

# *The Technical Writing Casebook*



THOMAS N. TRZYNA

MARGARET W. BATSCHELET

---

# **THE TECHNICAL WRITING CASEBOOK**

**Thomas N. Trzyna**  
*Seattle Pacific University*

**Margaret W. Batschelet**  
*University of Texas at San Antonio*

**Wadsworth Publishing Company**  
**Belmont, California**  
**A Division of Wadsworth, Inc.**

---

English Editor: John Strohmeier  
Editorial Assistant: Holly Allen  
Production Editor: Robin Lockwood, Bookman Productions  
Designer: Hal Lockwood  
Copy Editor: Ruth Cottrell  
Compositor: Bookends Typesetting  
Cover: Hal Lockwood

© 1988 by Wadsworth, Inc. All rights reserved. No part of this book may be reproduced, stored in a retrieval system, or transcribed, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher, Wadsworth Publishing Company, Belmont, California 94002, a division of Wadsworth, Inc.

Printed in the United States of America

1 2 3 4 5 6 7 8 9 10 — 92 91 90 89 88

ISBN 0-534-08658-6

**Library of Congress Cataloging in Publication Data**

Trzyna, Thomas N., 1946-  
The technical writing casebook.

Includes index.

1. Technical writing—Case studies. I. Batschelet, Margaret. II. Title.

T11.T747 1988 808'0666021 87-23108

ISBN 0-534-08658-6

# Preface

*The Technical Writing Casebook* presents thirty short, classroom-tested writing cases in a text that can be used as a supplement to *Writing for the Technical Professions* or another comprehensive technical or professional writing text. The opening chapter of *The Technical Writing Casebook* reviews the basics—the analysis of audience and purpose, problem solving, research methods, oral presentations, and visual aids. Chapter 2 explains how to write a report or letter in response to a case by following the entire writing process from assignment to final draft. Each of the following chapters focuses on a single type of document: business documents, types of reports, instructions and manuals, proposals, and brochures. In every chapter the cases are preceded by a short review of the featured formats.

The cases demand varying amounts of background research, problem solving, and audience analysis. They can be readily modified to meet a student's or instructor's need for assignments that are easier, more demanding, or focused on only one aspect of the writing process. No math is required, but the density and complexity of the data vary, as does the need for careful selection and summary of data for nontechnical audiences. Most assignments require students to design visual aids and to integrate these visual

aids with the text of their reports. Many of the cases are appropriate for group assignments.

Two or more assignments accompany most cases, and the assignments often require students to adopt different roles and to write at different stages of developing situations.

Cases have been drawn from a variety of technical and social science fields, including engineering, urban planning, the health sciences, computer science, management, safety engineering, and agriculture. *The Technical Writing Casebook* has been tested in both technical writing workshops and traditional lecture courses. The cases have been well received by several levels of students, including traditional college sophomores, juniors, and seniors, as well as returning adult learners.

We wish to acknowledge the help of the following individuals, both friends and students, in developing material for these cases: Bennett Anderson, William Batschelet, Jerry Cook, George Fernandez, Todd Folz, Jeanne Geiger, Perry Grosch, Roxanne Howard, Michele Kennison, Adrien N. Martinez, Cynthia Myers, Vicky Rugh, Blake Stapper, and Jacqueline Tregre.

We would also like to thank the following reviewers: Dorothy Bankson, Louisiana State University; Don Richard Cox, University of Tennessee; Treva Edwards, Front Range Community College; Ruth E. Falor, Ohio State University; Claude L. Gibson, Texas A & M University; Robin McNallie, James Madison University; Marion K. Smith, Brigham Young University; and Judith Stanton, Clemson University.

# Contents

## *Chapter 1*

### **STRATEGIES FOR TECHNICAL WRITING 1**

- Introduction 1
- Characteristics of Technical Writing 1
- Audience Analysis 2
- Determining Purposes 6
- Problem Solving 10
- Research Methods 11
- Oral Presentations 13
- Visual Aids 17
- Summary 23

## *Chapter 2*

### **HOW TO USE THE CASES 25**

- Introduction 25
- Sample Case: The Carlyle Windsor House 26
- Working with a Case 28
- Summary 32

## *Chapter 3*

### **BUSINESS COMMUNICATION 39**

- The Four Basic Principles of Business Communication 39
- Types of Letters 40

## *CONTENTS*

### *Cases 48*

- Park and Ride Lots 48
- The Rubber Formula 53
- The Gas Chromatograph 55
- The Fluoride Referendum 58
- Raising the Water Rates 62
- Cedar Heights 69

### *Chapter 4*

#### *TYPES OF REPORTS 73*

- Incident Reports 73
- Progress Reports 74
- Trip Reports 74
- Inspection Reports 76
- Recommendation Reports 76
- Feasibility Studies 81
- Cases 81
  - Portable Coolers 81
  - New Guardrails 89
  - College Fire Alarms 93
  - Propane-Powered Buses 98
  - Geotextiles for Highways 101
  - Nondestructive Testing 104
  - The Inspection Report 106
  - Thin-Panel Displays 107
  - Nuts and Bolts 116
  - The Landfill Gas Study 119
  - The Trip Report 125
  - The Heat Pump 126

### *Chapter 5*

#### *INSTRUCTIONS AND MANUALS 133*

- Audience and Purpose 133
- Describing Mechanisms and Processes 134

Organizing Your Manual 136

Writing to Instruct 138

Cases 139

    The Publishing Program 139

    The Multi-Cultural Training Manual 145

    The Laser Printer 148

    The Editing Job 154

*Chapter 6*

**PROPOSALS 157**

The Proposal Process 157

Multipart Proposals 158

Narrative Proposals 160

Cases 161

    The National Institute for Research 161

    The Computer Room 165

    Merit Hospital: Alcohol and Substance Abuse 171

    Private Places and Special Places 175

    The Plating Tank 176

    The Writing Conference 179

*Chapter 7*

**BROCHURES 185**

Characteristics of Brochures 185

Step-by-Step Brochure Design 186

Folding the Brochure 188

Cases 188

    The Aquifer 188

    Smoking and the Pill 192

    Choosing a Calculator 193

    Antibiotics in Animal Feed 195

*Index 199*



# **STRATEGIES FOR TECHNICAL WRITING**

## **INTRODUCTION**

This chapter is designed to be a handbook of the basic strategies of technical writing: analyzing audience and purpose, problem solving, research, oral presentations, and visual aids. If you are new to technical writing, you will want to refer to this chapter often as you develop responses to the problems posed in the cases. Even if you have taken a technical writing course before, you will find this chapter a convenient reference. We begin by defining the characteristics of technical writing.

## **CHARACTERISTICS OF TECHNICAL WRITING**

Technical writing has several characteristics that distinguish it from much of the personal and college writing you do. Technical writing is objective in tone; it is usually assigned like college

writing; it responds to a particular need or purpose; it is usually designed to solve a specific problem; it often calls for highly technical vocabulary; and it is often done in cooperation with other writers. In addition, technical writing uses formats that are not common in other contexts, and it is more common in certain fields of work. Good technical writing, however, shares many characteristics with other good writing. The style and content of technical documents should be simple wherever simplicity is possible. Good technical writers also keep their purposes—and the needs of their audiences—in mind as they write. The next few sections of this chapter provide a brief overview of the major pre-writing strategies used by professional technical writers—strategies for assessing audience and purpose, solving problems logically, and organizing well. As you read these sections remember that every technical writing task involves two parts—a *technical problem* that needs to be solved and a *communication problem* that needs to be carefully analyzed. Both tasks are equally important. If you cannot communicate your results, there is little point in solving technical or design problems.

## AUDIENCE ANALYSIS

Your audience needs answers to specific questions, and it expects to read information that is written at a level it can understand. Audience analysis techniques are designed to help you to produce reports and letters that will satisfy your readers by answering their questions and by making them feel at home with the vocabulary and technical content of your presentations.

### Audience Classification

The basic rule of thumb for audience analysis makes use of a simple classification of audiences. Your audience will usually include some combination of general readers, technicians, and experts.

The experts, in turn, can be divided into technical experts, managers, and executives. You can make finer discriminations about your audience by assessing its objectives, background knowledge, vocabulary, understanding of graphics and mathematics, and its expectations for organization and style. The following lists briefly summarize the items you need to consider for various audiences.

### General Readers

*Objectives:* Assume the readers want general information, information that can be transferred to another field, and/or technical information in an easily understood form.

*Background knowledge:* Assume that background knowledge is limited.

*Language:* Use simple language with limited technical vocabulary.

*Graphics:* Use simple graphs (line, pie, bar) and photographs.

*Measurements and relationships:* Explain technical measurements by analogy or simplify them. Limit your use of statistics.

*Organization and style:* Use simple sentences with an average of 20 words per sentence. Use subtitles to develop and maintain interest.

### Technicians

*Objectives:* Assume the readers want to find out how to do a task and/or learn how to explain a task to others.

*Background knowledge:* Assume they know their own fields and a limited amount about related fields. For example, an electrician needs to know about blueprints, property maps, and easements. Carefully consider how much a technician knows about related fields.

*Language:* Use simple language, but use technical terms where they are appropriate.

*Graphics:* Use complex graphics as long as they are types that are used in the specific field.

*Organization and style:* Use direct, imperative sentences. Use many informative subtitles for easy reference.

## Technical Experts

*Objectives:* Assume the readers want information about a specific topic or information that can be applied to a related issue. For example, a wheelchair designer might read about aircraft hydraulics to look for transferable technologies.

*Background knowledge:* Assume they know their own fields well, but their specializations tend to be narrow. All engineers, for example, are not one audience. Electrical engineers know a different subject from mechanical engineers.

*Language:* Use plain language when there is no good reason to use technical vocabulary. Otherwise there is no limit on technical vocabulary or content.

*Organization:* Organize for efficient use. You should often use a standard academic format, with abstract, statement of problem, review of research, body, summary, conclusions and recommendations, and appendices for additional data and graphics.

## Executives and Managers

*Objectives:* Assume the readers want information necessary for decision making. Executives tend to focus on long-term issues, managers on shorter-term issues. Both managers

and executives need to make decisions based on cost/benefit analyses. Organize comparisons to highlight both financial costs and commitments of personnel.

*Background knowledge:* Assume they know their own fields well. Foreign material will need careful explanation.

*Language and graphics:* Use the same strategy as for technical experts. Keep in mind that these readers have little time to spend reading or searching for information.

*Organization:* Organize for efficient use. Include an executive summary and clearly labeled body, conclusions, recommendations, and appendices.

### Questions to Ask about Your Audience

When you begin to write for a new audience, you can begin to identify the characteristics of that audience by asking the following questions:

1. What are my audience's expectations for language? Vocabulary? Technical terms?
2. How much can I assume that they know about mathematics?
3. What types of graphics are they used to seeing in their reports?
4. What measurement systems are familiar to them?
5. What are their primary fields of expertise? Have they also worked in other fields?
6. How much will they know about my field? About subjects related to their main field of expertise?
7. What are their objectives in reading my report?
8. How will they expect to see this report organized? What formats are they accustomed to seeing?

Once you recognize that many of your reports and presentations will be written for several audiences, you may need to work through these questions several times for a single report.

### **Multiple Audiences**

Usually you will be writing for several audiences at the same time. At a minimum, you will write for your current audience and some future audience that will need to refer to your reports. One solution to the multiple audience problem is to develop the ability to adjust vocabulary, technical content, and graphics to meet the needs of several audiences simultaneously. Another solution is to organize a report with an introductory section that is suitable for all audiences and a series of subsections for each different audience. If you are writing to an audience composed of people you know personally, your task is simplified to the extent that you can use an Audience Profile Form.

### **Profiling an Audience**

If you are writing a report to a person you know, you can obtain that person's profile by using the form in Figure 1-1. Instructions on the form itself explain how to answer the various questions.

When you have used one or more of these techniques to analyze your audience, you are ready to consider your purposes in writing a report or preparing an oral presentation.

## **DETERMINING PURPOSES**

Your decisions about the purposes you want to achieve when you write or speak are closely related to audience analysis and equally as important. You will usually have a number of purposes. At a minimum, you will need to provide a record for later reference

Audience Profile Form

1. Name: (Enter the name of the individual.)
2. Role in the organization: (Enter the job title and other information about the person's function.)
3. Audience type: (general reader, technician, technical expert, manager, executive.)
4. Decision to be made: (What decision will this person make about your report?)
5. Audience level: (Do you consider this person a primary audience--a person who must make a key decision--or a secondary audience--a person who needs to be informed but is less involved in approving or rejecting your report?)
6. Idiosyncracies: (Does this reader prefer memos or executive summaries? Does he or she have a preference for certain kinds of technical content or vocabulary? For a certain management style?)
7. Receptiveness: (Does this reader normally read reports in the elevator? Late at night? What do you know about this reader's current successes or failures on the job that might affect your request or report?)

Figure 1-1. Audience profile form

in addition to your other purposes. Whenever you have several purposes, organize to meet your most important purpose first, your second most important purpose second, and so on. Seven basic purposes of reports, with a few notes on what you need to do to achieve each of these purposes, follow.

### **Directing Action**

If your purpose is starting or ordering action, explain *what* is to be done, *when* it is to be done, and *how* it is to be done, and *by what organization or person* it is to be done.

### **Coordinating**

Coordinating documents provide information for the successful management and completion of projects. Coordinating memoranda explain *who* does which parts of a project, *what* is being done, *when* meetings and deadlines occur, and *where* resources are located. Coordinating documents generally do *not* explain the reasons for the project.

### **Proposing and Requesting**

Proposals explain *who* will do the work, *how much* money or assistance will be required and how that assistance will be managed, *when* the project will be undertaken, and *why* the proposal should be accepted. Proposals should also explain *how* the proposed action will benefit the agency that approves or funds the request.

### **Recommending**

A recommendation is a suggestion, not an order or a request. Recommendations focus on alternatives. When you write a recommendation, *specify* the recommended action, *name* and discuss



the alternatives, *present arguments* to support your choice, and *leave the final choice* to the reader who asked for the recommendation.

### Providing a Record

A secondary purpose of most reports is to provide a record. If you need to provide a record, as in a progress report, *describe* important research in detail, covering who, what, when, where, and why; *discuss* any problems that occurred; *explain* decisions, solutions to problems, and changes in the original plans and procedures; and *indicate where records are filed*.

### Informing

Purely informative reports have no expectations for action. If you want your audience to *do* something, consider whether you need to write a report, letter, or memo that coordinates, proposes, recommends, or serves some other purpose. Write an informative report when you want a co-worker to be aware of some development that might be of interest.

### Entertaining

If your reports are entertaining, you will achieve two goals. The audience will pay attention, and the audience will tend to remember your material better. Clever graphics or humorous writing may *reinforce* important points and help to *simplify* complex information.

When you have analyzed your audience and decided on your purposes, you have the information necessary to make excellent decisions about organization. Yet before you can organize any data, you need to gather the data. Getting the data requires two steps: You need to define the problem set by your work