project, what you are working on now, what you plan to work on next, and how the project is going in general. To report this information, you combine two of these organizational strategies: time periods, project tasks, or report topics.

Time Periods
A progress report usually summarizes work within each of the following:

- Work accomplished in the preceding period(s)
- Work currently being performed
- Work planned for the next period(s)

**Project Tasks**

Practically every project breaks down into individual tasks.

**Project Tasks: One organizational approach to progress reports.**

<table>
<thead>
<tr>
<th>Project</th>
<th>Individual tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building municipal ball parks on city-owned land</td>
<td>Measuring community interest</td>
</tr>
<tr>
<td></td>
<td>Locating suitable property</td>
</tr>
<tr>
<td></td>
<td>Designing the bleachers, fences, etc.</td>
</tr>
<tr>
<td>Writing a report</td>
<td>Studying the assignment</td>
</tr>
<tr>
<td></td>
<td>Selecting a topic</td>
</tr>
<tr>
<td></td>
<td>Identifying the audience of the report</td>
</tr>
<tr>
<td></td>
<td>Narrowing the topic</td>
</tr>
<tr>
<td></td>
<td>Developing a rough outline</td>
</tr>
<tr>
<td></td>
<td>Gathering information</td>
</tr>
<tr>
<td></td>
<td>Writing one or more rough drafts</td>
</tr>
<tr>
<td></td>
<td>Documenting the report</td>
</tr>
<tr>
<td></td>
<td>Revising and editing the report draft</td>
</tr>
<tr>
<td></td>
<td>Typing and proofreading the report</td>
</tr>
<tr>
<td></td>
<td>Putting the report in its final package</td>
</tr>
</tbody>
</table>

**Report Topics**

You can also organize your progress report according to the work done on the sections of the final report. In a report project on co-combusting municipal solid waste, you would need information on these topics.

**Topics to be covered in the final report**

1. The total amount of MSW produced—locally—nationally
2. The energy potential of MSW, factors affecting its energy potential
3. Costs to modify city utilities in order to change to co-combustion

For each of these topics, you'd explain the work you have done, the work you are currently doing, and the work you have planned.

A progress report is actually a combination of two of these organizational strategies. The following outline excerpts give you an idea of how they can combine.

**Progress Report Outlines**

<table>
<thead>
<tr>
<th>Progress Report A</th>
<th>Progress Report B</th>
<th>Progress Report C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task 1</td>
<td>Work Completed</td>
<td>Topic 1</td>
</tr>
<tr>
<td>Work completed</td>
<td>Task 1</td>
<td>Work completed</td>
</tr>
</tbody>
</table>
The following illustration shows an example of the project-tasks approach with subheadings for time periods.

### Brain Drainage Tube Modifications

During this period, we have continued to work on problems associated with the brine drainage tubes.

**Previous period.** After minor adjustments during a month of operation, the drainage tubes and the counterwasher have performed better but still not completely satisfactorily. The screen sections of these tubes, as you know, are located at variable distances along the height of the washer.

**Current period.** The screen portion of the brine drainage tubes have been moved to within 5 feet of the top of the pack. So far, no change in counterwasher performance has been observed. Production statistics at the end of this month (February) should give us a clearer idea of the effect of this modification.

**Next period.** Depending on the continued performance of the screen in its current position in relation to the top of the pack, we may move the screen to within 3 feet of the top of the pack in the next period of testing. Although the wash ratio was greater with greater screen height, the washing efficiency seems to remain relatively constant; the production vs. compressor KW data for all screen locations so far has seemed to follow the same linear curve.

These two outlines show progress reports organized by project tasks.

### Example Outlines

**WORK COMPLETED**

As of this time, I have completed almost all of the research work and am putting the sections of the final report together. Here is a breakdown of the work that I have done so far.

**PRESENT WORK**

Right now I am mainly involved in determining just which areas of my report are lacking information. Also, I am
Development of the Bottle. In the development section of my report, I have written a technical description of a typical PET soft-drink bottle. It is complete and gives the reader a good idea of what the product should look like and be able to accomplish.

Favorable Properties. The section of the report describing the properties of PET is finished. I have chosen four physical properties that many raw materials containers are tested for, and I have shown how PET withstands these tests.

Manufacturing Processes. For the section on manufacturing processes, I have done research to help me recommend one particular production method for PET bottles. Here, I have described this chosen method and have explained exactly how a plastic bottle is produced on an assembly line.

Economics. I have finished work on half the economics section of this report. So far, I have written an economic comparison of the use of plastic and glass bottles.

continuing my work in locating financial information on PET bottles.

Manufacturing Processes. In the manufacturing section, I am currently...

Other Parts of Progress Reports

In your progress report, you also need the following.

1. an introduction that reviews the purpose and scope of the project
2. a detailed description of your project and its history
3. an overall appraisal of the project to date, which usually acts as the conclusion.

Introduction

I am now submitting to you a report on the progress that I have made on my research for your company, Ginseng Cola. Immediately following the January 15 acceptance of my firm's bid to study the advantages of bottling your soft-drink product in plastic bottles, I began investigating all areas of the project.

In the following sections of this progress report, you will be informed on the work that I have already accomplished, the work I am now involved in, the work left to do, and finally an overall appraisal of the how the project is going.

Review the details of your project's purpose, scope, and activities. This will aid recipients who are unfamiliar with the project, who do not remember certain details, or who want to doublecheck your approach to the project. The introduction can contain the following:

- Purpose of the project
- Specific objectives of the project
- Scope, or limits, of the project
- Date the project began; date the project is scheduled to be completed
- People or organization working on the project
- People or organization for whom the project is being done
- Overview of the contents of the progress report

Project description

In most progress reports, include a project description to review the details of your project for the recipients.

Project Description

Here is a review of the purpose and scope of this project.
Purpose. The original investment plan of this corporation included only long-term, low-risk investment in corporate bonds and U.S. securities. This project was designed to answer questions about the potential of short-term, high-dollar investments, particularly those suited to the future expansion of this company's investment plan.

Scope. The report will cover basic definitions of stocks and options as well as reasons for and against these two investment strategies. The report will be broken down into four areas:

- Mechanics of stocks and options
- Comparisons of stocks and options
- Example investment scenarios
- Recommendations for an investment plan

Conclusion

The final paragraph or section usually reassures audiences that all is going well and on schedule. It can also alert recipients to unexpected changes or problems in the project.

Overall Appraisal

The project to recommend PET production is coming along well. I have not run into any major problems and have found plenty of material on this subject. However, I have not heard from Mr. Simon Juarez of PET Mfg., who is sending information on PET production methods used in several plants in the Southwest.

I can foresee no major problems that will keep me from submitting my report to you on the contract date. In fact, I may be able to get it to you a few days earlier than planned. In general, I am finding that the PET bottle is an even more attractive packaging idea than had seemed in our earlier discussions. Full details on this, however, will appear in the final report.

Sincerely,

Steven C. Crosswell
Process Engineer
C&S Engineering

Revision Checklist for Progress Reports

As you reread and revise your progress report, watch out for problems such as the following:

- Make sure you use the right format. Remember, the memo format is for internal progress reports; the business-letter format is for progress reports written from one external organization to another. (Whether you use a cover memo or cover letter is your choice.)
- Write a good introduction—in it, state that this is a progress report, and provide an overview of the contents of the progress report.
- Make sure to include a description of the final completed project.
- Use one or a combination of the organizational patterns in the discussion of your work.
- Use headings to mark off the different parts of your progress report, particularly the different parts of your summary of work done on the project.
- Use lists as appropriate.
- Provide specifics—avoid relying on vague, overly general statements about the work you've done on the final report project.
- Be sure and address the progress report to the real or realistic audience—not your instructor.
- Assume there will be nonspecialists reading your progress report. But don't avoid discussion of technical aspects of the project—just bring them down to a level that nonspecialists can understand.
Instructions
David McMurrey & Cassandra Race

Chapter Objectives

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

1. Analyze and evaluate a set of technical instructions.
2. Write clear and accurate instructions with an introduction and conclusion.
3. Develop and design an instruction manual for a specific audience.

The focus for this chapter is one of the most important of all uses of technical writing—instructions. As you know, instructions are those step-by-step explanations of how to do something: how to build, operate, repair, or maintain things.

Writing Instructions

One of the most common and one of the most important uses of technical writing is instructions—those step-by-step explanations of how to do things: assemble something, operate something, repair something, or do routine maintenance on something. But for something seemingly so easy and intuitive, instructions are some of the worst-written documents you can find. Like me, you've probably had many infuriating experiences with badly written instructions. What follows in this chapter may not be a fool-proof, goof-proof guide to writing instructions, but it will show you what professionals consider the best techniques.

Ultimately, good instruction writing requires:

- Clear, concise writing
- A thorough understanding of the procedure in all its technical detail
- Your ability to put yourself in the place of the reader, the person trying to use your instructions
- Your ability to visualize the procedure in great detail and to capture that awareness on paper
- Finally, your willingness to go that extra distance and test your instructions on the kind of person you wrote them for.

By now, you've probably studied headings, lists, and special notices—writing a set of instructions with these tools probably seems obvious. Just break the discussion out into numbered vertical lists and throw in some special notices at the obvious points and you're done! Well, not quite, but that's a great start. This chapter explores some of the features of instructions that can make them more complex. You can in turn use these considerations to plan your own instructions.

Some Preliminaries

At the beginning of a project to write instructions, it's important to determine the structure or characteristics of the particular procedure you are going to write about. Particularly in technical instructions, your understanding of the procedure could make the difference between success and failure, or at more complex levels, life and death.

Early in the process, define the audience and situation of your instructions. Remember that defining an audience means defining its level of familiarity with the topic as well as other details, including age and ability level. See the discussion of audiences and steps to use in defining audiences.

If you are in a writing course, you may need to write a description of your audience and attach that to your instructions. This will enable your instructor to assess your instructions in terms of their rightness for the intended audience. And remember too that in a technical-writing course it is preferable to write for nonspecialist audiences—much more of a challenge to you as a writer.

Next, examine the procedure you are describing to determine the number of tasks. How many tasks are there in the procedure you are writing about? Let's use the term procedure to refer to the whole set of activities your instructions are intended to discuss. A task is a semi-independent group of actions within the procedure: for example, setting the clock on a microwave oven is one task in the big overall procedure of operating a microwave oven.
A simple procedure like changing the oil in a car contains only one task; there are no semi-independent groupings of activities. Within that task are a number of steps, such as removing the plug, draining the old oil, replacing the filter, and adding the new oil. If you were writing instructions on maintaining your car yourself to save money, you would have several tasks, some which are independent, such as rotating the tires, checking the fluids, or replacing the windshield wiper blades.

A complex procedure like using a microwave oven is another example of a procedure that contains plenty of such semi-independent tasks: setting the clock; setting the power level; using the timer; and cleaning and maintaining the microwave.

There may be more to your instructions than just tasks. Some instructions have only a single task, but have many steps within that single task. For example, imagine a set of instructions for assembling a kids' swing set. In my own experience, there were more than a 130 steps! That can be a bit daunting. A good approach is to group similar and related steps into phases, and start renumbering the steps at each new phase. A phase then is a group of similar steps within a single-task procedure. In the swing-set example, setting up the frame would be a phase; anchoring the thing in the ground would be another; and assembling the box swing would be still another.

Another consideration, which maybe you can't determine early on, is how to focus your instructions. For most instructions, you can focus on tasks, or you can focus on tools (or features of tools). Your approach will depend on your overall objective in writing the instructions, and you will find that the task approach is one you will probably use most often, with the discussion of the tools included in notes or supplementary sections like a glossary.

"Use task orientation. Focus on the tasks your readers want to perform; use how to or -ing phrasing on headings."

In a task approach (also known as task orientation) to instructions on using a phone-answering service, you'd have these sections:

- recording your greeting
- playing back your messages
- saving your messages
- forwarding your messages
- deleting your messages, and so on

These are tasks—the typical things we'd want to do with the machine.

On the other hand, in a tools approach to instructions on using a photocopier, there would be these unlikely sections:

- copy button
- cancel button
- enlarge/reduce button
- collate/staple button
- copy-size button, and so on

If you designed a set of instructions on this plan, you'd write steps for using each button or feature of the photocopier. Instructions using this approach are hard to make work. Sometimes, the name of the button doesn't quite match the task it is associated with; sometimes you have to use more than just the one button to accomplish the task. Still, there can be times when the tools/feature approach may be preferable.

Finally, you have to decide how your are going to group tasks if there are more than one. Simply listing tasks may not be all that you need to do. There may be so many tasks that you must group them so that readers can find individual ones more easily. For example, the following are common task groupings in instructions:

1. unpacking and setup tasks
2. installing and customizing tasks
3. basic operating tasks
4. routine maintenance tasks
5. troubleshooting tasks; and so on

Common Sections in Instructions

The following is a review of the sections you'll commonly find in instructions.
Title. Naturally you need one, and it should be concise. Avoid awkward noun strings like "Amazing Pizza Rolls Baking Instructions" and instead opt for the "how to", such as "How to Clean Your G.E Microwave" or the gerund, or -ing word phrase, such as "Maintaining Your Apple iPhone."

Date. With technical instructions, the date is crucial. It enables the reader to be certain that these instructions are the most current, and if they are not, where these instructions belong in the line of documents related to this product or procedure.

Table of Contents. If your instructions consist of multiple tasks or have multiple sections, or if they are being presented in the form of a manual, a table of contents is necessary.

Introduction. Plan the introduction to your instructions carefully. Make sure it does any of the following things (but not necessarily in this order) that apply to your particular instructions:

- Indicate the specific tasks or procedure to be explained as well as the scope of coverage (what won't be covered).
- Indicate what the audience needs in terms of knowledge and background to understand the instructions. You may also specify audience age here.
- Give a general idea of the procedure and what it accomplishes. If this is a lengthy set of instructions, indicate how much time may be necessary to complete the task or procedure.
- Indicate the conditions when these instructions should (or should not) be used.
- Give an overview of the contents of the instructions.

General warning, caution, danger notices. Instructions often must alert readers to the possibility of ruining their equipment, screwing up the procedure, and hurting themselves. Also, instructions must often emphasize key points or exceptions. For these situations, you use special notices—note, warning, caution, and danger notices. Typically, danger means that there is a risk of severe bodily harm or death; warning means there is actual risk of bodily harm or major damage to the product; caution means be careful here—there might be a risk; and a note is used to explain details, or tell how to troubleshoot a step within a task.

Technical background or theory. At the beginning of certain kinds of instructions (after the introduction, of course), you may need a discussion of background related to the procedure. For certain instructions, this background is critical—otherwise, the steps in the procedure make no sense. Here is where you get to show your expertise in writing technical definitions and descriptions. For example, you may have had some experience with those software applets in which you define your own colors by nudging red, green, and blue slider bars around. To really understand what you're doing, you need to have some background on color. Similarly, you can imagine that, for certain instructions using cameras, some theory might be needed as well.
Equipment and supplies. Notice that most instructions include a list of the things you need to gather before you start the procedure. This includes equipment, the tools you use in the procedure (such as mixing bowls, spoons, bread pans, hammers, drills, and saws), and supplies, the things that are consumed in the procedure (such as wood, paint, oil, flour, and nails). In instructions, these typically are listed either in a simple vertical list or in a two-column list. Use the two-column list if you need to add some specifications to some or all of the items—for example, brand names, sizes, amounts, types, model numbers, and so on. This may be a good place to use graphics or visuals, especially if a necessary tool is a specialty item.

Discussion of the steps. When you get to the actual writing of the steps, there are several things to keep in mind:

1. the structure and format of those steps
2. supplementary information that might be needed
3. the point of view and general writing style

Structure and format. Normally, we imagine a set of instructions as being formatted as vertical numbered lists. And most are in fact. Normally, you format your actual step-by-step instructions this way. There are some variations, however, as well as some other considerations:

- **Fixed-order steps** are steps that must be performed in the order presented. For example, if you are changing the oil in a car, draining the oil is a step that must come before putting the new oil. These are numbered lists (usually, vertical numbered lists). When in doubt, structure your instructions in this format. You may then use notes to indicate if there is any leeway to perform the steps in another sequence.

- **Variable-order steps** are steps that can be performed in practically any order. Good examples are those troubleshooting guides that tell you to "check this, check that" where you are trying to fix something. You can do these kinds of steps in practically any order. With this type, the bulleted list is the appropriate format.

- **Alternate steps** are those in which two or more ways to accomplish the same thing are presented. Alternate steps are also used when various conditions might exist. Use bulleted lists with this type, with "OR" inserted between the alternatives, or the lead-in indicating that alternatives are about to be presented.

- **Nested steps** are those in which individual steps within a procedure can be rather complex in their own right and need to be broken down into substeps. In this case, you indent further and sequence the substeps as a, b, c, and so on.

- **"Stepless" instructions** are those that really cannot use numbered vertical lists and that do little if any straightforward instructional-style directing of the reader. Some situations must be so generalized or so variable that steps cannot be stated.

Supplementary discussion. Often, it is not enough simply to tell readers to do this or to do that. They need additional explanatory information such as how the thing should look before and after the step; why they should care about doing this step; what mechanical principle is behind what they are doing; and even more micro-level explanation of the step—discussion of the specific actions that make up the step.

The problem with supplementary discussion, however, is that it can hide the actual step. You want the actual step—the specific actions the reader is to take—to stand out. You don't want it all buried in a heap of words.

There are at least two techniques to avoid this problem: you can split the instruction from the supplement into separate paragraphs; or you can bold the instruction. The example below shows you a possible technique for including supplementary discussion so that it doesn't obscure the instructions.

How to change engine oil in six steps

When changing engine oil, always check the owner's manual to find the correct amount and type of oil and filter needed.

1. **Start the vehicle and allow the engine to warm up for a minute.** This allows the existing oil in the engine to warm up so that it drains out very smoothly.

2. **Locate the oil pan drain plug and remove the plug for draining.** Removing the fill cap and pulling the oil dipstick will allow good flow for the oil while draining. If there is more than one plug, drain the oil from both plugs into a container.

Caution: Be careful because the old oil may be hot and could burn you.

"Avoid telegraphic writing—omitting "understood" articles (the, a, an). True, robots write that way, but we don't have to."
Writing style. The way you actually write instructions, sentence by sentence, may seem contradictory to what previous writing classes have taught you. However, notice how "real-world" instructions are written—they use a lot of imperative (command, or direct-address) kinds of writing; they use a lot of "you." That's entirely appropriate. You want to get in your reader's face, get her or his full attention. For that reason, instruction-style sentences sound like these: "Press the Pause button on the front panel to stop the display temporarily" and a clarifying note might read "You should be careful not to..."

If your instructions have to be more formal, ask your teacher about preferences for using "you." You may find that the direct address isn't appropriate for certain contexts.

For the most effective instructions, begin each step with an action verb.

Never use the passive voice in instructions. For some weird reason, some instructions sound like this: "The Pause button should be depressed in order to stop the display temporarily." Not only are we worried about the Pause button's mental health, but we wonder who's supposed to depress the thing (are you talkin' to me?). Or consider this example: "The Timer button is then set to 3:00." Again, as the person following these instructions, you might miss this; you might think it is simply a reference to some existing state, or you might wonder, "Are they talking to me?" Almost as bad is using the third person: "The user should then press the Pause button." Again, it's the old double-take: you look around the room and wonder, "Who me?"

Another of the typical problems with writing style in instructions is that people seem to want to leave out articles: "Press Pause button on front panel to stop display of information temporarily" or "Earthperson, please provide address of nearest pizza restaurant." Why do we do this? Do we all secretly want to be robots? Anyway, be sure to include all articles (a, an, the) and other such words that we'd normally use in instructions.

Conclusion. You really don't want to just end your instructions with the last step. A conclusion ties the process up neatly; offers trouble shooting information (i.e. what to do if something went wrong); and, if you are writing the instructions as part of your work responsibility, should include contact information.

Other Back Matter. Your set of instructions may include a list of references, a glossary or appendix, an index, or technical specifications. Items placed here are important to the overall instructions because they provide additional information that certain audiences may need, but that are not critical to understanding how to complete the procedure.

Graphics and Images in Instructions

Probably more so than in any other form of writing (except maybe for comic books), graphics are crucial to instructions. Sometimes, words simply cannot explain the step. Illustrations are often critical to readers' ability to visualize what they are supposed to do. Consider the example of car repair manuals which actually use photographs to illustrate procedures, or screen shots that demonstrate the process of using software.

In a technical writing course, instructions may require you to include illustrations or other kinds of graphics—whatever would normally be used in the instructions. Just be sure that the graphics you choose are appropriate and placed in close proximity to the steps they illustrate. Don't make your audience flip pages to see the accompanying graphic.

If you don't create your own graphics or images, and find them in other sources, be sure that you cite the source, preferrably right below the graphic.

Format in Instructions

Headings. In your instructions, make good use of headings. Normally, you'd want headings for any background section you might have, the equipment and supplies section, a general heading for the actual instructions section, and subheadings for the individual tasks or phases within that section. Take a look at the examples at the beginning of this chapter.

Lists. Similarly, instructions typically make heavy use of lists, particularly numbered vertical lists for the actual step-by-step explanations. Simple vertical lists or two-column lists are usually good for the equipment and supplies section. In-sentence lists are good whenever you give an overview of things to come.

Special notices. In instructions, you must alert readers to possibilities in which they may damage their equipment, waste supplies, cause the entire procedure to fail, or injure themselves or others—even seriously or fatally. Companies have been sued for lack of these special notices, for poorly written special notices, or for special notices that were out of place.
Replace the Guitar Neck

If you've followed the previous steps, your fretboard is now scalloped. The only thing left to do is put your guitar back together. To put it back together, follow these steps:

1. Remove the tape from the frets.
2. Insert the neck back into the body.
3. Put the metal panel back in its place and put in the screws. Note: Make sure that you put each screw firmly back in place. The screws keep the neck secure inside the body. If the screws are not installed correctly, the guitar could develop intonation problems.
4. Restring the guitar.

Mounting the NID

Follow these instructions to mount the network interface device (NID) on the wall:

Warning: Always wear safety glasses when using hand tools. Misuse of the tool or ricochet from power tools can result in eye injury.

1. Select the location for the NID. This should be close to an electrical ground and located in a place where the ISP's wire will reach the NID. The electrical ground can be identified as a copper wire coming from the electric company's equipment on the exterior of your home.
2. Drill the NID into place using the screws. You will need to drill screws into the slots on the top and bottom of the NID.

Indentation of notices in instructions. In the first example, notice how the notice is indented to the text of the preceding step. In the second example, notice that the severe notice is placed at the beginning before any of the steps.

Number, abbreviations, and symbols. Instructions also use plenty of numbers, abbreviations, and symbols. Be sure you are using them correctly. Remember if your instructions pertain to a brand name product to use trademark symbols appropriately.

Revision Checklist for Instructions

As you reread and revise your instructions, watch out for problems such as the following:

- Make sure you provide real instructions—explanations of how to build, operate, or repair something.
- Identify where the instructions will be used.
- Write a good introduction—in it, indicate the exact procedure to be explained, indicate audience requirements, and provide an overview of contents.
- Make sure that you use the various types of lists wherever appropriate. In particular, use numbered vertical lists for sequential steps.
- Use headings to mark off all the main sections and subheadings for subsections. (Remember that no heading "Introduction" is needed between the title and the first paragraph. Remember not to use first-level headings in this assignment; start with the second level.)
- Use special notices as appropriate.
- Make sure you use the style and format for all headings, lists, special notices, and graphics as specified by your teacher for instruction writing assignments.
- Use graphics to illustrate any key actions or objects, and make certain they are located right beside or beneath the step they illustrate and properly labeled.
- Provide additional supplementary explanation of the steps as necessary.
- Remember to create a section listing equipment and supplies, if necessary.

Some final thoughts about writing instructions. As a technical or workplace writer, your ability to write good instructions carries a number of ethical implications. Keep in mind that poorly or carelessly designed instructions leave you or your company liable for damages. They also destroy your credibility and authority. Before you submit any instructions for final review, be sure you get other eyes on them. For small or routine procedures, it may be enough to have a coworker look them over, but more complex instructions should always be tested for usability. Make sure that you
have read the chapter on Usability Testing and carried out the necessary testing before your instructions go to publication and distribution.

Exercises and Activities

Exercise 1: Locate a set of instructions for an item you currently own. How effectively do these instructions meet the guidelines presented in this chapter? Analyze each part of the instructions separately, and summarize your findings in an memo to your instructor. Be prepared to share examples with the class if you are in a face-to-face classroom.

Exercise 2: For discussion: Identify the ethical issues or concerns you must address in creating instructions for the following: installing a water heater; changing the brakes on a car; preparing an elaborate meal for a large group; attaching the wing to a fighter jet (okay, I know...this is pretty obvious); office policies and procedures for new employees. Can you think of other situations in which ethical concerns must be addressed?

Exercise 3: Create an instruction manual. This may be completed as a group or individual project: Instructions for this activity may be found here. Your teacher will provide additional information and guidelines.

Writing Assignment: The Instruction Manual

The main purpose of this assignment is to give you practice in writing instructions and creating a manual, one of the most common kinds of technical communication you will do in the workplace and in your day-to-day life. Some common reasons for writing instructions include:

- specifying details of technical activities
- describing office procedures
- preparing training manuals
- explaining how to operate computer programs
- telling your children (or adults who act like children) what to do

An important aspect of writing instructions is using graphics and design: good instructions contain graphics and are designed to be easy to read and understand. Therefore, another important purpose of this assignment is to improve your skills in the visual dimension of technical communication.

Directions: Create an instruction manual that gives directions for completing a process. (A list of topics…and the topics you should not use…is provided at the end of these directions, right after the assessment rubric).

Then, conduct a usability test and include your notes as outlined below, and write a memo response/reflection according to the guidelines in this assignment. See the chapter on usability for additional guidance.

Instruction Manual

- a title page (focus it on the task's audience, not the assignment)
- a table of contents
- a brief introduction
- a technical definition and description
- materials and/or equipment needed to carry out the instructions
- cautions and safety notices (include ANSI- or ISO-compliant safety information, as appropriate)
- 3–4 pages (max length) of step-by-step instructions (8-12 steps)
- you must include visual elements
- all graphic elements must have a caption (for example, Figure 1: Widget configuration)
- a conclusion with a feedback statement
- any relevant back matter; this can include troubleshooting information if required.

Your instructions should describe a simple, easily-conducted process, something you could carry out in a classroom setting.

Avoid illegal, unethical, and potentially dangerous topics, but try to find something interesting.

You may get ideas from existing instruction sets online, but you must write your own instructions.

Usability Test Notes
Next, test your instructions on a friend or family member and take notes as they carry out your process. You might ask them to think aloud as they perform the process, but don’t help! Use your notes to revise your instructions if they need it.

Submit a legible photocopy/scan of the handwritten notes you took during the usability testing session. Be sure to identify your “tester.” Include notes about what your tester said during the process, especially any questions he or she asked you while carrying out the instructions.

Reflective Memo

Write a reflective memo of 300–500 words, addressed to the instructor, in which you describe:

- the rhetorical approach you used to tailor the document to your audience
- how your instructions changed as a result of usability testing
- ethical issues that you encountered
- the course or module objectives you encountered in completing this assignment.

Explain your answers.

Rubric for Assessment

The following rubric is a possible guide for the teacher…or you may use it as a checklist to assess your instruction manual before you submit it to the teacher.

<table>
<thead>
<tr>
<th>Expectation</th>
<th>Doesn't meet</th>
<th>Partially Meets: May be missing one or more components</th>
<th>Meets: You did a great job achieving the standards of technical instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>The title page is appropriate for the audience and reflects the principles of good document design.</td>
<td>0</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>The writer has included a table of contents.</td>
<td>0</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>The introduction identifies the audience and includes at least one definition and one description.</td>
<td>0</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Materials and equipment are presented with any necessary explanation .</td>
<td>0</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Safety alerts and information are appropriate and are placed properly.</td>
<td>0</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>8 - 12 step by step instructions which begin with an action verb.</td>
<td>0</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>At least 3 visual/graphic elements.</td>
<td>0</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Visual/graphic elements are appropriately placed and captioned.</td>
<td>0</td>
<td>3</td>
<td>5</td>
</tr>
</tbody>
</table>
A reminder: points will be lost for every grammatical, mechanical, or spelling error! I wear my Grammar Queen T shirt when I grade.

Suggestions for Topics

Feel free to use one of these ideas, but get permission from me first. I've seen about a billion examples of "How To Tie A Windsor Knot" and don't wish to see another as long as I live, and origami projects are harder to document than you might think. Don't even think about paper airplanes!

- creating artwork/constructing a craft
- using a specific function of a computer software product
- editing pictures in Adobe Photoshop
- creating a graphic for a written assignment
- effective monthly budgeting
- using advanced features of MS Office programs
- carving a pumpkin
- folding origami (no paper airplanes)
- coloring Easter eggs
- using advanced features of Adobe Acrobat
- writing a simple computer program
- creating a basic web page
- making balloon animals
- straightening/curling hair
- tying special knots in a necktie
- tying scarves
- creating a flower arrangement
- making simple food items
- publishing a website
- performing first aid or CPR

Here's a link to an annotated set of instructions as an example of how its done. A big thank you to Dr. Jonathan Arnett at KSU.

Checklist

- Have you included all three parts of the assignment?
- Does the organization/content/design of the instructions show audience awareness?
- Are the user's tasks and goal clearly stated?
- Is the instructions' purpose clearly identified?
- Are the related safety issues addressed?
- Does the front matter include a brief technical description?
- Does the instructions document include an introduction, step-by-step instructions, and a conclusion?
- Are appropriate graphics included?
- Is the document design neat and professional?
- Are the notes from the user's think-aloud usability testing session detailed?
- Does the reflective response memo include all required elements?
- Does the reflective memo follow standard memo format?
- Are the spelling, punctuation, grammar, and editing on everything clean and professional?
- Do the instructions actually work?
User Guides
David McMurrey & Tamara Powell

Chapter Objectives

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

1. Explain the purpose of a user guide.
2. Define the technical writing concepts of this textbook that apply to user guides.
3. Explain and apply the style, format, components, and process for creating user guides.

User Guides

A user guide is essentially a book-length document containing instructions on installing, using, or troubleshooting a hardware or software product. A user guide can be very brief—for example, only 10 or 20 pages or it can be a full-length book of 200 pages or more. While this definition assumes computers, a user guide can provide operating instructions on practically anything—lawnmowers, microwave ovens, dishwashers, and so on.

The more complex the product, the greater the page count. When this happens, some elements of the user guide get split out into their own separate volumes—especially the installation procedures, troubleshooting procedures, and the commands. A user guide can even contain a brief tutorial—for example, getting users started using the product—but if there is too much tutorial, it too goes into a separate book.

Filepad User Guide
Gimp User Guide
Parallels User Guide

Style and Format for User Guides

A user guide is a combination of many things presented in this online textbook. At its core it's instruction writing; you need to be good at the writing style, headings, lists, notices, highlighting, tables, and graphics commonly used in instructions. As a set of instructions, a user guide should use the style and format that is presented elsewhere in this online textbook:

- **Headings.** Use headings to mark off key contents of the information so that readers can find it quickly.
- **Lists.** Use numbered and bulleted lists to help readers scan information quickly.
- **Special notices.** Use special notices such as warnings, cautions, and notes to alert readers to potential problems or emphasize special points.
- **Instructional design.** In general, use the standard design of instructions; primarily, this means task-oriented headings and sections and numbered vertical lists for actual steps that readers are to perform.

Instructions—and therefore user guides—also make abundant use of:

- **Graphics.** Show readers key components of the objects they will be working with, before and after views, and illustrations of key actions that readers must perform.
- **Tables.** Provide statistical information and other such details in easy-to-access table form. In user guides, tables are particularly useful whenever reference-type information must be presented.
- **Highlighting.** Use a consistent and standard scheme of highlighting (bold, italics, alternate fonts, color, caps, and so on).

Components of User Guides

As a book, a user guide must have some combination of the standard book-design components such as the following:
Information Included in User Guides

Here's review the common contents of user guides:

Instructions. The most obvious are those step-by-step directions on how to assemble, operate, or troubleshoot the product. Instructions in user guide should generally be task-oriented—that is, written for specific tasks that users must perform. Instructions should generally use vertical numbered lists for actions that must be performed in a required sequence. Similar or closely related instructions in user guides should be grouped into chapters.

Precautionary information. You'll see notes, warning, caution, and even danger notices in user guides. These represent liability concerns for the manufacturer of the product.

Reference information. User guides typically contain plenty of reference information, but only up to a certain point. For example, if there are numerous commands, a separate book for commands is necessary. Reference information in user guides is often presented in tables: columnal lists of settings, descriptions, variables, parameters, flags, and so on.

Getting started information. Some user guides will actually include brief tutorials that will help new users get acquainted with using the product.

About the product. User guides also provide some description of the product, a review of its essential features or its new features. Sometimes this information also gets put into a separate volume, if it is extensive. Typically, the volume will be called something like "Introducing New Product..."

Technical background. Sometimes, users guides will include technical explanations of how the product works, what physical or chemical principles are essential to its operation, and so on. For example, you will see considerable background in user guides for graphic or audio programs—you can’t operate them without understanding the concepts of brightness, saturation, and hue; μ law, A law, and other such.

Descriptive Examples of User Guides

Consider these examples. Note: Not all of the following styles and formats are not necessarily recommended. Ask your instructor if you have questions.

Delarina WinFax LITE User’s Guide

This book is 5.5 × 8.5 inches and under 150 pages. It uses by-chapter pagination, with new chapters and sections beginning on a righthand page.

Cover. On the front cover, you see the full book title, a version number, the company name with its logo, and warning that the book is not for retail sale. The back cover contains advertising material—rather atypical for user guides—on the product’s best features, special offers on the full version, a 1-800 number to call, and the book number.

Title page. The first page inside this user guide is the title page, which includes the product name, the book title, the book edition number, the date of the edition, the company logo (which includes its name), several addresses for the company, and the not-for-retail-sale warning. The company name has a registered trademark symbol beside it; the
No trademark symbols are shown on the front or back covers. A greener approach is to omit the title page, since it is practically a duplicate of the front cover, and put the edition notice on the back of the front cover.

**Edition notice:** On the back of the title page is the edition notice. This edition notice includes the book title, a copyright notice, legal statements concerning copying the book, list of trademarked product names occurring in the book, and the document number.

**License agreement:** On the next page is the software agreement, a two-page thing that outlines permitted uses of the software and related warranties.

**Table of contents:** The TOC begins on a right-hand page numbered "i" and lists up to level of headings within the chapters.

**Headers and footers:** The book title is used for both the left and right footers: on the left page, the title is right-aligned; on the right page, the title is left-aligned. The page number appears opposite of both footers, and a solid ruled line is placed just above both footers. The chapter title is used for the inside header on each page; the current heading is used for the outside header on each page. A solid ruled line is placed just beneath these headers.

**Preface:** The overview which is treated as chapter 1. It contains some promotion of the product, a diagram of the product's many uses, hardware and software requirements on its use, an overview of the manual contents, and instructions on how to get help.

**Body chapters:** Chapters use the following design features:

- **Chapter title:** Large bold Arial letters with the chapter title on the left margin and the chapter number on the right and a double ruled line below.
- **Headings:** First-level headings are about 1 point smaller than chapter titles, left aligned, with a solid ruled line just below. Second-level headings are about 2 points smaller, left aligned, with no ruled line. Third-level headings are the same size as body text but use bold italic Arial and are placed on the left margin.
- **Text:** Body text is a serif font about 10 points in size. This manual does not use hanging-head format; run-over text extends to the same left margin as do headings.
- **Graphics:** Numerous screen captures are used through the book; they are all centered.
- **Lists:** Numbered lists are used for items in sequence such as steps. Open squares are used for bulleted items that have a subhead. Otherwise standard filled disks are used as bullets.
- **Highlighting:** Text that users must type uses a sans serif type (probably Arial) as do screen buttons, options, field names, and system messages. Bold is used for simple emphasis.
- **Notices:** Only notes and hints are used. The word "Note" or "Hint" uses bold-italics. The text of the notice is regular body font indented an inch.
- **Appendices:** The book ends with two appendixes: Appendix A addresses common problems with a situation–solution format; Appendix B addresses fonts. These pages are numbered A–1, A–2,...,B–1, B–2, and so on.
- **Index:** The book ends with a 10-page index with pages numbered with lowercase roman numerals starting at i. The index uses the standard but does something unusual with entries. It uses a table-of-contents format for the entries and their page references, connecting them with the sort of leader dots you’d see in TOCs.

**IBM Aptiva Reference Guide**

This book is also 8.5 × 5.5 inches. It uses consecutive page numbering throughout the book and is about 120 pages long.

**Covers.** The front cover has a graphic design with stylized numbers 1, 2, and 3 along with large grid pattern and various sorts of shading. The three elements of the book title are placed at the top, upper third, and bottom of the area, respectively. You also see the words "information," "getting help," and "troubleshooting" which seems to float between the second and third title elements, giving readers a more detailed sense of the book’s contents. The back cover continues the grid pattern and includes the IBM logo with the part number of the book, its print date, a statement that the book was printed in the "USA," and a bar code for the book number.

**Title page.** This page contains the words "Aptiva Reference Guide" in large serif letter in the upper right of the page—and that's it!

**Edition notice.** The edition notice occurs on the back of the title page. It is pushed to the bottom of the page and uses a smaller type size, probably 7-point, for its body text. The heading for the edition notice is the edition number followed by the month and year of the edition. The paragraphs of the edition notice states that the book is provided "as is" without any warranty, that the book is for multiple models of the product and that portions of it may not refer to the
reader's own particular model. Also included are an address where comments can be sent, a 1-800 number to request additional copies, and the standard copyright line.

**Table of contents.** The TOC is an unusual design in which all entries are left aligned in the center of the page, with the page numbers to the left about an inch. First-level entries use bold. TOC begins on page iii.

**Notices section.** The first body section of this manual is for notices—specifically, trademarks, highlighting conventions used in the book, safety notices, and regulatory (communications) notices. The section begins with its own title page on which is displayed the word "Notices" in a large serif font in the upper right corner and with a grid and shading design similar to that on the front cover. The text of the notices section begins on a right-hand page as does the chapter title page.

**Body text.** Here are the key design features of the body text:

- **Text:** Text for this book is indented nearly 2 inches. Body text is a rather small sans serif font, probably Helvetica, probably 9 or 10 points. The hanging-head format is used.
- **Headings:** First-level headings align to the far left margin and use a blocky bold sans serif font with a solid ruled line above. Chapter titles use a large gray serif font in the upper right corner of the first page of the chapter. Second-level headings align with body text and use sentence-style caps (as do first-level headings) and use the same font as do first-level headings but about 2 points smaller.
- **Highlighting:** In stepwise instructions, the following elements are bold: buttons, tabs, menu options, menu names, keyboard key names, icon names, parameter settings. Names of disks supplied with the product are in italics. System messages are in regular roman and double quotation marks.
- **Steps:** Instructions sequences are introduced with a gerund-phrased heading in the bold font. Substeps or alternate subtasks use infinitive phrasing with the same font but smaller and are punctuated with a colon. Actual steps use a number in the same smaller font without a period.

**Headers and footers.** Only footers are used. Bold page numbers (using the same font as the first-level heading but much smaller) are on the outside; the current heading, not chapter title, is centered and in a serif italics font using sentence-style caps.

**Special notices.** This book uses a light gray box with a white checkmark in it to call attention to special notices. The text of the special notices is the same as the footers: small italic serif font. Usually, the checkmark box is located on the far left margin and the notice text is aligned to the normal body text. Where possible, the checkmark box and the notice text are in the open area between the far left margin and the body text.

**Troubleshooting section.** The body of this section begins with a flowchart that must be meant to orient a user to the overall process of troubleshooting and to the different troubleshooting resources available. The next section consists of common questions with actions to take depending on yes or no answers. The text of the actions is bulleted or numbered depending on the content and contains cross-references to other areas of the troubleshooting information. The next section is designed in two columns, the left column with the heading "If the problem is..." and the right column with the heading "Here's what to do..." The problem statement in the left column is in bold. the next section is similar except that it lists error codes that are displayed on the computer and actions to take.

**Index.** The book has a 6-page index formatted in 3 column. Two levels of index entries are used. The page references are set about a half inch away from the text entries.

### Process and Internal Documents for User Guides

Lorem ipsum

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat. Ut wisi enim ad minim veniam, quis nostrud exerci tation ullam corper suscipit lobortis nisl ut aliquip ex ea commodo consequat. Duis autem vel eum iriure dolor in hendrerit in vulputate velit esse molestie consequat, vel illum dolore eu feugiat nulla facilisis at vero eros et accumsan.

An important part of user guides—in fact, of almost any technical document—is the process that produces it:

1. **Initial planning.** Early planning on a user guide involves needs assessment (is any documentation needed at all?), audience analysis (who will be using the user guide? what are their needs?), task analysis (what will users
use the product for? what are their common tasks?), library plan (what books and media, in addition to a user
guide, are needed to support the product?), and so on.

2. **Documentation proposal.** If you are working freelance or as part of an independent documentation firm, you
may have to write a documentation proposal in an effort to win a contract to do a certain technical documentation
project.

3. **Documentation plan.** User guides need documentation plans, which are internal supporting documents that
specify content, audience, design, format, production team members, schedule, and other such information about
a documentation project and its "deliverables." The documentation plan resembles the documentation proposal in
certain ways, but the plan represents an established plan agreed upon by everybody involved in the production
process (and that means both the user guide and the product it documents).

4. **Prototype and specifications.** Important planning tools, which also serve as useful reference tools during a
documentation project, include the prototype of the user guide and the specifications for the user guide. The
prototype is a dummy version of the book with all planned components of the book (see the list on book-design
components) and all planned elements (see the list under format and style). However, the prototype uses
"greeked" text (also known as Lorem ipsum) like the example shown.

Typically, the prototype of the user guide is very brief: it needs to include only as many pages as it takes to illustrate
every unique textual component and textual element that will be used in the user guide. **Specifications** are descriptions of
a book design in table form. Specifications describe every unique component or element of a book, so that it can be
recreated by someone who might not have access to the electronic files, templates, or styles of that book.

- **Template and style catalog.** A well-designed user guide, and a well-designed process to produce that user
guide, should include templates and style catalogs. A template is an electronic file that defines such
aspects of the user guide as page size, headers and footers, page-numbering style, regular and special
page layout, and other such detail. A style catalog is also an electronic thing that defines the format and
style of textual elements such as headings, headers, footers, lists, paragraphs, tables, and so on. For
example, a style for a "heading 1" might specify 24-point Arial bold with 24 picas above and 12 picas below.
Styles help you create a user guide more efficiently; styles also help you maintain consistency in the format
and style of that user guide.

- **Multiple review drafts & sign-off.** A good process for the production of a user guide also includes several
drafts that editors, technical experts, usability testers, and documentation team members can review and
provide comments on. You as writer then implement those comments and produce a new draft for these
same people to review again. When everybody is satisfied with the draft of the user guide (or worn out or
out of time), they sign off on the user guide, and it can then go into "production," which means producing
the finished bound copies or the PDF that is made available to users.

As you can see, a user guide brings together many of the topics covered in this online textbook. If you are taking a
technical writing course, you probably cannot implement all these features and phases of a user guide. Get with your
instructor to see which are required.
Chapter Objectives

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

1. Explain the purpose of standard operating policies and procedures.
2. Identify basic structure of standard operating policies and procedures.
3. Review examples and apply concepts from them to their writing.

Standard Operating Policies and Procedures

This chapter introduces you to policies and procedure documents and to standard operating procedure documents. Click on the links, below, to see samples.

- Hand-washing policies for health care personnel (policies_example.pdf)
- Accounting policies and procedures (pols_procs_ex2.pdf)
- Standard operating procedures: pouring dental impressions (sop1.pdf)

Overview

Standard operating procedures and policy-and-procedure documents are roughly the same: they establish standards for doing things and present specific step-by-step procedures for doing those things. Although these distinctions blur in practice, a policy-and-procedure document focuses more often on behavior expected of employees (for example, policies and procedures on smoking, substance abuse, or sexual harassment). Standard operating procedures focus more standard expectations for performing specific procedures such as hand-washing by health care professionals or taking a dental implant in a dental lab.

Organizations use policies and procedures documents to record their rules and regulations: attendance policies, substance-abuse policies, work-flow procedures, and so on. Once recorded, the
Recommendation and Feasibility Reports
David McMurrey and Jonathan Arnett

Chapter Objectives

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

1. Explain the differences between recommendation, feasibility, and evaluation reports.
2. Define the common components of recommendation and feasibility reports.
3. Explain and apply organization strategies for reports.

Recommendation and Feasibility Reports

This chapter addresses a loosely defined group of report types that examine a situation, evaluate the evidence, and render a judgment.

Some Rather Fine Distinctions...

The reports in this loosely defined category are variously called feasibility reports, recommendation reports, evaluation reports, assessment reports, and who knows what else. They all do roughly the same thing—provide carefully studied opinions and, sometimes, recommendations. There are some subtle differences among some these types.

Feasibility report

This type of report studies a situation (for example, a problem or opportunity) and a plan for doing something about it and then determines whether that plan is "feasible"—whether it is practical in terms of current technology, economics, social needs, and so on. The feasibility report answers the question "Should we implement Plan X?" by stating "yes" or "no," but more often, "maybe." Not only does it give a recommendation, it also provides the data and the reasoning behind that recommendation.

Recommendation report

This type of report starts from a stated need, a selection of choices, or both, and then recommends one, some, or none. For example, a company might be looking at grammar-checking software and want a recommendation on which product is the best. As the report writer on this project, you could study the market for this type of application and recommend one particular product, a couple of products (differing perhaps in their strengths and their weaknesses), or none (maybe none of them are any good). The recommendation report answers the question "Which option should we choose?" (or in some cases "Which are the best options?" by recommending Product B, or maybe both Products B and C, or none of the products.

Evaluation report

This type of report provides an opinion or judgment rather than a yes-no-maybe answer or a recommendation. It provides a studied opinion on the value or worth of something. For example, for over a year the city of Austin had free bus transportation in an attempt to increase ridership and reduce automobile traffic. Did it work? Was it worthwhile?—These are questions an evaluation report would attempt to answer. This type of report compares a thing to a set of requirements (or criteria) and determines how well it meets those requirements. (And of course there may be a recommendation—continue the project, scrap it, change it, or other possibilities.)

As you can see, these distinctions are rather fine, and they overlap. In real-world writing, these types often combine—you might see elements of the recommendation report combine with the feasibility report, for example. Of course, the writers of these reports don't care which type they are writing—and well they shouldn't! They're trying to get a job done.
Typical Contents: Recommendation and Feasibility Reports

Whatever shade of feasibility or recommendation report you write, whatever name people call it—most of the sections and the organization of those sections are roughly the same.

The structural principle that undergirds this type of report is simple: you provide not only your recommendation, choice, or judgment, but also the data and the conclusions leading up to it. That way, readers can check your findings, your logic, and your conclusions and come up with a completely different view. But, more likely, they will be convinced by all your careful research and documentation.

Introduction

As with any technical report, the introduction sets forth the report's purpose (in this case, indicate that it's a recommendation, feasibility, or evaluation report), 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.

Problem description/definition

If the problem is complex, expand on the situation you briefly mentioned in the Introduction, and remind the readers why they are reading your report. What is the problem? Why is it a problem? Why does it need a solution? How will this report help address the problem?

This section's size can vary tremendously. If the audience is deeply familiar with the problem, you may be able to omit this section and summarize the problem in the report's introduction. Or you could include a short problem description section that summarizes the issue's major points. Or you may need to delve into detail in order to prove that the audience should take you and your report seriously. Alternatively, if the audience is grappling with a problem they don't fully understand, then you may need to write a detailed problem description in order to justify your report's existence.

Technical Background

If the readers are not familiar with the issues, objects, or techniques discussed in the report, then you may need to include a separate section in which you explain any information that requires specialized skills or knowledge. This section often goes after the problem description or in an appendix. Alternatively, it may make more sense to fit the technical discussion into the comparison sections where it is relevant.

For example, a discussion of power and speed of tablet computers is going to necessitate some discussion of RAM, megahertz, and processors. Should you put that in a section that compares the tablets according to power and speed? Or should you keep the comparison neat and clean, limited strictly to the comparison and the conclusion, and put the technical discussion into a separate section?
Requirements/Decision-Making Criteria

If your technical report requires you to make a judgment of some sort—is the project feasible? what is the best option? did the item pass or fail a test?—describe and define the factors that guide your decision. Common examples of decision-making criteria include costs, schedules, popular opinions, demonstrated needs, and degrees of quality. Here are some examples:

- If you're trying to recommend a tablet computer for use by employees, your requirements are likely to involve size, cost, hard-disk storage, display quality, durability, and battery function.
- If you're looking into the feasibility of providing every student at Austin Community College with an ID on the ACC computer network, you'd need to define the basic requirements of such a program—what it would be expected to accomplish, problems that it would have to avoid, and so on.
- If you're evaluating the free bus transportation program in Austin, you'd need to know what was expected of the program and then compare its actual results to those requirements.

Requirements can be defined in several basic ways:
• **Numerical values:** Many requirements are stated as maximum or minimum numerical values. For example, there may be a cost requirement—the tablet should cost no more than $900.

• **Yes/no values:** Some requirements are simply a yes-no question. Does the tablet come equipped with Bluetooth? Is the car equipped with voice recognition?

• **Ratings values:** In some cases, key considerations cannot be handled either with numerical values or yes/no values. For example, your organization might want a tablet that has an ease-of-use rating of at least "good" by some nationally accepted ratings group. Or you may have to assign ratings yourself.

Criteria may need to be defined on a fairly granular level. For example, "chocolate flavor" may be a criterion for choosing among brands of chocolate truffles, but what defines a desirable chocolate flavor? Do you want a milk chocolate flavor? A dark chocolate flavor? White chocolate? A high or low percentage of cacao? Sweet, bitter, or spicy? Single-origin cacao beans or a blend? If single-origin, do you want Ghanaian, Venezuelan, Honduran, Ecuadorian, or Filipino?

The criteria section should also discuss how important the individual requirements are in relation to each other. Picture the typical situation where no one option is best in all categories of comparison. One option is cheaper; another has more functions; one has better ease-of-use ratings; another is known to be more durable. Set up your criteria so that they dictate a "winner" from situation where there is no obvious winner.

**Discussion of the options**

In certain kinds of feasibility or recommendation reports, you'll need to explain how you narrowed the field of choices down to the ones your report focuses on. Often, this section follows right after the discussion of the criteria. Your basic requirements may well narrow the field down for you. But there may be other considerations that disqualify other options—explain these as well.

Additionally, you may need to provide brief descriptions of the options themselves, along with some brief, general specifications on each option you are about to compare. DO NOT, however, actually compare the options in this section. Simply describe them.

**Whole-to-Whole Approach**

**Option A**

- Cost of Option A
- Functions of Option A
- Base of use: Option A

**Option B**

- Cost of Option B
- Functions of Option B
- Base of use: Option B

**Option C**

- Cost of Option C
- Functions of Option C
- Base of use: Option C

---

**Point-by-Point Approach**

**Cost**

- Option A
- Option B
Option C

**Functions**

- Option A
- Option B
- Option C

**Ease of use**

- Option A
- Option B
- Option C

**Criterion-to-criterion comparisons**

In this section, evaluate the options according to the decision-making criteria. **Do not** make a list of pros and cons. You can organize the comparison by criteria or by options, depending on what is most appropriate for the subject and your audience, but the best approach is usually to compare the options point-by-point.

For example, if you were comparing tablet computers, you'd have a section that compared them on cost, another section that compared them on battery function, and so on. It would be less effective to have a section that discussed everything about an iPad, another section that discussed everything about a Windows Surface, and so on, because you still need to make the criterion-to-criterion comparisons somewhere.

**Equipment price.** The price of the highest functioning portable satellite radio/MP3 player offered by XM was $399.99 for the Pioneer Inno [2]. The price for Sirius' highest functioning satellite radio/MP3 player was $259.99 for the Sirius S50 [3]. The price range for the XM plug-and-play radios is $49.99 to $119.99 [2]. The price range for Sirius plug-and-play radios is $39.99 to $124.99 [3]. In terms of equipment prices, both XM and Sirius offer similar products from high functioning to low functioning. Because Sirius only offers one portable/MP3 player, it holds a lower average price than XM. **XM has more options for the lower priced plug-and-play radios than Sirius does, so it holds a lower average price than Sirius.**

Each of these comparative sections should end with a conclusion that states which option is the best choice in that particular category. Of course, it won't always be easy to state a clear winner—you may have to qualify the conclusions in various ways, providing multiple conclusions for different conditions.

If you were creating an evaluation report, you obviously wouldn't be comparing options. Instead, you'd be comparing the thing being evaluated against the requirements placed upon it, the expectations people had of it. For example, the city of Austin, TX, tested a program in which it provided free bus transportation in order to increase ridership and reduce automobile traffic. What was expected of that program? Did the program meet those expectations?

**Summary table**

After the individual comparisons, include a table that summarizes the conclusions from the comparison section. Some readers are prone to pay attention to details in a table rather than in paragraphs. **DO NOT** just create a summary table and omit the descriptive paragraphs.

<table>
<thead>
<tr>
<th>Category</th>
<th>QM Satellite Radio</th>
<th>Sirius Satellite Radio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music channels</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Sports channels</td>
<td>4</td>
<td>2.5</td>
</tr>
</tbody>
</table>
Talk and entertainment channels  | 3.5 | 4
Subscription price          | 4   | 3.5
Portable radio/MP3 player price | 2.5 | 3.5
Plug-and-Play radio price    | 4   | 2.5
Signal                       | 3   | 4
Portable radio/MP3 player features | 4   | 4
Plug-and-Play radio features | 3   | 4
TOTAL                        | 32  | 31

Note: 1 - Poor, 2 - Good, 3 - Very Good, 4 - Excellent

Conclusions

The conclusions section of a feasibility or recommendation report summarizes or restates the conclusions you already reached in the comparison sections. In this section, you restate the individual conclusions; for example, which model had the best price, which had the best battery function, and so on.

But this section has to go further. It must untangle all the conflicting conclusions and somehow reach the final conclusion. Thus, the conclusion section first lists the primary conclusions—the simple, single-category ones. But then it must state secondary conclusions—the ones that balance conflicting primary conclusions. For example, if one tablet computer is the least inexpensive but has poor battery function, but another is the most expensive and has good battery function, which do you choose, and why? The secondary conclusion would state the answer to this dilemma.

And of course, the conclusions section ends with the final conclusion—the one that states which option is the best choice, or whether the project is feasible, or whether the program you are evaluating is a success or a failure.

Recommendation or Final Opinion

Summary

The following is a summary of the comparisons of XM Satellite Radio and Sirius Satellite Radio.

Primary conclusions:

1. XM and Sirius are the only two competitors when it comes to satellite radio.
2. XM has a higher total number of music and sports channels than Sirius.
3. XM has overall lower costs for monthly and yearly subscriptions than Sirius.

Secondary conclusions:

1. Sirius has the best signal and satellite coverage.
2. Although XM offers more than four portable satellite radios/MP3 players, they are all much higher priced than Sirius' one option.
3. The price range for the Sirius plug-and-play radios start lower than XM, but XM offers more options of lower priced plug-and-play radios than Sirius.
4. The features of the XM and Sirius portable radios/MP3 players are all very similar, but the XM Pioneer Inno is the highest price option at $399.99.
5. The features of the XM and Sirius plug-and-play radios are also similar but the Sirius Streamer Replay is the best. It's also the same price as XM's highest priced radio--Delphi SKYFi2 at $119.99.

Final Conclusion:

The best option for satellite radio is XM radio because it has more options to choose from at lower prices than Sirius.

In a feasibility or recommendation report, the final section states the recommendation. You'd think that that ought to be obvious by now. Ordinarily it is, but remember that some readers may skip right to the recommendation section and bypass all your hard work! Also, there will be some cases where there may be a best choice but you wouldn't want to recommend it. Early in their history, labtop computers were heavy and unreliable; there may have been one model that was better than the rest, but even it was not worth having.

The recommendation section should echo the most important conclusions leading to the recommendation and then state the recommendation emphatically. Ordinarily, you may need to recommend several options based on different possibilities. This situation can be handled, as shown in the examples, with bulleted lists.

In an evaluation report, this final section states a final opinion or judgement. Here are some possibilities:

- Yes, the free-bus-transportation program was successful, or at least it was, based on its initial expectations.
- No, it was a miserable flop—it lived up to none of its minimal expectations.
- Or, it was both a success and a flop—It did live up to some of its expectations, but did not do so in others. But in this case you're still on the hook—what's your overall evaluation? Once again, you need to state the basis for that judgment somewhere in the Requirements / Decision-making criteria section.

Executive Organization

Introduction

Factual Summary

Conclusions

Recommendations

Appendixes

A. Shiner Facility Background
   Energy consumption
   Alternative fuel sources

B. Existing Heating System
   Heat production
   Fuel consumption and costs
   Replacement costs

C. Proposed Wood-Fired System
   Design Basis:
   System description
   Boiler system
   HVAC
Costs:
- Investment costs
- Replacement costs
- Operation and maintenance costs

---

Traditional Organization

Abstract

I. Introduction

II. Shiner Facility Background
   - Energy consumption
   - Alternative fuel sources

III. Existing Heating System
   - Heat production
   - Fuel consumption and costs
   - Replacement costs

IV. Proposed Wood-Fired System
   - Design Basis
     - System description
     - Boiler system
     - HVAC
   - Costs
     - Investment costs
     - Replacement costs
     - Operation and maintenance costs

V. Conclusions

VI. Recommendations

---

Organizational Plans for Feasibility and Recommendation Reports

This is a good point to discuss the two basic organizational plans for this type of report.

Traditional organization
This layout corresponds to the order that the sections have just been presented in this chapter. You start with background and decision-making criteria, define the options, then move to comparisons, and end with conclusions and recommendations.

**Executive plan**

This layout moves the conclusions and recommendations to the front of the report and pitches the full discussion of background, criteria, options, and the comparisons into appendices. That way, the "busy executive" can see the most important information right away, and turn to the detailed discussion only if there are questions. (In a large report printed in hard copy, there would be tabs for each major section and appendix.)

**Report Pre-writing Strategy**

When you develop a recommendation, feasibility, or evaluation report, go through this checklist and think about these issues. Make a list of your thoughts on them so you (and if you are working in a group, all your coworkers) have a master document you can refer back to.

**Audience.** Describe the report's intended audience in terms of the organization they work for, their titles and jobs, their technical background, and their ability to understand the report.

**Situation.** Describe the situation and subject that the report will address. What problems or needs are there? Who has them? Where are they located? What will the report discuss?

**Deliverable type.** Describe the report that you are writing. Is it a recommendation, feasibility, or evaluation report?

**Research subject.** Develop a research question. What, exactly, will you investigate? (Be specific!)

**Available options.** Identify and describe the things you will be comparing. What are these things? Are you going to determine yes or no? Choose from multiple options? Decide if something is good or bad?

**Criteria.** Identify specific features, values, or ideas you can use to compare the various options or make an informed decision. Which of those criteria is most important? Least important?

**Information sources.** Identify places where you can get information about your research subject. List specific books, articles, reference works, interview subjects, field observations, and other kinds of sources that you think will contribute to your report.

**Graphics.** List the graphics you think your report will need according to their type and their content. Odds are, you'll need at least one table.
Handbooks
David McMurrey

Chapter Objectives

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

1. Explain the three types of information found in handbooks.
2. Explain and apply the guidelines for handbook format and style.

A handbook, as we are defining it here, is a combination of concept, instruction, and reference information focused on a specific topic for a specific audience's needs.

Handbook Basics

Concepts

Conceptual information explains how things work, how things are put together. For more complex instructions, you have to know some concepts, theory, background, and principles to perform the instructions. Consider the example of the software function that enables you to modify or create your own color. Using something like Photoshop, Illustration, CorelDraw or Paint Shop Pro to do this—the actual buttons and sliders—is easy. But understanding how hue, intensity, brightness, saturation, density, contrast, and RGB work—that's hard. You have to know computer color theory to create the color you need.

Consider another example: simple Linux file system commands—ls, cd, cp, mv, pwd. To use these commands, you need to understand what files and directories are, and probably what an operating system is as well as wildcards. You really can't understand how to use these commands—follow instructions using them—unless you understand these basic concepts.

Instructions

If you do understand the fundamental concepts, then you can intelligently follow the step-by-step procedures. Instructions are those familiar numbered-list things that carefully walk you through a procedure. Instructions are everywhere, on product packaging, in user guides that come with appliances, and on computers.

Reference

The last category of information involves look-up information, or quick-reference information. If you followed the file system example above, you had to study and learn the concepts of files, directory, and wildcards first. Then you could follow and understand the instructions on changing directories, copying, deleting, or moving files. After a while you no longer need the instructions, but now and then you have special requirements not covered in the instruction section or you can't remember certain procedures that were covered in the instruction section. Now's the time you need basic reference information: you just go to that section and quickly look it up.

And so after more time, you no longer need the concepts section and the instructions section: you gotten so accustomed to those procedures, you know them by heart. But now and then you forget some little detail or you have some special task you've never done before—that's when you go to the reference section. You could probably tear off the concepts and instructions sections and throw them away. All you'll ever need is the reference section.

Handbook Format and Style

In creating a handbook, you should adhere to rather specific guidelines for the use of headings, lists, notices, graphics, tables, documentation, and introductions—which of course assumes that you must use these things.
Handbook prototype

From the link below you can get a dummy version of the handbook. It includes all the required pages in good format. Included in this Word document are paragraph and character styles that will make your work easier and add some professional skills to your repertoire.

Handbook prototype

Contents prototype

The prototype for the table of contents is particularly useful: it gives you the Word styles to produce a professional-looking TOC. It is tough to get the left- and right-alignments and leader dots right.

Table of contents prototype

Actually, these same prototypes can be used for any formal report.
Chapter Objectives

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

1. summarize strategies for writing effective document titles
2. define abstract and explain the different types of abstracts
3. explain the purposes of different types of introductions and summarize the common elements of them
4. explain the components and purposes of conclusions

Title It, Summarize It, Introduce It, Conclude It

Formal technical reports over eight to ten pages contain several components that deserve their own focus because they are important in technical reports and because people are unfamiliar with them:

- **Titles** explores strategies for making document titles specific but not paragraphs long.
- **Abstracts** provide several kinds of summaries of the report contents and conclusions.
- **Introductions** get readers ready to read reports by indicating the topic, purpose, intended audience, contents, and other such matters.
- **Conclusions** shape how readers view and understand the report upon leaving it.

Abstracts

Summarize it

An *abstract* is a summary of a body of information. Sometimes, abstracts are in fact called summaries—sometimes, executive summaries or executive abstracts. The business and scientific worlds define different types of abstracts according to their needs. If you are taking a technical writing course based on this online textbook, your technical report (depending on your instructor) may use two types: the descriptive abstract and the informative abstract.

Descriptive Abstracts

The descriptive abstract provides a description of the report's main topic and purpose as well an overview of its contents. As you can see from the example, it is very short—usually a brief one- or two-sentence paragraph. In this report design, it appears on the title page. You may have noticed something similar to this type of abstract at the beginning of journal articles.

In this type of abstract, you don't summarize any of the facts or conclusions of the report. The descriptive abstract does *not* say something like this:

**Problem:** Based on an exhaustive review of currently available products, this report concludes that none of the available grammar-checking software products provides any useful function to writers.

This is the style of summarizing you find in the informative abstract. Instead, the descriptive abstract says something like this:

**Revision:** This report provides conclusions and recommendations on the grammar-checking software that is currently available.
The descriptive abstract is a little like a program teaser. Or, to use a different analogy, it is as if the major first-level headings of the table of contents have been rewritten in paragraph format.

*Descriptive abstract on report title page.*

### Informative Abstracts

The informative abstract, as its name implies, provides information from the body of the report—specifically, the key facts and conclusions. To put it another way, this type of abstract summarizes the key information from every major section in the body of the report.

It is as if someone had taken a yellow marker and highlighted all the key points in the body of the report then vacuumed them up into a one- or two-page document. (Of course, then some editing and rewriting would be necessary to make the abstract readable.) Specifically, the requirements for the informative abstract are as follows:

- Summarize the key facts, conclusions, and other important information in the body of the report.
- Equals about 10 percent of the length of a 10-page report: for example, an informative abstract for a 10-page report would be 1 page. This ratio stops after about 30 pages, however. For 50- or 60-page reports, the abstract should not go over 2 to 3 pages.
- Summarize the key information from each of the main sections of the report, and proportionately so (a 3-page section of a 10-page report ought to take up about 30 percent of the informative abstract).
- Phrase information in a very dense, compact way. Sentences are longer than normal and are crammed with information. The abstract tries to compact information down to that 10-percent level (or lower for longer reports). While it's expected that the writing in an informative abstract will be dense and heavily worded, do not omit normal words such as the, a, and an.
- Omit introductory explanation, unless that is the focus of the main body of the report. Definitions and other background information are omitted if they are not the major focus of the report. The informative abstract is not an introduction to the subject matter of the report—and it is not an introduction!
- Omit citations for source borrowings. If you summarize information that you borrowed from other writers, you do not have to repeat the citation in the informative abstract (in other words, no brackets with source numbers and page numbers).
- Include key statistical detail. Don't sacrifice key numerical facts to make the informative abstract brief. One expects to see numerical data in an informative abstract.
- Omit descriptive-abstract phrasing. You should not see phrasing like this: "This report presents conclusions and recommendations from a survey done on grammar-checking software." Instead, the informative abstract presents the details of those conclusions and recommendations.

This last point is particularly important. People often confuse the kinds of writing expected in descriptive and informative abstracts. Study the difference between the informative and descriptive phrasing in the following examples:

**Informative:** Based on an exhaustive review of currently available products, this report concludes that none of the available grammar-checking software products provides any useful function to writers.

**Descriptive:** This report provides conclusions and recommendations on the grammar-checking software that is currently available.

**ABSTRACT**

Computerized speech recognition takes advantage of the most natural form of communication, the human voice. During speech, sound is generated by the vocal cords and by air rushing from the lungs. If the vocal cords vibrate, a voiced sound is produced; otherwise, the sound is unvoiced. The main problem in speech recognition is that no two voices produce their sounds alike and that an individual voice varies in different conditions. Because voices do vary and because words blend together in a continuous stream in natural speech, most recognition systems require that each speaker train the machine to his or her voice and that words have at least one-tenth of a second pause between them. Such a system is called an isolated word recognition system and consists of three major components that process human speech: (1) the preprocessor which removes irregularities from the speech signal and then breaks it up into parts; (2) the feature extractor which extracts 32 key features from the signal; and (3) the classification phase which identifies the spoken word and includes the training mode and reference pattern memory. Spoken words are identified
on the basis of a certain decision algorithm, some of which involve dynamic programming, zero crossing rate, linear predictive coding, and the use of a state diagram.

Voice recognition systems offer many applications including data entry, freedom for mobility, security uses, telephone access, and helpful devices for the handicapped. However, these same systems also face problems such as poor recognition accuracy, loss of privacy among those who use them, and limited vocabulary sizes. The goal of the industry is the development of speaker-independent systems that can recognize continuous human speech regardless of the speaker and that can continually improve their vocabulary size and recognition accuracy.

*Informative abstract.* This type summarizes the key facts and conclusions in the body of the report. (By the way, speech recognition has come a long way since this report was written in 1982!)

**Executive Summary**

The executive summary is a hybrid of the descriptive and informative summaries. Written for executives whose focus is business decisions and whose background is not necessarily technical, it focuses on conclusions and recommendations but provides little background, theory, results, or other such detail. It doesn't summarize research theory or method; it makes descriptive-summary statements: for example, "theory of heat gain, loss, and storage is also discussed."

To get a sense of the executive summary, study the following example:

**EXECUTIVE SUMMARY** *Rural Health Clinics: Requirements* The most important needs of rural health clinics, which require energy resources, are as follows: **Refrigeration.** Absorption refrigeration, fueled by propane or kerosene and common at unelectrified health clinics, is vulnerable to interruption and is thus inadequate for the vaccines needed in immunization programs for dangerous diseases including polio, diphtheria, tetanus, pertussis, tuberculosis, measles, yellow fever, and Hepatitis B. Instead, compression-type refrigerators powered by 12- or 24-volt storage batteries and recharged by photovoltaic panels or a small wind turbine can meet these needs. **Lighting.** Instead of kerosene lighting, common in unelectrified communities and a known safety hazard and contributor to poor indoor air quality as well, renewable energy technologies can improve lighting in rural health clinics for such important functions as emergency treatment, birthing, maternity care, surgery, and administrative tasks. **Communications.** Health care services and emergency medical treatment, in particular, are greatly facilitated with reliable radio and radio-telephone communications to other health clinics and facilities in the region. Rural health clinics can have reliable two-way regional communication via VHF radio with electricity provided by a single 30-W PV module. **Medical appliances.** Small medical appliances that operate on 120-volt AC electricity require an inverter, which is easily incorporated into wind- or solar-based systems. Although photovoltaic systems can provide the electricity needed for the high temperatures, approximately 120°C (250°F) needed in sterilization, solar thermal collector systems can produce high temperatures at a lower cost, especially in areas with good solar insolation. **Water.** Solar and wind power can be used to generate high volumes of potable water in tandem with techniques such as ozone treatment, reverse osmosis, photochemical treatment, also known as ultraviolet or UV, disinfection and carbon filters. Ozone treatment is very suitable to solar- or wind-generated power requiring only 0.3 watt-hours per liter. Clean water can also be provided from deep wells but requires an energy source for pumping significant volumes. Solar or wind power (or both) generated on site can economically meet the broad range of these needs.

*Executive summary.*

**Revision Checklist for Abstracts**

As you re-read and revise your abstracts, watch out for problems such as the following:

- Make sure that the descriptive abstract does *not* include informative abstract phrasing; make sure that the informative abstract does *not* include descriptive abstract phrasing.
- Make sure the descriptive abstract provides an overview of the topics covered in all the major sections of the report.
- Make sure that the informative abstract summarizes *all* the major sections of the report. (And don't forget—the informative abstract is *not* an introduction!)
- Make sure the informative abstract summarizes *all* key concepts, conclusions, and facts from the body of the report (including key statistical information).
- Make sure that the informative abstract excludes general, obvious, deadwood information and that the phrasing is compact and concentrated.
• Make sure that the informative abstract is neither too brief (less than 10 percent) nor too long (more than 15 percent).

Introductions

Get Readers Ready to Read that Document

The introduction is one of the most important sections of a report—or, for that matter, any document—but introductions are often poorly written. One reason may be that people misunderstand the purpose of introductions. An introduction introduces readers to the report and not necessarily, or only minimally, to the subject matter. "Introduction" does not equal "background"; it may contain some background but only minimally.

Readers have an understandable need to know some basic things about a report before they begin reading it: such as what is it about, why was it written, what's it for, for whom it written, and what are its main contents. Readers need a basic orientation to the topic, purpose, situation, and contents of a report—in other words, an introduction.

Imagine that, years ago, you were writing a recommendation report about CD-ROM computer devices. You might be tempted to use the introduction to discuss the background of compact disc development or its theoretical side. That might be good stuff to include in the report, and it probably belongs in the report—but not in the introduction, or at least not in much detail or length.

For 10-page reports, introductions might average one half to one full page. On that one page, you might have three paragraphs. One of those paragraphs could be devoted to background information—in other words, to introducing the subject matter. But the other two paragraphs must do the job of introducing the report and orienting the reader to the report, as discussed in the following.

Common Elements of Introductions

Each of the following elements is not required in all introductions, and some elements combine into the same sentence. Rather than mechanically applying these elements, write the introduction that seems good to you, then come back and search for these elements in it.

Topic. Early in the introduction, indicate the specific topic of the report. Some introductions seem to want to hold readers in suspense for a while before they indicate the true topic—that's a gamble. Better is to indicate the topic early—such that you could circle the topic words in the first three to four lines.

Purpose and situation. A good introduction needs to indicate why it was written, for whom, and for what purpose. If the report provides recommendations on whether to implement a program, the introduction needs to indicate that purpose. You might also consider indicating something of the scope of the report—what it is not intended to accomplish.

Audience. Indicate who are the appropriate or intended readers of the report—for example, "experienced technicians trained on the HAL/6000." Indicate what level of experience or knowledge readers need to understand the report, if any. If none is needed, say that. If the report was prepared for council members of the City of Utopia, Texas, the introduction needs to express that.

Overview of contents. Indicate the main contents of the report. You can do this with an in-sentence list, as the examples illustrate. If you are concerned about readers' exaggerated expectations, indicate what topics the report does not cover.

Background on the topic. This is everybody's favorite! Some minimal background is usually in an introduction—for example, key definitions, historical background, theory, the importance of the subject. Information like this gets readers interested, motivated to read, grounded in some fundamental concepts. Watch out, though—this discussion can get away from you and fill up more than page. If it does, that's okay—all is not lost. Move it in to the body of the report, or into an appendix.

Background on the situation. Another kind of background is also a good candidate for introductions—the situation that brought about the need for the report. For example, if there were a lot of conflicting data about some new technology, which brought about the need for the research, this background could be summarized in the introduction. For example, if a company needed new equipment of some kind or if the company had some problem or need and some requirements in relation to that equipment—discussion of these matters should go in the introduction.

Notice in the discussion of these elements the word "indicate" keeps getting used. That's because you'd like to avoid heavy-handed language such as "The topic of this report is..." or "This report has been written for...". Notice how the
example introductions generally avoid this kind of phrasing.

**Introductions to Brief Documents**

If you are writing a brief document of 1 to 2 pages, you don't need all those elements common to report introductions discussed in the preceding section. Here's the subset of what you are likely to need:

**Topic.** If you can circle the topic words somewhere in the first three to four lines of the introduction, you're good.

**Purpose and situation.** In instructions, it's enough to tell readers that they are going to see how to do something. In a recommendation report, just mention that readers will be seeing conclusions and recommendations.

**Audience.** Indicate what level of experience or knowledge readers need to understand the document. If none is needed, say that.

**Overview of contents.** Indicate the main contents of the document. A simple in-sentence list will do.

**Background.** Always remember that an introduction is not a background discussion; it may contain some, but only minimally.

Example of a brief introduction with most of the key elements present.

**Section Introductions**

We don't normally think that there is more than one introduction in a report. However, in reports over 8 to 10 or more pages, the individual sections also need some sort of introduction. These can be called *section introductions* because they prepare readers to read a section of a report—they orient readers to its contents and purpose and show some linkage to the preceding section.

Of course, a section introduction need not have all the elements of a report introduction. However, it does have several that, if handled well, can make a lot of difference in the clarity and flow of a report.

**Example section introduction.** Notice that this section introduction not only mentions the preceding and upcoming topics but shows how they are related. (From a report written in 1983.)

**Topic indication.** As with the report introduction, indicate the topic of the upcoming section. But remember—it doesn't have to be the stodgy, heavy-handed "The topic of this next section of the report is..."

**Contents overview.** Just as in the report introduction, it is a good idea to list the main contents. The in-sentence list serves this purpose well.

**Transition.** An element that is very useful in section introductions is transitional phrasing that indicates how the preceding section relates to the one about to start. In reports of any length and complexity, it is a good technique—it guides readers along, showing them how the parts of the report all fit together.

**Revision Checklist for Introductions**

As you revise your introductions, watch out for problems such as the following:

- Avoid writing an introduction consisting of only background information; avoid allowing background information to overwhelm the key elements of the introduction.
- Make sure to indicate the topic early.
- Be sure to indicate the audience and situation—what the readers should expect from the report; what knowledge or background they need to understand the report; what situation brought about the need for the report.
- Make sure there is an overview of the report contents, plus scope information—what the report doesn't cover.

**Conclusions**

**Get It Over with...Gracefully**

We normally use the word "conclusion" to refer to that last section or paragraph of a document. However, the word refers more to a specific type of final section. If we were going to be fussy about it, the current section should be called "Final
Sections," which covers all possibilities.

There seem to be at least four ways to end a report: a summary, a true conclusion, an afterword, and nothing. Yes, it is possible to end a document with no conclusion (or "final section") whatsoever. However, in most cases, that’s a bit like slamming the phone down without even saying good-bye. More often, the final section is some combination of the first three ways of ending the document.

**Summaries**

One common way to wrap up a report is to review and summarize the high points. If your report is rather long, complex, heavily detailed, and if you want your readers to come away with the right perspective, a summary is in order. For short reports, summaries can seem absurd—the reader thinks "You've just told me that!" Summaries need to read as if time has passed, things have settled down, and the writer is viewing the subject from higher ground.

**VIII. SUMMARY**

This report has shown that as the supply of fresh water decreases, desalting water will become a necessity. While a number of different methods are in competition with each other, freezing methods of desalination appear to have the greatest potential for the future.

The three main freezing techniques are the direct method, the indirect method, and the hydrate method. Each has some advantage over the others, but all three freezing methods have distinct advantages over other methods of desalination. Because freezing methods operate at such low temperatures, scaling and corrosion of pipe and other equipment is greatly reduced. In non-freezing methods, corrosion is a great problem that is difficult and expensive to prevent. Freezing processes also allow the use of plastic and other protective coatings on steel equipment to prevent corrosion, a measure that cannot be taken in other methods that require high operating temperatures.

Desalination, as this report has shown, requires much energy, regardless of the method. Therefore, pairing desalination plants with nuclear or solar power resources may be a necessity. Some of the expense of desalination can be offset, however . . .

*Summary-type of final section. From a report written in the 1980s.*

**"True" Conclusions**

A "true" conclusion is a logical thing. For example, in the body of a report, you might present conflicting theories and explored the related data. Or you might have compared different models and brands of some product. In the conclusion, the "true" conclusion, you'd present your resolution of the conflicting theories, your choice of the best model or brand—your final conclusions.

**V. CONCLUSIONS**

Solar heating can be an aid in fighting high fuel bills if planned carefully, as has been shown in preceding sections. Every home represents a different set of conditions; the best system for one home may not be the best one for next door. A salesman can make any system appear to be profitable on paper, and therefore prospective buyers must have some general knowledge about solar products.

A solar heating system should have as many of the best design features as possible and still be affordable. As explained in this report, the collector should have high transmissivity and yet be durable enough to handle hail storms. Collector insulation should be at least one inch of fiberglass mat. Liquid circulating coils should be at least one inch in diameter if an open loop system is used. The control module should perform all the required functions with no added
circuits. Any hot water circulating pumps should be isolated from the electric drive motor by a non-transmitting coupler of some kind.

Homeowners should follow the recommendations in the guidelines section carefully. In particular, they should decide how much money they are willing to spend and then arrange their components in their order of importance. Control module designs vary the most in quality and therefore should have first priority. The collector is the second in importance, and care should be taken to ensure compatibility. Careful attention to the details of the design and selection of solar heating devices discussed in this report will enable homeowners to install efficient, productive solar heating systems.

A "true" conclusions final section. This type states conclusions based on the discussion contained in the body of the report. (From a report written in the 1980s.)

Afterwords

One last possibility for ending a report involves turning to some related topic but discussing it at a very general level. Imagine that you had written a background report on some exciting new technology. In the final section, you might broaden your focus and discuss how that technology might be used, or the problems it might bring about. But the key is to keep it general—don't force yourself into a whole new detailed section.

VII. CONCLUSION: FUTURE TRENDS

Everyone seems to agree that the car of the future must weigh even less than today's down-sized models. According to a recent forecast by the Arthur Anderson Company, the typical car will have lost about 1,000 pounds between 1978 and 1990 [2:40]. The National Highway Traffic Safety Administration estimates the loss of another 350 pounds by 1995. To obtain these reductions, automobile manufacturers will have find or develop composites such as fiber-reinforced plastics for the major load-bearing components, particularly the frame and drivetrain components.

Ford Motor Company believes that if it is to achieve further growth in the late 1980's, it must achieve breakthroughs in structural and semistructural load-bearing applications. Some of the breakthroughs Ford sees as needed include improvements in the use of continuous fibers, especially hybridized reinforced materials containing glass and graphite fibers. In addition, Ford hopes to develop a high speed production system for continuous fiber preforms. In the related area of composite technology, researchers at Owens Corning and Hercules are seeking the best combination of hybrid fibers for structural automotive components such as engine and transmission supports, drive shafts, and leaf springs. Tests thus far have led the vice president of Owen Corning's Composites and Equipment Marketing Division, John B. Jenks, to predict that hybrid composites can compete with metal by the mid-1980's for both automotive leaf springs and transmission supports.

With development in these areas of plastics for automobiles, we can look forward to lighter, less expensive, and more economical cars in the next decade. Such developments might well provide the needed spark to rejuvenate America's auto industry and to further decrease our rate of petroleum consumption.

Afterword-type final section. The main body of the report discussed technical aspects of using plastics in main structural components of automobiles. This final section explores the future, looking at current developments, speculating on the impact of this trend.

Combinations

In practice, the preceding ways of ending reports often combine. You can analyze final sections of reports and identify elements that summarize, elements that conclude, and elements that discuss something related but at a general level (afterwords).

Here are some possibilities for afterword-type final sections:
• Provide a brief, general look to the future; speculate on future developments.
• Explore solutions to problems that were discussed in the main body of the report.
• Discuss the operation of a mechanism or technology that was described in the main body of the report.
• Provide some cautions, guidelines, tips, or preview of advanced functions.
• Explore the economics, social implications, problems, legal aspects, advantages, disadvantages, benefits, or applications of the report subject (but only generally and briefly).

Revision Checklist for Conclusions

As you reread and revise your conclusions, watch out for problems such as the following:

• If you use an afterword-type last section, make sure you write it at a general enough level that it doesn't seem like yet another body section of the report.
• Avoid conclusions for which there is no basis (discussion, support) in the body of report.
• Keep final sections brief and general.
Chapter Objectives

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

1. Plan and prepare a talk or presentation.
2. Deliver the presentation.
3. Create presentation materials that reflect standards of effective presentation.
4. Evaluate presentations delivered by others, including classmates.

Oral Presentations

A common assignment in technical writing courses—not to mention in the workplace—is to prepare and deliver an oral presentation, a task most of us would be happy to avoid. However, while employers look for coursework and experience in preparing written documents, they also look for experience in oral presentations as well. Look back at the first chapter. Remember how important interpersonal communication skills are in the workplace.

The following was written for a standard face-to-face classroom setting. If you are taking an online technical writing course, oral reports can be sent in as "scripts," or audio versions can be transmitted live or recorded. In any case, students may evaluate each other's oral reports by filling out a form like the one provided at the end of this chapter or responding through the discussion board.

If you can believe the research, most people would rather have root canal surgery without novocaine than stand up in front of a group and speak. It truly is one of the great stressors. But with some help from the resources that follow, you can be a champion presenter.

For additional information on oral presentations and public speaking in general, see Effective Presentations (http://www.kumc.edu/SAH/OTEd/jradel/effective.html). This is part of an online tutorial series provided by Kansas University Medical Center. This section has many resources that will be helpful to you.
Chapter Objectives

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

1. Identify basic memo and email formats.
2. Describe the key differences between basic memo and basic email formats.
3. Explain cc, bc, and attachment functions and when to use them.

Introduction to Memos and Emails

If you like movies, especially ones set in historical periods, you might enjoy finding anachronisms, or things in the wrong time period. You might see something from the present, such as a mobile phone, that is not supposed to be in a movie set in the past, such as 1850.

Anachronism

"a person or a thing that is chronologically out of place; especially: one from a former age that is incongruous in the present"

(Merriam-Webster)

For example, a well-known anachronism is in the first Indiana Jones movie, Raiders of the Lost Ark. In the movie, we see a plane flying over a map to show us Indy's route to adventure in Nepal. But while the movie was set in the 1930s, the map is from the 1980s. For example, viewers see the plane fly over Thailand, but the country was called Siam until 1939.

Maybe no one has ever confused the writing of an email or memo with an action movie. But if you enjoy finding anachronisms, there are a few hiding out in your everyday email form. It has anachronisms embedded in it from the old days before computers. Can you think of any right now? As we cover the basics of email and memos, I'll point out a few—let's see if I can tell you about any that you might not know about.
If you have ever written an email, you may have noticed that you have to provide the name of the person you are sending the email to and the subject. The email automatically provides the name of the sender and the date.

Example Memo Format

To: Martha Garner
From: Greg Brown
Subject: Server Outage
Date: December 1, 2015

We will be performing several software updates on our servers this Friday at 7pm EST. The maintenance is required in order to keep our servers secure and up-to-date.

Our lms, email, and support forum may be momentarily unavailable around that time. We expect only a very short interruption of services (i.e. a few seconds while the web server software is restarting).

Email formats are based on memo formats—that is, they are set up to provide the four key pieces of introductory information that a memo states in the heading: to, from, subject, and date.

Memos and emails have the to, from, subject, date heading format in common. For this reason, emails are often considered to be synonymous with memos. Also, much of the information that is shared via email is the information categorized into types of memos, for example, meeting minutes, lab reports, progress reports, directives, and other types of business and professional correspondence.

In fact, the main difference, if one is said to exist, between emails and memos, is that non-email memos exist on paper. The key format difference, then, is the signature.

That's right—it is common in email for persons to "sign" the email like a letter. In an informal email, the person might just sign his or her first name. In a more formal email, the person might have a closing like in a letter—"Sincerely," for example, along with his or her full name and title. In this way, emails can be more like letters.

Example of the Old Memo Format

To: Martha Garner
From: Greg Brown GB
Subject: Server Outage
Date: December 1, 2015

We will be performing several software updates on our servers this Friday at 7pm EST. The maintenance is required in order to keep our servers secure and up-to-date.

Our lms, email, and support forum may be momentarily unavailable around that time. We expect only a very short interruption of services (i.e. a few seconds while the web server software is restarting).

Paper memos NEVER have a closing and signature. Instead, the writer would indicate that he or she really wrote the memo by initialing by his or her name in the paper heading using blue or black ink. Historically, memos were typed up by stenographers and taken back to a boss for approval. Thus, the stenos would put their lower-case initials after a backslash at page bottom, like so:

Example Memo Format

To: Martha Garner
From: Greg Brown
Subject: Server Outage
Date: December 1, 2015

We will be performing several software updates on our servers this Friday at 7pm EST. The maintenance is required in order to keep our servers secure and up-to-date.
Our lms, email, and support forum may be momentarily unavailable around that time. We expect only a very short interruption of services (i.e. a few seconds while the web server software is restarting).

/gb

However, since people write their own messages on their own computers, the /ab now indicates authorship as long as they match the From line.

Of course, in email, the reader feels pretty confident that the email really came from the sender because, presumably, the sender had to log in to a secure email account.

If you take a look at your email when you are about to send one, you will notice some other options you have that are related to the olden days of memo writing and letter writing. You have the options of cc. CC stands for carbon copy. You may not be old enough to remember that before copy machines and computers that could print off multiple copies of a document, people used carbon paper to make copies. When a person would write or type, he or she would slip a piece of carbon paper underneath the document, and the striking of the pen or typewriter key would make a duplicate mark on a second piece of paper underneath the carbon paper, hence the term carbon copy. So the "cc" in the email heading stands for carbon copy, even though we don't use carbon anymore. In fact, sometimes, the cc is just changed to c for copy.

When do you use the cc option? When you want someone to have a copy of the email, but only for reference purposes. Or to put it more casually, to keep someone in the loop. For example, you manage a team, and you recently had a meeting. You send the meeting minutes to the team members who attended the meeting. You also want your supervisor to know that 1) you had a meeting and 2) you covered important topics and some decisions are made. Your supervisor isn't necessarily going to respond to the email and isn't directly involved in the meeting or projects. This is a good time to use a cc. When you cc someone on the email, everyone who gets the email can see who is cc-ed.

Your email has a bcc or bc option. Bcc stands for blind carbon copy, and bc is blind copy, but they are the same thing. When you use the bc option, only the person bc-ed can see who gets the email. The person in the "to" box or anyone cc-ed cannot see that a bc copy was sent or who received it. Some people consider the bc option to be unethical. Persons who disagree say that it is appropriate to use the bc option when emailing a subordinate about a difficult matter—a disagreement regarding policy, for example—and you want to make sure your supervisor knows what you wrote. You would bc your supervisor. You don't want your subordinate to think you are "tattling" on him or her, but you do want your supervisor to know what you did in case the matter ends up in his or her office, he or she is not caught unawares.

People generally agree that using the bc option is appropriate for privacy reasons. For example, perhaps you are an attorney, and you email an insurance company a copy of a client's claim. You might bc the client to ensure the client knows you sent the document and to keep his or her email address private from the insurance company. The insurance company likely assumes that the client will get a copy of the claim, or already has one. In another example, as a professor, I might send out an email to my entire class but bc all the students to keep their emails private from each other. With the bc, every student will receive the email, but each student can only see my name as the sender. Or, you might use bc for courtesy. For example, perhaps you have received an email with the hundreds of email addresses that were cc-ed on the original email, and you have to scroll through them to get to the message. It's annoying. If it's not necessary for the recipients to know who received the email—maybe it's just a reminder that the office is closing early today—and you want to avoid the scroll through the cc's, then you can bc all the recipients. That way, there's no cc scroll, and when someone replies, there's no chance that he or she will accidentally hit "reply all."

Memo Format Example

To: Martha Garner
Through: Allison Hall
From: Greg Brown GB
Subject: Server outage
Date: December 1, 2015

We will be performing several software updates on our servers this Friday at 7pm EST. The maintenance is required in order to keep our servers secure and up-to-date.

Our lms, email, and support forum may be momentarily unavailable around that time. We expect only a very short interruption of services (i.e. a few seconds while the web server software is restarting).

/ah

Something you may not know about is the “through” or “via” line on paper memos. In the military or in especially hierarchical companies, it may be frowned upon for a person to send an email to someone at a level above his or her direct supervisor. At such organizations, any correspondence to a person above the writer’s direct supervisor must go through the supervisor. The memo must go first to the direct supervisor, indicated with a “through” or “via” line. The direct supervisor initials by his or her name to show he or she has read and approved the memo, and then sends it to the next level until it arrives at its destination. When the final recipient receives it, he or she is assured that your memo has been read and approved all the way up the chain of command.

In an email-only culture, this same process would be achieved by sending the email to your direct supervisor and allowing him or her to forward the email up the chain of command.

Regardless of how hierarchical you believe your organization to be, it is not generally a good practice to send correspondence—paper or electronic—to persons at levels above your supervisor without talking to your supervisor about the matter first and perhaps asking him or her to unofficially review and approve your memo or email.

Driving question: What impression do you want to make on readers in your email/memo correspondence?

Do you want readers to respect your writing, read it with ease, and come away with a clear sense of what you intended to communicate and a positive impression of you as a co-worker or team member?

If so, knowing the memo format and a bit of the reason why memos look as they do will help you in structuring your memo/email properly.

As we move through this lesson, you will learn more about what types of content go in the main types of emails/memos, and how to write clearly and effectively.

One last thing. As you can see, memos and emails are not exactly the same thing. But memos evolved into emails, although paper memos are still created, and often then scanned and distributed electronically. In this chapter, we will usually refer to emails and memos as the same thing, and then clarify if we are referring to one or the other specifically.

Five Types of Memos

When this content for this chapter was first being developed, a helpful colleague imparted this wisdom to me: "Just show them a memo, have the participants write one, and boom, success!" Wouldn't it be GREAT if that were how it worked? The high interest in this topic shows how important memos and emails are, and yet at the same time, how much people want to improve their memo and writing skills. And if the problem were that you just hadn't ever seen a memo or email before, well, this chapter would be a lot shorter. It would be great if there were "one memo to rule them all," so to speak, that once you saw it and copied it, all your future memo and email writing endeavors would flow effortlessly from your fingertips.

The truth is, as you well know, there are lots of different occasions to write emails and memos. And emails and memos have been classified into over 10 different types. In this chapter, we will look at the five most common types—progress report, meeting minutes, incident report,
directive, and response to an inquiry. With these five types of memos/emails in your writing arsenal, you should be ready to tackle most memo/email writing tasks.

First, note that progress reports, meeting minutes, incident reports, directives, and responses to inquiry can be created in many formats—as memos, emails, informal reports, and even formal reports. We will look at these types of documents as memos or emails.

As memos or emails, you will want to start by putting the documents in the correct format. For a memo, you will open up a word processing program, such as Microsoft Word, and you will type the memo header at the top of the document: to, from, subject, and date. You will fill in the information, and then you will begin your memo. If it is a longer memo (longer than a paragraph), you may wish to use section headers. But you do not start the memo with “Dear Mr. Carter,” or any other type of salutation.

Example Email with Memo Attachment

Dear Mr. Carter,

I hope this email finds you well. I have attached the progress report for the ABC project. Please let me know if you have any problems accessing it, or if you have any questions.

Thank you for the opportunity to be involved in this project.

Sincerely,

Mary Lewis, ABC Project Manager

Note that you also do not sign the memo or end it with any type of closing. After you print the memo, you then initial by your name, and then, if you are sending the memo format by email (this is not uncommon), then you scan it (unless directed otherwise, it is recommended that you save it as a pdf), and you attach it to the email. The email should alert readers to the contents of the attachment.

If you are sending the progress report by email, then you fill in the email headings—the “to” and “subject” lines. Make sure the subject line is clear: “Progress Report for ABC Project.” You may also have readers to include in the cc lines—persons who need to be aware that you sent the progress report but who may not need to act on it, or persons involved in the project who will not respond directly to the progress report but who requested a copy. After you have filled in the headings, you start your email with a greeting and a note letting the readers know what they are receiving. You might write something like the example shown to the right.

It is assumed that you wrote your progress report in MS Word or another word processing program so that you could run spell check and save the document on your own computer. So when you are ready to send it via email, you copy it into the open email form. Proofread it to make sure the copy happened correctly, and then hit “submit.”

Progress Reports

A progress report is much like what it sounds like. It lets your supervisor know the status of an ongoing project. Let’s say you work for a company that serves clients by creating web pages for middle school sports teams. But because you are very good at writing and designing documents, you have been put in charge of an annual project—the company newsletter. This newsletter comes out once a year around the holidays, and it’s really a feel-good piece sharing the wonderful things your company has done all year. It’s important, but maybe not a high stress or high dollar task that you are in charge of. Nevertheless, you are expected to work on it with your team all year and submit quarterly progress reports to your supervisor. Therefore, each quarter you will prepare your progress report on the team meetings, what is planned, what has been done, and what will be done. You also list any problems you are having or any you foresee. This last part is very important. While on the one hand, you don’t want a progress report that reads like a disaster report, on the other hand you do want to prepare the reader for any upcoming problems. This preparation is especially important if something really might be delayed or over budget. You don’t want to submit perfect progress reports and then suddenly your supervisor finds out the project is behind schedule!

Of course the stakes become higher if a progress report is about a high pressure task. If, for example, your team is in charge of the new renovations on the parking deck, and those renovations are behind, you want to let your supervisor know as soon as possible in the progress report so that he or she can prepare for things like, letting his or her supervisor know that there is a delay, extending the rental on the parking lot that has been used while the deck is built, and moving the clean up crew’s scheduled work dates back until they are actually needed, and a host of other things that will be impacted by a change in timeline.

Something related to a progress report is a status report or status update. While a progress report reports upon the progress of a single project, a status report is a report on the status of your entire unit or department—it can encompass a range of projects and activities, and it is usually submitted at regular intervals—monthly or quarterly—regardless of what projects are underway.
Meeting Minutes

For most meetings, notes are kept regarding what important topics were brought up in the meeting and what important decisions were made. These notes are often kept on file so that people can look back through them if questions arise about, for example, important votes or discussions about topics. These notes are called meeting minutes. Sometimes a secretary is appointed to always take minutes. And sometimes the duty rotates among attendees. The minutes are then "written up," which is a common term for preparing them to share with the group. Meeting minutes take a particular form, whether they are distributed via memo or email. The header includes the organization's name, the date and location of the meeting, who was present, and the meeting leader and the person taking the minutes. They also include the time the meeting started and the time the meeting ended.

Meetings have an agenda that is usually distributed before the meeting. Many times, people taking minutes for a meeting like to pull up the agenda on their word processing program and take the minutes right on that agenda so that they know they are using the original wording of the topics, as they are presented to the group.

Most importantly, as mentioned above, minutes include what happened during the meeting, including who presented on main topics and who brought forth and seconded votes, and what decisions were made. It's important not to make the minutes a "play by play" of conversations, and especially don't get bogged down in the details. Just make sure to take down the main points. If a heated discussion breaks out, don't put that in the minutes. Just note that the topic was discussed and note the resolution, if any, or if the topic was tabled (that is, put on hold for another time). You want to portray the organization positively, and for that reason, avoid recording squabbling or other human behavior that is normal, but that is not beneficial to preserve in meeting minutes.

More information about meeting minutes

Incident Reports

Incident reports are written by police officers, security personnel, and anyone who was involved in an incident or accident. As you can see from the story of Police Constable/Police Dog Peach, incident reports (here in the form of a witness statement) often are forms one fills out. Even so, it is important to secure the correct form and make sure that you fill in the requested information. Usually there is a portion of the form where you are asked to tell what happened—provide the narrative of the event. You will want to double check all information before you commit it to the incident report, which is a legal document. You may have to look up the names and titles of persons also involved. You also want to make sure the date is correct, and any equipment names or room numbers are correct. Do not write what you THINK happened. Write where you were and what happened to you or what you saw. Explain what happened after the incident, as well. How did you handle it? What did you do? Also, be very clear and avoid any language that might not be understood by people outside your field.
Instead of saying you reached for the bandages but they were "86" (slang for "out of"), say there were no bandages in the first aid kit. Be honest. Dishonest information can put your job in jeopardy or inhibit your ability to receive medical treatment or compensation for an incident/accident.

You do not (and likely should not) make judgments about who is at fault, and I would advise you not to admit that you were at fault or did something wrong. After all, that judgment is better made by someone who can see a bigger picture than you can. Instead, report the facts as clearly as possible.

If there is no form to fill out, then organize your narrative chronologically. Use paragraph breaks at logical points to make it easier to read your report. In incident reports, because perhaps a person was hurt or property was damaged, it's very important to make sure your grammar and spelling are correct. As you probably know, problems in language clarity can create legal problems that again, might impede your ability to receive medical treatment or compensation for an incident/accident.

More information on incident reports

**Directives**

You send out emails and memos for a variety of reasons—usually to distribute information. Sometimes, you want to let people know that tomorrow is doughnut day, and so you might send out a short email such as "Hello Everyone! Just a quick reminder that tomorrow is doughnut day!" Such an email is appropriate because everyone knows what doughnut day means—Joan in marketing will be bringing in some yummy doughnuts to share. And it's probably okay to be that informal because it's also not an official event that requires action on the employees' parts. But what if tomorrow is the annual blood drive? That event may require more explanation, especially since new employees (hired since the last blood drive) may not be aware of the company's long standing support of the local blood bank. It may also be nice to remind everyone of the positive impact this event has on the local community and how Roger, from Accounts, has a daughter who has a health condition that frequently requires blood transfusions (assuming Roger is okay with sharing that personal information). On more than one occasion, the local blood bank has been able to provide that blood because the company's support helps to make sure they have the resources they need on hand.

Such an email or memo would first start with the announcement of this year's blood drive, a reminder to drink a lot of water and eat a meal before donating, and then name the date, time, and place. Then the memo/email might move into some of the history of the blood drive at the company and present the facts about last year's effort—the number of participants and pints collected. And then end with "I encourage everyone who is able to show up to support the blood drive."

This common type of email/memo is an informational email/memo. A directive is a little different, and it has a little different organization. The directive is not a piece of general information but, as its title makes clear, directions that direct readers to follow a particular procedure or policy.

Unlike the general information memo, a directive generally starts with the rationale behind the directive so that people feel that it is a reasonable request, and also to help people remember it. It then ends by stating the policy or procedure that readers are directed to follow. For example, let's say that for security reasons, the janitorial staff will no longer be allowed access to employee offices. Instead, employees will put their trash cans outside their offices on Mondays, Wednesdays, and Fridays for the janitorial staff to empty. Employees will then put their trash cans back in their offices the following morning. This is a new practice, so you want to issue a directive.

First, you explain the situation. You don't want to give too many details because you don't want to encourage similar incidents, and you don't want to cast suspicion on any particular employees, but you do want to provide enough details so that employees understand the rationale behind this policy. You might write that in the past two weeks, a few employees have entered their offices in the mornings to find their computers on. A forensic investigation confirms that the computers were tampered with. As an extra precaution, the janitorial staff will no longer have access to the employee offices. This step is taken to help narrow down who might be responsible for these incidents. At this point, it is not clear if any sensitive information was stolen, but you will let the employees know as soon as any information becomes available. You might also ask everyone to change his or her passwords now for extra security and remember not to leave passwords written down and lying around their computers.

You end with the directive: effective immediately, employees are directed to place their trash bins outside their office doors on Mondays, Wednesdays, and Fridays at 5pm. The bins are to be put back in the offices on the following business morning. The janitorial staff will no longer enter your offices to empty your trash.

So that's it. A directive is different from a general information memo in that it involves a policy or procedure, and it generally starts by providing an explanation and ending with the new policy or procedure that is being implemented.
Response to an Inquiry

Our final type of memo/email is the response to an inquiry. Most of the memos/emails you send will be informational or response to an inquiry.

Response to an inquiry memos/emails address a question or series of questions—perhaps about an action, a product, or a policy. Perhaps a customer wants to know why something doesn't work. Perhaps your supervisor wants to know his computer has not yet been updated. Perhaps your team member wants to know what the policy is on splitting up vacation days into half days. Whatever the case, you are responding to an inquiry.

To begin your response, especially if you are responding to a client, you might thank the writer for purchasing your product or for being a loyal customer or client. Keep in mind, this person took time out of his or her day to write you, so it was important. And the person may be out of patience if the inquiry is in relation to a malfunction. If the inquiry is from a colleague, you might begin with "It's nice to hear from you," or another polite phrase to being your response.

Next, provide the answer to the question. If there are multiple questions, and if they are numbered, number your responses the same way for clarity. For example, if question 3 is "The directions say to put tab A into slot B, but I can only see tab A and slot C," then you might answer, "3. Please turn the paper doll over. Slot B is on the side opposite slot C." Also, if there is a website that provides information that you think might be helpful, mention the website and provide the link. Be sure to double check the link to make sure it is correct.

If you cannot answer the question, either because you don't know the answers or because you are not allowed to divulge the requested information (perhaps it is a company secret, or proprietary), let the reader know. Close the email/memo with an offer to assist with other requests or answer further questions.

Please keep in mind that if it is your job to answer questions on the topic of x, then it doesn't look good if you say "I don't know the answer to that question on the topic of x," and end the email/memo. Such a response will sour a customer on your brand very quickly. Just yesterday, I heard a story of a person to whom all responses to inquiries were met with "I don't know." It certainly is easier to do business that way—and it is a real time saver to just have one, standard response. But when you don't answer people's questions, they turn to other people. And they quickly learn that the person with no answers really isn't serving any purpose in the office. The person mentioned above lost her job right before Christmas. The moral of this story is that if it is your job to answer questions on the topic of x, then you should find the answer. Ask a colleague or supervisor to assist you. And if it is someone else's job to answer questions on the topic of x, then you should find the answer. Ask a colleague or supervisor to assist you. And if it is someone else's job to answer the question on the topic of x, then you should find the answer. Ask a colleague or supervisor to assist you. Finally, if it is not your job to answer the question on the topic of x, and you have permission to forward the inquiry to the person whose job it is, then ask the person making the inquiry if it is okay if you forward his/her correspondence to the correct person. Then, if you have permission, do so. It is never okay to just forward email without permission.

Finally, always be polite and practice the "you" attitude. Think about how it must feel to need information—and to perhaps be frustrated. It's true, you might be frustrated, too, at the questions that you feel are silly or repetitive, but still. Have empathy, be polite, and offer to assist with other questions or requests.
Technical Definitions and Descriptions
Jonathan Arnett

Chapter Objectives

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

1. Explain and apply the 5 primary characteristics of technical definitions.
2. Write a definition using appropriate content, descriptors, details, length, placement, and audience analysis.
3. Avoid common technical definition problems.
4. Explain and apply the 5 primary characteristics of technical descriptions.
5. Write a description using the 6 common parts.
6. Organize a description according to the 3 common organizational patterns.

Technical Definitions

When you think of the word "definition," what comes to mind? If you're like most people, you think of a dictionary's contents. What, then, does a dictionary definition contain?

Typically, dictionary definitions include a word's:

- Standard spelling
- Syllable breaks
- Pronunciation
- Part of speech
- Meaning
- Current and archaic usage
- Etymology
- Synonyms/antonyms
- Variant spellings
- Variants including suffixes

If you've used a dictionary before, then none of these items should surprise you. Think, though... Are all dictionaries the same? And do they contain the same types of thing?

Not really. All dictionaries contain lists of words, but their contents are otherwise markedly different. A children's dictionary, for example, is much simpler and shorter than a "collegiate" dictionary, which is shorter and simpler than an unabridged dictionary, which pales in comparison to the Oxford English Dictionary, a two-volume monster that comes with a reinforced bookstand and its own magnifying glass.

All these different dictionaries share several characteristics, though, which are characteristics of any technical definition:

- their authors focus on a particular audience;
- their contents describe the object of attention;
- their contents clarify ambiguity;
- readers can use the contents to communicate across expertise levels; and
- readers can use the contents to solve problems.

At least one of these ideas should sound familiar. For example, focusing on a particular audience...haven't we mentioned that sometime before, in this very class?

As far as the other four elements go, the temptation is to say, "Well, yeah, of course. That's what a definition does." The trick, though, is to include the right information, structure it the right way, and build a good definition. That's what we'll talk about next.

Technical Definition Contents
As the name might suggest, a technical definition should explain what a thing is. But what does "explain what a thing is" actually mean? How long does the explanation have to be? And where does the explanation go?

The answers to these questions depend on the characteristics listed above and the noun (person, place, thing, idea, or process) you're defining, and we see the answers expressed in terms of content, length, and placement.

Descriptors

Let's talk descriptors that can be used in writing a definition. Here's a partial list of possible items you can use to define a noun:

- physical characteristics (a thing's color, shape, size, material, smell, taste, texture, and so on)
- uses
- functions
- operation (how it works, but not how to work it -- that's what goes in instructions)
- effects
- origins
- analogies ("It tastes like chicken," for example)
- specific examples
- pictures
- diagrams

More possible descriptors exist, but these are the usual suspects. You'll choose appropriate ones based on the situation at hand.

Type of Details

The kind of detail you'd include in a technical definition will vary. As with everything you write—and quite literally everything, whether you're writing it for this class, in future classes, or over the rest of your life—you need to consider your audience very carefully. For example, who is your audience? What is s/he like? What kind of language would you use? What medium would the audience respond to best? What kind of words will the audience respond to best? Et cetera... In short, analyze your audience carefully and tailor the content to that audience.

Example

As an illustration of the kind of details you'd choose for a particular audience, let's think about defining the special steel used in the crumple zone of a car's frame. (If you don't know what a crumple zone is, it's an area of a car that's designed to get squished in a crash and absorb all the kinetic energy, thereby making the passengers safer.)

We're going to define the steel in this part of the car for three different audiences: you, a car manufacturer, and a car buyer.

For you, if I defined the steel as boron-doped high-austenite steel that undergoes a martensitic transformation in a crash, that would probably mean nothing because the information is too detailed. However, if I defined the steel in a modern car's crumple zone as relatively soft steel that suddenly stiffens up when it's put under stress, then you'd probably understand just fine.

For a modern car manufacturer, though, neither of those definitions would be detailed enough. The manufacturer would need to know specifics about how much boron went into the steel, how ductile (bendable) the steel is, how much stress the steel can take before it stiffens or breaks, and how quickly the steel stiffens when it's put under stress. For this audience, you'd need to write a highly detailed, highly technical definition.

A car buyer, on the other hand, simply doesn't care what kind of steel goes into a car's crumple zone. The only thing a car buyer wants to know is if the car's NHTSA crash test ratings are good.

Another thing to consider is what sort of object/process/thing it is you're documenting. Some nouns just don't require certain types of descriptors.

Example

As an illustration of necessary details for a particular subject, let's consider the same example again: the steel used in a car's crumple zone.
High-austenite steel is relatively ductile; its manufacturing process includes cold rolling, annealing, and quenching; and car manufacturers use high-austenite steel in crumple zones because this steel gets harder and stiffer under pressure, thus protecting drivers.

All of these properties make sense when we’re talking about metal. In contrast, saying that a certain piece of high-austenite steel has a mottled gray appearance, makes a clang in the key of C-sharp, or tastes like chocolate chip cookies probably isn't relevant to anybody.

**Length**

As we've already mentioned, the audience’s need for information will drive how much information you provide. If the audience both needs and can handle a lot of information, then get super-detailed. On the other hand, if the audience only needs or only can handle the basics for whatever reason, then keep the definition short and include just the absolutely necessary information.

**Example**

As an illustration of length, let's consider a dictionary definition.

A person who consults the Oxford English Dictionary probably wants detailed information about the many ways a particular word has been used over the centuries. Accordingly, the OED definition should be very long and full of examples.

In contrast, a middle-school student who just wants to know how to pronounce a word or find out a word's meaning won't want to read pages upon pages of etymology and usage. That student just wants the basic information and nothing more.

**Placement**

The audience's need for information and the type of information you're defining will also drive where you place definitions. Four major options include placing definitions in

- independent sentences
- dependent clauses
- parenthetical asides
- separate sections

If you're using relatively simple terms and have a knowledgeable audience, use simple, short definitions that fit within an ordinary sentence. If the definition is a bit more complex and/or your audience needs a bit more information, use a parenthetical statement. If you're defining complicated or detailed information, even to a knowledgeable audience, insert full paragraphs or subsections.

Sometimes, depending on the nature of the document that contains a definition, you'll refer readers to entire sections, such as footnotes, a glossary in the back of a textbook, or appendices at the end of formal proposals and reports (hint, hint on this last part).

**Examples**

In a separate sentence: "Peanut butter is a paste made from ground peanuts."

In a dependent clause: "Jim's Steakhouse uses wide-mouth Mason jars, like those used for preserving homemade jam, as water glasses."

In a parenthetical statement: "Siamese cats—easily identifiable by their blue eyes, triangular-shaped heads, incessant yowling, and self-entitled attitudes—come from Southeast Asia."

**Technical Definition Problems**

When you write technical definitions, pay special attention to avoiding these three problems:

- audience-inappropriate content/language
- circular definitions
- synonymous definitions
Audience-Inappropriate Material

We've already discussed this, so I'll keep my rap short: Analyze your audience and give your audience members what they need, in a way they can understand it.

Circular Definitions

Some bad definitions depend on the reader already knowing what the defined thing is/does.

Here's an example: "Superchlorination is a swimming pool chemistry technique that enables operators to achieve breakpoint chlorination." Okay...but what is breakpoint chlorination? "Breakpoint chlorination is an elevated level of chlorine that swimming pool operators reach by superchlorinating the water."

*sigh*

Synonymous Definitions

Other bad definitions substitute one synonym for another. Here's an example: "Chloramines are another name for combined chlorine." Okay...but what is combined chlorine? Oops. I've just defined a thing as itself.

Here's a revised version: "Chloramines are molecules of 'free chlorine' (the chemically active form of chlorine that sanitizes, oxidizes, and disinfects pool water) that met an organic substance, chemically bonded to the organic substance, became chemically neutral, and began to give off a foul odor." This version is much better, yes?

Technical Descriptions

Technical descriptions are similar to technical definitions. but technical descriptions can be stand-alone documents, whereas technical definitions are always components of a larger document. Furthermore, technical descriptions

- are usually longer than technical definitions,
- contain more detail,
- focus on functionality,
- often describe complicated subjects with multiple parts, and
- contain technical definitions.

Technical Description Parts

Since technical descriptions are longer and more detailed than technical definitions, descriptions contain two major sections: Introductions and Body sections.

Introduction

The contents of a technical description's introduction are very similar to the contents of a formal letter. In the first paragraph, you need to

- identify the thing to be described;
- provide some basic background information (purpose of writing, context of writing);
- give a brief overview of the thing to be described (what is it like, what is its purpose); and
- preview the rest of the document.

Body

After the Introduction, a technical description's content will vary, depending on your audience and the thing being described. However, there are a few common themes in any technical description's body paragraphs.

Background

The body paragraphs flesh out the background information in more detail. Again, like the body of a formal letter contains details about the letter's subject, the body of a technical description contains details about the background of the thing
Parts/Characteristics

The body paragraphs also include details about the various parts that make up the thing being described. If the thing is a physical object, you'll want to list and describe the various parts that make up the whole. If the thing is a place, then what makes it different from or similar to other places? If the thing is a process, then what are its necessary conditions and its various stages/steps?

Visuals

A technical description's body can also include visual materials (and, conceivably, audio materials if the description is multimedia). These can be pictures, tables, diagrams, charts, graphs...if it's appropriate, put it in. One particular kind of visual material that we need to address under its own heading, though, is the specification.

Specifications

The word "specifications" has two definitions. One of the definitions refers to a list (often a table) of technical details about the object or process you're documenting. These can be part of a technical definition and are often necessary in a technical description.

The second meaning, which we'll address here, refers to images that depict the subject of a description and include callouts (lines or arrows with text attached) to highlight that object's constituent parts.

Please note: Specifications are not descriptions. They may be part of descriptions, but specifications cannot stand alone.

Here's why: Imagine that you bought a new, top-of-the-line TV. You're quite excited, as it's a technologically advanced TV, with one bazillion features that you can program and customize for the world's most amazing TV experience.

You unpack the box and, instead of an owner's manual, all you find is a single piece of paper that pictures the TV's remote control, with labeled arrows to each button. One button is labeled "Skip."

- What will the TV do if you press the button?
- What will be skipped?
- Can you undo a skip?
- What if you press the button twice? Three times?
- Can "Skip" be used while watching regular TV, or just during DVR replay?
- Does "Skip" have meaning for programming your DVR?

All these questions need answering before you dare press the "Skip" button. You'd be very unhappy if you missed recording this week's episode of Game of Thrones or somehow recorded over the Jersey Shore marathon...

Technical Description Organization

Long technical definitions need their own organization strategies, just as any piece of writing does, but technical descriptions usually rely on one of three organization schemes:

- general-to-specific
- spatial
- chronological

Your choice of an organization strategy will depend on the kind of thing you're describing. In general, you'll always want to go from general to specific, for you need to begin by defining the thing and then proceed by breaking it down thematically. What that theme is, though, depends on the nature of the thing being described.

General-to-Specific

For example, let's say you're documenting a bicycle. Would it do any good to just start naming pieces? "Okay...here's the front wheel, and here's the seat, and here's the handlebars...oooh! My favorite part, the chain guard!" Of course not; you need some sort of internal logic to the parts list. A logical scheme might be to begin with major systems—frame, wheels, gears, brakes—and then describe how the systems work together or go into more detail about the parts that compose each of these systems.
Spatial

What about describing the construction of a four-barrel carburetor? You'd likely want to describe how the parts fit together, so a spatial organization scheme would make sense, complete with an exploded-view diagram of the parts. (As a completely irrelevant side note, in the year 2000, I met the inventor of the four-barrel carburetor; he was in his early nineties, and he was volunteering as a math tutor at a community college in Arizona. He was a very nice fellow.)

Chronological

But what about describing a process, like smelting iron? Giving a tour of the factory wouldn't make much sense, would it? "Here's the blast furnace, and over here is the rock crusher. And then on this side, we've got the mold-making shop and a pile of spare wheelbarrow tires."

No...you'd want to proceed chronologically, step-by-step, through the process. "First, dump trucks haul in raw ore and pour it into this bin. Then we use a bucket loader to transfer the ore into this machine, where we pulverize it. Then we load the crushed ore into these crucibles and roast the ore until the iron melts out. From that point, we..." You get the idea.