

David E. Fear

Technical Writing

Second Edition



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SECOND EDITION

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Valencia Community College

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Second Edition

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DEDICATED TO

Sharon, Lynn, and Stephanie

Preface

As with the first edition, this text is written primarily for college students in technical-industrial or business programs. No attempt is made to treat the writing problems of high-level businessmen, engineers, or scientists. The principle aim of the text remains the same: to speak directly to students who have relatively little interest in English composition; to eliminate references to compositional formalities and subtleties that are meaningful only to professors or professional technical writers; and to offer models that represent writing required of students in their course work.

The text is designed for use by second-semester English students in the typical two-year program and by upperclass students in four-year programs. However, students with good high-school writing backgrounds should easily be able to handle the material during their first semesters.

The examples and models in this edition have been expanded to cover a wider range of fields, but space limitations prevented the inclusion of models from all relevant occupational areas. The same limitations have also prevented the treatment of all types of letters and informal reports that students might face on the job. Hopefully, the selection is broad enough to help students learn to develop specific pieces of communication to fit the various situations they will face. Instructors are encouraged to supplement the text with models of their own choosing that will represent students' fields of specialization.

Several significant changes have been made in the second edition. The most important is probably the expansion of Chapter 2 ("Basic Techniques") into two full chapters. Chapter 1 in the first edition has been shortened and moved to front matter as part of an expanded introductory note to students. New Chapter 1 concentrates on prewriting (and especially reader analysis), on clarity, and on conciseness, treating these matters more thoroughly than did the previous edition. New Chapter 2 covers paragraph development and technical rhetorical modes, again much more thoroughly than did the original text.

Chapter 6 ("Illustrations") is now Chapter 3 to better present the basic techniques of technical writing along with Chapters 1 and 2, with the remaining chapters presenting applications of the techniques. The appendix "Gathering Information" remains. The chapters on technical letters and informal reports have been given some new improved models and the *résumé* has been treated more fully. A new model report has been included in the formal report chapter and Appendix B containing another model report has been deleted. Some models have also been improved in "Illustrations" (now Chapter 3), and "Oral Reporting" (Chapter 7) has been partially rewritten to better emphasize the actual planning and delivery of oral presentations.

The revisions could not have been made without the assistance of many people. Numerous instructors who have used the first edition offered valuable suggestions. Herman Estrin, Don Cunningham, and Keats Sparrow offered specific suggestions based on the author's revision plan. Roy McGalliard offered invaluable suggestions and kept me on the track throughout. My wife Sharon gave much advice on specific revision and furnished editorial support. The Random House editorial staff did their usual excellent job.

D.E.F.

An Introductory Note to Students

This text has only one purpose: to improve your communication skills on the job. It is not intended to make you an authority on English grammar or a professional writer. Every suggestion offered is intended to help you better fulfill the communications needs as a professional in modern business-industrial society.

In that modern business-industrial society, nearly everyone must devote a large portion of the workday communicating with others. No longer can a bright high school or college graduate with a distaste for writing reports and giving speeches expect to pick up some training in a technical area and work his way rapidly to the top. Any technical or business position above the lowest and most menial demands competence in both written and spoken communication. The more responsible, prestigious, and well-paying the job is, the higher the level of communication skills it will demand.

With technology advancing so rapidly, the specific technical skills you learn in college today will soon become obsolete. Many experts suggest that without on-the-job retraining the skills of many technicians and engineers will become obsolete in as little as five years. The study necessary for this constant retraining suggests the need for strong communication skills.

Coupled with this are the extreme mobility of modern professionals and the constant development of new professions. The result is new jobs in new companies in new specializations. To attempt to prepare for these new positions again requires high-level communication skills. In addition, new equipment is constantly being developed, automation increases daily, and employers are spending more of their time recording and transmitting various types of information obtained from machines.

Thus, many employers no longer only demand that their prospective employees have the maximum amount of education in their fields of specialization; they now require solid skills in technical communication. Recently some executives have even begun rating communication skills higher, and are pressuring deans and department chairpersons to require more communications courses, if necessary at the expense of courses in students' majors.

To further demonstrate the importance of communication to the modern technical employee, we must look at just what specific skills are sought by employers. The speaking and writing skills needed vary considerably, depending on the specific position held within a specific organization. Some fields, for instance, require more paperwork than do others. Research work, work for or within a governmental agency, and work within new, highly innovative disciplines, for instance, will generally require a great deal of written communication.

Companies in a particular field will require more communication than others. Small companies often work somewhat informally with much oral communication; other firms, particularly large ones with numerous branches and divisions, demand more paperwork. Fortunately, many of the firms that demand the most paperwork are also among the best organized with communication experts and systems analysts facilitating the information flow.

The most important factor in determining the amount of time and effort you will have to spend with communication tasks, however, will be the specific type of position you hold. If you work under close supervision doing mechanical, repetitious work, you will do much less reporting than if you work more independently at a wide variety of tasks. If you assume supervisory responsibility over other employees or over expensive equipment, your communication workload will increase. If you move into management, the increase is even greater. In short, nearly all jobs requiring formal college training will require a substantial amount of written and oral communication, and as you advance in your field the amount will increase.

Oral communication will constitute the bulk of your communication responsibilities. Job assignments must be given, schedules explained, and suggestions made. Conferences to discuss policies and procedures are held regularly. New employees must be broken in. Telephone conferences must be held with members of other departments, as well as with clients and other outsiders. More formal presentations include lectures to apprentices or groups of new employees and speeches before professional organizations and community groups. Obviously no technical employee has to go through all these speaking situations every workday. Many technical workers do little formal technical speaking, but recent studies show that the average technical or business professional regularly spends over fifty percent of the workday in some form of oral technical communication.

In some jobs, the written communication load is nearly as heavy as the oral load. Letter writing is one of the most common types of written communication. Even though this is justifiably called the age of automation, people in business and industry are still required to write letters. Automation has greatly simplified the typing and duplication of these letters, but no device has yet been perfected that totally eliminates the task of composing them.

Effective letter writing can be a valuable asset even before the technical person takes a job. As a candidate for a technical position, he or she will almost certainly have to write letters of application and résumés. Contrary to what many aspiring employees believe, most technical employers do take résumés and letters of application seriously.

Once employed, the technical worker may have to write any of a wide variety of letters. Letters of inquiry, sales letters, claim letters, responses to claim letters, and letters of quotation are a few of the most common types. Interoffice letters, or memorandums, are even more common. Composing memos occupies a large part of the typical technical workday.

A more complex, time-consuming type of written technical communication is the technical report. Unlike the letter, which follows rather specific patterns, reports come in almost every size, shape, and description. At one extreme is a simple, ordinary timecard; at the other extreme is a several-hundred-page formal report.

Reports can be classified in various ways. We will use several of them in Chapters 5 and 6. One common means of classification is by format. "Format" refers to the selection of parts or sections for inclusion and the pattern of their arrangement. The most simple and common is the "prepared form" or "form report." This is really just a set of fill-in-the-blank questions. Prepared forms are used for everything from job applications to complex investigative reports. When forms are well-prepared they have several advantages: they are clear and concise; they are quick and easy to complete; and they assure complete coverage of essential information.

Prepared forms, however, are not practical for formal reports or long involved proposals. Detailed style sheets, listing material to be included and showing the desired organization, can be used instead. They do less of the work for writers than do prepared forms, but they do simplify the composition process.

When no stylesheets or prepared forms are available, writers must select their own format. Their first choice will be between the formal approach explained in Chapter 6 and the informal approach explained in Chapter 5; they can then use the guidelines offered to further classify the report. While some professionals may never have to write a formal report, they cannot escape responsibility for submitting at least some informal reports. Chapter 5 offers suggestions for composing a wide range of such informal reports.

Whatever the specific type of report, letter, or other document you are required to write, you will find certain principles necessary to an effective presentation. Four of the most important are surveyed below. These and others are then developed throughout the text.

1. Adapt your presentation to the specific reader and situation. Effective communication is communication that conveys the desired information to the reader. Nothing else matters nearly as much. *Always* stop and analyze the reader and the situation. Then do what is necessary. If deviating from a standard format or violating some other precept of good writing seems called for, be careful but go ahead and do it.
2. Constantly strive for clarity. Unless you are deliberately trying to be obscure or ambiguous, clarity is necessary. If your reader does not understand you, or, worse, misunderstands, your communication attempt will be a failure regardless of its other characteristics.
3. Once you are certain of being clear, work for conciseness; say a lot in a few words. Busy technical people have an enormous number of reports, letters, and articles to read; consequently, reading three pages of material

that could have been expressed in one page is an imposition. Neither do technical people wish to spend twenty minutes listening to a speaker who has only five minutes worth of information. One caution must be noted: whenever you are in doubt about the inclusion of a particular detail, include it; sacrifice conciseness rather than clarity.

4. Proofread for grammar, mechanics, and conventional form. Unless you are composing a very informal document for someone you know very well, do not take a chance on grammatical or mechanical flaws spoiling an otherwise well-prepared presentation. Remember—technical people are generally conservative about such matters. Studies indicate that they are often more concerned about these matters than are most English teachers.

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Technical Writing

Basic Techniques

Technical writing has never been defined to everyone's satisfaction; however, the following definition should suffice during your use of this text and for most of your other writing needs. Technical writing is any on-the-job writing in any conventional profession or job area. The purpose of such writing is to attain specific goals, to address specific readers, and to accommodate specific situations. Thus, technical writing is functional; it communicates specific information to clients, customers, subordinates, colleagues, supervisors, or even to boards of directors. The writer may be the company president, the branch manager, the chief of police, the director of nursing—or the lowest-ranking employee, fresh from college. Technical writing may be in longhand on a single news sheet or formally typewritten on several reams of paper.

Despite this range of possibilities, all effective technical writing shares certain characteristics and makes use of certain basic techniques. This chapter will help you learn to identify those characteristics and to use those techniques. Below is a brief explanation of the most important characteristics of effective technical writing. The remainder of the chapter will help you to develop the necessary techniques to give your own writing these qualities.

1. Technical writing is aimed at a specific reader. You will almost always know who your reader is and so will be able to design the piece of writing to have the effect you desire. This takes precedence over every other aspect of technical writing. No principle of grammar, style, or effective communication is so important that it cannot be violated if the reader and situation seem to call for doing so.

2. Technical writing is clear. Writing that is not clear is generally worthless. If your reader cannot understand what you are saying, nothing else about the communication matters.
3. Technical writing is concise but thorough. The briefest presentation is not necessarily the best, but the briefest presentation that includes all essential information *is*. Your reader will usually be a busy person who does not wish to waste time reading unnecessarily long presentations. However, omitting necessary data can result in misunderstandings and confusion, as well as waste a great deal of time.
4. Technical writing is logical. It always gives evidence to support any conclusions or recommendations. Your reader is interested in the facts and in your conclusions based on those facts; he or she is not interested in unsubstantiated opinions or in gimmicks.

1.1 FIRST CONSIDERATIONS

Before you attempt to construct a given piece of technical writing, you must do some careful planning. Begin by answering six questions:

1. What is it I'm about to compose?
2. Why am I doing it?
3. Who is my reader?
4. When should I submit the piece?
5. What—if any—are my restrictions?
6. How am I going to write the piece?

The answers to some questions will require substantial investigation, but most will be easy to determine. The key is to remember to ask them. You should consider each question individually, preferably in the order given here.

Immediately on learning that you need to develop a given piece of technical writing, establish clearly and specifically exactly what it is that you are going to write. Is it a letter, report, proposal, job description, or something else? Then try to classify it further. Choose a format. If the piece is a report, classify it as formal or informal, then decide what type of informal or formal report.

Next, consider why you are writing the piece. Does company policy require you to? Does a superior demand it? Are you writing the piece to furnish a permanent record for company files or does it have a more immediate, specific purpose? Perhaps your writing will serve both purposes; for instance, a company progress report that will be permanently filed but will also attempt to justify your being given an extra helper.

Whom are you going to send it to? To one person or to a large group? To a superior, a colleague in a different department, or to some subordinates? Identifying and writing directly for your reader are so important that the entire next section addresses itself to perfecting these skills.

When is the composition due? Is there a definite due date, or may you submit it at your convenience? Would it be to your advantage to submit early, or can you wait a bit longer to get more information and polish your presentation?

How are you going to compose it? Where will you get your information? How long will it take to gather your information? To write the communication? Can you write it up yourself? Will you need typing support? Duplicating (xerox, multilith) support?

Are there organizational or departmental restrictions on length, format, style? Is a style sheet or form available? Must you do all of the work yourself, or may you farm some of it out to another department or delegate part of the work to an assistant?

Jot down the answers to your questions. Of course you could remember most of them, but do not take the chance of forgetting. Your answers might look something like this:

What? Progress report on analysis of payroll
system
Why? Called for by controller, Lee Young
Who? Lee Young, with copies to executive board
When? Submitted by Monday, July 14
Restrictions? Standard format, as used for all
company reports
How? Information from all project supervisors;
I compose and duplicate

Having answered the questions, you are now ready to begin to develop the document. Since you have decided what material to include, begin gathering it. Prepare yourself a scratch outline, as explained in Section 1.3.1. Then, as your data comes in, you can catalogue it according to the points on your outline. When you think that you have collected all the necessary information, you can expand your scratch outline into a more detailed topic or sentence outline, as shown in Section 1.3.2. Organize the information in the sequence that you intend to present it in. Check the outline against your data to make certain that you have everything you need. If you have excess, delete it; if you are lacking something, locate it. Double-check your preliminary questions, especially those concerning your reader and any restrictions. Rearrange, delete, or add as necessary.

Now you can actually begin composing the document, starting with the body or the sections containing what you consider to be the most important information. Do not try to write from beginning to end unless your document is very short and simple. Concentrate on the information that your reader needs most or that you most want to present. The other sections will usually fall nicely into place.

Now check your rough copy. Do not be surprised if you have to change your outline a bit, moving, combining, adding, or deleting sections. Once you have properly rearranged the rough copy, you are ready for the difficult but essential task of revising and correcting. If the document is fairly long and complex, plan on a second rough draft; if not, make your revisions on the original. If need be, you can literally cut up the draft and paste it back together to accommodate your changes. Now give it a thorough going over for grammar, mechanics,