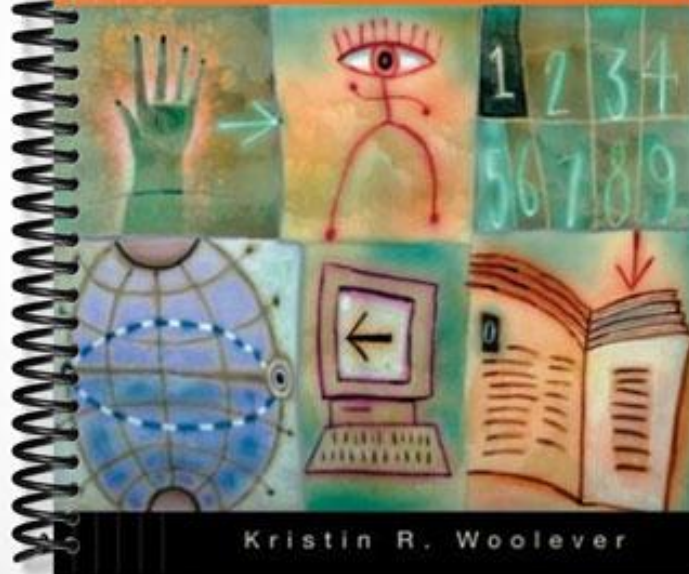# SOLUTIONS MANUAL

Writing for the
Technical
Professions

FOURTH EDITION

Kristin R. Woolever

INSTRUCTOR'S MANUAL

to accompany

Woolever

Writing for the Technical Professions
Fourth Edition

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Instructor's Manual to accompany Woolever, *Writing for the Technical Professions, Fourth Edition*

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PART THREE: APPENDICES

PREFACE

This manual, which is designed for both new and veteran instructors, supplements Kristin R. Woolever's *Writing for the Technical Professions, 4/e*. Here you will find suggestions and approaches for using the Woolever textbook effectively in your own technical writing course. Note that this manual has three parts:

- Part One: Chapter Guides

  For each textbook chapter, you will find an overview and rationale, teaching objectives, instructions for teaching main concepts, and an explanation of assignments.

- Part Two: Teaching Tips and Ideas

  This part offers suggestions for designing a syllabus; using sustained writing assignments, portfolio assessment, workshops, and community-based projects; and integrating computer technologies and international communication strategies into your instruction.

- Part Three: Appendices

  In this part, you'll find syllabi, samples, teaching materials, and information that can aid in your instruction. Appendix A contains sample syllabi for eleven-week and fifteen-week terms, Appendix B contains materials that you can photocopy and use directly in your classes, Appendix C is a glossary of terms, and Appendix D is a bibliography.

How to Use This Manual

If you are new to teaching technical writing, you may want to start with Part Two chapters, especially those on designing a syllabus, using sustained writing assignments, and taking a workshop approach. Then take a look at sample syllabi provided in Appendix A. You can design your own syllabus, or use one of the samples provided. Consult chapters in Part One to determine how to organize your course, structure assignments, and teach main concepts.

If you have taught technical writing before, you may want to look first at sample syllabi in Appendix A. These syllabi illustrate how you can use *Writing for the Technical Professions*, 4/e in your course. Part One chapters may suggest to you new ways of teaching familiar concepts, and those in Part Two may help you add new components to your repertoire.

PART ONE

CHAPTER GUIDES

CHAPTER 1: Planning

OVERVIEW

Chapter 1 offers problem-solving strategies for students to use when planning technical documents. Here you will find approaches for analyzing the audience (including a section on special considerations for international audiences), assessing document requirements, and organizing ideas. A section on ethics reinforces the idea, discussed throughout the book, that writing always involves choices. A sample outline, storyboard, and document specification can be useful models for your students.

RATIONALE

This chapter conceptualizes technical and professional writing as a problem-solving and process-oriented activity. By locating the planning phase of writing up front, the book emphasizes the importance of strategizing before attempting to create a written product. Of course, planning often involves some informal pre-writing; the suggested heuristics require students to put pen to paper even before they know what they want to say.

As with the book as a whole, this chapter attempts to demystify the process of writing about technical subjects. Geared toward both technical professionals and professional communicators, the chapter makes direct comparisons between the kinds of problem solving done in technical decision-making and in writing. Students who are acquainted with step-by-step instructions in other disciplines will find a familiar process here; other students will be relieved to see that writing is a skill that they can learn and practice.

This chapter focuses on the need to create writing that will be used for particular purposes. Rather than encouraging students to look inward or to mine their own experience (strategies which, of course, are legitimate in technical writing), this chapter takes an outward, outcome-oriented approach. Students are encouraged to think rhetorically, that is, to understand that writing is situated within a communicative context and argues a point of view. With this perspective, students are more likely to think carefully about the broader contexts of their work as they plan and write.

TEACHING OBJECTIVES

You can use Chapter 1 to introduce students to planning as a starting point in their writing process. Your goals can include the following:

- Emphasize to students that the most effective documents are carefully planned.

- Introduce students to rhetorical strategies for planning documents.

- Help students apply problem-solving techniques to document planning.

- Introduce students to methods for collaborating on document development.

Emphasize to students that most effective documents are carefully planned.

By emphasizing the planning phase, you can help students get started with their writing—a phase that many writers find difficult.

Introduce students to rhetorical strategies for planning documents.

These strategies include:

- Determining the purposes of a document;

- Analyzing the audience using domestic and international user analysis grids;

- Identifying appropriate writing techniques with such tools as outlining;

- Considering ethical implications by examining choices a student makes when writing.

Help students apply problem-solving techniques to document planning.

These techniques include:

- Defining the issue;

- Viewing the issue in context;

- Researching comparable situations;

- Applying technical expertise;

- Generating possible solutions;

- Testing results;

- Developing a well-supported conclusion.

Introduce students to methods for collaborating on document development.

This chapter focuses on two collaboration tools:

- *Document specifications*. When completed as part of the planning process, these will guide students when writing alone and explaining the document to other people.

- *Storyboarding*. Typically created at the beginning of the development process, storyboards explain the entire document, thereby serving as a guide for everyone working on the document.

Encourage students to write initially without worrying about the final product or about form and grammar. Planning should be a time to explore freely.

TEACHING THE MAIN CONCEPTS

Developing a Rhetorical Strategy. Before a writer begins to plan what a document will say or look like, it helps to work through these two questions:

- Who are the audiences for this document?

- What purposes do I want to accomplish through this document?

You can ask students to think through these rhetorical questions for a particular document you assign early in the course. Individually, students can begin by identifying audiences for the document, and then can gather in small groups to share their ideas. Afterward, the entire class can meet to develop a collective list of ideas.

As you model this rhetorical analysis process using small- and large-group discussions, keep in mind that workplace documents almost always have a multiple audience and multiple purposes. For example, a memo might be written to a supervisor, but can also be read by people at that company in similar current or future jobs; people who pick up the project later on, when you are no longer working on it; lawyers who are looking for legal

evidence in case of a lawsuit; and executives who make promotion decisions based on the quality of your writing.

Using a Problem-Solving Approach to Document Planning. In technical writing classes, as in all writing, we deal with ill-defined problems for which there are no clearly right or wrong solutions that will work in all situations. The more appropriate solutions to writers' problems depend on the context(s) of the writing: how much (dis)agreement exists on the issue; how much your primary audience already knows about the topic; and generic conventions and requirements for what documents should look like.

Students are often more familiar and comfortable with well-defined problems, which characterize much textbook learning, problems for which there are right and wrong answers. When they come to a technical writing class and we give them a series of ill-defined problems to analyze and solve, they can become quite uncomfortable. To help students gain more skill and confidence in analyzing ill-defined problems and using their analysis to plan a document, this textbook sets out specific steps for a problem-solving process.

To model how to do this analysis for your students, you can choose a documentation or communication problem and work through it as a class before asking students to tackle this assignment on their own. After working through one problem as a large group, students can work in small groups of two or three to work through another problem and report back to the class for further discussion. Then students will be ready to choose their own problem and work through the problem-solving process individually.

Here are some sample problems that you can use in your course:

- A graduate assistant feels undervalued and wants the professor she works for to start assigning her more research and less filing. How can the assistant communicate this request to the professor?

- Someone about to turn 21 wants a new car for his birthday. How does he persuade his parents to buy it for him?

- You feel smoking should be banned in the cafeteria. You want to write a letter to the campus newspaper. What would that letter say?

Using an Audience Analysis Grid for Document Planning: Sometimes writers feel that they know all they need to know about an audience. And sometimes that may be the case. More often, though, writers can produce more effective documents by engaging in careful audience analysis in the planning stages.

The Audience Analysis Grid in this chapter provides a useful structure for identifying potential readers for a document and some characteristics of these readers. You can use any number of documents for this type of assignment, including newsletters, advertisements, direct mail pieces, catalogues, magazines, and flyers. Students will benefit from answering the questions on the Grid for as many audiences as they feel will be important for them to consider as they design the document.

You can ask students to use the Audience Analysis Grid as they complete an audience analysis as part of Individual Exercise 2, explained later. It might help to pick a document and work through the Grid as a class before asking students to tackle this assignment themselves. After working through it as a large group, students can work in small groups of two or three, read through another document and report back to the class for further discussion. Once students gain competence using the Grid, they can choose their own document and work through the Grid questions individually.

Similarily, before asking students to complete the Needs Assessment Steps on their own, it might be helpful to pick a document and work through the steps as a class. After working through it as a large group, students could work in small groups of two or three to work through other documents and report back to the class for further discussion. Students can then choose their own document and work through the Needs Assessment Steps individually.

Collaborating through Storyboarding: When a number of writers are collaborating to develop a document, communication among the collaborators can suffer. Writers can forget or misinterpret design decisions. They can visualize ideas differently and assume that all agree on them. Often, these communication problems occur when writers assume that their individual interpretations are shared by all in the group, which almost never is the case.

To help ensure that all collaborators are really in sync with their ideas, it helps to sketch out roughly the sequence of document development steps and what the final product will look like. This rough visual map of the document's development is called a storyboard.

When planning class storyboarding exercises, students will need many large sheets of blank paper, markers in many colors, clear tape, and even tacks or masking tape for hanging the finished storyboards on the walls of the classroom.

Collaborators often keep storyboards on the wall while working on their documents. This way, they can continuously access and check information on the storyboard and keep the project on track. Of course, as the document develops, collaborators usually learn more about the project and may jointly decide to make changes to the storyboard. Encourage your students to do the same, and to regard the storyboard as a flexible, ever-changing, fluid working document.

Collaborating through Document Specifications: To set out what a document will look like and to obtain approval by appropriate people for an early concept of a document, writers often write detailed document specifications early in the development process. Doing so helps clarify a project for all interested parties and increases the likelihood that they will find a finished document acceptable. With document specs, writers are promising to complete a document as described by a specified deadline and within a specified budget. If they must deviate from approved specifications, they need to write up intended changes and get these approved as well.

A finished set of document specifications can be rather lengthy. You'll find in the chapter a list of Document Specification Components, along with a sample of complete document specifications.

Before asking students to complete their own document specifications, you could review sample specifications and ask students to decide why each section includes the information that it does. They could work on this in small groups and then discuss each section as a class.

You can also ask small groups of students to write specifications for a practice document in class and then compare each group's drafts to see what they included and what they chose to exclude in each section. You can then lead the class in jointly writing the specifications, with you transcribing the developing text on a board, an overhead, or a projected computer screen. Students will see the text developing in front of them, with all its deletions and changes on its way to becoming a final draft. Many students will find it reassuring to glimpse the messy writing process and will learn that they do not have to produce finished prose on their first attempt.

EXPLANATION OF CHAPTER EXERCISES

1. Writing a rhetorical strategy.

    In this exercise, students both practice a skill and reflect on it. They produce a rhetorical strategy while planning a short writing project, and then analyze that strategy after finishing the project.

    The idea behind this exercise is for students to consider their audience and purpose in writing and then operationalize their analysis in the form of specific writing techniques. For this assignment, students need not use the more elaborate Audience Analysis Grid contained in the chapter. Instead, encourage students to limit their strategy to one page.

    Combine this exercise with class work. After drafting their strategy, students can discuss their ideas in pairs. After the writing project is complete, the pairs can discuss whether and how they used their strategies to create their documents.

2. Completing a thorough audience analysis.

    This exercise asks students to complete a more detailed analysis than the one in the previous exercise. Students collect data about their audience rather than letting them base their analyses on assumptions. Encourage or require students to:

    •   Observe members of the intended audience in the setting where they will use the document. Ask students to take detailed observation notes and to incorporate details from these notes into their analysis. Ask them to attend to all details that could influence how a reader would use the document (for example, lighting, seating, noise, and interruptions) to perform a task.

    •   Interview members of the intended audience. Ask students to combine features of a closed interview with open-ended questions that follow up on answers an interviewee has just given. In a closed interview, the student asks only set questions (for example, about the person's level of expertise in the subject or their job function). In an open interview, the student encourages the interviewee to expand on or clarify previous statements. By combining features of both types of interviewing, students can gather information they expected but also have the chance to learn something new about the audience.

    •   Conduct a survey (paper or electronic) of the intended audience using the instructions.

- Gather and analyze written materials that have already been produced on an audience, such as reader response cards, usability study data, and market analyses.

- Interview other people who produce materials for the intended audience. Ask students to talk to field engineers, marketers, customer support representatives, and others who have direct contact with the audience or have already researched them.

Emphasize to students the value of using the information that they have just gathered. Rather than just learning about features of their audience, students should consider how those features could affect and improve their documents.

3. Defining what "writing as problem-solving" means.

The purpose of this exercise is to help students internalize the idea that writing is problem solving. When students write about whether they agree with this definition and analyze how it might work, they begin to develop a framework for understanding writing. Such a framework will help demystify the writing process, giving them a useful tool to use when approaching a writing task.

You can combine this exercise with class discussion. Ask students, in groups of three or four, to read and discuss their responses.

4. Targeting a different culture for a communication project.

This activity asks students to do significant research to learn about the needs of an audience that comes from another culture. As with the audience analysis exercise described earlier, students must research the needs of this audience rather than assuming features (including stereotypes) of this audience. For this report, ask students to cite sources carefully to make sure that they are not relying on their own preconceived notions.

Encourage students to seek out members of the culture that they are targeting. Ask them to conduct interviews that combine closed-ended and open-ended questions and to evaluate thoughtfully the interview data. For example, ask students to consider:

- How their own interviewing style may have affected the interviewees' answers

- The extent to which one person (or several) can represent another culture

This activity lends itself to Internet research, with the usual caveat that a researcher must be particularly careful about assessing the truth-value of information disseminated through this medium. For example, students might analyze Web pages of corporations based in another country. In such an analysis, encourage students to evaluate the extent to which another country might be adopting standards from another culture in order to appeal to an international market.

Each student can select a different resource for investigating the culture. Afterward, students can compare and analyze their data. Students should note how different kinds of data could lead to different assumptions about the audience.

5.   Creating a planning portfolio.

The purpose of this exercise is to help students see writing as problem solving and as a process. By collecting their work in a portfolio, students can see how each step in the process led to another. You could ask students to include in the portfolio an analysis of how this process worked. Ask them to describe their problem-solving processes, as well as the extent to which various stages of the process were generative of new ideas.

If students have worked collaboratively on this exercise, ask them to include an evaluation of the roles each person played in the project.

You can combine this exercise with class presentations. Have students describe their writing projects as well as their processes. Emphasize that such a presentation is good practice for job interviews.

6.   Developing a storyboard.

This exercise is designed to give students experience in both storyboarding and working in groups.

If you have asked students to complete course-long group projects, this exercise could be a required part of that assignment. To emphasize the importance of group dynamics, ask each group to appoint one student to observe the process, and then, later on, report their observations to the entire class.

You can also use this exercise as a class activity. Define a project about a familiar problem that most of your students can write about easily (for example, a brochure to incoming students describing the food service options at your institution). Select a

subset of your class to develop a storyboard in a "fishbowl." In a fishbowl exercise, one group of students conducts an activity in the center of the room, while the remaining students sit on the perimeter and take notes. You might ask the observing students to take notes on different aspects of the process. For example, some students could focus on the roles played by those in the fishbowl, while others could look at how ideas get transformed or how disputes are resolved.

CHAPTER 2: Researching

OVERVIEW

Chapter 2 discusses why technical communicators conduct research. It then describes how to conduct the kinds of research frequently done by professionals and technical communicators. A key aim of this chapter is to help students find and evaluate information from a variety of sources. In addition to covering traditional academic research, the chapter provides guidelines for conducting primary research (such as interviews and surveys) and locating information on the Internet. It also explains how to integrate and document sources in writing.

RATIONALE

In this chapter, students learn that research is a systematic process with particular steps to complete. Students learn the importance of careful problem definition; invention techniques (for example, brainstorming and clustering); criteria for determining where to look for information, including technical sources; and guidelines for evaluating their success. The chapter also presents specific instructions for interviewing, conducting surveys, and surfing the Web.

This chapter acknowledges that the goals of the professional may differ from those of the student or academic. Students, when employed, may conduct research to solve a problem or understand or evaluate a product or process. In these situations, students will need to translate research findings into improvements that will make documents more readable and functional for target users. In this chapter, students are encouraged to develop appropriate questions and to remain open to the idea of using a variety of methods and sources to answer those questions.

Students are also asked to evaluate the usefulness of the information they have collected by revisiting the issue that prompted their research. Through examples, they learn the value of organizing a written product not by the collected data, but by the conclusions drawn from that data. Other examples show how to integrate quotations so that the finished product reads like a synthesis, rather than an annotated bibliography.

TEACHING OBJECTIVES

This chapter emphasizes the idea that in professional contexts, research extends beyond the library. Your goals in this chapter should include the following:

- Demonstrate how research helps with problem solving and document evaluation.

- Emphasize that effective research requires careful planning.

- Introduce students to a number of possible research sources.

- Help students learn to evaluate research sources.

- Help students move from research to writing.

- Introduce students to a number of citation styles.

Demonstrate how research helps with problem solving and document evaluation.

Students often see research as a process focused on just information gathering. Show them that research can also help a corporation answer important questions, resolve problems, and evaluate the effectiveness of writing processes and written products.

Emphasize that effective research requires careful planning.

This chapter emphasizes time management skills and the need to produce tightly focused research reports. When students take time early in a project to define and clearly state their research problem, they can save time later that they might have spent conducting unnecessary research. In addition, a well-defined and clearly stated problem will help students focus their research report.

Introduce students to a number of possible research sources.

Many students believe that research involves only library searches leading to academic papers. Yet, the research projects done in professional contexts often involve gathering information from a variety of sources, including the following:

- first-hand interviews (e.g., in-person, telephone, email),

- questionnaires and surveys,

- hardcopy resources, such as books, periodicals, dissertations, company reports, manuals, or proposals;

- electronic resources, such as indexes of periodicals, conference proceedings, and dissertations, as well as academic, government, nonprofit, and commercial Websites;

- product reviews in trade magazines.

Help students learn to evaluate research sources.

An important part of effective research is learning which sources are credible and valuable to the project and which are of questionable credibility and value. The following criteria are useful in evaluating information sources:

- timeliness—less than two years old;

- familiarity with previous research—reliance on previous sources;

- bias—balanced exploration of the topic;

- reliability—author's expertise in the research field.

Help students move from research to writing.

Well-written research reports rely on a coherent argument or point that the writer wishes to make about the topic. This chapter sets out these steps for students to follow as they write their research reports:

- Define and clearly state the problem you have researched.

- Consider whether the material you have generated is complete for supporting your argument.

- Break down your problem into components and subsections with specific conclusions supported by your research.

- Organize each section starting with the conclusions and then the research that led you there.

- Present the research as logical steps leading to the conclusion.

- Introduce a quotation with a statement about why it is important to your conclusion and follow it with a further explanation of how it fits into your argument.

- Synthesize your material into an argument in the final paper.

Introduce students to a number of citation styles.

To avoid plagiarism, students need to cite their sources in one of the following standard citation styles which are explained in this chapter:

- AMA (American Medical Association)

- APA (American Psychological Association)

- CBE (Council of Biology Editors)

- Chicago Manual of Style

- The Columbia Guide to Online Style

- IEEE (Institute of Electrical and Electronic Engineers)

TEACHING THE MAIN CONCEPTS

Taking a Systematic Approach to Research. Students often believe that research is an academic exercise that they undertake solely to write a research paper that will be graded by a teacher. Not surprisingly, many students have not yet learned more practical purposes for research and do not view it as especially relevant to their lives outside the classroom. Given these beliefs, many students tend to start researching in the library the night before their paper is due. Therefore, the first task you have in assigning a research project is to show its relevance to your students' lives.

Probably the most effective way to demonstrate the relevance of research is to allow students to participate in identifying and choosing their research topics. Ask students to think of projects that relate to work they are doing in professional contexts or in other classes. This approach motivates students because they tend to care about problems related to job or academic experiences. When students work on projects from fields in

which you are not expert, you can still help them with formulating arguments and writing clearly. In some cases, it helps them to write for a reader who is unfamiliar with their topic because they must include enough background information and details to help you understand their argument.

Once students have chosen their research topics, you can then have them define and state their problem and write down early ideas they have on their topic. You can then ask small groups of two or three to brainstorm ideas together about each student's topic, allowing enough time for them to work through a few topics thoroughly. Each student can then cluster ideas generated in these brainstorming sessions into categories. After organizing categories into some logical arrangement, each student can write one or several research questions about their own topic. From there, you can ask students to write a research plan specifying their research question(s), the categories of subtopics they will explore, and an order they might use to organize these topics. (Emphasize that the question, categories, and order may change as they find out more about their topic.)

Even if students plan to work on a project in groups, you can ask them to formulate individual plans. This way you can evaluate each student's writing and thinking about the project. After students complete individual plans, they can compare plans with their team members and formulate a team plan which the team can hand in to you for evaluation. When evaluating these plans, you are looking at the feasibility of their research plans as much as their writing abilities. You can also ask them to format the plan in a memo, thereby teaching them that standard form. See the Individual or Collaborative Exercise 1 later in this section for more ideas for assigning a research plan.

Determining and Evaluating Research Sources. Once students have made a research plan, you can review possible research sources detailed in this chapter (hardcopy, electronic, interviews, questionnaires, surveys, product reports, etc.) and ask students to consider which sources might be useful to them. Students can work on this preliminary thinking in teams and report back to the whole class so students can see different ways of researching the topics. After doing this preliminary thinking, teams can determine which sources they will want to start researching and divide up their work so that each team member has to research a number of sources, depending on the difficulty of the projects and the time they have available to complete the assignment.

After students develop a preliminary list of research sources, you can review criteria for evaluating the sources, as detailed in the chapter (timeliness, reliance on previous work,

bias, reliability of the source). When you discuss these with the class, students might identify more criteria that you can work into their thinking about this issue. Students can then write annotations for the sources they have identified to research. These annotations can include citations in a standard format (also covered in this chapter), a brief summary of the main idea of each research source, and an evaluation of its potential usefulness to the research project. This assignment may take some time if you are including interviews, surveys, and questionnaires as sources. You could also ask to see a draft of their work, comment on it, and return it to them for completion. Individual Exercise 3 offers more ideas for assigning an annotated bibliography.

Working with Different Research Sources. Since much research into technical topics can take place outside the library, you can encourage your students to incorporate a number of different sources into their research project. If you ask them to interview an expert in the field, you might first ask them to write out interview questions for you to review. They could even practice asking the questions to other members of the class before going out on the "real interview." Individual Exercise 1 offers more ideas for working on interviewing skills.

If you ask students to gather information through a questionnaire or survey, also ask to review their instrument before they distribute it. Even more helpful is to ask students to pilot test their survey or questionnaire with a small number of people, perhaps others in the class, to evaluate their questions before they distribute the instrument.

When designing interview, questionnaire, or survey questions, ask students what information they hope to get from the answers that will be relevant to their research questions. Be sure they know how they intend to use the answers before they ask the questions. Individual or Collaborative Exercise 2 gives more information on developing a questionnaire as an assignment.

Framing and Writing an Argument in the Research Report. Synthesizing research findings into a coherent argument can be the most difficult task of a research project. Students need sufficient time to draft and revise their research reports at least once before you grade them. Requiring partial drafts to be submitted once or twice before the final deadline is one way to keep students on track with their writing. If you do not review the drafts, you can at least provide the opportunity for students to get your feedback before the final draft is due. Conferencing is an effective way to check on their progress before

the final deadline. Ask them to formulate questions for you about their drafts before the conference. This will help focus discussions on issues experienced in their writing.

Structured peer evaluations can also provide effective feedback. You can model good feedback for the class by asking in advance for one volunteer to provide a draft for you before class. Then you can make overhead transparencies of the draft and work through feedback with the class. In this session, you can again ask the writers to ask you questions about their drafts to help you focus your feedback on issues that the writer has chosen. Emphasize that readers can respond to writing by indicating how it has affected them. For example, a reader could tell an author, "When I read this part, I didn't understand how it related to your main point." Or, "When I read this part I was confused because I didn't understand that term." Additionally, readers can tell writers what is working well with a paper, for example, by saying, "I really liked the way you backed up your point here with a clear example and a graph." It can help when readers describe their reactions to a text and are specific about what part in the text makes them feel a certain way about the whole argument and topic. Writers, in turn, need to listen carefully to feedback and not necessarily explain their reasons for writing as they did. Writers can then decide what feedback to accept and reject as they revise.

If you ask for peer evaluations of student drafts, you can ask reviewers to put their responses in writing and the writers to explain, perhaps in a memo, whether and how they revised in response to each reviewer response. Why did they incorporate the responses they did? Why did they choose not to incorporate other responses?

EXPLANATION OF CHAPTER EXERCISES

1. Planning and conducting an interview with a subject matter expert.

    Interviewing subject matter experts is the primary means by which professional technical communicators gather information, and is also important to technical professionals who write. Be sure to emphasize the importance of this skill to your students.

    As students practice interviewing, they should learn professional etiquette (in this case, sending a follow-up letter), and reflect on the entire experience. Doing so will help students internalize and improve their practice of this research method.