Introduction: The Nature of Sexy Technical Writing

Did you know that you probably read or create technical communication every day without even realizing it? If you noticed signs on your way to work, checked the calories on the cereal box, emailed your professor to request a recommendation or followed instructions to make a withdrawal from an ATM, you have been involved with technical, workplace, or professional communication.

So what? You ask. Today, writing is a more important skill for professionals than ever before. The National Commission on Writing for Americas Families, Schools, and Colleges (2004) declares that writing today is not a frill for the few, but an essential skill for the many, and goes on to state that much of what is important in American public and economic life depends on strong written and oral communication skills. A survey by the Workforce Solutions group at St. Louis Community College asserts many employers are concerned at the large number of college graduates applying for jobs who lack communication and interpersonal skills (White, 2013).

Good communication skills, particularly in writing, are essential if you are going to succeed in the workplace. The working world depends on written communication because within modern organizations, almost every action is documented in writing. Furthermore, many kinds of writing, including correspondence, presentations using visuals like PowerPoint, technical reports, and formal reports are prevalent in most workplaces. And the writing has to be good, accurate, clear, and grammatically correct. Kyle Wiens (2012) writes in an article in the Harvard Business Review: “If you think an apostrophe was one of the 12 disciples of Jesus, you will never work for me. If you scatter commas into a sentence with all the discrimination of a shotgun, you might make it to the foyer before we politely escort you from the building. I have a zero tolerance to grammar mistakes that make people look stupid.”

Check out this video for more ideas about the kinds of writing that will be expected of you, especially if you are in a STEAM (Science, Technology, Engineering, Arts, and Mathematics) field.

Writing in the Workplace 1

So how do we define this kind of writing?

In this text, the word document refers to any of the many forms of technical writing, whether it be a web page, an instruction manual, a lab report, or a travel brochure.

Technical communication is the process of making and sharing ideas and information in the workplace, as well as the set of applications such as letters, emails, instructions, reports, proposals, websites, and blogs that comprise the documents you write. The Society of Technical Communicators (STC) defines technical communication as a broad field that includes any form of communication that is about technical or specialized topics, that uses technology such as web pages or help files, or that provides instruction about how to do something. (n.d.)

Specifically, technical writing involves communicating complex information to a specific audience who will use it to accomplish some goal or task in a manner that is accurate, useful, and clear. Whether you write an email to your professor or supervisor, develop a presentation or report, design a sales flyer or create a webpage, you are a technical communicator.

Where does it come from? According to the STC (n.d.), technical communications origins have actually been attributed to various eras dating back to Ancient Greece (think Rhetoric!) and to the Renaissance, but what we know today as the professional field of technical writing began during World War I from the need for technology based documentation for military and manufacturing industries. As technology grew, and organizations become more global, the need and relevance for technical communication emerged, and in 2009 the U.S. Bureau of Labor Statistics recognized Technical Writers as a profession. (STC).

What does technical communication or workplace writing look like? Check out this page from a U.S. Environmental Protection Agency about climate change. Who is the target audience? What information does this document provide? What task or goal will it help to accomplish? What elements of this document do you think make it useful? Does it solve a problem? What about the style of the writing in this government document? Is it concise and accurate? This is just one example of the many kinds of technical documents you will work with in this course.

Be sure to notice the annotations in the margins of the document. Do you agree that this is an effective document? Read on for further discussion about the characteristics of technical writing.

Let's Take a Look at Characteristics of Technical Writing:

Mike Markell (2015), Sidney Dobrin (2010), Elizabeth Tebeaux (2012), Sam Dragga (2012) and others all identify similar characteristics of technical writing and emphasize that it must adhere to the highest standards.

Focused on audience: Technical and workplace documents address a specific audience. The audience may be an individual or a group, and it may or may not be known to the writer. While there is always a primary audience addressed, there may be a secondary audience. Thus, an understanding of the reader or user of a technical document is important.

Rhetorical, persuasive, purposeful, and problem oriented: Technical communication is all about helping the reader or user of a document solve a problem or compel others to act or do. For example, the syllabus of your calculus class informs the students what is expected of them; and the university's web site provides information to potential students about how to apply or to current students about where to seek assistance. Identification of a specific purpose and a particular audience are the first two steps of technical writing.

Professional: Technical communication reflects the values, goals, and culture of the organization and as such, creates and maintains the public image of the organization. Look back at your university's web site to see what image it conveys. Or consider the United States Government.

On October 13, 2010, President Obama signed into law the Plain Writing Act of 2010 (the Act) which is designed to promote clear government communication that the public can understand and use. The Act calls for writing that is clear, concise and well-organized. Click here to learn about Plain Language.

Design Centered: Technical communication uses elements of document design such as visuals, graphics, typography, color, and spacing to make a document interesting, attractive, usable, and comprehensible. While some documents may be totally in print, many more use images such as charts, photographs, and illustrations to enhance readability and understanding and simplify complex information.

Research and Technology Oriented: Because of workplace demands, technical and workplace writing is often created in collaboration with others through a network of experts and designers and depends on sound research practices to ensure that information provided is correct, accurate, and complete.

Ethical: Lastly, technical communication is ethical. All workplace writers have ethical obligations, many of which are closely linked to legal obligations that include liability laws, copyright laws, contract laws, and trademark laws. You'll learn more about these in a later chapter on ethics.

What Standards Should I Observe to Make my Writing Successful?
Ask a colleague to read your text and then tell you what the important ideas are. Evaluate how easy your document is to comprehend by getting another set of eyes on it. Strive for brevity if your users will be reading on tablets or mobile devices. Use visuals such as charts or diagrams to present a lot of information in a graphic format. You can document in the manner you meant? To enhance the readers

Finally, your writing may be legible and readable, but how well can your audience comprehend, or understand it in the way you intended? Is the reader able to use the document in the manner you meant? To enhance the readers comprehension, use language and terminology familiar to the reader, and limit paragraphs to one main idea. Strive for brevity if your users will be reading on tablets or mobile devices. Use visuals such as charts or diagrams to present a lot of information in a graphic format. You can evaluate how easy your document is to comprehend by getting another set of eyes on it.

Ask a colleague to read your text and then tell you what the important ideas are.

How are you doing so far? Take the quiz to see how much you've learned!
Got it? Then head for the exercises and activities below.

**Exercise 1:** Locate some examples of what you consider technical writing. These may include correspondence, journal articles, lab reports, web pages, or advertisements. In small groups with other classmates, discuss how the documents reflect the characteristics of sexy technical writing. After your group has analyzed the document, present it to the entire class and explain how it meets the characteristics of a technical document.

**Exercise 2:** Locate some of the free readability tools on the Internet and apply one to a section of writing, such as this text, to evaluate the reading level. What do you think is an ideal readability level for a bank's website; a college history text, or even the school's website? In a memo to your instructor, discuss the importance of readability measures in creating useful technical documents.

**Exercise 3:** Locate an instruction manual for a product you may own. Analyze it against the standards listed in the chapter for good technical writing. Submit your analysis in a memo to your instructor.

**References for Chapter 1**


Business Correspondence and Resumes

This chapter focuses on business correspondence—general format and style for business letters as well as specific types of business letters. Specifically:

- Overview of business correspondence: format and style
- Inquiry letters
- Complaint and adjustment letters
- Application letters
- Resumes

If you can't see the video above, click here.

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:
6 June 1996
1117 The High Road
Austin, TX 78703

Mr. David Patricks
3005 West 29th, Suite 130
Waco, TX 77663

Dear Mr. Patricks:

I received your June 6th letter requesting consultation and am providing my recommendation in the following:

First, let me review my understanding of your inquiry. The question you raise revolves around whether the heating registers should be located in a low sidewall, or in the ceiling, and, if ceiling registers are used, which type—step-down or stamped-faced—will deliver the best results. Additionally, the problem concerns whether there is any benefit to having the heating registers near the floor, whether moving heated air "down" in ducts negatively affects blower performance, and whether adequate injection that can be achieved on the low speed of a two-stage furnace.

My recommendations are as follows:

- I can find nothing in either Carrier, Trane, or ASHRAE design manuals that indicates drop as being a factor in duct design any different from normal static losses. If you have different information on this, I would like to have references to it.
- I cannot see any advantage to low sidewall application. The problem is injection and pattern. I do see an advantage to low sidewall return; Carrier Design Manual—Air Distribution is a good reference on both items.
- I recommend step-down diffusers with OBD because they have pattern and volume control that is superior to stamped-faced diffusers.
- I am opposed to low sidewall diffusers or floor diffusers in the application you describe. The increased static losses that result from trying to get the ducts down through the walls will only increase installation cost and reduce efficiency.

If there is anyone in your organization who is uncomfortable with these recommendations, let me know. I'd be very interested in reviewing any actual documented test results. Let me know if you have any further questions or if I can be of any further assistance.

Sincerely,

Jane A. McMurray, P.E.
HVAC Consultants, Inc.

Encl.: invoice for consulting services

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 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," "Dear Director of Financial Aid," for example.

Block letter format

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-correspoindence 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 submit a resume and writing sample with your application letter, you'd do this: "Enc.: 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.

---

**Dear Sir:**

On June 1 of this year I purchased a Hitachi Model 311 cholesterol from your company. I had some difficulty with the new instrument after checking with your company. I took the instrument to a local repair shop, H & M Labs, and Garden, here in Santa Barbara, for warranty service. The problem, a misaligned chain assembly, was corrected in one day. About three weeks later, however, I again had problems. I took the instrument back to H & M. The repairman there said he would have to order parts for the chain assembly so I left the instrument there, expecting it to be ready in about a week.

However, four weeks went by, unable to get the needed parts. I had an out-of-town project and needed a dependable chain saw. So I paid for and bought a brand new replacement I originally bought.

---

**Dear Sir:**

I am writing this letter to describe problems that I have had over the past five months with one of your chain saws and to request reimbursement for rental charges that I incurred during that time and a new replacement saw.

There were problems with the Hitachi Model 311 chain saw from the very beginning when I bought it on June 1. After checking with your company, I took the saw to a local repair shop, H & M Labs, and Garden, here in Santa Barbara for warranty service. The problem, a misaligned chain assembly, was corrected in one day. About three weeks later, however, I again had problems. I took the saw back to H & M. The repairman there said he would have to order parts for the chain assembly so I left the saw there, expecting it to be ready in about a week.

However, four weeks went by, and H & M was still unable to get the needed parts. At this time, I had an out-of-town project that called for a dependable chain saw so I rented a saw for a total of $25. When I returned to Santa Barbara, I found out that the reason for the delay had been that your company had lost H & M’s parts order.

As a result of this inconvenience and expense, I am writing you to request reimbursement of the rental charges I paid for a dependable chain saw and a brand new replacement for the chain assembly that I originally bought.

---

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:

---

Examples of following-page header format.
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 of 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 these 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:

<table>
<thead>
<tr>
<th>Problem:</th>
<th>Revision:</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td>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. <em>(italics not in the original.)</em></td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>Problem:</th>
<th>Revision:</th>
</tr>
</thead>
<tbody>
<tr>
<td>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. <em>(The job calls for a technical writer; let's emphasize that first, then mention the rest!)</em></td>
<td>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 as St. David's Hospital in Lawrence in the past year and a half.</td>
</tr>
</tbody>
</table>

http://distanceed.hss.kennesaw.edu/technicalcommunication/chapters/2_1BusinessCorrespondanceResumes/2_1BusinessCorrespondanceResume...
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. (Let's not lie about our lack of experience, but let's not put it on a billboard either!)

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:
Because of the amount of information you request in your letter, I simply cannot help you without seriously disrupting my work schedule.

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 you 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.
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 illustration for a serious dose of bureaucratese.

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 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.

Be sure to check out the examples.

For related matters, see the chapter 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, 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.

Replies 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.

Sexy Technical Communication Home

Job Application Letters

This chapter 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.

Be sure and check out the examples accompanying this chapter.

For related matters:

- See the section on resumes for the companion to this section.
- See the section on general business-letter format and style

**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, 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 section 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.
Common sections of application letters. You can organize the letter thematically or functionally the same way that you can the resume.

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've 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.

---

June 6, 2013
Vern Whittington
University Recruiting Manager
Dallas Semiconductor
4401 South Beltwood Pkwy
Dallas, TX 75244-3292

Dear Mr. Whittington:

I am writing to express my interest in becoming a VLSI design engineer with Dallas Semiconductor. I will earn my BS degree in Electrical Engineering from The University of Texas at Austin in August, 2008. My objective upon graduation is to become a successful VLSI design engineer in the semiconductor industry.

During the Engineering Career Exposition in September 2008, Tiffany Oberlin, a Dallas Semiconductor college staffing coordinator, talked to me about career opportunities with Dallas Semiconductor. Her description of the company’s wide range of products, especially touch memory for automatic identification, impressed me. I am very interested in becoming part of the VLSI design team working on this challenging project.

As my enclosed résumé explains, I have completed courses related to VLSI design, including digital system design and reduced instruction set microprocessor design. I am also proficient in several VLSI design tools such as Synopsys and Workview. In addition, my three co-op tours with National Instruments have demonstrated my ability to work with people and to apply my technical knowledge to practical tasks.

I am looking forward to discussing my qualifications with you. Please feel free to contact me either at (512)111-2222 or at platapus@aussieu.edu. Meanwhile, I greatly appreciate your kind help and attention.

Sincerely,

Edward Damien
Enclosure

---

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, overly reserved, stand-offish, blasé, 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 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 information that is simply your opinion of yourself**—Do you avoid 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; play around with them until you find one that works for you.

Be sure and check out the examples accompanying this chapter.
Basic sections of a resume. Whichever format you use, the information generally divides up as shown here.

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 in "Special Sections in Resumes."

**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.
Two basic organizational approaches to resume design. Functional and thematic. (The “hanging-head” format is used in the functional-design version.)

- **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
- Company or organization name
- Time period you were there
- Key details about your accomplishments and responsibilities while there.
Examples of detail formats. Use combinations of list or paragraph format, italics, bold, all caps on the four main elements: date, organization name, job title, and details.

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 you have 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—these 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 outermost, 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 “3.2/4.00.” 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

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. See the chapter on standard operational policies and procedures for full discussion and examples.

- **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. See the chapter on recommendation reports for complete discussion.

- **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. See the content, organization, and format guidelines for the technical background report in the following.

- **Technical guides and handbooks.**

  Closely related to technical report but differing somewhat in purpose and audience are technical guides and handbooks. See the discussion of these types in the technical guides and handbooks in the following.

- **Primary research reports.**

  This type presents findings and interpretation from laboratory or field research. See the content, organization, and format guidelines for the primary research report in the following.

- **Business plans.**

  This type is a proposal to start a new business. See content, organization, and format guidelines in the chapter on business plans.

- **Technical specifications.**

  This type presents descriptive and operational details on a new or updated product. See the content, organization, and format guidelines for technical specifications in the following.

---

Technical Background Reports

http://distanceed.hss.kennesaw.edu/technicalcommunication/chapters/2_2TypesTechnicalReports/2_2TypesTechnicalReports_print.html
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 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.

Take a look at the examples of technical background reports.

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 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. See the chapter on organizational patterns and applying them.

Typical format of technical background reports. See the format for technical background reports. That chapter takes you from the front cover all the way to the last page in this type of report, showing the expected contents and format. 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.

For more detail, see handbooks.

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.

See the examples of primary research reports.

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):
Types of Technical Documents

- **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. For details see the full discussion of introductions.

- **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 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 (see the chapter on creating, formatting, and incorporating graphics into your reports). These can go in the body of your report, or in appendixes 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. For guidelines and format, see the chapter on documentation.

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 and in which you bind the report.

**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.

**SECTION 8A**

**HOLLOW METAL DOORS AND FRAMES**

8A.1 **GENERAL**
- All work of this Section shall be performed in accordance with the requirements of the Contract Documents.

8A.2 **SCOPE**
- Provide all labor, materials, equipment, and form all operations required for complete hollow metal doors and frames and related drawings or specified herein.

8A.3 **WORK OF OTHER SECTIONS**
- Furnishing of finishing hardware.
- Finish painting.
- Rolling metal doors.

8A.4 **MATERIALS**
- **Steel**—Prime quality, cold-rolled, pickeled, stretcher-leveled, entirely free from scale, defect. Gages refer to the U.S. Standard and Steel.
- **Standard Steel Shapes** for supporting, reattachment work—ASTM A36.
- **Fastening Devices**

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.

**SPECIFICATIONS:**

**NAS 3469 CASSETTE DECK**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed</td>
<td>+1/-1%</td>
</tr>
<tr>
<td>Wow and Flutter</td>
<td>0.05% JIS wtd. RMS</td>
</tr>
<tr>
<td></td>
<td>0.1% DIN wtd. peak</td>
</tr>
<tr>
<td>Frequency Response</td>
<td>35 Hz - 16 kHz +/- 3 dB</td>
</tr>
<tr>
<td>(Dolby NR off)</td>
<td></td>
</tr>
<tr>
<td>Harmonic Distortion</td>
<td>Varies with recording level; typically 0.3% at -10 dB.</td>
</tr>
<tr>
<td>THD at 0 dB</td>
<td>1.0% (normal tape)</td>
</tr>
<tr>
<td></td>
<td>1.5% (Cr 2, metal tape)</td>
</tr>
<tr>
<td>Signal-to-Noise Ratio</td>
<td>56 dB Dolby off</td>
</tr>
<tr>
<td>ref. 3% THD</td>
<td>66 dB Dolby B</td>
</tr>
<tr>
<td>(CCIR/ARM weighting)</td>
<td>76 dB Dolby C</td>
</tr>
<tr>
<td>Channel Separation</td>
<td>40 dB at 1 kHz</td>
</tr>
<tr>
<td></td>
<td>35 dB broadband</td>
</tr>
<tr>
<td>Erasure</td>
<td>&gt; 70 dB at 1 kHz</td>
</tr>
<tr>
<td>Input Sensitivity</td>
<td>40 mV / 10 k ohms</td>
</tr>
<tr>
<td>Maximum Input Level</td>
<td>25V</td>
</tr>
<tr>
<td>Output Level at 0 dB</td>
<td>500 mV</td>
</tr>
<tr>
<td>Output Impedance</td>
<td>1000 ohms</td>
</tr>
<tr>
<td>Dimensions</td>
<td>42 x 12.2 x 27 cm</td>
</tr>
<tr>
<td>(width x height x depth)</td>
<td>(16.5 x 4.8 x 10.5 in.)</td>
</tr>
</tbody>
</table>
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. See the example of a graphics used in specifications writing in the second illustration on specifications. For details, see the chapter on graphics.

**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?" (http://www.stanford.edu/dept/undergrad/urp/PDFLibrary/writing/LiteratureReviewHandout.pdf) 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 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 A. S. Tolba, A.H. El-Baz, and A.A. El-Harby, "Face Recognition: A Literature Review." International Journal of Signal Processing, vol. 2, no. 2, 2005:

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.
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. And see the links at the end of this chapter.

- Product or service to be offered—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.
- Technical background on the product or service—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.
- Market for the product or service—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?
- Process by which the product or service is produced—If applicable, explain how the product or service will be produced. Explain how the proposed business will operate on a day-to-day basis.
- Facilities and personnel needed for the operation—Plan to discuss the facilities (storefronts, warehouses, production facilities, vehicles) your business will require as well as the personnel that will be needed.
- Projected revenues from the operation—Of obvious importance in any business plan is the discussion of the revenues you project for your business. If you know the estimate of total revenues for the market area in which you plan to operate, what percentage do you expect to win? Obviously, in your first few years, you may operate at a loss—at what point in time do you project to break even?
- Funding necessary for startup and operation—The plan should also discuss the funding you'll need to get the business started as well as the operating costs—the funding needed to run the business on a daily basis.
- Legal issues related to the proposed business—Your business plan may also need to discuss your business, its products, or its services in relation to government regulations—for example, environmental restrictions.
- Qualifications and background of the personnel—Important too is the section that presents your qualifications to start and operate the business you are proposing. Of course, "you" can mean a number of people with whom you are working to start the business. This section can be very much like a collection of resumes, although you want to write an introduction in which you describe your group's qualifications as a whole.
- Discussion of feasibility and investment potential—You'll want to include in your plan a discussion of the likelihood of the success of your business. Obviously, you believe that it will be a success, but you must find a
way to support this belief with facts and conclusions in order to convince your readers. Also, you must discuss what sort of return on investment readers can expect.

- Investment offering—And finally, you may need to present what kinds of investment apparatus you are actually offering.

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 section on formal reports). You'll also need a cover letter—examples of this are also in the section 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

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:

- **Internal / External.** 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.

- **Solicited / Unsolicited.** 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 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,
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.

Proposal that uses the consolidated memo format (left) and a proposal that is separate from its cover letter (right)

Sexy Technical Communication Home

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 pretty much a condensed version of 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 timberland 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.

---

**Schematic view of proposals**

- **Title:** be sure to include "Proposal!"
- **Introduction:**
  - Purpose, content
  - Context
  - Encouragement
  - Overview of proposal contents
- **Project background**
- **Statement of the proposed work**
- **Benefit, advantages of the work**
- **Procedure for the project**
- **Description of the finished product or service**
- **If necessary, the likelihood of the project's success**
- **Schedule, milestones for the project: dates and accomplished work**
- **Project Benefits**
- **Description of the Completed Project**
- **Feasibility of the Project**
- **Schedule for the Proposed Project**
Schematic view of proposals—continued

**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 address (at least in general terms) 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.
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)
Project tasks.

Practically every project breaks down into individual tasks:

<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, Locating suitable property, Designing the bleachers, fences, etc.</td>
</tr>
<tr>
<td>Writing a report</td>
<td>Studying the assignment, Selecting a topic, Identifying the audience of the report, Narrowing the topic, Developing a rough outline, Gathering information, Writing one or more rough drafts, Documenting the report, Revising and editing the report draft, Typing and proofreading the report, Putting the report in its final package</td>
</tr>
</tbody>
</table>

Project tasks. One organizational approach to progress reports.

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 cocombusting 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 cocombustion

Topics to be covered in a final report. An organizational approach to a progress report about the progress on a report.

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:

<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>
<tr>
<td>Current work</td>
<td>Task 2</td>
<td>Current work</td>
</tr>
<tr>
<td>Planned work</td>
<td>Task 3</td>
<td>Planned work</td>
</tr>
<tr>
<td>Task 2</td>
<td>Current Work</td>
<td>Topic 2</td>
</tr>
<tr>
<td>Work completed</td>
<td>Task 1</td>
<td>Work completed</td>
</tr>
<tr>
<td>Current work</td>
<td>Task 2</td>
<td>Current work</td>
</tr>
<tr>
<td>Planned work</td>
<td>Task 3</td>
<td>Planned work</td>
</tr>
<tr>
<td>Task 3</td>
<td>Future Work</td>
<td>Topic 3</td>
</tr>
<tr>
<td>Work completed</td>
<td>Task 1</td>
<td>Work completed</td>
</tr>
<tr>
<td>Current work</td>
<td>Task 2</td>
<td>Current work</td>
</tr>
<tr>
<td>Planned work</td>
<td>Task 3</td>
<td>Planned work</td>
</tr>
</tbody>
</table>
Combination of organizational strategies for progress reports

The following illustration shows an example of the project-tasks approach with subheadings for time periods:

**Brine 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.

Example progress reports organized by time periods

These two outlines show progress reports organized by project tasks:

<table>
<thead>
<tr>
<th>WORK COMPLETED</th>
<th>PRESENT WORK</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td>Right now I am mainly involved in determining just which areas of my report are lacking information. Also, I am continuing my work in locating financial information on PET bottles.</td>
</tr>
</tbody>
</table>

**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 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.

<table>
<thead>
<tr>
<th>Manufacturing Processes</th>
<th>Economics</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the manufacturing section, I am currently . . .</td>
<td>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.</td>
</tr>
</tbody>
</table>

Example progress reports organized by project tasks

Sexy Technical Communication Home

Other Parts of Progress Reports

In your progress report, you also need (a) an introduction that reviews the purpose and scope of the project, (b) a detailed description of your project and its history, and (c) an overall appraisal of the project to date, which usually acts as the conclusion.

Introduction.

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
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 how the project is going.

Example introduction to a 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

Example project description from a report

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

Overall appraisal used as conclusion to a progress report
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.
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. When you finish this chapter you will be able to:

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

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; 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.

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

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

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. For further discussion, see the chapter on task analysis.

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.

As you read the following on common sections in instructions, check out the example instructions.

Schematic view of instructions. Remember that this is a typical or common model for the contents and organization —many others are possible.

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 I-Phone."
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 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.
- Indicate the conditions when these instructions should (or should not) be used.
- Give an overview of the contents of the instructions.

See the section on introductions for further discussion.

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, and caution means be careful here...there might be a risk. 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, and (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.** In some cases, 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.** And finally there exist instructions that really cannot use numbered vertical list 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.

See the chapter on [lists](http://distanceed.hss.kennesaw.edu/technicalcommunication/chapters/2_6Instructions/2_6Instructions_print.html) for the style and format of these possibilities.

### 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; 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.

<table>
<thead>
<tr>
<th>How to change engine oil in six steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>When changing engine oil, always check the owner’s manual to find the correct amount and type of oil and filter needed.</td>
</tr>
</tbody>
</table>

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.

*Bolding actual user steps in instructions.* Bold text helps distinguish the actual action from the supplementary information.
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?" (For more detail, see passive-voice problem.)

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 place 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, preferably 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. See headings for common requirements.

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. See lists for common requirements.

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, 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. See special notices for a complete discussion of the proper use of these special notices as well as their format and placement within instructions.

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 your 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 and carried out the necessary testing before your instructions go to publication and distribution.

**Sexy Technical Communication Home**

**Exercises and Activities--NOT FOR DR. POWELL'S CLASS**

**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, and
- 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 *Usability* for additional guidance.

**1. 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.

**2. 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.

3. 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>
<tr>
<td>Conclusion</td>
<td>0</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Back matter if needed (trouble shooting, glossary, references cited)</td>
<td>0</td>
<td>3</td>
<td>5</td>
</tr>
</tbody>
</table>

A reminder…I will subtract points 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! Copy and paste into your browser.

http://www.dr-arnett.com/WRIT3140/PDF_files/Preparing_the_X7_2.pdf

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?

A Note…

I use this assignment in my face to face course, but am grateful to Dr. Jonathan Arnett for sharing from his WRIT 3140 class at KSU for wording that will make this assignment better for an online environment. Thanks, Dr. Arnett!
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 is instruction writing; you need to be good at the writing style, headings, lists, notices, highlighting, tables, 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:

- Front and back covers
- Title page
- Edition notice
- Trademarks
- Disclaimers
- Warrenties
There is no standard combination or sequence of these elements; every company does it differently. Details on the contents, format, and design of these elements can be found in the book-design chapter.

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: columnar 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.

- Covers: 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 product name has the trademark letters beside it. 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.
IBM Aptiva Reference Guide. This book is also 8.5 × 5.5 inches. It is uses consecutive page numbering throughout the book and is about 120 pages long.

Covers: The front cover has a graphic design with stylized numbered 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. The index uses the standard TOC format for the entries and their page references, connecting them with the sort of leader dots you'd see in TOCs.
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 to the far left margin, 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 heading align with body text, 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

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 following instead of real text:

```
Lorem ipsum dolor sit amet, consectetur adipiscing elit,
```

http://distanceed.hss.kennesaw.edu/technicalcommunication/chapters/2_7UserGuides/2_7UserGuides_print.html
Typically, the prototype of the user guide is very brief: it need 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.
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

Accounting policies and procedures

Standard operating procedures: pouring dental impressions (Thanks to Melissa Burke for making this SOP available.)

Standard Operating Policies and Procedures: 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, sexual harassment). Standard operating procedures focus more on 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 policies and procedures are there for everybody in the organization to refer to, and these documents become the means of settling most disputes within the organization. To distinguish between these two terms, policies are rule statements. Policies are like laws: for example, most organizations have anti-harassment policies, which mimic actual government-legislated laws. Procedures, on the other hand, are the step-by-step methods of carrying out those policies. Of course, some policies do not require procedures. If the organization has a no-smoking policy, that's all that need be said. However, if someone breaks that policy, a procedure is needed for handling that situation.

Standard Operating Policies and Procedures: Writing Projects

If you are enrolled in a course associated with this page, you are in a writing course, not a business management course. Our focus is on good writing; well-designed documents; documents that accomplish their purposes; and documents that meet common expectations as to their content, organization, and format. Standard operating procedure and policy-and-procedure documents are obviously an important application of writing and can contain substantial technical information about an organization's operations. But don't view this chapter as the last word on these topics.

Standard Operating Policies and Procedures: Structure

As you can see from the two standard operating procedures and policy-and-procedure documents in the links above, there are some standard contents and format.

- Decimal numbering system—This feature enables policies or procedures to be "cited." For example, if an employee smokes at a building entryway, you can cite admin policy 23.1.4 (or just give a warning and forget the whole thing this once).
- Heavy use of predicates ("Establish" this, "promote" that).
- Distinction between policies and procedures in the hand-washing example. Policies tell employees what to do; procedures tell them exactly how to do it.
- Tracking numbers to enable ease of reference.
- Ownership and approval names are specified.
- Revision dates, to enable employees to know whether they are looking at the most current version.
- Definitions to establish the precise meanings of key terms.
- Use of "will" to indicate a requirement (older style uses "shall").

Standard Operating Policies and Procedures: Resources

Here are some resources for standard operating procedures:

- www.bizmanualz.com/blog/how-to-write-standard-operating-procedures-sop.html

Provided by bizmanualz.com.
• www.nsf.gov/about/contracting/rfqs/support_ant/docs/environ_health_safety/usap_sandh_policy_man/mcmurdostandardmedicalsop-311.pdf
  
  Medical procedures developed for McMurdo Station, Antarctica.

• Guidance for Preparing Standard Operating Procedures (SOPs). From the EPA.

Here are some resources for policies and procedures:


• Management. Articles from about.com.

• Policies and Procedures. From Wikipedia.

• Guide to Writing Policy and Procedure Documents. From UC Santa Clara.

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. See introductions for a more-detailed discussion of writing introductions.

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 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 Ghanian, 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.

**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. See Figure 2 below.

![Figure 2: Schematic view of the whole-to-whole and the part-by-part approaches to organizing a comparison.](http://distanceed.hss.kennesaw.edu/technicalcommunication/chapters/2_9RecommendationFeasabilityReports/2_9RecommendationFeasabilityReport...)

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.
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 $99.99 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.

Figure 3: Individual comparison section.

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>XM 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>
<tr>
<td>Talk &amp; entertainment channels</td>
<td>3.5</td>
<td>4</td>
</tr>
<tr>
<td>Subscription price</td>
<td>4</td>
<td>3.5</td>
</tr>
<tr>
<td>Portable radio/Mp3 player price</td>
<td>2.5</td>
<td>3.5</td>
</tr>
<tr>
<td>Plug-and-Play radio price</td>
<td>4</td>
<td>2.5</td>
</tr>
<tr>
<td>Signal</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Portable radio/Mp3 player</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>features</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plug-and-Play radio features</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>TOTAL</td>
<td>32</td>
<td>31</td>
</tr>
</tbody>
</table>

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

Figure 4: Summary table.

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.**

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, laptop 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.

<table>
<thead>
<tr>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>The following is a summary of the comparisons of XM Satellite Radio and Sirius Satellite Radio:</td>
</tr>
</tbody>
</table>

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.  
4. Sirius has the best signal and satellite coverage.  
5. Although XM offers more than four portable satellite radios/MP3 players, they are all much higher priced than Sirius’ one option.  
6. 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.  
7. 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.  
8. 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.  
9. The best option for satellite radio is XM radio because it has more options to choose from at lower prices than Sirius.  

**Figure 5: Primary, secondary, and final conclusions.** (Notice that in conclusion 6, two categories of comparison are weighed against each other, with more options winning out over lower cost—a secondary conclusion.)

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.

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.)

<table>
<thead>
<tr>
<th>Executive Organization</th>
<th>Traditional Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>Abstract</td>
</tr>
<tr>
<td>Factual Summary</td>
<td>I. Introduction</td>
</tr>
<tr>
<td>Conclusions</td>
<td>II. Shiner Facility Background</td>
</tr>
<tr>
<td>Recommendations</td>
<td>Energy consumption</td>
</tr>
<tr>
<td></td>
<td>Alternative fuel sources</td>
</tr>
<tr>
<td>Appendixes</td>
<td>III. Existing Heating System</td>
</tr>
<tr>
<td>A. Shiner Facility Background</td>
<td>Heat production</td>
</tr>
<tr>
<td></td>
<td>Fuel consumption and costs</td>
</tr>
<tr>
<td></td>
<td>Replacement costs</td>
</tr>
<tr>
<td>B. Existing Heating System</td>
<td>IV. Proposed Wood-Fired System</td>
</tr>
<tr>
<td></td>
<td>Design Basis</td>
</tr>
<tr>
<td></td>
<td>System description</td>
</tr>
<tr>
<td></td>
<td>Boiler system</td>
</tr>
<tr>
<td></td>
<td>HVAC</td>
</tr>
<tr>
<td>C. Proposed Wood-Fired System</td>
<td>Costs</td>
</tr>
<tr>
<td></td>
<td>Investment costs</td>
</tr>
<tr>
<td></td>
<td>Replacement costs</td>
</tr>
<tr>
<td></td>
<td>Operation and maintenance costs</td>
</tr>
<tr>
<td></td>
<td>V. Conclusions</td>
</tr>
<tr>
<td></td>
<td>VI. Recommendations</td>
</tr>
</tbody>
</table>

Figure 6: Example outlines of the same report.

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, 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.