

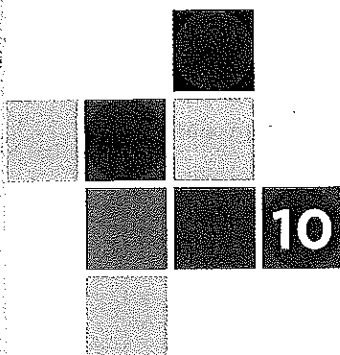
The Essentials of
**Technical
Communication**

THIRD EDITION

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New York Oxford
Oxford University Press



Instructions, Procedures, and Policies

INSTRUCTIONS VERSUS PROCEDURES

Procedures provide general guidelines for performing a task, while *instructions* provide specific, detailed steps. Procedures will be appropriate for some situations, while instructions may be necessary for readers who need detailed directions to perform a job task or process.

Instructions and procedures can appear in several formats: in letters and memoranda (see Chapter 7 for an example instructional memo), in reports, in technical papers or notes, in stand-alone documents to accompany mechanisms or processes, or in complete manuals. Complex procedures and instructions usually appear as manuals, which use many of the report elements exemplified in the formal report in Appendix C. E-mail is not a suitable method of sending instructions or procedures, unless you send these as an e-mail attachment (in a standard rtf, doc, docx, or pdf file) that can be printed or read on the receiver's computer screen. Differences in e-mail applications can produce awkwardly formatted, unreadable text.

CRITICAL ROLE OF INSTRUCTIONS AND PROCEDURES IN THE WORKPLACE

Instructions and procedures often carry heavy legal liability. Because instructions are written for those who need them, most new products and processes have instructions attached. Instructions may also appear on a website, but many of these do not exhibit the qualities of good instructions. When a product fails because

instructions lack clarity, completeness, and/or adequate warnings, the manufacturing company can be held responsible for costs incurred from buyers who, in good faith, attempted to follow the instructions. Even worse, when a customer or an employee dies or suffers major injuries because instructions did not provide complete, readable information and safety warnings, the company can be liable for the injuries or death. Companies that provide incomplete or hard-to-follow instructions on products that must be installed or assembled by the purchasers can lose money on the product when purchasers return the product. Conversely, well-written instructions can improve the image of a company that manufactures products. Many companies will provide on-site, face-to-face instructions for individuals who will have to operate equipment after it is installed. Face-to-face instructions plus written instructions can help purchasers feel confident in the company that sells the equipment. In short, well-designed, clear, complete, accurate instructions can become good sales documents while preventing lawsuits if equipment or products are damaged because users did not or could not follow the instructions.

Quick Tips

Many people resist reading instructions. They try to figure out for themselves how to operate a product or perform a task and will turn to the instructions only if all their efforts fail. When they do read the instructions, they want to understand everything immediately without having to read anything twice. A simple design, plain wording, and clear illustrations will be critical to encouraging readers to pay attention to your instructions or procedures.

1. Use concise headings and subheadings to describe and highlight each section.
2. Leave plenty of white space around headings.
3. Use numbers for every step in a chronological process; use bullets for lists of conditions, materials, and equipment.
4. Use white space to make items in lists easy to find and read.
5. Highlight safety information and warnings. Distinguish between *danger*, *warning*, and *caution*.
6. Keep illustrations as simple as possible.
7. Locate illustrations at the point where the reader needs them. Don't expect readers to locate an illustration that is several pages away from the instruction to which it pertains.
8. Label every illustration, and at the appropriate point in the related text, write "See Figure X."
9. Do not begin an instruction at the bottom of one page and complete it at the top of the next page. Insert a "page break" and move the entire instruction to the next page.

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PLANNING INSTRUCTIONS AND PROCEDURES

Instructions and procedures should enable those who need them to perform the tasks covered. Successful instructions and procedures can be easily read, easily understood, and correctly followed by the intended users with minimal difficulty. Understanding your target readers and, in some cases, the context in which the documents will be used is paramount. If readers are confused or misled by statements, they can hold the company liable for injury or financial damage suffered because of poorly written instructions or procedures. Instructions, particularly those that involve processes that could be hazardous, should explain the knowledge level required of the target audience.

Who are the readers? What do your readers know about the subject? These questions will determine how much information you provide and the type of language you use. The audience for instructions should be specified, especially if readers not conforming to that audience should not attempt to follow the instructions. For general instructions, remember that many people resist reading instructions. They tend to avoid reading them, if possible, and attempt to perform the task without them. When they do read the instructions, they want to understand them immediately without having to reread them. Design features (layout), format, choice of language, and use of visuals can be critical to encouraging readers to focus on the instructions or procedures.

What is your purpose? Successful instructions/procedures require that both you and your readers know your purpose. What should your readers know and be able to do after they read these instructions/procedures? Any information that isn't applicable should be omitted.

What is the context in which the instructions/procedures will be used? Knowing how documents will be read can help you design effective documents. Readers may be focusing on them while they are sitting at their desks. They may need to read the entire document before trying to perform the task, or they may perform the task as they go.

Do your readers need to read the instructions/procedures before they begin? Your telling them how to read the instructions may be necessary. For example, you can include detailed instructions for first-time readers and then have a summary of steps for readers to use once they are familiar with the longer instructions. Context-sensitive instructions can be found in numerous settings:

- Some sailboards have instructions for how to right the sailboard—if it turns over in the water—on the bottom of the boat where riders can see the instructions if the boat turns over.
- “Quick Start” instructions for many handheld devices can be found inside the top or lid of the device.
- Some products, such as bookcases, computers, and lamps, come with instructions composed only of pictures, to show the steps in assembling the product. However, if the product will be sold in other countries, “picture-only” instructions should be tested for interpretation.

- Instructions printed on grease-resistant pages can be used along with these instructions.
- Basic instructions can be designed to be used with the available or lengthy instructions linked in a document they should online reading.

Planning instructions or even helping you determine the medium (or that could be sensitive to the topic, and w

STRUCTURE

First, analyze the procedures/instructions to include, by topic, your instructions/procedures. Shorter instructions will focus on

Introduction: performed: skill level the

Theory governs, reader success. Knowledge an error and a mechanism prepare read

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em to perform the easily read, easily minimal difficulty. ntext in which the or misled by state- il damage suffered :tions, particularly :explain the knowl-

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- Instructions used in machine shops and on manufacturing floors are often printed in large type on eye-saver yellow or green paper and laminated to resist grease. These instructions may be in metal loose-leaf notebooks so strong that pages cannot be torn out. Or they may appear on computer screens projected along the assembly line. Again, the readability, completeness, and accuracy of these screens can be critical to error avoidance and safety of employees.
- Basic operation instructions and troubleshooting information for large clocks can be found inside the clock mechanism access compartment. These are designed to accompany the booklet that contains detailed instructions.

Will the instructions be available online or on paper? If instructions will be available online, focus on readability of the material. Avoid "text-heavy" and lengthy instructions. Partition your instructions into distinct sections hyper-linked in a logical way. Or you may want to tell your readers immediately that they should print a copy of the instructions if they are too long and complex for online reading.

Planning is particularly critical for writing instructions or procedures. Remembering or even using the document analysis checklist at the end of this chapter will help you determine whether you need instructions or procedures, the delivery medium (online or paper), the content you will include, and any design strategies that could help you produce an effective document. Effective instructions require sensitive attention to readers' information needs, their current knowledge of the topic, and what you want them to know as a result of reading the instructions.

STRUCTURE AND ORGANIZATION

First, analyze the audience, purpose, and context; then, begin to structure your procedures/instructions. Examine the following general guide for what elements to include, but remember that what you decide to include will depend on your topic, your audience, your purpose, and the reader's context. Comprehensive instruction/procedure manuals will usually contain most of these elements, while shorter instructions/procedures may require fewer. To illustrate instructions, we will focus on three examples.

Introduction. The introduction should familiarize readers with the task to be performed: specifically, what the instructions will allow readers to do and what skill level the person should have to perform the task successfully.

Theory governing the procedure or instruction. For some types of procedures, readers will perform tasks better if they have a general overview of the process. Knowledge of the process may help them understand when they have made an error and how to avoid errors. If you are going to give instructions for operating a mechanism, some explanation of the value and purpose of the mechanism can prepare readers for the process.

Warnings, cautions, hazards, and notes regarding safety or quality. Given the wide variety of technologically complicated and potentially dangerous products available today, you really cannot “overwarn” readers. And a failure to warn could have costly legal implications for your organization. Any level of hazard needs to be described—what will happen and why—if a particular action is performed. Identify the hazard, followed by the reason or the result, and be sure that all warnings, cautions, and notes are clearly visible. Warnings may also be repeated if they are associated with a particular step or direction. Warnings given at the beginning alert readers to possible problems they may encounter. Be sure that warnings stand out so that readers’ eyes are drawn to them. The American National Standards Institute (www.ansi.org) articulates standards for hazard statements. A review of research on hazard messages is available from the US Occupational Safety and Health Administration (www.osha.gov).

Conditions under which the task should be performed. Some instructions, particularly laboratory instructions, may require you to describe the physical conditions required to perform a task: room size, temperature, time required for the entire process and for individual steps, specific safety processes. If time is a constraint, readers need to know how much time will be needed before they begin the task.

Name of each step. For each step, give the following: purpose of the step; warnings, cautions, and notes; any conditions necessary for performing the step; time required to perform the step; and the list of materials needed for the step.

- Place instructions in chronological order.
- Number each step.
- Limit each instruction to one action.
- After you have written the instruction, state in a separate sentence the reason for the instruction but only if you believe that the reader may not follow the instruction without an explanation. Include warnings whenever necessary. And be sure to explain all warnings if you believe that people will not understand the reason for the warning.

Case 10-1:

Tasnim Mohameed decides that the linear text in the focus on teaching a confusing process lab. A portion of it will expect student available when they do a prewriting analysis.

Prewriting Analysis

1. Identify your reader. Texas A&M student.

2. Describe your instructions.

Most of the students in another class before the first organic chemistry experiment. They already have and appropriate chemistry play, etc.

Students in organic chemistry obtain high yield quickly as possible huge paragraphs.

3. How much does the student know? The students in the background information. The course is chemistry II lecture course experiments, but the lecture gives student need help assessment.

4. Will you have to? Students should do organic chemistry more only thing I may have.

Case 10-1: The Grignard Reaction

Tasnim Mohamed, a graduate student who supervises a biochemistry lab, decides that the laboratory instructions for the Grignard reaction, presented as linear text in the lab manual, need clarification. She believes that labs should focus on teaching students chemical concepts rather than having them try to read confusing process discussion. She decides to revise these before assigning the lab. A portion of the original instructions appears in Case Document 10-1A. She will expect students to read the original instructions but also to have the revision available when they actually begin the experiment. Her first step in revising is to do a prewriting analysis.

Prewriting Analysis for Revising the Grignard Reaction

1. Identify your reader(s).

Texas A&M students in the second semester of organic chemistry (CHEM238).

2. Describe your reader profile: background, attitude toward following instructions

Most of the students are sophomores, so they may have had lab experience in another class before taking this lab. Generally, all students have already taken the first organic chemistry lab (CHEM237), so they have some idea of what to expect. They already know common lab safety rules such as wearing goggles and appropriate clothing, tying back long hair, no eating or drinking, no horseplay, etc.

Students in organic chemistry lab do not usually do everything correctly to obtain high yield or even the expected results. Most hope to finish the lab as quickly as possible in order to leave early, so they do not take the time to read huge paragraphs of instructions.

3. How much does your reader(s) know about the subject?

The students in the lab are not experts in the subject, so they will need some background information to understand what happens throughout the experiment. The course has a prerequisite of CHEM228, which is the Organic Chemistry II lecture course. Usually, the lecture material aligns with the laboratory experiments, but sometimes the professors teach at a different pace. The lecture gives students some background information, but they will probably still need help assessing what happens when something in the lab goes wrong.

4. Will you have to define any terms that your reader(s) may not understand?

Students should already know most vocabulary words that align with the organic chemistry material. A new technique specific for this lab alone will be the only thing I may have to define.

5. What do you want your reader(s) to be able to do after reading the instructions or procedures?

The reader should be able to fully understand the purpose of the lab, methods that will be used in the lab, and how to conduct the lab in a timely fashion. They will know where to obtain all the material and exactly what equipment to use for a specific setup. They will also know if they need to begin another task while they wait for something else to be completed so that they can safely and efficiently complete their experiment. The reader should know that actually understanding the lab is more important than the result.

6. What is the situation that led to the need for these instructions?

Organic chemistry lab is designed to teach students several lab techniques aligned with material learned through the lecture course. Some techniques include purification, spectroscopy, classification tests, computer modeling, and reaction kinetics. This specific set of instructions guides students through the Grignard reaction and allows them to practice their distillation and infrared spectroscopy techniques.

6a. If you are revising an existing set of instruction, explain why the original needs revision.

The Grignard reaction was the hardest lab of this semester. Students are often not able to perform the complete experiment because they are unable to prepare the Grignard reagent. If the lab instructions are revised, students may stand a better chance of performing the experiment correctly. The format of the procedure and the lab manual as a whole deter the students from actually reading the entire lab instructions, which hinders their success. They also find it difficult to reread bulky paragraphs of instructions while conducting the experiment, causing them to miss some vital steps.

7. How will your reader(s) use these instructions? Will they need to be read every time, or will they be used only for reference?

Readers should be able to read the instructions before lab, understand the lab, and then perform the experiment on their own. However, they can have the instructions available to them while conducting the experiment for a reference guide. Students should not have to read everything over again during the lab.

8. What kinds of pictorials, if needed, will you use?

I will include graphics of some experimental setups that are used during the lab. I will also need to include pictures of the equipment that the setup will need in case the student does not know some of the terms.

9. What kinds of formatting and page design strategies will you use to make the instructions easy to read?

I will make sure to use bold headings to separate main topics and subtopics. I will put each picture or graphic beside the text to which it corresponds. I will also make sure to leave plenty of white space to help the eye find what it needs on the page.

10. What content I will include the

- Purpose
- Summary of
- Materials
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10. What content segments will you include?

I will include the following sections:

- Purpose
- Summary of Methods
- Materials
- Reagents and Solvents
- Methods
- Experimental Procedure
- Safety Precautions
- Discussion for In-Lab Notebook
- Discussion for Post-Lab Report

CASE DOCUMENT 10-1A: ORIGINAL, GRIGNARD REACTION**THE GRIGNARD REACTION**

Purpose: To prepare and use the Grignard reagent as a method of studying the utility of organometallic reagents in synthesis and to identify starting materials by using retrosynthetic analysis

Reading: McMurry: See assignment for this lab session on the website.
Review Separation and Purification Techniques: "Distillation" (Simple)
Review Separation and Purification Techniques: IR, "Extraction"

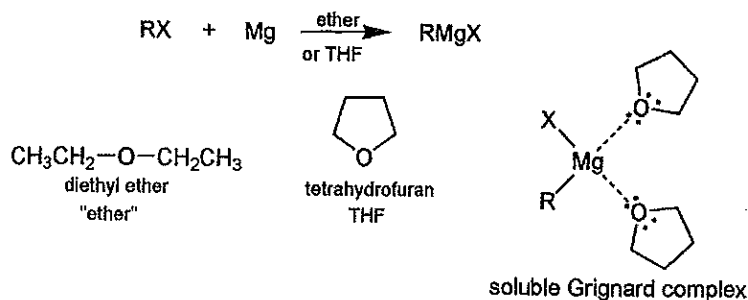
INTRODUCTION

Organometallic compounds are defined as organic compounds which have a carbon-metal bond. These are valuable tools for use in organic synthesis. The reactivity of the organometallic compound is highly dependent upon the nature, ionic or covalent, of the carbon-metal bond. Organosodium and organopotassium reagents are highly ionic and the carbon acts like a powerful base. These reagents react explosively with water and are pyrophoric (burst into flame upon exposure to air). Organomagnesium (Grignard reagents) and organolithium reagents are sufficiently ionic in nature to be strong carbon nucleophiles, strong bases, and yet covalent enough to be soluble in many organic solvents. These two reagents are widely used in organic synthesis. In recent years the use of other organometallic compounds, particularly organocuprates and organomercury compounds, have been widely used in research. However, the very low toxicity of the Grignard reagents makes them a reagent of choice.

continued

Organomagnesium reagents are perhaps the easiest to prepare and use of all the organometallic reagents. These reagents were discovered in 1901 (Victor Grignard won the Nobel Prize in 1912 for this discovery; the reagents are named after him.) Grignard reagents are prepared by the reaction of alkyl or aryl halides with magnesium. The exact mechanism involved in the formation of Grignard reagents is unknown, and despite their wide use, there is some doubt as to their exact structure. Grignard reagents are conventionally written as RMgX , where X is chlorine, bromine, or iodine, although there is some evidence that in solution a di-organomagnesium structure exists in equilibrium with the magnesium halide. Generally speaking, any organic halide can be used in the preparation of a Grignard reagent. There are a few exceptions to this, most notably are aryl chlorides. Aryl chlorides, where the chlorine attaches to the aromatic ring, do not react with magnesium. Methyl iodide (todornethane), a liquid cancer suspect agent, is used instead of either of the poisonous gases methyl bromide or methyl chloride to prepare methyl Grignard. Likewise, ethyl bromide (Qachrymator) is commonly used in place of the gas ethyl chloride to prepare ethyl Grignard. In the preparation of the Grignard reagents, the alkyl halide used can affect the rate of formation with $\text{I} > \text{Br} > \text{Cl}$ (organomagnesium fluorides have not been prepared). Once the reagent is formed, the halide ion has no apparent effect on either the rate or the yield of the subsequent reaction.

The use of an ether solvent is a key step in the synthesis of Grignard reagents. The electron pairs on the oxygen of the ether coordinate with the magnesium of the Grignard reagent and form a soluble complex. Most frequently diethyl ether or tetrahydrofuran (THF) is used as the solvent for both the synthesis and the subsequent reaction of the Grignard reagent. Grignard reagents have been made and used in the absence of ether; however in both situations (synthesis and use) the yields were "disappointingly poor."



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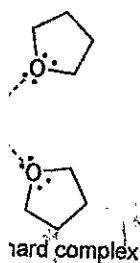
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Safety! The use of ether is the only serious safety concern associated with the Grignard reaction. Ethers are highly flammable. Exercising a few simple safety precautions dramatically reduces the hazard of fire. Unfortunately that is not the only hazard associated with ethers. Ethers react readily with atmospheric oxygen to form peroxides. Organic peroxides can undergo explosive decomposition and the risk of an explosion is directly proportional to the concentration of the peroxide. This is why it is important *not* to distill to dryness (the distillation pot goes dry). Ethers are usually checked with special peroxide detection strips prior to their use.

Grignard reagents are most often used in reactions with aldehydes, ketones, or esters. The products of these reactions following work up are alcohols. Reaction with formaldehyde produces a primary alcohol that has a carbon chain one carbon longer than the beginning Grignard reagent. Reactions with other aldehydes give secondary alcohols, and reactions with ketones or esters yield tertiary alcohols. Notice that esters react with *two* moles of Grignard. After the first reaction, the intermediate loses alkoxide to form a ketone. The ketone then reacts with a second mole of Grignard to form a tertiary alcohol. Grignard reagents have also been used in reactions with nitriles, R-C/N to yield ketones, with epoxides to yield alcohols, and with anhydrous carbon dioxide, CO₂, to yield carboxylic acids (*Note:* Grignard reagents will also react with oxygen in air. The reaction with air is so slow that it is not normally necessary to run the reaction under an inert atmosphere. Atmospheric moisture is a real problem and will be discussed in detail.)

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CASE DOCUMENT 10-1B: REVISED GRIGNARD

Tasnim Mohamed
CHEN 301
Spring 2013

Lab 18: The Grignard Reaction

Purpose

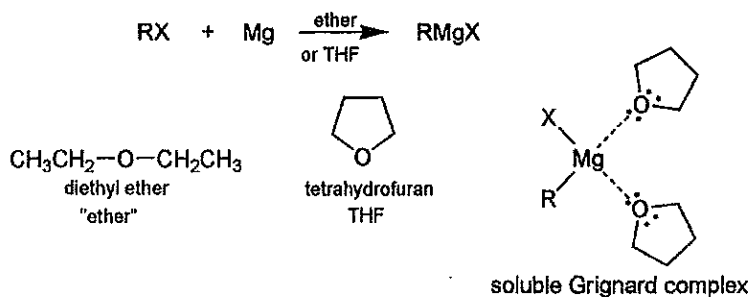
You will learn how to prepare and use a Grignard reagent to study the utility of organometallic reagents in synthesis and to identify starting materials by using retrosynthetic analysis.

Introduction

Organometallic compounds are organic compounds with carbon-metal bonds. These compounds are valuable tools for use in organic synthesis. Their reactivity is highly dependent upon the nature, ionic or covalent, of the carbon-metal bond. Organomagnesium (Grignard reagents) are widely used in organic synthesis due to their low toxicity.

Grignard reagents are conveniently written as RMgX , where X is chlorine, bromine, or iodine. When preparing Grignard reagents, the halide used can affect the rate of formation (fastest: $\text{I} > \text{Br} > \text{Cl}$; slowest). However, once the reagent is formed, the halide ion has no effect on the rate or yield of the reaction.

The use of an ether solvent is the key step of Grignard reagent synthesis. The lone pairs on the oxygen of the ether coordinate with the magnesium of the Grignard reagents and form a soluble complex, as shown in the figure below. Most frequently, diethyl ether or tetrahydrofuran (THF) is used as the solvent for the synthesis and subsequent reaction of the Grignard reagent.



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Reage

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Distilled
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Magnesi

Tasnim Mohamed

Page 2 of 10.

Grignard reagents are most often used in reactions with aldehydes, ketones, and esters to form alcohol products. They can also react with nitriles to yield ketones, epoxides to yield alcohols, and anhydrous carbon dioxide to yield carboxylic acids. Grignard reagents may be viewed as a strong base. They react readily with acids to form alkanes. Even weak acids such as water, alcohols, phenols, and terminal acetylenes will protonate Grignard reagents to give the corresponding alkane. If the synthesis does not call for the formation of an alkane, this side reaction only lowers the yield of the desired product. Also, if the starting material contains an unprotected alcohol, phenol, or terminal acetylene, you must use two equivalents of the Grignard reagent. One equivalent will be destroyed by the proton source.

Warning!

THF is flammable and volatile. Work close to the hood. If flames occur, smother with a watch glass or beaker, and do not use a fire extinguisher.

Diethyl ether is even more flammable and volatile than THF, has a low affinity for water, and reacts readily with oxygen to form peroxides, which can undergo explosive decomposition.

Materials

- | | |
|---|---|
| ☐ 25mL round-bottom flask | ☐ Air condenser |
| ☐ Heat gun | ☐ Micro-scale distillation glassware |
| ☐ Magnetic stir bar and stir plate | ☐ Sonicator |
| ☐ Small beaker | ☐ Large test tube |
| ☐ Weighing scale | ☐ Plastic pipette |
| ☐ Weighing paper | ☐ Pasteur pipettes |
| ☐ Claisen head | |

Reagents and Solvents

tetrahydrofuran (THF)
Magnesium turnings
Ammonium chloride
Distilled water
10% sodium bicarbonate
Saturated sodium chloride
Magnesium sulfate

Alkyl Bromides:
1-bromopropane
1-bromobutane
1-bromopentane

Ketones:
Acetone
2-butanone
2-pentanone
3-pentanone

continued

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CHEN 301
Spring 2013

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Tasnim Mohamed

Page 3 of 10

Methods to Achieve Objectives

Simple Distillation

Extraction

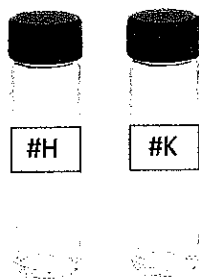
Infrared Spectroscopy

Experimental Procedure

This experiment will take two lab periods. In the first period, you will prepare the Grignard reagent and run the reaction with the ketone. The crude product will be allowed to dry until the second week. In the second week, you will purify and identify the product.

Week 1

Step 1: Obtain your alkyl halide and ketone.



- The alkyl halides and the ketones will be at the front of the lab room. Alkyl halide vials are labeled "#H" and ketone vials are labeled "#K." The # on the vial you obtained should be your workstation number. Record the unknown codes in your lab notebook.
- The alkyl halide vials contain 0.025 moles of one of the 3 alkyl bromides (1-bromopropane, 1-bromobutane, or 1-bromopentane) and the ketone vials contain 0.025 moles of one of the 4 ketones (acetone, 2-butanone, 2-pentanone, or 3-pentanone). Each of the compounds is dissolved in THF.

Step 2: Examine glassware.

- Your 25mL round-bottom flask should contain no cracks. If you find a crack, return the flask to the stockroom and obtain a new one. If the glassware appears dry, you can begin with **Step 3**.
- If the glassware is not dry, dry it with a heat gun. You can speed up the drying process by rinsing glassware with acetone, which evaporates faster than water. All glassware must be *completely* dry before proceeding with the next step.



Experimental Set-up

Step 3: Add a stir bar to the flask and place it in a small beaker.

Tasnim Mohamed

Step 4: Weigh 0.61g (0.025mol) of reagent and add to the flask.

Step 5: Add 4mL of THF to the flask.

Caution!

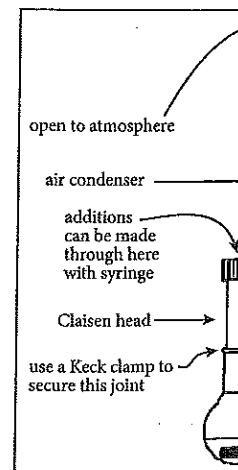
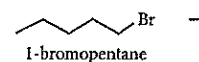
THF is flammable. Handle it with care. In case of fire, DO NOT use a watch glass or beaker.

Step 6: Attach Claisen head and air condenser.

- All ground-glass joints should be secured with a Keck clamp to secure all connections.
- Refer to the figure on the next page for the setup.

Step 7: Use a plastic pipette to add the ketone to the flask through the top of the air condenser.

- The diagram below shows a typical setup for this step.



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Step 4: Weigh 0.61g (0.025mol) of magnesium turnings on a piece of weighing paper and add to the flask.

Step 5: Add 4mL of THF to the flask.

Caution!

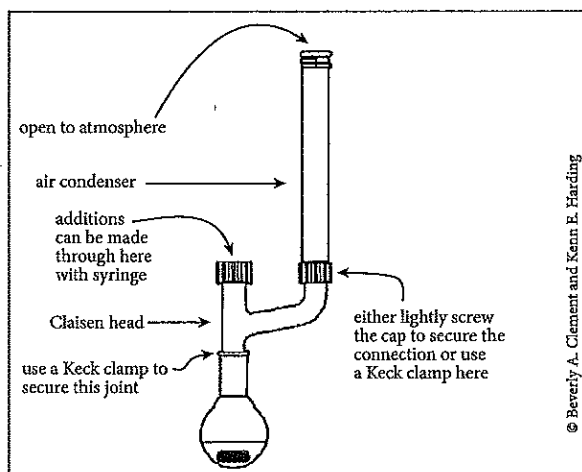
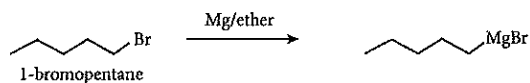
THF is flammable. Handle it carefully under the hood at your work station. In case of fire, DO NOT use a fire extinguisher. Smother flames with a watch glass or beaker.

Step 6: Attach Claisen head and air condenser to the flask.

- All ground-glass joints should be greased. If not, notify your TA. Use a Keck clamp to secure all connections.
- Refer to the figure on the next page to set-up the glassware.

Step 7: Use a plastic pipette to add 1mL of your alkyl bromide solution to the flask through the top of the air condenser.

- The diagram below shows an example of the reaction taking place in this step.



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continued

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Step 8: Swirl the flask.

Your reaction may begin immediately, and the solution will become very warm and cloudy. In this rare case, you may proceed to Step 10.

Step 9: Place the flask with the attached condenser in an ultrasound bath.

- The bath is located underneath one of the main hoods in the back of the lab room.
- Look for agitation of the liquid and magnesium particles. The more agitation, the faster the reaction will initiate.
- After a couple minutes of agitation, the THF solution should appear somewhat cloudy. Warm the flask if it is not already warm.
- Hold the glassware by the condenser to immerse your flask so that the liquid inside is at or below the level of the liquid in the tank.

Ultrasound Bath Sonication Tips

- Make sure the bath is turned on. If it is on, you should hear a constant clicking noise. Turn the time dial if it is off. DO NOT turn on the heat on the ultrasound bath.
- Sonication is greater near the corners of the bath.
- Four reaction set-ups can be placed in the bath at the same time.

Step 10: Clamp the glassware so that the flask is centered over a magnetic stir plate underneath the hood at your work station.

- Make sure the mixture is stirring evenly.

Step 11: You can use the same plastic pipette from Step 7 to add the rest of the alkyl bromide, slowly and in small portions, through the air condenser.

- The reaction should warm the solution to the boiling point of THF (~66°C) but not so much to the point where the solution boils over the top of the condenser.
- If the reaction does become too hot, moderate the temperature with an ice bath, without letting the temperature drop below room temperature (~25°C).
- If the reaction does not become warm and the magnesium turnings disappear, return the flask to the sonication bath.

Step 12: Stir the mixture for 15 minutes after adding all the alkyl bromide.

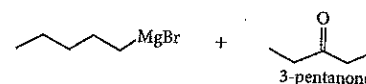
Tasnim Mohamed

*Addition of Ketone to Grignard Reagent***Step 13:** Use the same pipette to add the ketone, continuously stirring.

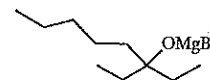
- Add ketone at a rate to keep a suspension.

Step 14: Stir the mixture for 15 minutes.

- The reaction flask now contains the product.
- The diagram below shows an example of this step.

**Hydrolysis****Step 15:** Add 6g of ammonium chloride with a stir bar.**Why ammonium chloride?**

The slightly acidic ammonium chloride solution is more effective in hydrolyzing the magnesium alkoxide than water alone, but keep the acidity of the solution lower than the addition of excess HCl.

**Step 18:** Allow phases to separate and discard the aqueous phase in a waste beaker.

- This phase will later be discarded. The organic phase in a waste beaker anything until the end.

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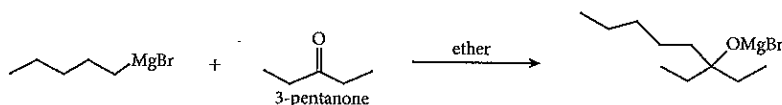
Addition of Ketone to Grignard Reagent

Step 13: Use the same pipette to add the ketone solution to the flask while continuously stirring.

- Add ketone at a rate to keep a steady, gentle reflux.

Step 14: Stir the mixture for 15 minutes after adding all the ketone.

- The reaction flask now contains the magnesium salt of the alcohol product.
- The diagram below shows an example of the reaction taking place in this step.

*Hydrolysis*

Step 15: Add 6g of ammonium chloride and 20mL of distilled water in a beaker with a stir bar.

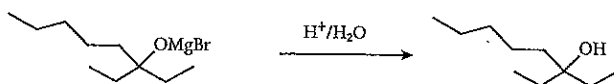
Why ammonium chloride?

The slightly acidic ammonium chloride solution is more effective in hydrolyzing the magnesium alkoxide than water alone, but keeps the acidity of the solution lower than the addition of excess HCl.

Step 16: Stir salt solution vigorously and add contents of the reaction flask.

Step 17: Transfer the solution in the beaker to a large test tube.

- The diagram below shows an example of the reaction taking place in this step.



Step 18: Allow phases to separate and remove the lower *aqueous* phase.

- This phase will later be discarded. However, keep all extractions of the aqueous phase in a waste beaker at your work station. Never discard anything until the end.

continued

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Step 19: Wash the organic layer with 5mL of water and remove the lower aqueous phase.

Step 20: Wash the organic layer with 5mL of 10% sodium bicarbonate and remove the lower aqueous phase.

Step 21: Wash the organic layer with 5mL of saturated sodium chloride and remove the lower aqueous phase.

Step 22: Transfer the organic layer to a sample vial.

Step 23: Add magnesium sulfate to the vial to remove any water remaining.

- Cap the vial.
- Label it with your name and section number.
- Store it in your section's storage drawer until next week.

Week 1 Clean-Up Procedures

- Rinse vials that contained your starting alkyl halide and ketone with acetone in the acetone wash bottle in the sink.
- Return the vials to the rack where you obtained them.
- Dispose of plastic pipette by placing it in the labeled plastic beaker in one of the main hoods in the back of the lab.
- Dispose of used Pasteur pipettes in the broken-glass box after rinsing out any organics.
- Dispose of unreacted magnesium metal in your beaker in the solid waste container provided.
- Aqueous washes may be disposed of in the sink.

Week 2

Purification

Step 1: Decant the dry THF solution into a 25mL round-bottom flask with a few boiling chips.

Why saturated sodium chloride?

The saturated salt solution wash helps remove the water from the organic layer. Some water is dissolved in the organic layer because of the presence of THF.

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Step 2: Set up the distillation apparatus.

- All ground glass joints should be greased and notify your TA of the connection.
- Refer to the diagram on the right to the glassware.

Step 3: Distill the mixture in a steam bath.

- THF should be collected around 55°C.
- Periodically check the temperature of the THF from the bottom of the flask with a pipette.
- Dispose of the THF in the designated waste container.
- After most of the THF has been removed, bottomed off the flask.

Step 4: Remove the flask from the steam bath to cool.

- You can speed up the cooling process by placing the flask in an ice-water bath.

Step 5: Transfer the cooled mixture to a 25mL round-bottom flask.

Step 6: Attach the flask to the distillation apparatus.

Step 7: Distill the mixture.

- Depending on the boiling point of the mixture, it may take some time to boil. See the next page for more details.
- Discard the residue in the designated waste container.

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Step 2: Set up the micro-scale distillation apparatus.

- All ground-glass joints should be greased. If not, notify your TA. Use a Keck clamp to secure all connections.
- Refer to the diagram on the right to set up the glassware.

Step 3: Distill THF with the steam bath.

- THF should distill around 55°C–65°C.
- Periodically remove the THF from the collection well of the distillation head with a Pasteur pipette.
- Dispose of the collected THF in the appropriate waste bottle in the main hood.
- After most of the THF has distilled (3–4 mL remains in the round-bottomed flask), the temperature will begin to fall.

Step 4: Remove distillation set-up from the steam bath and allow product to cool.

- You can speed up this process by placing the flask in a bath of *room-temperature* water, NOT an ice bath.

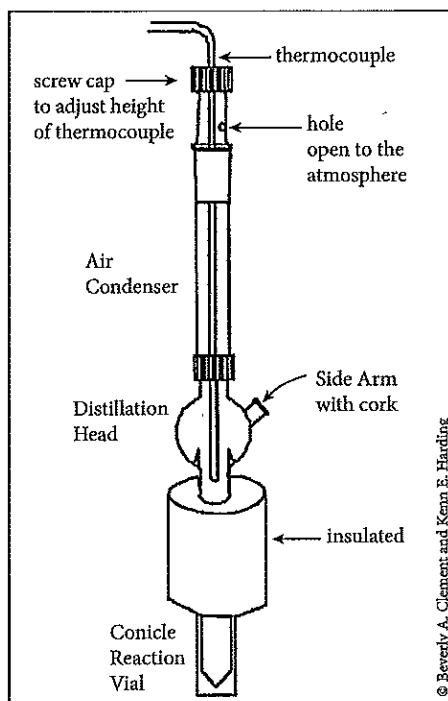
Step 5: Transfer the liquid in the flask to a conical reaction vial.

Step 6: Attach the vial to the micro-scale distillation head.

Step 7: Distill the tertiary alcohol product using the heating mantle.

- Depending on your starting materials, your product may be expected to boil somewhere between 122°C and 215°C. Refer to **Table 1** on the next page.
- Discard the initial distillate that collects in the collection well.

continued



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- Periodically transfer the product from the collection well of the distillation head with a Pasteur pipette into a pre-weighed, capped vial.
- At some point when you have already collected some product, and at a constant boiling point, collect a drop of the product from the collection well with a Pasteur pipette into a separate vial to later obtain an IR spectrum.
- Distill until most of the liquid has distilled or until temperature starts to drop.
- DO NOT distill until no liquid remains!

Table 1: Boiling points for possible products

Compound Name	b.p. (°C)	Compound Name	b.p. (°C)
2-methyl-2-pentanol	122	3-methyl-3-heptanol	163
2-methyl-2-hexanol	142	4-methyl-4-octanol	183
3-methyl-3-hexanol	142	3-ethyl-3-heptanol	184
3-ethyl-3-hexanol	160	3-methyl-3-octanol	185
4-methyl-4-heptanol	161	3-ethyl-3-octanol	199
2-methyl-2-heptanol	162	4-methyl-4-nonanol	212

Step 8: Turn off heating mantle and remove it from the distillation set-up.

Step 9: Obtain an IR spectrum of the product while allowing the glassware to cool.

- Identify your product by comparing your spectrum to the spectra of the products in Table 1.
- After identifying your product, determine your starting alkyl bromide and ketone.

Caution!

DO NOT put the hot conical vial into water. Thermal shock will cause the vial to crack instantly.

Step 10: Weigh the vial to determine the yield.

- Calculate the percent yield of your product.

Week 2 Clean-Up Procedures

- Rinse glassware with acetone in the acetone wash bottle in the sink.
- Dispose of THF in the labeled container in one of the main hoods at the back of the lab room.

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- Dispose of the magnesium sulfate used to dry the extract in the appropriate waste container hood.
- Aqueous washes may be disposed of in the sink.

Discussion Items for the In-Lab Notebook

- Boiling point of alcohol product
- Identity of alcohol product (attach your IR spectrum)
- Theoretical yield
- Product yield
- Percent yield

Discussion Items for the Post-Lab Report

- Which starting alkyl halide and ketone would give the alcohol product you obtained?
- Write a Grignard synthesis scheme using different starting materials to obtain your same product.

Case 10-2: Job Instructions

These procedures were written by an employee who had just completed several years as a runner/floater at an animal hospital. Before she left, she decided to write a set of instructions for the next person who would take her place. Job procedures have become increasingly important in many organizations. These help the organization in writing job descriptions, training new employees, and evaluating employee performance.

CASE DOCUMENT 10-2

How to Be a Runner at Kingsland Animal Clinic

Congratulations! You have the job! You will now need to learn how to perform your job. These instructions will tell you what you will need to do here at the clinic. Keep these instructions close by until you know all the tasks you will need to perform.

Your First Day

You will be training most of your first day. Read these instructions before you arrive, then observe, listen, and practice. Make notes on the instructions to help you remember what to do.

As you learn the job, you will see other ways that you can help. Always ask questions. The better all employees work as a team, the better service and care the clinic can provide. Every person employed at the clinic has an important job. The runner's tasks, as you will see, prevent gaps in service and care and improve efficiency.

What the Runner/Floater Does

As the runner/floater, you will experience all aspects of a working veterinary clinic: reception, technical, kennel cleaning, pharmacy, and any other job that the clinic does. If someone needs your help, respond immediately. The runner/floater position exists to make everyone's job easier and more efficient.

IMPORTANT: Realize that other employees do not always know when they need help, or they do not want to bother you by asking for it. Learn to know when someone needs you. Take initiative. If someone is having trouble, offer to help. Communicate openly with the receptionists, technicians, and vets to find where you are needed at any given time. Don't be afraid to ask questions about where and how you can help.

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CAUTION: Since you will work with animals, remember that sick animals are often frightened. Remain alert and aware of your surroundings. Treat all animals with caution. Just because an owner tells you that her chihuahua is a "sweetie" doesn't mean that it won't try to bite you when you take its temperature.

Your Responsibilities—Discussed in These Instructions

- Knowing the Phone Room
- Helping the Receptionists
- Helping the Technicians
- Completing End of Day Duties
- Working on Other Tasks When You Have Time

The Phone Room

If you are assigned to the phone room, when one of the receptionists is at lunch, or if no one is in the phone room, **answer the phone**. A receptionist will teach you to work the phone.

- Greet callers with "This is [insert your name] at Kingsland Animal Clinic. How can I help you?"
- Always have a notepad ready to write down owner's name, animal's name, and any other important information.

Most common calls you will receive:

1. **Make an Appointment.** Use the Cornerstone program on the computer in the phone room to make an appointment. A receptionist will show you how to work Cornerstone. Practice using the program so that you don't make mistakes.
2. **Make a Boarding Reservation.** The boarding book should always remain in the phone room, on one of the desks. Write the owner's last name under the requested dates **in pencil**. If the reservation changes, you can easily erase.
3. **Ask about the Status of a Pet.** If the owner dropped off a pet for any reason, the owner may call to find out how the animal is doing. Put the owner on hold; run to the back; and ask the techs, "Does anyone know if [pet name] is ready to go?" or "[pet name]'s owner wants to know how he or she is doing. Does anyone know?" When you find out, run to the phone and relay the information.
4. **Ask about Prices.** The price book, like the boarding book, is located in the phone room. This book lists prices for common procedures, surgeries, details, etc. You may put the client on hold for a moment as you find the information.

continued

5. **Ask a Pet Health Question.** Transfer the caller to the phone in the tech station. Put the caller on hold and first make sure a tech can take the call, then transfer the caller. If no tech is free, get the caller's information and tell them a tech will call shortly. Pull the file, and put it in the Drop Off box with a note attached. Describe question clearly.
6. **Refill Medication.** Simply transfer the caller to the pharmacy station. Check first to make sure someone is available in pharmacy.
7. **Other.** Many calls do not fit into these categories. If you do not know the answer, put the caller on hold and find someone who does know the answer. Any employee will be glad to answer your questions.

NOTE: Make sure to "roll the phones over" when the clinic closes so that no more calls come in.

Helping the Receptionists

The receptionists should never leave the front desk vacant. Your job: make sure they do not leave unless someone else takes their places. You must constantly run between the reception area and the back of the clinic to relay information from the receptionists to the vets and to retrieve animals. This requirement describes the "runner" part of your job. You will keep the receptionists from leaving by doing the following tasks for them:

- When a client drops off a pet, take the pet into the back.
 1. Make a cage card for the animal. Include name, date, and reason for the visit.
 2. Write the animal's name on one of our temporary collars.
 3. Put these in your pocket.
 4. Walk to the front and gently take the animal from the owner. Leave the dog's collar with the owner. CAUTION: Be gentle in dealing with an unknown animal.
 5. Take dogs to the kennel in the back. Take cats to the cat room. Take exotics to the exotics room.
 6. Put the temporary collar on the animal, and tape the cage card on the cage.
 7. Take the animal's folder, which the receptionist will have given you, and place it in the Drop Off box.
- When a pet is ready to go home, bring it up to its owner.
 1. Ask the receptionist which animal needs to go home.
 2. Ask the owner for leash and collar or carrier.

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3. Find the pet.

4. Take it to its owner.

- When a client arrives for an appointment, the receptionist will prepare the file and hand it to you. Take it to the back and place it in the appropriate appointment slot. Tell the techs that Dr. [vet's name]'s appointment has arrived or that a walk-in has arrived.
- If a receptionist needs to leave the front for some reason, ask if you can help so that he or she doesn't have to leave. You can help when bathroom breaks are needed.

Helping the Technicians

If the phone room is quiet and the receptionists seem to have things under control, you can head to the treatment area. Here you will find the techs, who can almost always use a hand. How you can help:

1. Restraining an animal. Usually, two people are needed to deal with an animal. If you see a tech trying to take an animal's temperature or trim nails with no help, offer to hold the animal. Special ways are needed to restrain the animal for a blood draw: the tech will be glad to show you.
2. Taking temperatures. You can help hold the animal, particularly the head if the animal decides to bite.
3. Trimming nails. If you do not know how to trim nails by looking for "the quick," ask a tech to teach you.
4. Weighing an animal.
5. Drawing blood. If you do not know how and would like to learn, the techs will teach you. This process requires two people.
6. Fecal tests. A tech will teach you how to attain a fecal sample and set up the fecal test.
7. Giving vaccines. Once you learn how to use needles, the techs and vets will let you draw and administer some vaccines, such as *Bordetella* and leptospirosis vaccines. You can also learn to give Adequan shots.
8. Pharmacy work. Once you have worked at the clinic for several months, you will be allowed to fill prescriptions. The tech will print a label, which will tell you how many and what kinds of pills to place in the pill bottles. Apply the label to the bottle and initial it.
9. Anything else the tech asks you to do. NOTE: You will not be asked or allowed to perform any task for which you have not been trained. Take every opportunity to learn.

continued

End of the Day Duties

End of day clean-up duties depend on how busy the clinic has been that day. Whenever business begins to slow down toward closing time, you can begin working on the following tasks:

- **Take out the trash.** Try to get someone to help you carry the bag to the dumpster.
 1. Every trash can in the clinic must be emptied at the end of EVERY DAY.
 2. Retrieve one large black trash bag from under the sink in the cat room.
 3. Begin dumping the contents of every small trash can into the large bag. You do not need to change the trash bags in the smaller trash cans unless they are particularly dirty.
 4. Make sure you get every trash can—the ICU, employee lounge, and every treatment room. The cans in the cat room and the kennel will be cleaned by the kennel kids.
 5. Take the now full trash bag out to the dumpster.
 6. Replace any of the small bags that you had to throw away.
- **Vacuum**
 1. The vacuum is located in the freezer room, off the exotics room.
 2. Insert one end of the vacuum into the various outlets in the hallway.
 3. Begin vacuuming the entire clinic (aside from the cat room and kennel).

Other Tasks to Complete When You Have Time

When you have time, such as a lull in activity or no appointments scheduled, other tasks must be completed.

1. **Filing.** The receptionists will show and help you with filing.
2. Restock the boxes of flea/tick/heartworm prevention on display in the reception area. (New boxes are stored in the stockroom. One of the vets must unlock that room for you.)
3. Restock the shelves of shampoos, ear cleaners, collars, ointments, etc. Most of these items are stored in the pharmacy area.
4. Clean the lobby. If at any point during the day the lobby looks dirty, sweep it. The broom is stored in the filing hall.
5. Clean up any messes the techs have made in the back (blood, nail trimmings, animal hair, etc.) by spraying the treatment tables with Trifectant, found in spray bottles.

6. Clean the treatment tables.
7. Rinse the treatment tables.
8. Clean the reception area.
 - Replenish the reception area.
 - Rinse the reception area.
 - Replenish the reception area.
 - Spray the reception area.
 - Wash the reception area.
 - Linen the reception area.
 - Go on the reception area.
9. Make sure the reception area is clean, and
10. Check the reception area for walking.

Final Words—

6. Clean thermometers with alcohol swabs from the metal tins on the treatment tables.
7. Rinse the fecal loops and cups in the sink and place them in the Trifectant bath along with the urine collection trays.
8. Clean any dirty cages in ICU, isolation, or the cat room. For each cage,
 - Remove the mat from the cage and take it to the nearest bathtub.
 - Rinse off the mat and spray it with Trifectant. Leave it while you complete the next tasks.
 - Remove the newspaper from the cage and throw it away.
 - Spray the cage down with Trifectant.
 - Wipe the Trifectant with paper towels.
 - Line the cage with fresh newspaper found in every room of the clinic.
 - Go back to the mat—rinse it, dry it, and put it back in the cage on top of the newspaper.
9. Make sure all the animals have water, unless they will have surgery that day, and that all cats have litter boxes.
10. Check to see if the kennel kids need help cleaning cages, feeding, or walking dogs in the kennel.

Final Words—If you don't understand, always ask!

Case 10-3: Instructional Letter

Jonathan Varner, president of a professional organization, writes the incoming vice president to explain how elections for new officers should be conducted. The letter can be used as a reference by Dr. Dawson as she plans and executes the elections (see Case Document 10-3).

CASE DOCUMENT 10-3

May 12, 2014

Dr. Gabrielle Dawson
Department of Geography
San Diego State University
San Diego, CA

Dear Gabrielle,

As we discussed at AAGG in April, the VP of AAGG is responsible for conducting elections. From my experience in conducting the last election, I recommend that you begin this process immediately. The more persistent you are, the more efficient the process. Do as much as you can before faculty leave campus for the summer.

Timetable

In general, the election process begins during the late spring-early summer. Ballots are developed and mailed by mid-September. Ballots should be returned and tabulated by mid-January and the results reported to the vice president. As vice president, you will inform me and then inform each person whose name appeared on the ballot about the results of the election.

Election Procedures

The following procedures should help you conduct the elections. Ultimately, when the AAGG procedures manual is complete, these will appear in the manual. Until that time, however, each president will be responsible for informing the vice president of election procedures.

Materials Needed

- Election File—contains ballots of previous elections and names of nominating committees
- AAGG Directory—names, phone numbers, and e-mail addresses of all members

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May 12, 2014

- Annual Meeting Agendas—protocols for announcing newly elected officers

Step 1: Creating a Nominating Committee

1. At the annual meeting in April, the president asks the general membership to consider individuals who should be asked to run for the offices of vice president and member-at-large. Members are invited to send the names of individuals to the president.
2. The president also organizes a nominating committee. At AAGG, I asked three individuals—Steve Jones, Pam Souther, and Casey Morgan—to serve as the nominating committee. All agreed to serve. Casey Morgan agreed to chair the committee.

Note: Former officers of the organization are good choices for the nominating committee. They know what is involved in executing the duties of each office. I attempted to select a nominating committee of individuals from different regions in the United States. With that point in mind, you could select four members of the committee, but more than four makes the committee unwieldy.

3. The nominating committee must recommend a minimum of six nominees for three member-at-large positions. Eight nominees will be fine, too. Three vice presidential nominees should be chosen. The chair of the nominating committee should ask each candidate for a one-paragraph (150-word) biographical profile.

Step 2: Selecting Nominees for Offices

1. In selecting candidates, you will want to consider several factors:
 - Interest in AAGG and Its Activities. Look for people who have shown interest in the organization: attendance at regional and national meetings, people who engage in conversation on the listserv, people who make solid suggestions.
 - Interest in Geography and/or Geoscience. AAGG needs individuals who are effective spokespersons for both as fields of teaching and research, i.e., individuals who are effective and prolific researchers; people who are in charge of programs; people who are regular presenters at meetings.
 - Record of Dependability. VERY IMPORTANT! Try to determine how reliable an individual is. Stay in touch with the nominating

continued

Gabrielle Dawson

-3-

May 12, 2014

committee. Once you get a list of individuals you are considering, please post the list on the Executive Committee listserv. If any of the potential nominees has a track record of nonperformance, this is the time to determine that! Many people are "all talk" but slow on performance.

Note: Choose the VP very carefully. This is the person who will succeed you as president of AAGG. Because the president and vice president have so much responsibility and because they will need to work as a team, be sure you choose someone with whom you can work and someone who will continue to strengthen the organization. AAGG has very strong individuals in its thirty-year history. Each group of officers must be committed to developing AAGG further.

Step 3: Developing the Ballot

1. Be sure to let Casey Morgan know when you want the final list of names. I would suggest that you ask for the list by the second week in September.
2. Contact each individual whose name was submitted by the nominating committee. Be sure that each person has agreed to be nominated and understands what is involved.
3. Develop the ballot and a letter that will be sent along with the ballot.
4. Send the ballot and the letter to Dan Jameson. He will make copies. Try to get this material sent to Dan no later than the third week in September.

Step 4: Monitoring the Election Process

1. Once he has the materials, Dan will duplicate and mail the ballots to the membership. He knows the procedure: each ballot has a self-addressed, stamped return envelope, to ensure better response.
2. Dan will want all ballots returned by early January. He will count the ballots and report the results to you. As soon as you have the results, please call—rather than e-mail—each candidate and report the results.

Step 5: Preparing for the Annual Meeting

1. Plan to introduce each of the officers at the meeting. After my farewell speech, I will hand the reins of the organization to you.
2. To help prepare for the meeting, discuss your agenda as president with the incoming VP. I would also suggest that you plan an informal gathering of all the new officers BEFORE the Executive Committee meeting. At the EC, as you are aware, we always have several hours of business to conduct. Meeting with the incoming officers will give you planning time with them.

Gabrielle Dawson

3. Be prepared to prepare goals for the large show fifteen minutes

Final Thoughts

The election of individuals. The become more in to exclude individuals and/or geoscientists

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As always, if you

ONLINE INSTRUCTIONS

Online instructions : used in letters, reports will create confusion

Gabrielle Dawson

-4-

May 12, 2014

3. Be prepared to tell the general membership at the annual meeting your goals for the next two years. The newly elected VP and members-at-large should be allotted time to express their concerns. Usually we allot fifteen minutes for this segment of the annual meeting.

Final Thoughts

The election process has been developed to attempt to involve a variety of individuals. The nominating committee should seek members who want to become more involved in AAGG. In no sense does the election process seek to exclude individuals other than those who are not interested in geography and/or geoscience and the development of AAGG as an organization.

As you work with the elections, keep notes on ways that the EC can improve the election process. Then add these to the agenda for the 2010 meeting.

As always, if you have any questions, please call me.

Sincerely,

Jonathan

ONLINE INSTRUCTIONS

Online instructions need to follow the same readability considerations as those used in letters, reports, and stand-alone instructions. Otherwise, the instructions will create confusion for many users.

Case 10-4

A university explained how to download class rosters from the faculty e-mail system and insert these into an Excel spreadsheet (see Case Document 10-4A). Note how the application of principles discussed in this chapter improves the instructions (see Case Document 10-4B). The revision supplanted the original, which diminished the number of calls to the computing help desk from faculty who were confused by the original instructions.

CASE DOCUMENT 10-4A

Original Online Instructions

How exactly do I get my roster from NEO, put it into an Excel spreadsheet, and make a comma separated value (.csv) file for uploading?

1. Log into your neo account, go to the **Class Roster** tool, and go to the appropriate semester. Click on **Download Class Roster**, and you'll see your class roster as a .csv file. Copy and paste this file into a blank Excel spreadsheet and save. There's no way right now to actually download it.
2. To get rid of the quotes, go to **Edit**, then **Replace**. You want to find every " and replace it with a blank, so in the **Find what** box type " and put nothing into the **Replace with** box. Click on **Replace All**, and the quotes disappear.
3. Under **File**, select **Save As** option, and save the file as **Formatted Text (space delimited)(.prn)**. Choose **OK** and **Yes** to the questions that pop up. Close the file, and answer **no** to the popup box. You don't want to save the changes.
4. Open the .prn file. The **Text Import Wizard** will pop up. Leave the file type as **delimited** and click **next**. Change the delimiter from **tab** to **comma** and click **next**. Holding the ctrl key down, click on the last four columns, and choose **Do not import column (skip)**, then choose **Finish**.
5. Under **File**, select the **Save As** option. Change the file name to something that does not include the .prn, and save the file as **CSV (Comma delimited) (.csv)**. Always answer **yes** to the question, "Do you want to keep the workbook in this format?" and when you close the file, answer **no** to "Do you want to save the changes?" Voila! This is the file the administrator needs.
6. To upload your students into your course, you only need the UIN numbers as a .csv file. So just delete the name columns and any rows above your data and save. Always answer **yes** to the question, "Do you want to

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the direct

CASE DOCUMENT 10-4B

Revised Online Instructions

How to Download

1. Click on **Download** as a command.
2. Without clicking, copy the file.
3. Go back to the spreadsheet.
4. Paste the roster.

Get rid of the quotes

1. Go to **Edit** and click **Replace**.
2. In the **Find** box, type a double quote.
3. Click on **Replace All**.

Prepare to Format

1. Under **File**, click **Save As**.
2. Choose **OK** and **Yes** to the questions that pop up.
3. Close the file.
4. Open the .prn file.

Select the Correct Format

1. Leave the file type as **delimited**.
2. Change the delimiter from **tab** to **comma**.
3. Under **File**, click **Save As**.
4. Save the file as **CSV (Comma delimited)**.

With your file in the correct format, you can upload it to the course roster sheet.

keep the workbook in this format?" and when you close the file, answer **no** to "Do you want to save the changes?" Upload your file according to the directions in CPR. [top]

CASE DOCUMENT 10-4B

Revised Online Instructions

How to Download Your Roster

1. Click on **download class roster**. Note that your class roster now appears as a comma separated value (.csv) file.
2. Without closing the roster on Neo, create an Excel spreadsheet.
3. Go back to your roster. Copy the names.
4. Paste the roster into the Excel spreadsheet just as you copied it.

Get rid of the quotes (" ").

1. Go to **Edit** on the toolbar, then to **Replace**. You want to find every " " and replace it with a blank.
2. In the **Find what** box, type " ", and put nothing into the **Replace with** box.
3. Click on **Replace All**, and the quotes disappear.

Prepare to Format the Information in the Excel Spreadsheet.

1. Under **File**, select **Save As** option, and save the file as **Formatted Text (space delimited) (.prn)**.
2. Choose **OK** and then **Yes** to the questions that pop up.
3. Close the file and answer **no** to the popup box.
4. Open the .prn file. The **Text Import Wizard** will pop up.

Select the Correct Boxes on the Wizard.

1. Leave the file type as **delimited**. Then click **next**.
2. Change the delimiter from **tab** to **comma**. Then click **next**. You will see the opening rows of your roster appear in neat columns.
3. Under **File**, select the **Save As** option.
4. Save the file as an Excel file. Be sure to save with a name descriptive of the contents.

With your file in an Excel spreadsheet, you can now create a grade or attendance sheet.

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CHECKLIST FOR DEVELOPING INSTRUCTIONS/PROCEDURES

Because instructions require careful analysis of readers from many perspectives—the context in which the instructions will be read and used—following a checklist can be helpful in ensuring that you have considered critical issues needed for the instructions.

- ☐ Who are your readers? Describe them in terms of their knowledge of the subject: educational level, technical level, responsibilities in the organization.
- ☐ What do you want them to be able to do as a result of these instructions/procedures?
- ☐ What is the situation that has led to the need for these instructions/procedures to be written?
- ☐ How will these instructions/procedures be used? Will readers need to read all of them before they begin the task? In what context will readers be using these instructions?
- ☐ What problems could readers encounter in attempting to use these instructions/procedures?
- ☐ What types of problems in safety and/or quality control do you need to emphasize? What warnings or notes will you need to include?
- ☐ What topics do you want to be sure to include/exclude?
- ☐ What format will you use: online, online to be printed, paper, manual, poster?
- ☐ Given the context in which the instructions/procedures will be read, what formatting strategies do you need to use to enhance accessibility?
- ☐ What types of visuals will you need to include?
- ☐ What is the basic outline of your instructions? Does this outline meet the needs of your readers? Will it achieve your purpose?

EXERCISES

1. You are employed in a fast-food restaurant. Write instructions for preparing fast cereals. The cereal is popular in China. Because of the population in China, how to prepare and including rough illustrations.
2. Revise a set of instructions for a new mobile device that is difficult to use, including a revision. Complete the revision.
3. Working individually, write instructions for a new mobile device to use with limited access to the internet, for checking email, for checking entertainment systems, for checking the deficiencies in the system. Complete the revision.
4. Working individually, write instructions for a new mobile device (Figure 10-1). Before writing, consider the following questions: What problems do you anticipate? How does the device work? What problems might you encounter? Assuming the device is new, how would you make it?

EXERCISES

1. You are employed by a small manufacturer of all-organic ready-to-eat breakfast cereals. The company would like to develop its sales overseas, especially in China. Because ready-to-eat cereals would be relatively new to the majority of the population in China, your package will have to include instructions on how to prepare and eat a serving of cereal. Compose step-by-step instructions, including rough illustrations, to fit on the side of the package.
2. Revise a set of instructions, from a course in your field, that you have found difficult to use, incomplete, or confusing. Submit both the original and your revision. Complete the prewriting analysis.
3. Working individually or collaboratively, find a set of instructions you have tried to use with limited success: for example, instructions for posting to a blog or wiki, for checking the security settings on your Internet browser, for operating a new mobile device, or for assembling the several components of a home entertainment system. Develop a slide presentation for your class explaining the deficiencies in the original instructions and the revisions you perceive as necessary.
4. Working individually or collaboratively, revise the document on Laser Toys (Figure 10-1). Before you begin, answer the following questions:

What problems do you find with the instructions?

How does the writer perceive the readers?

What problems might readers have with this document?

Assuming the document must be one page, what design changes would you make?

FDA Consumer Health Information
www.fda.gov/consumer

Laser Toys: Not Always Child's Play



Many a kid (and parent) who has seen Luke Skywalker battle Darth Vader with a lightsaber thinks lasers are cool.

What they may not know is this: When operated unsafely, or without certain controls, the highly-concentrated light from lasers—even those in toys—can be dangerous, causing serious eye injuries and even blindness. And not just to the person using a laser, but to anyone within range of the laser beam.

The Food and Drug Administration (FDA) is particularly concerned about this potential danger to children and those around them, and has issued a draft guidance document on the safety of toy laser products.

According to Dan Hewett, health promotion officer at FDA's Center for Devices and Radiological Health, "A beam shone directly into a person's eye can injure it in an instant, especially if the laser is a powerful one."

However, laser injuries usually don't hurt, and vision can deteriorate slowly over time. Eye injuries caused by laser light may go unnoticed, for days and even weeks, and could be permanent, he says.

Some examples of laser toys are:

- lasers mounted on toy guns that can be used for "aiming;"

- spinning tops that project laser beams while they spin;
- hand-held lasers used during play as "lightsabers;" and
- lasers intended for entertainment that create optical effects in an open room.

FDA Regulates Lasers

A laser creates a powerful, targeted beam of electromagnetic radiation that is used in many products, from music players and printers to eye-surgery tools. FDA regulates radiation-emitting electronic products, including lasers, and sets radiation-safety standards that manufacturers must meet. Hewett explains that this includes all laser products that are marketed as toys.

Toys with lasers are of particular interest to the FDA because it's often children who are injured by these products, says Hewett. He notes that because advertisers promote them as playthings, parents and kids alike may believe they're safe to use.

"For toys to be considered minimal risk, we recommend that the levels of radiation and light not exceed the limits of Class 1, which is the lowest level in regulated products," Hewett says. Lasers used for industrial and other purposes often require higher radiation levels, he explains. But in toys, those levels are unnecessary and potentially dangerous.

In recent years, Hewett says, lasers have increased markedly in power and have gone way down in price. And while adults may buy a laser pointer for use in work, kids often buy them for amusement.

"Low-cost, compact laser pointers

used to be quite low in power," Hewett says; but, in the last 10 years, many laser pointers have increased in power 10-fold and more. The fact that lasers can be dangerous may not be evident, particularly to the children who use them as toys, or to the adults who supervise them.

Tips to Keep in Mind

- Never aim or shine a laser directly at anyone, including animals. The light energy from a laser aimed into the eye can be hazardous, perhaps even more than staring directly into the sun.
- Do not aim a laser at any reflective surface.
- Remember that the startling effect of a bright beam of light can cause serious accidents when aimed at a driver in a car or otherwise negatively affect someone who is engaged in other activity (such as playing sports).
- Look for a statement that it complies with 21 CFR (the Code of Federal Regulations) Subchapter J on the label.

"If you buy a laser toy or pointer and you don't see this information in the labeling, it's best not to make any assumptions about its safety," Hewett says. **FDA**

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FIGURE 10-1 Document for Exercise 4