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INTRODUCTION

The materials in this manual are offered so that you, the teacher, can adapt this text to your needs. Included are teaching suggestions, lecture presentation options, lecture outlines, lecture and exercise audioscripts, and answers to exercises.

Lecture Presentation
*Learn to Listen–Listen to Learn 1* allows teachers the option of delivering lectures themselves, using prerecorded lectures from the companion audioprogram, or both. Teachers who deliver lectures live can use the lecture outlines provided in this manual, which provide the core information of the lecture. It is up to the teacher, as the lecturer, to paraphrase, summarize, repeat, digress, etc., in order to create a realistic-sounding lecture. Audioscripts of the lectures from the audio program are also included. In order to best express the natural speech pattern of the lecturer, these scripts use ellipses to indicate pauses. Please note, however, that these scripts should not be read aloud to the class, as this would create very artificial, awkward lectures. Rather, these audioscripts are included as a resource.

Activities for Vocabulary Development
*Learn to Listen–Listen to Learn 1* offers a variety of opportunities for vocabulary development. Lectures have a section on “Vocabulary Related to the Topic.” During the Pre-lecture discussions, the teacher can present relevant vocabulary in context as needed by paraphrasing students’ ideas. Exercises in “Defining Vocabulary,” “Using Vocabulary,” and “Retaining Vocabulary” provide additional practice. “Defining Vocabulary” exercises typically require students to listen to words in context and guess their meanings. Audioscripts for these exercises are included in this manual. Teachers, of course, are encouraged to paraphrase or add information as necessary. In addition, teachers can ask students to try to recall how each word was used in the lecture. “Using Vocabulary” exercises provide further practice in recognizing and using relevant vocabulary by intertwining vocabulary development and listening comprehension. In “Retaining Vocabulary” exercises, a single vocabulary acquisition or retention strategy is highlighted and practiced. Finally, many lectures are followed by an Academic Word List exercise, in which students specifically focus on words that are of high frequency in academic contexts. (Throughout the text, Academic Word List vocabulary is marked with an asterisk.)

Multiskill Development through Topic Exploration and Discussion
*Learn to Listen–Listen to Learn 1* focuses on listening and note-taking. However, as students learn and practice these skills, they can improve their speaking and reading skills through pre- and post-lecture discussions. Many of these sections involve reading, critiquing, and responding to related newspaper, magazine, and journal articles. Lastly, a “Beyond the Lecture” extension activity after lectures provides practice in numerous academic and creative endeavors such as formal letter writing, creation of brochures, essay writing, story telling, web research, and class presentations.

Listening Beyond the Lecture
In addition to traditional professor-led lectures, *Learn to Listen–Listen to Learn 1* features academic listening situations that are not “uni-directional”: that is, with only the lecturer speaking. Occasionally, the lectures are interrupted and incorporate student questions. In addition, lectures are followed with “Other Voices Follow-up” activities that focus on different types of interaction that take place in and around university lectures. These include office visits (for purposes such as career guidance, discussion of difficulties, inquiries about grades, sharing of information), end-of-class questions, student-to-student discussions in and out of class, and media presentations (such as an astronaut audio clip).

The TOEFL® iBT
Because so much of *Learn to Listen–Listen to Learn 1* is based on examination of lecture organization and comprehension of the lecturer’s goals and meaning, it is excellent preparation for the TOEFL® iBT, without being specifically a TOEFL® preparation book. Many of the questions in the “Using Your Notes” and “Replay Questions” sections are stylistically similar to those found on the TOEFL® iBT test.

Feedback on Notes
You can use the *Note-Taking Feedback Form* on pages 7–8 of the student book (or an adaptation) when evaluating your students’ notes. For detailed information about what criteria to look for when evaluating notes, see *Eight DOs and DON'Ts for Improving Lecture Comprehension and Note-Taking* on page 40 of the student book.
Listening Selections and Text


UNIT 1 STARTING OUT: PRE-COURSEWORK EVALUATION

Unit Summary: In this unit, teachers evaluate students’ listening comprehension and note-taking abilities. Students reflect on their own strengths and weaknesses in listening and note-taking. The lecture content in the unit provides information about helpful study tips.

Lecture 1: Study Tips

Lecture Outline: Part 1, page 3
Use this outline if you’d like to deliver the lecture yourself.

INTRODUCTION: How can you learn best? How can you study best? What can brain research tell you about the best ways to study and remember? I’m going to focus on one technique: recitation.

I. Recitation involves saying ideas aloud in your own words.
   A. We’ve used this in the past: the multiplication tables, spelling words; still a powerful tool.

   B. Recitation works for several reasons:
      1. When you know you are going to recite something in your own words, you pay more attention. It forces you to create an intention to remember.
      2. You get immediate feedback. If you are able to explain something in your own words, you are more likely to understand it.
      3. When you hear or read something and then recite it, you have used an entirely different part of the brain.

   C. What brain research says about recitation:
      1. When we use more senses, we strengthen the neural connections and neural traces.
      2. The brain needs feedback so that it can make sure it’s on the right course. The more feedback we get, the faster and more accurate our learning is.

   D. Some tips for recitation:
      1. When you finish reading a paragraph in your reading assignment, stop and recite. If you can explain something out loud, you are learning it. (Recite even if by yourself!)
      2. Find a partner, ask each other questions, and answer out loud.
      3. Create tools to help you recite and remember: flash cards, notes, index cards.

CONCLUSION: Try it today!

Lecture Audioscript: Part 1, page 3
This audioscript shows one speaker’s delivery of the lecture, as recorded in the audio program. Use it as a resource.

OK, you’re all here to learn . . . You’ve all been successful at least this far . . . and what I’d like to talk about are some ways that brain research is giving us some insights into how you might learn better . . . how you might improve your memory for learning . . . how you might increase your ability to learn . . . and brain research says a lot and I can’t possibly in this very short time go over everything but I want to focus on one technique and that’s called “recitation” . . . saying things out loud . . . and I’m going to talk about how this technique of recitation is consistent with brain research and the research that shows how memories are made and deepened . . . and of course that’s how we learn . . .

So recitation . . . what is recitation? . . . the idea of saying your ideas aloud . . . in your own words . . . repeating them in your own words . . . and what it does is it gives you . . . it . . . it gives you immediate feedback as to whether you’ve “gotten it” or not . . . now of course many of us have used recitation in the past . . . we’ve practiced multiplication tables . . . or spelling words . . . facts like capital cities . . . over and over and over . . . repeating them . . . to our parents . . . ourselves . . . and sometimes I think in college we forget how much power . . . really powerful it can be to do that . . .

Now recitation works for several reasons . . . first . . . when you know you’re going to have to say something out loud in your own words, you of course pay more attention . . . you’re thinking, “oh . . . I’m going to have to tell somebody this” . . . so it’s a big . . . impetus for paying attention . . . it focuses you . . . it forces you to . . . to really make a serious effort to attend . . . not just to sit back and listen but you’re actually making an effort to attend . . . to focus . . . you have more of an intention to remember . . . and second you’re going to get immediate feedback if you recite something to somebody else out loud . . . and it actually happens even if you do it to yourself . . . you can learn . . . you can know if you’re able to explain it in your own words . . . you know if you understand it . . . or not . . . and then finally another reason recitation works is that when you recite something
that you heard or read . . . you’re using different parts of your brain . . . so instead of just using the parts of your brain that enable you to listen or read, you’re also using the part that enables you to verbalize . . . so recitation can really help you because it gets you to pay closer attention, it makes it clear whether you understand something or not, and it uses a different part of your brain . . .

And this all fits in with brain research . . . ’cause what brain research says is . . . that the more senses we use . . . senses, listening, feeling, smelling, tasting . . . the stronger the neural connections . . . the more senses that we use, the stronger the neural trace . . . the neural traces . . . those patterns . . . those pathways . . . those impressions that are made on the brain . . . so by reading, speaking, listening, writing, reusing . . . again the more senses we use, the greater the impression on the brain . . . and by saying something out loud or using a different sense than previously . . . we’re deepening those neural traces . . . and then another thing that brain research says is that the more feedback we get, the faster and the more accurate our learning can be . . . so listening is not just about information going in but it’s also about seeing if we’re correct . . . seeing if we got it . . . seeing if it makes sense to others or even to ourselves . . .

OK, so here are some tips for recitation . . . the first one . . . and we’ve talked about this before . . . when you finish reading . . . for example a paragraph in a reading assignment . . . what should you do?

(Unclear mumbling among students, but can hear one say “Reread it.”)

Not just reread it but tell someone . . . about it . . . try to speak about it . . . put it in your own words . . . even if you’re by yourself . . . say it out loud . . . to hear . . . to see whether you understand it or not . . . can you explain it or not . . . you don’t even need a partner for that . . . and you’ll see that if you understood what you read, you can explain it . . . another thing that you can do to practice this is to find a partner and ask each other questions and answer them out loud . . . so work with partners asking and answering questions . . . I often see students doing just that in the cafeteria . . . And the third thing to do is to make some tools to help you recite . . . you might want to create some reminders to help you remember ideas . . . to prepare you for saying things out loud . . . index cards . . . flash cards . . . note cards . . . all this will help you remember more and remember more accurately . . . and retain it for longer . . .

So I recommend trying this . . . it’s a great tool for remembering vocabulary . . . for practicing reading . . . there’s a lot more that we can get from brain research about how to study, how to remember . . . But I hope this gives you a little bit of an idea about one technique that you might use to strengthen your own or to deepen your own learning and memory . . . in fact . . . you might want to see if you can apply some of those concepts right now . . . with this particular lesson . . . try it.

Activity 1: Listening and Note-Taking (Part 1), page 3
The following is an example of student notes for Lecture 1, Part 1.

Way to learn better? RECITATION: saying ideas aloud in your own words

Used in past: multipic. tables, spelling: powerful

Why works?

1. if know have to recite sth. → pay ↑ attention.
2. u get immed. feedback. u know if can explain
3. u use diff. part of brain to speak (vs. hear or read)

Brain Research:

• ↑ senses we use, ↑ neural connections/trace.
• ↑ feedback we get . . . faster and ↑ accurate learning.

Study tips:

1. finish reading paragraph—recite (to other or self)
   u see if understand.
2. Find partner & Q & A aloud.
3. Make tools to help remember: e.g. flash cards, notes . . .

Lecture Outline: Part 2, page 4
Use this outline if you’d like to deliver the lecture yourself.

INTRODUCTION: We’re in a bad mood. How do we get out of it? We’re in a funk. How do we pick ourselves up? We’re worried about a test. How do we get over it?

1. What does the research say? I’m going to talk about some research conducted by a psychologist and professor named Robert Thayer. He wanted to see what works in effecting mood change. What doesn’t work? Do some things work better than others? He did a number of experiments.
A. First experiment: Goal: Does a brisk 10 minute walk outside change mood and energy?
   1. A group of college students sat for a few minutes and rated their feelings of energy and tension using a short checklist.
   2. They then walked at a moderately fast pace for 10 minutes around the campus.
   3. When they returned and sat down, within 5 minutes, they completed the checklist again.
   4. Results: people felt more energetic and less tired following the walk.

B. Second experiment: Goal: Can people get the same energy boost by walking on a treadmill—is the boost caused by the act of walking or the act of being outside?
   1. Did same experiment with same participants but this time instead of a walk outside for 10 minutes, participants walked on a treadmill in a bare-walled room.
   2. Results: Energizing effect held true.

C. Third experiment: Goal: How long would this energized mood last?
   1. During a 3-week period, people walked on a number of occasions.
   2. Each time, they rated their energy and tension levels, walked briskly for 10 minutes, and repeated the ratings several times during the following two hours.
   3. Results: 20 minutes after the walk, there were significant increases in energy and decreases in fatigue and tension. The effects lasted for at least an hour—impressive results when you consider that it took only 10 minutes of rapid walking to produce them. Even after 2 hours, the increased energy from walking was still present to a small degree.

D. Fourth experiment: Goal: How does walking compare to the effects of eating a sugar snack?
   1. People ate an average-sized candy bar instead of walking.
   2. Results: Immediate mood change from candy bar was similar to effect of walking: increased energy, BUT one hour after snacking, negative changes began to show: People felt more tired and a lot more tense. (The tension was gone after 2 hours.) The first reaction to sugar is enhanced energy but fatigue seems to occur half an hour to an hour later. (This might explain the tension.)

CONCLUSION: Try it. The benefits are real, and it doesn’t require investment or great physical condition. Just get out and walk.

Lecture Audioscript: Part 2, page 4
This audioscript shows one speaker’s delivery of the lecture, as recorded in the audio program. Use it as a resource.

OK, you’re in a bad mood . . . you’re tired . . . you’re anxious . . . you’re worried about a test . . . how are you going to get over it? . . . you’re feeling tired, what can you do to pick yourself up? . . . you can drink a cup of coffee . . . eat a candy bar . . . take a walk . . . take a nap . . . What’s the best thing for you to do to get energy? . . . to get focused . . . to change your mood . . . and what I want to do is talk about some research that’s been conducted to see what works best to effect this kind of mood change . . . energy change . . . do some techniques work better than others?

I’m going to talk about a couple of studies that were done . . . actually . . . more than a couple . . . I’m going to talk about four studies that were done by a psychologist and professor named Robert Thayer . . . and in those studies he was looking specifically at what seems to work for changing mood or elevating mood or increasing energy . . . and he primarily worked with students . . . what can they do to energize themselves? . . . what’s most effective? . . .

And the first thing he chose to look at . . . the first experiment . . . the focus was . . . his goal was . . . was to see . . . whether a brisk . . . 10-minute walk outside would change . . . a person’s mood and energy . . . so just 10 minutes . . . just taking a little break . . . walking outside . . . moderately quickly . . . so here’s how he set up the study . . . he had a group of college students and he had them sit down for a few minutes and he said I want you to rate your feelings right now . . . so he gave them a checklist and he had them rate their feelings . . . of energy . . . of tension . . . just a short checklist . . . what did they did next is they just walked . . . at a moderately fast pace for about 10 minutes outside . . . around the campus . . . and then when they returned . . . he had them sit down again . . . and within five minutes he had them complete the same checklist again . . . so . . . checklist . . . walk . . . checklist . . . and what he wanted to see was what their change in self-reported energy . . . in self-reported tension . . . was . . . What were his results? . . . results were that people came back . . . they were in a better mood . . . they had more energy . . . just after the 10-minute walk . . . OK, so that’s his first experiment . . .

But then he thought to himself . . . but maybe it’s the beautiful air . . . maybe it’s not the walking, maybe it’s the getting outside . . . he thought, well, what if I put the people on a treadmill instead of having them walk outside . . . What will be the difference? . . . so he did the exact same experiment . . . college students . . . sat in a room . . . filled out a checklist . . . talked about their mood . . . their energy . . . but this time instead of walking outside for 10 minutes . . . he put them in a bare-walled room on a treadmill for 10 minutes . . . they came back
Into the room... again they rated their energy level. What did he find? He found that the energizing... the mood building effect was the same. So it wasn’t the air... it was actually doing the exercise that seemed to make a difference...

So what’s the third thing he wanted to look at? Well, he thought, now how long will this energized mood last? You take a 10-minute walk... how long will the mood change last? So what he had... what he did this time is... he said let’s follow people over a three-week period... and have them walk on many occasions... so each time... again they did the same thing... they started out they rated their energy and their mood... they used a checklist... they walked briskly for 10 minutes... but this time when they came back he asked them regularly over the next couple of hours what was their mood like... what was their energy like... so he wanted to see how long did it last... how did it change... what did he find? He found that 20 minutes after the walk... there were still significant increases in energy... and decreases in fatigue and tension... so 20 minutes after coming back it still was lasting... And in fact, he found that these effects lasted for at least an hour... after their walk... which, uh, that’s really impressive considering it only took 10 minutes of rapid walking to produce them... and he even found that after two hours there was still an energizing mood-lifting effect... the increased energy from walking was still present to a small degree... pretty good payback for a 10-minute walk, I’d say...

But then he was still curious and he said OK, let’s try one more experiment... and the experiment was how about instead of walking... we just have a candy bar... and see how that works. You know quicker... tastier... how many of us have a candy bar when we need an energy boost? (chuckle) admit it... I know that’s one of my weaknesses... so what he wanted to see was how does walking compare to the effects of eating a sugar snack?... so he did the same thing as in the third experiment... He started off by having them rate their mood... but this time instead of walking, people ate an average-sized candy bar... and then over the next two hours, he asked them to rate their mood... rate their energy... multiple times... What did they find?... immediately after having the candy bar... there was increased energy... it was very similar to after the walks... the first 20 minutes were similar to after the walk... both of them showed increased energy... but what happened one hour after snacking?

(Unclear mumbling among students, but can hear one say, “They crashed?”)

Yes... that’s when the negative changes began to occur... People began to feel more tired and a lot more tense... The sugar rush and crash... OK, so unlike the third experiment where the walk resulted in continuing energy... the candy bar resulted in fatigue... people became more tense... they became tired... and after about two hours... the tension was gone... they were OK again... so again, the first reaction to sugar is enhanced energy... but fatigue seems to come about a half an hour to an hour later...

So I think there are some good suggestions for students here, too... you’re studying two hours... three hours... stop... take a break... walk outside... and if you can’t go outside... walk on a treadmill... and what should you not do?...

(A student answers, “Skip the candy!”)

Right... Don’t eat candy.

(light laughter)

Activity 2: Listening and Note-Taking (Part 2), page 4

The following is an example of student notes for Lecture 1, Part 2.

Pick up energy? How?

Research: psychol. Robert Thayer: What works in effecting mood change? What doesn’t work? Do some things work better than others?

Experiments:

1. Q: brisk 10 minute walk outside change mood & energy?
   Who? college stud.
   What? sat few min... rated their feelings of energy & tension w/ short checklist
   walked mod. fast pace 10 min. outside.
   returned and sat, w/in 5 min. did checklist again.
   Results: people felt ↑ energetic & ↓ tired following walk.

2. Q: can people get = energy boost on treadmill?
   did same experiment but w/ treadmill in bare-walled room, not outside
   Results: same energy lift

3. Q: how long energized mood last?
   Study: During 3-wk, people walked many times
Each time, rated energy & tension levels,
walked briskly 10 min.

repeated ratings several times during following 2 hrs.

Results: 20 min. after walk, ↑ energy & ↓ fatigue/tension. Effect lasted at least 1 hr. After 2 hrs., energy still present (small)

4. Q: how walking compares to eat sugar

People ate av. candy bar instead of walking.

Results: Immed. mood change--similar to effect of walking: ↑ energy

BUT

1 hr. after snack, neg. changes: ↑ tired and tense.

Tension gone after 2 hrs.

. . . WALK! (Not candy!)

Activity 3: Using Your Notes, pages 4–5

Answers:

1. Recitation: saying things out loud
2. a. When you know you are going to recite something in your own words, you pay more attention.
   b. You get immediate feedback. You really understand it if you are able to explain something in your own words.
   c. When you hear something, you have used a different part of the brain.
3. a. After reading, stop and recite. See if you can explain it out loud.
   b. Find a partner and ask each other questions and answer out loud.
   c. Create tools to help you recite and remember: flash cards, notes.
4. A psychologist and professor
5.

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Participants</th>
<th>Procedure</th>
<th>Results / Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1 How does 10-min. brisk walk outside affect mood/energy?</td>
<td>College students</td>
<td>1. Participants filled out checklist rating feelings of energy/tension 2. walked mod. fast pace 10 min. outside 3. returned &amp; w/in 5 min. did checklist again</td>
<td>people felt ↑ energetic ↓ tired following walk.</td>
</tr>
</tbody>
</table>
Activity 5: Dictation of Numbers: An Evaluation (Audioscript), page 6
Students will listen to the statements and write the numbers they hear. Read or play each item only once.

Answers:
1. You’ve probably heard about the artist Michelangelo, but did you know he was born in 1475?
2. Now here’s someone you probably haven’t heard of. She’s a writer by the name of Mary Wollstonecraft Shelley . . . an English writer . . . she wrote the novel Frankenstein . . . and she was born in 1797 . . . and died in 1851.
3. Is anyone here watching their calories? If so, you might want to know that a cup of raisins has 580 calories.
4. Better for your diet is yogurt . . . If you eat 100 grams of yogurt from partially skimmed milk, it has only 50 calories.
5. Let’s take a look at immigration to the U.S. in 2005. In that year, about 34% of immigrants coming to the U.S. were from Asia.
6. OK . . . some geography facts. The Missouri River in the U.S. is 2,533 miles long. That’s 2,533 miles long.
7. And how about mountains . . . Well, the world’s highest, Mount Everest, is 29,028 feet high. Again, 29,028 feet high.
8. How about continents . . . the least known continent perhaps . . . Antarctica . . . the total surface area of Antarctica is about 5.5 million square miles . . . Now that’s in summer . . . and that’s about twice the size of Australia.
9. OK . . . we’ve been talking about geography, but how about population? Consider India. Now its population is projected to be nearly 1.4 billion by 2025. Wow!
10. How about a city’s population? Tokyo, for example. Tokyo is projected to have 36.4 million people in the year 2025 . . . 36.4 million. Something to think about!
11. When we think about our planet, we think about geography and population, but we also might think about natural disasters. A major and devastating tsunami occurred in Aceh, Indonesia on December 26, 2004.
12. And this tsunami in Aceh was believed to have been caused by an underwater earthquake measuring 9.1 on the Richter Scale and it resulted in the deaths of over 128,000 people . . . what a tragedy.
13. In a survey taken in 2007, people were asked about what problems they considered to be very big in their country. What kinds of answers were given? Well, in India, for example, nearly 8 out of every 10 people answered “pollution.” Eight in ten.
14. In the year 2007 again, oil consumption varied greatly around the world. China consumed a little less than 1/3 of U.S. consumption while Brazil consumed about 1/10 the amount that the U.S. did.
15. Changing the subject completely. You’re an engineer. You’re building something. The length of the board required was 12 1/2 feet . . . the width was 7 3/4 inches . . . and the depth was 1/4 inch.
16. Do you know how many grams there are in a pound? Well, one pound equals 453.59 grams. One pound equals 453.59 grams.

Teacher’s Note-Taking Feedback Form, pages 7–8
Use this form to give students feedback each time they take lecture notes. Specific skills mentioned in the feedback form are detailed in Units 4 and 5 of the student book.

UNIT 2 UNDERSTANDING LECTURE DESIGN

Unit Summary: Unit 2 provides information and exercises that increase students’ awareness of how lectures are formatted, enabling them to better predict lecture content and organizational direction while listening. Transcripts of lectures are used to demonstrate discourse features that are unique to lectures.

Unit 2 teaches some basics of lecture discourse. It is not meant to be an in-depth analysis, but rather, it provides students with an overview and general understanding about the language of lectures. Basically, the student should understand the following:

• There is much repetition and paraphrase in lectures. This allows the listener time to absorb ideas and take notes. In addition, it may serve to emphasize important ideas.
• Speakers use cues to let the listener know what is happening and what will happen in the lecture. Specific cues introduce a topic, the organization that follows, or a conclusion. These cues can help students predict, plan, or get back into a lecture if they get lost.

Much of Unit 2 can be assigned for homework and then compared and discussed in class. The goal of this unit is discussion and increased awareness; therefore, different answers are acceptable as long as students can explain their choices. Avoid spending too much time on this unit; emphasize that the goal of the course and the book is listening and that this unit allows them to “see” a lecture briefly before moving into the heart of the matter, listening to lectures.
Exercise 1, page 11

Possible Answers:

<table>
<thead>
<tr>
<th>Textbook Paragraph</th>
<th>Lecture Excerpt</th>
</tr>
</thead>
<tbody>
<tr>
<td>There are fewer words. There are clear beginnings and endings to sentences. Words like “all right” and “hmm” aren’t used. The ideas are presented more succinctly. There is punctuation. The speaker stays on the topic. It is more formal.</td>
<td>There are more words. The sentences seem to go on and on. The speaker uses words like “all right” and “hmm.” There is more repetition. There is no punctuation. The speaker sometimes goes off the topic. It is more informal.</td>
</tr>
</tbody>
</table>

Exercise 2, page 15

Answers:

paraphrase; digression; paraphrase

Exercise 3, page 16

Answers:

- Written language uses punctuation to separate and relate ideas; spoken language uses a type of vocal punctuation (e.g., hesitations and intonation) to achieve the same purpose.
- Written language often indicates new ideas by beginning new paragraphs. In spoken language, lecturers use verbal and nonverbal cues to indicate the introduction of new ideas, a change of topic, the conclusion of an idea, and the intended organization. Listeners depend on these cues to follow the lecture.
- Spoken language typically has more paraphrasing, repetition, and exemplification than written language. This gives listeners more time to process important information. In addition, in spoken language, digressions are more likely because new thoughts arise while lecturers are speaking.

Exercise 4, pages 16–17

Possible Answers:

We use language to describe . . . tell about the world that we see . . . there’s a chair over there . . . there’s a person over here . . . someone is from China . . . or whatever . . . another thing that we use it for is to tell people to do something . . . please close the door . . . please open the door . . . do your homework . . . do this . . . do that . . . now we might not always say do it but we have ways of telling people to do something . . . a third way is we use language to tell people what we’re going to do . . . I’m going to tell you about language . . . I’m going to open the door . . . another way to look at language . . . is to tell about feelings . . . express what’s inside of us about the world . . . not only that there is a chair but that I don’t like that chair or I do like that chair. . . . and the fifth way or the fifth thing we use is to change the world . . . certain things that you say change the world . . . if I say you fail this course . . . that language changes the world . . . just my four words make you unhappy and hate me . . . something has changed because of my words and nothing else except those words . . . so we can change the world with language . . . now since we have all these different purposes and you probably can think of other purposes with which we want to use language to win or accomplish what we want inside . . . so it’s kind of like a game that way.
Exercise 5, pages 18–19

Answers:

a. The “players” change.
b. You’re out to win something.
c. Everybody has his or her own style.
d. You can change your style.
e. There are rules.

Exercise 6, pages 19–22

This is a discussion activity. Have students cover each section of the lecture until they are ready to read it. After each section, have the class discuss for a few minutes what content might come next and what organization students expect. Have students give reasons for their predictions. Rather than correcting students, allow them to confirm or refute their hypotheses by themselves when reading the next section. Discuss why certain hypotheses were unlikely expectations. Make sure students realize that predictions do not have to be correct, but should be likely choices.

UNIT 3 RECOGNIZING INTRODUCTIONS, CONCLUSIONS, AND DIGRESSIONS

Unit Summary: Unit 3 provides information and exercises that increase students’ awareness of lecture organization—particularly introductions, conclusions, and digressions. Students listen to authentic lecture excerpts to practice recognizing and learning from these lecture parts.

The excerpts in Unit 3 come from authentic lectures primarily given to native-speaker audiences. Very occasionally, the originals were altered by adding paraphrase, simplifying vocabulary, or omitting certain comments. However, because of the value for students of hearing real lecture language, adaptations were kept to a minimum. Because of this, the vocabulary is occasionally difficult.

Vocabulary that is essential to comprehending the lecture excerpt is glossed in the text. However, there may be other words that students don’t know. Instead of trying to teach students every word in every excerpt, help students see that it is not necessary to understand all the words in order to take notes. Encourage students to guess and create meaning from what they do understand.

Exercise 1 Audioscript, page 25–26

Example:

All over the world, the question of women’s role in society is becoming . . . or is an emotionally charged issue . . . women are questioning their previous roles and exploring new roles . . . everyone seems to have an opinion about it . . . one good thing that has come out of this is that women now feel that they have control or more control over the direction of their lives . . . but this has caused some conflict . . . in fact . . . some people are saying that there is more strain on women than ever before . . . in any case . . . at least in the United States and many other countries . . . women must now decide a major question . . . whether to work outside of the home . . . pursue a career . . . or whether to stay at home and raise a family or whether to do both . . . I must add that this is the dilemma of a lucky few women . . . here in the U.S. nowadays, the majority of working women must work outside of the home and it is no longer a luxury . . . but anyway, what I would like to focus on in this lecture are some of the factors a woman might want to take into account when deciding whether to enter the job market or not . . . a major question would be which one is emotionally and physically more beneficial . . .

1. Well, we’re not going to be talking about language, we’re not going to be talking about motor skills . . . because we already talked about that . . . what we are going to talk about here are the stages of child cognitive development . . . uh, Piaget . . .

2. Scientists are discovering things every day . . . things that are bad for you . . . twenty years ago it was smoking . . . fifteen years ago it was saccharine . . . a few years ago it was eggs . . . high cholesterol . . . caffeine . . . and we all get nervous when we hear these things but usually don’t change our habits that much . . . a time, though, when people are concerned about what they eat and what they put in their body is usually when a woman is pregnant because not only at that time do the drugs or the food affect her but they also affect the fetus . . . what I’d like to tell you about is a recent study that was done concerning the effect of the mother’s eating habits on the fetus . . . in particular, the effect of alcohol on the fetus . . .

3. Now I’d like to talk about ecosystem structure because ecosystems have a very consistent structure irrespective of which ecosystem you are dealing with . . . they all have the same basic structure . . . you have first of all . . .

4. I’m going to be talking about marriage and divorce trends ranging over a period of time . . . I know people . . . especially non-Americans . . . think that in the U.S., people get married easily and get divorced easily . . . people get married five times . . . divorced five times . . . but is this true? Has it always been the same? . . . what I’d like
to do is show you a little about how the marriage trends have changed over the years and I’ll give you some statistics dating back to 1900 and going all the way up to 1984 . . . OK . . .

5. So what is the question that’s going to guide this . . . this class? What I call the question of questions . . . also the title of my book . . . how can we help ourselves and others—individuals, communities and societies—become happier . . . this class is very much about the individual . . . but a community is a collection of individuals . . . how can we make others happy? . . . and society is a collection of communities . . . so how can we make society as a whole happy? . . . and we’ll get a lot of tools to do that in this class . . .

Exercise 1, pages 25–26

Answers:
1. c  2. c  3. a  4. b  5. d

Exercise 2 Audioscript, pages 27–28

Example:

OK . . . so remember . . . the problem is not in the stressful experiences themselves . . . we all experience stress and stressful events . . . the problem is in one’s reaction to these experiences . . . and each of us has our own limits for stress . . . our own ways of coping with stress . . . our own way of balancing the cost and benefits of stress . . . stress can be positive for some . . . more positive for others . . . negative for some . . . etcetera . . . perhaps your strategies for dealing with stress were mentioned in this lecture . . . and perhaps some of you have your own ways that you’d like to share with the class . . . so, uh, why don’t we open the floor to comments . . . suggestions . . . questions from you before we go on.

1. OK, that completes Section 2.4 of your book . . . now we’re coming to Section 2.5 . . . oh, what fun!

2. All right, so we talked about personal change and we’ll talk much more about it . . . but what about changing the world? Can we change the world? . . . because there are studies that question that . . .

3. OK . . . so this was just a brief introduction to the different cacti that can be found in southern California . . . And as I said . . . the deserts may on first glance look lifeless . . . but a closer look shows that life is very special and diverse there . . .

4. So, what I think I’ve tried to argue here is that both for humans—in the work that other people have done—and for animals, we really do see effects of experience on the brain . . . We saw especially in the case of the human studies, the importance of physical activity as you grow older . . . And so bottom line, both mental and physical activity are ways of using your brain and as I said at the outset, use it or lose it is a rule for your brain.

5. OK . . . so you can see that these eight principles have helped Amnesty International to survive for nearly 50 years . . . to grow to a membership of over 2.2 million . . . and to gain very, very high international respect . . . quite an achievement.

Exercise 2, pages 27–28

Answers:
1. Section 2.4; Section 2.5  2. personal change; changing the world  3. b  4. a, b, d  5. b

Exercise 3 Audioscript, page 30

1. This theory agrees with the idea that man in fact did come from some kind of chimpanzee . . . some kind of a monkey . . . but that there was a long . . . something like 12 million years of aquatic evolution . . . the idea that men and women were in the water . . . and the suggestion of this theory is not that he was a deep-sea creature not like a . . . a shark or a deep-sea fish . . . but rather a seashore creature . . . a creature of the seashore that lived on the beach and found his food in the water diving for his food and living a great deal of time in the water along the shore . . . so . . . if you go down to the beach on any Sunday and take a look at that crowded beach with people all around the beach and then some of them playing and swimming in the water, you’ll have a very accurate scene of . . . what perhaps this theory suggested millions and millions of years ago . . . the only thing wrong would be the bikini bathing suit which I don’t think existed then . . .

2. Now why should water have such a moderating effect on climate? . . . the answer is because of its physical properties and there are two particularly that you need to know about . . . the specific heat (writing on board) is the amount of heat it takes to raise the temperature of one gram of water by one degree Celsius . . . this is the calorie . . . now don’t confuse this with the calorie of the calorie counter . . . the calorie of the calorie counter is a bigger unit . . . and just as the meter and the kilometer are related in this way . . . the kilometer is 1,000 meters . . . the calorie of the calorie counter is in fact a thousand of the little calories I’ve just been talking about . . . and I know you’d never be able to sell a can of diet soda if you advertised it as containing 1,000 calories . . . which in
fact is scientifically correct . . . the food calories should be spelled with a capital C or kilocalories should be used in its place . . . the other two heat factors that need to be considered are the two latent (writing on board) heats . . . these are the amount of heat energy needed to convert solid water . . . that’s ice . . . to liquid . . . on the one hand . . . and to convert the liquid water to steam on the other . . . without raising temperature . . . just simply convert it from solid to liquid to gas . . . and all of those three . . . the specific heat and the two latent heats . . . for water . . . are higher than for any other fluid . . .

3. People who’ve never been to the desert often assume that it’s a place where nothing can survive . . . but this is wrong . . . in fact, there are numerous plant and animal species which have adapted to life in the desert . . . And I’m going to talk about one of those plant species . . . Cacti . . . or in the singular . . . cactus . . . While I’m talking you may want to glance at the pictures in your handout . . . by the way, my son took those pictures last year in Death Valley . . . it was an unbelievable year for plant growth . . . Just the right amount of rainfall . . . he got to see some cacti that I have never personally seen . . . I’m sorry I wasn’t there . . .

4. OK . . . When you’re talking about the stock market, we have two terms that are relevant . . . a bear market . . . and that’s a market in which the prices of securities are falling . . . or expected to fall . . . And the opposite . . . a bull market . . . where the prices of securities are rising . . . or expected to rise . . . and you might even hear analysts describing themselves as bullish on a particular stock . . . meaning that they’re optimistic . . . and bearish, of course, would mean (Two loud sneezes from the classroom) . . . oh . . . bless you . . . bless you . . . lot of colds going around . . . in fact, that reminds me . . . I’m supposed to make an announcement that the health center is offering flu shots starting next Monday . . . it’s a great deal . . . cheap . . . fast . . . painless . . . thanks for reminding me . . . (Student calls out: “But does it work?”)

It has for me . . . not every year but most of the time. I’m a believer in them . . . But you never know . . . It’s a year-by-year thing . . . Anyway, where was I?

5. . . . And let’s move on to the next one here and talk about Kohlberg . . . you’re going to get so sick of ages and stages today . . . Kohlberg’s moral development . . . Kohlberg’s moral development . . . what does “moral development” mean anyway? . . . it means what’s the reasoning behind why you choose to do something or why you choose not to do something? Kohlberg . . . it’s the reasoning behind why you chose to do something or why you chose not to do something . . . which absolutely makes no sense until we get into it here you know . . . I’m going to ask you two questions as we go through all of these stages and it’ll make it come alive for you . . . “why are you in college?” . . . you know what . . . a lot of your friends are sleeping still and “why are you taking” . . . come on . . . Friday morning . . . nobody . . . nobody . . . does anything on Fridays . . . I wouldn’t be here if I wasn’t getting paid for it . . . nah . . . you guys . . . but the thing is that, um . . . come on! . . . look at this campus here . . . there’s nobody on this campus here except hardcore . . . hardcore . . . whatever you are . . . (laughter) academicians . . . I mean, no . . . you know why I like to teach on Fridays . . . ‘cause serious students . . . only serious students . . . will take Friday classes . . . and come to class . . . only serious ones . . . so anyway I’m going to be asking those questions . . . I’m going to see where the answer lies here . . . so what’s the reason behind why you’re a college student and what’s the reason why you’re taking Friday morning classes . . . OK, let’s talk about it . . . we’re going to go through six different stages here . . . we’re going from the least sophisticated to the most sophisticated.

Exercise 3, page 30
Answers:
1. information about bikinis on the beach (no) 2. information about calories of diet soda (not necessary but maybe) 3. information about her son taking the pictures in Death Valley, it being a great year for seeing cactus, even some she’d never seen (no) 4. information about flu shot availability at the health center and the effectiveness of the shots (no—or just the reminder about availability) 5. information about why the lecturer likes to teach on Fridays (no).

UNIT 4 THE BASICS OF NOTE-TAKING

Unit Summary: Unit 4 introduces and provides practice exercises for the basics of note-taking: choosing key words to note, judging the relative importance of information, and visually representing the relationship between pieces of information. The unit ends with eight “DOs and DON’Ts” for successful note-taking.

Exercise 1, page 35
Have three students take notes at the board while others take notes from their seats. Read or play each excerpt once for listening and a second time for note-taking. Use your judgment as to the need to reread or replay the excerpt. After each exercise, discuss and compare the different note-taking examples on the board. Point out where symbols and note-taking conventions are especially useful, and point out which words are essential and which are not. After three or four exercises, invite another group of three to the board.
1. I'd like to tell you about a famous painter . . . named Georgia O’Keeffe . . . That’s O-apostrophe-K-E-E-F-F-E . . . Georgia O’Keeffe . . . now Ms. O’Keeffe is considered to be one of the major artists . . . one of the major American artists . . . of the 20th century.

2. Do you know where the Sahara Desert is? . . . Well . . . the Sahara Desert . . . that’s Sahara . . . S-A-H-A-R-A . . . the Sahara Desert is located in North Africa . . . and it extends for approximately 3¼ million square miles . . . quite big . . . very big!

3. Do you know what animal is the largest animal ever to have lived on earth? Anyone? Well, it’s the blue whale. Yes . . . the blue whale is the largest animal that has ever lived on earth. It can weigh up to 136,400 kilograms . . . Wow! It’s hard to even imagine that . . . 136,400 kilos . . . And for those of you who still don’t think metric . . . that’s 300,000 pounds!

4. Let’s talk about computer usage. I’m sure all of you use a computer . . . probably every day. Well, the number of people using computers is growing everywhere . . . but do you know which country led the world in computer usage in 2005? . . . anyone want to guess? No, it wasn’t the United States. It was the Netherlands . . . the Netherlands . . . with a full 84 percent of its population reporting that they use a computer either at home or at work. That’s more than 8 in 10 people. The numbers are, of course, probably much higher now.

5. Television. How much TV do you watch? When do you watch TV? Is it too much? Do you think it’s too much? Well, when asked . . . 40 percent of Americans say that they always or often watch TV while eating dinner . . . while eating dinner . . . Is that how it is in your house? I wonder if that helps or hurts digestion . . .

6. So let’s continue our tour of the planets in our solar system . . . the next planet I want to look at is Mars . . . Mars . . . now Mars is the fourth planet from the sun and the seventh largest . . . and it’s one of the planets we’ve visited . . . well, not us personally . . . not even humans . . . but technology . . . spacecraft . . . The first spacecraft to visit Mars was in 1965 . . . Quite a while ago . . .

7. Let’s continue talking about Mars . . . the planet Mars . . . now Mars is sometimes referred to as the Red Planet . . . anyone know why? . . . well probably due to its color as seen through telescopes . . . take a look one evening . . . it has a reddish tint . . .

8. Are people smoking less? more? what do you think? . . . Actually, on the average, worldwide . . . so we’re not talking about individual nations here but worldwide . . . on the average, worldwide, smoking is increasing at a rate of 2 percent per year . . . surprising? . . . and why do you think this is the case? . . . well, this is mostly because of increases in developing countries . . . where people are smoking more now than they did in the past.

9. How about in the U.S.? What’s happening to smoking rates here in the U.S.? It seems that smoking rates in the U.S. . . . as perhaps you might imagine . . . have gone down. Fewer people are smoking each year . . . Why is this? Well, there are many reasons . . . but one of them—public education about the dangers of smoking—is clearly one of the important ones . . . I’m sure you can think of other reasons.

10. I’m going to talk about earthquakes. Have you ever experienced one? It’s not something you’ll easily forget if you’ve experienced a strong one . . . And even if you haven’t, you’ve all certainly seen the effects through news reports on TV . . . now, the strength of an earthquake is measured by a scale called the Richter scale . . . that’s R-I-C-H-T-E-R, Richter . . . and the Richter scale is a scale that measures a quake’s strength by assigning it a number . . . for example, a 1 or 2 on the Richter scale shows an earthquake that is hardly noticeable . . . it’s usually not felt by people.
8. Smoking worldwide ↑ 2%/yr.
   Y? ↑ in developing countries

9. Smoking U.S.: ↓
   Y? public ed. about danger

10. Richter scale—measures earthquake strength w/ #
    e.g., 1 or 2—not felt

Exercise 2, page 37

Have three students take notes at the board while others take notes from their seats. Read or play each excerpt once for listening and a second time for note-taking. Use your own judgment as to the need for rereading or replaying the excerpt. After each exercise, discuss and compare the different note-taking samples on the board. Point out where symbols and note-taking conventions are especially useful, and point out which words are essential and which are not. Point out how different people arranged information (e.g., indentation) to show how ideas are related. After three or four exercises, invite another group of three to the board.

Exercise 2 Audioscript, page 37

1. I want to tell you about the official languages in the country Switzerland. . . . did you know that Switzerland has four official languages? . . . and those are German . . . French . . . Italian . . . and a language called Romansch. . . . let me spell that for you . . . R-O-M-A-N-S-C-H . . . now German is spoken by the majority of the total population. . . . by about 65 percent. . . . French by 18 percent. . . . Italian by 12 percent. . . . and Romansch is the lowest . . . or the least frequently spoken. . . . and that’s spoken by only about one percent.

2. Last week was election day. How many people here voted? . . . nowadays, many people take the right to vote for granted. But actually . . . it is only slightly more than a century since women first got the right to vote. . . . speaking globally . . . the first country where this happened . . . the first country which gave women the right to vote. . . . was New Zealand. . . . in 1893. . . . Australia was next when women got the right to vote there in 1901. . . . in the U.S., women, by the way, did not get the right to vote until 1920 . . . 1920.

3. I’d like to tell you about a survey that was done in 2007. . . . It was done worldwide. . . . and it was very extensive. . . . and one of the questions they asked of respondents was about their ability to afford food in the previous year. . . . so they might have phrased the question like this. . . . “In the past year, were there any times when you couldn’t afford to buy necessary food?” . . . and given that food is such a basic human need, the results of the survey should surprise you. . . . It turns out that in the U.S., 16 percent of the respondents said that yes . . . sometime in the past year . . . they hadn’t been able to afford needed food. . . . in Western European countries, 7 percent said yes . . . in East European countries it was 32 percent . . . and in Latin America, it was 41 percent. . . . in Africa 43 percent. . . . these numbers certainly give us cause to reflect. . . . a serious, serious problem.

4. I want to tell you. . . . I’m going to talk a little bit about astronomy. . . . and in particular I want to tell you about the two planets that are closer to the sun than the Earth. . . . and those two planets are called Mercury and Venus. . . . Mercury orbits the sun. . . . that is. . . . completes its circuit around the sun in 88 days. . . . Venus on the other hand takes longer. . . . it takes 225 days.

5. Have you ever heard of the expression in English “once in a blue moon.” . . . maybe you heard people say something like “oh . . . I see them once in a blue moon” or “oh . . . I write letters once in a blue moon.” . . . it means “rarely” . . . “very infrequently.” . . . “I watch TV once in a blue moon” means “I hardly ever watch TV.” . . . where do you think this expression came from? What is a blue moon? Well . . . a “blue moon” is actually the term used to describe the second full moon in a particular month. . . . of course this happens very rarely . . . only when the first full moon is right at the beginning of the month. . . . only then can there be a second full moon falling right at the end of the month. . . . this only occurs on the average every 2.7 years. . . . so . . . now not only do you know the expression “once in a blue moon” . . . but you also know where it came from!

6. Increasingly the world is becoming more urban. . . . More and more people are moving from rural areas. . . . farms. . . . countryside. . . . small towns. . . . to cities where they typically hope to find work. . . . In fact, researchers have made predictions suggesting that by the year 2030, urban dwellers . . . people who live in cities. . . . will make up roughly 60 percent of the world’s population. . . . 60 percent. . . . What’s the impact of this? Does it matter? Well, the problem with this is that people in cities . . . in urban areas. . . . consume much more energy than people in rural areas. . . . And that’s energy consumption for electricity . . . for transportation. . . . for cooking and heating. . . . and then this increased energy consumption has great effects on the environment. . . .
7. OK . . . students . . . I know you get tired . . . Especially around test time . . . so what can you do . . . How can you increase your energy for the day? Your energy for studying? For completing your responsibilities? Well . . . one thing that dieticians and others suggest is not skipping breakfast . . . so many of us run out of the door in the morning . . . perhaps a quick cup of coffee . . . that’s it . . . and they say that’s just not a good idea . . . In fact, they say that people who eat breakfast report being in a better mood and having energy throughout the day . . . so the effects last . . . so for short term and long term energy boosts, make a habit of eating breakfast . . . healthy breakfast of course . . . grains, fruit, milk, or cheese . . . so mom was right . . . don’t skip your breakfast!

8. We watch a lot of television in this society and what I want us to think about are the effects of watching so much television . . . Well, one thing that researchers have looked at is the effect on . . . on weight . . . Are children getting heavier because of increased TV watching? . . . And here they’ve found a definite link between television watching and childhood obesity . . . not just slightly overweight kids but seriously overweight kids . . . And this connection is thought to result from several causes and I’m sure you can speculate on these causes yourself . . . But let’s name a few of them . . . First, television viewing is a passive activity . . . children who are watching are not actively playing or exercising . . . they’re not running around the schoolyard . . . kicking a soccer ball . . . And second, there is a strong tendency to eat snacks while watching television . . . so this makes the problem even worse . . . and third, advertising . . . advertisements are often aimed at promoting high calorie, less healthful foods and the eating habits of children who watch a lot of television are influenced by this advertising . . . So yes, there is a correlation between TV watching among children and obesity . . . and as I said, this stems from the lack of exercise . . . the tendency to eat snacks while watching . . . and the effects of commercials that encourage kids to buy . . . or ask mom to buy . . . unhealthy foods . . .

9. I’m going to talk about a term called “balance of payments” . . . an economic term . . . and the term “balance of payments” means the difference between all payments made to foreign countries and all payments coming in from abroad . . . over a set period of time . . . again . . . the difference between all payments made to foreign countries . . . and all payments coming in from abroad . . . therefore, a favorable balance of payments occurs when more payments are coming in than going out . . . an unfavorable balance of course exists when the opposite is true . . . when more payments are going out than are coming in.

10. Does anyone here know first aid . . . or emergency medicine? OK . . . if you found someone with a burn . . . from a fire for example . . . what would you do? . . . would you know what to do? . . . Well . . . let me tell you . . . doctors say that if the burn is mild . . . so it’s not too severe . . . and there’s no broken skin . . . what you should do is put the burn into ice water . . . submerge it in ice water . . . now if the burn is severe . . . you should call a doctor . . . and keep the patient quiet and warm . . . until the doctor arrives.

Exercise 2 Example Notes, page 37

1. Switzerland—4 official langs.
   1. German—spoken by 65% of total pop.
   2. French—" 18%  "
   3. Italian—" 12%  "
   4. Romansch—" 1%  "

2. —right to vote received
   1st: New Zealand—1893
   2nd: Australia—1901
   3rd: U.S.—1920

3. 2007 survey: ability to afford food in previous year
   U.S.: 16% said couldn’t afford
   W. Europe: 7%
   E. Europe: 32%
   Latin America: 41%
   Africa: 43%
   Serious problem!
4. 2 planets closer to sun than Earth
   Mercury: orbits sun 88 days
   Venus: " " 225 days
5. "once in a blue moon"—means "rarely"
   Where from?
   —blue moon: 2nd full moon in a month
   —occurs every ~2.7 yrs.
6. worldwide: ↑ urban (by 2030 60% world in cities)
   problem: city people energy use > rural
   for electricity, transport . . .
   → ↑ effects on environment
7. Breakfast important → ↑ mood and ↑ energy throughout day (effects last)
   e.g. Grain? Fruit? Milk? Cheese?
   Don't skip!
8. TV watching link to childhood obesity
   Y? Kids passive (not exercising)
   Eat snacks while watching
   Advertisements—unhealthy hi-calorie food
9. balance of payments—diff. betw. payments to foreign countries
   and $ coming in
   e.g. favorable balance—more $ in than out
10. What to do if burned?
    —if mild (no broken skin)—put in ice H₂O
    —if severe—call Dr.—keep patient warm

Lecture 2: “Nu Shu”: Women’s Unique Language

Activity 1: Listening and Reading, page 38–39
Use the lecture excerpt on pages 20–22 of the textbook as a resource if you’d like to deliver the lecture yourself.

Eight DOs and DON’Ts for Improving Lecture Comprehension and Note-Taking, page 40
Key points about note-taking to emphasize:
• Good note-takers note key words, not every word.
• Good note-takers use symbols and abbreviations they will understand even when the ideas are no longer fresh in their mind.
• Good note-takers use the space on the page to visually represent the relationship of ideas. Examples of poor and good notes for Lecture 1 follow.

Poor notes
Recitation works because you pay more attention if u know u have to recite it, u get immediate feedback, u know if u can explain

Good notes
Recitation works
Y?
• if know have to recite sth. → pay ↑ attention.
• u get immediate feedback, u know if can explain
• u use diff. part of brain to speak (vs. hear)
• Good note-takers use headings to organize and group ideas. Examples of good and poor notes for Lecture 1 follow.

**Poor notes**

Study #3: Q: how long energized mood last?
During 3-wk, people walked many times, each time, rated energy & tension levels, walked briskly 10 min., repeated ratings several times during following 2 hrs.

20 min. after walk, ↑ energy & ↓ fatigue/tension. Effect lasted at least 1 hr. After 2 hrs., energy still present (small)

**Good notes**

Study #3: Q: how long energized mood last?
Procedure: During 3-wk, people walked many times, each time, rated energy & tension levels, walked briskly 10 min., repeated ratings several times during following 2 hrs.

Results: 20 min. after walk, ↑ energy & ↓ fatigue/tension.
Effect lasted at least 1 hr. After 2 hrs., energy still present (small)

• Good note-takers listen for the larger picture. They know that it is easier to remember details if they have the overall ideas and general concepts than it is to recreate the main points from details.

• Good note-takers develop their own style. Some students write occasional words in their native language; others don’t. Some people write neat notes; others take very messy notes but still understand what they have written.

• Good note-takers take time as soon as possible after listening to rewrite or add to their notes. They add information that they remember but did not have time to note, and they reorganize information to best reflect the importance of ideas and the relationship between them.

**UNIT 5 NOTING NUMBERS AND STATISTICS**

Unit Summary: Often even advanced students have problems noting numbers and statistics. Unit 5 provides tips and practice exercises to enable students to better comprehend and note numbers, including fractions, decimals, ratios, and years. The two lectures in this unit provide practice with numbers in meaningful contexts.

**Exercises 1–2, page 42**
Read or play each number once. Reread or replay numbers if necessary.

**Exercise 1, Audioscript and Answers:**
1. 13 2. 14 3. 15 4. 60 5. 7 6. 18 7. 9 8. 40 9. 16 10. 8

**Exercise 2, Audioscript and Answers:**
1. 17 2. 70 3. 19 4. 9 5. 50 6. 16

**Exercise 3, page 43**
Read or play each number once. When students have finished, have them read all the years out loud.

*Audioscript and Answers:*

**Exercises 4–5, page 44**
Read or play each number twice. When students have finished, have them read all the numbers out loud.

**Exercise 4, Audioscript and Answers:**
1. 102 2. 150 3. 1,020 4. 1,250 5. 3,056 6. 53,000
7. 4,500,000 8. 1,213,000 9. 50,000,000 10. 85,000,000,000

**NOTING NUMBERS AND STATISTICS  15**
Exercise 5, *Audioscript and Answers*:
1. 14,569  
2. 67,440  
3. 15,515  
4. 2,000,001  
5. 2,000,100  
6. 202,202,000
7. 95,825,000  
8. 95,925,000,000  
9. 175,240,150  
10. 12,000,565,000

**Exercises 6–7, page 45**
Read or play each number once. Reread or replay numbers if necessary.

Exercise 6, *Audioscript and Answers*:
1. \( \frac{1}{5} \)  
2. \( 2 \frac{2}{3} \)  
3. 2.5  
4. 1 \( \frac{1}{3} \)  
5. 106  
6. 3.4  
7. 78  
8. \( \frac{1}{2} \)
9. 35  
10. 2.6

Exercise 7, *Audioscript and Answers*:
1. \( \frac{1}{3} \)  
2. 2.18  
3. 3 \( \frac{3}{4} \)  
4. 308  
5. \( \frac{5}{4} \)  
6. 3 \( \frac{1}{4} \)  
7. 8.27  
8. 2 \( \frac{1}{3} \)
9. 78  
10. 2.056

Exercise 8, page 46
Read or play each number once. Reread or replay numbers if necessary.

*Audioscript and Answers*:
1. In 2007, nearly **3 in 10** Americans listed reading as one of their favorite leisure activities.
2. In the same study, **18 out of 100** Americans listed TV watching.
3. And in the same study, people preferred computer activities to bicycling **3 to 1**.
4. In 2008, worldwide, nearly **2 out of 3** city dwellers lived in cities with populations of 1 million or fewer.
5. The number of infant deaths in Ethiopia in 2007 was **77 per 1000** births.

**Lecture 3: Exploring a Market: Attitudes toward Pets**

**Activity 2: Preparing for the Lecture (Audioscript), page 48**

What I’d like to do today is to take a look at some surveys . . . survey data . . . and then discuss how this data can be used . . . to draw conclusions about markets . . . to make predictions about the market . . . to make up a marketing plan . . . to make investment decisions . . . and so today I’m going to look specifically at a survey that was taken to look at the issue of pets . . . to look at pets as a cultural phenomena . . . to look at pets in people’s lives . . . and the data that I’m going to focus on right now is going to focus on Americans’ attitudes towards pets but later we’ll also look at how this plays out internationally . . .

**Answer: d**

**Lecture Outline, page 48**
Use this outline if you’d like to deliver the lecture yourself.

**INTRODUCTION:** What I’d like to do today is to take a look at some surveys . . . survey data . . . and then discuss how this data can be used . . . to draw conclusions about markets . . . to make predictions about the market . . . to make up a marketing plan . . . to make investment decisions . . . and so today I’m going to look specifically at a survey that was taken to look at the issue of pets . . . to look at pets as a cultural phenomena . . . to look at pets in people’s lives . . . and the data that I’m going to focus on right now is going to focus on Americans’ attitudes towards pets but later we’ll also look at how this plays out internationally . . .

- First some statistics . . .
  - There are approximately 74.8 million owned dogs in the United States . . . not including strays
  - There are approximately 90 million owned cats in the United States.
  - Americans spend lots on their pets: $36 billion in 2006—on food, shelter, health care, and luxuries
  - The pet industry is one of the fastest-growing subsectors in the entire U.S. economy, growing by as much as 6% a year.
I. Results of poll about pet ownership/attitudes/behaviors of 2,455 adults surveyed online between November 7 and 13, 2007. . . looked at age, race and ethnicity, education, and region. . . broke age down into

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Year Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baby Boomers</td>
<td>born post-WWII 1946–1964</td>
</tr>
<tr>
<td>Gen X</td>
<td>born 1965–1976</td>
</tr>
<tr>
<td>Echo boomers</td>
<td>born 1977–1989</td>
</tr>
<tr>
<td>Matures</td>
<td>born pre-1945</td>
</tr>
</tbody>
</table>

A. Who has a pet?
1. Just under two-thirds (63%) of Americans currently have a pet.
2. Certain groups are more likely to have pets than others.
   (a) Women are more likely than men (68% versus 57%).
   (b) Gen Xers and Baby Boomers are more likely to have pets than the younger and older generations.
   (c) Regionally, those in the Midwest are most likely (67%) to have a pet while those in the East are least likely (58%) to have one.
   (d) Looking at race and ethnicity, 67 percent of Whites and 68 percent of Hispanics have a pet compared to just 35 percent of African Americans.
   (e) In terms of education, those who have more education are less likely to have a pet, as just over half (54%) of those with a post-graduate education have pets, while two-thirds with less than a high school education do.

B. What kinds of pets do people have?
1. Dogs and cats are the most popular of house pets, with “dog people” outnumbering “cat people” among U.S. pet owners.
   a. 7 in 10 pet owners have a dog compared to just over half (52%) who have a cat (however, according to other statistics, cat owners are more likely to have more than one cat, while dog owners are more likely to have just one dog).
2. 15% have fish
3. 7% have a bird
4. 12% have some other type of pet
5. Imagine this: 13% of pet owners have 6 or more pets.

C. Attitude toward pets: “Do you consider your pet to be a member of your family?” (asked of people who indicated they had a pet)
1. 88%: Yes; 7%: No; 4%: Not sure
2. Females said yes more than men—93% to 84%.

D. What do people do with their pets?
1. If pets are members of the family, then they are entitled to certain things and pet owners make sure their pets get these things:
   (a) Sleeping on the bed
      (1) Over two-thirds (69%) of pet owners let their pets sleep in the bed with them, with women more likely than men to share their bed (72% versus 64%).
      (2) Gen Xers are also more likely to share their bed, as almost three-quarters (74%) let their pet sleep with them.
      (3) Cats are more likely to get on the bed than dogs (78% versus 70%).
   (b) Buying gifts for pets
      (1) Almost two-thirds (65%) have bought their pet a holiday present, and over one-third (37%) have bought their pet a birthday present.
(2) Dogs get presents more than cats do. 7 in 10 (71%) of dog owners have bought their pet a holiday present compared to 63 percent of cat owners. The same is true for birthday presents as 42 percent of dog owners have gotten a present for their pet, compared to one-third (33%) of cat owners.

(b) Cooking especially for pets—23% of pet owners have done so

(c) Dressing pets in some type of clothing (18%)

(d) Taking pets to work (10%)

CONCLUSION: A disclaimer: This poll was taken among adults who were online and agreed to be part of the survey. Although the survey conductors made efforts to weigh responses to reflect the composition of the adult population, the sample is based on those who agreed to participate in this particular panel and is not truly random.

Some international perspective from China, with information coming from a marketing research newsletter in 2007:

- China’s pet population has grown by a remarkable 20 percent in five years, from 240,799,000 in 1999 to 291,315,000 in 2004. And it is forecasted that this will continue to grow strongly.
- The percentage of the population owning dogs and cats increased from 1999 to 2004 with five percent owning dogs in 1999 to seven percent owning dogs in 2004 and with 14 percent owning cats in 1999 to 15 percent owning cats in 2004.
- Relation to new products, new markets: sales of dog and cat food reached nearly RMB 1.6 billion in 2004, representing current value growth of 13 percent over the previous year.

What are the business, marketing, investment implications of all this?

Lecture Audioscript, page 48

This audioscript shows one speaker’s delivery of the lecture, as recorded in the audio program. Use it as a resource.

What I’d like to do today is to take a look at some surveys . . . survey data . . . and then discuss how this data can be used . . . to draw conclusions about markets . . . to make predictions about the market . . . to make up a marketing plan . . . to make investment decisions . . . and so today I’m going to look specifically at a survey that was taken to look at the issue of pets . . . to look at pets as a cultural phenomena . . . to look at pets in people’s lives . . . and the data that I’m going to focus on right now is going to focus on Americans’ attitudes towards pets but later we’ll also look at how this plays out internationally . . .

So there are approximately 74.8 million owned dogs in the United States . . . 74.8 million . . . and we’re not talking about stray animals here . . . We’re talking about owned dogs . . . there are about 90 million owned cats in the United States . . . 90 million . . . now the population of the United States is over 300 million . . . but we’re talking a lot of animals . . . and Americans spend a lot on their pets . . . in 2006, $36 billion was spent in the United States on food . . . shelter . . . healthcare . . . luxuries . . . for pets . . . looking at the industry it’s considered one of the fastest-growing subsectors in the entire U.S. economy . . . growing by as much as 6% a year . . . so what I’m going to talk about is a poll that was taken looking at pets . . . pet ownership, attitudes, behaviors . . . surveying um 2,455 adults . . . it was an online poll . . . taken in late 2007 . . . and the poll looked at age . . . race . . . ethnicity . . . education . . . region . . . and when they looked at age they broke down the groups into sectors . . . into groups more for market research purposes . . . and the group you’re probably most familiar with is the group called the Baby Boomers . . . the Baby Boomers are those who were born post-World War II . . . to 1964 . . . 1946 to 1964 . . . but they also looked at a group called the Gen X group and this is a group that’s . . . and these dates vary per study, but I want to give you this particular study’s range of ages . . . the Gen X group they categorized as being born between 1965 and 1976 . . . they also created another group called Echo Boomers . . . and they were born 1977 to 1989 . . . So you’ve got those three groups here . . . and then they had an older group called . . . they labeled them “Matures” . . . a euphemism for sure . . . and they were born before 1945 . . . OK, so what they found is that under two thirds of Americans . . . just under two thirds of Americans . . . 63 percent . . . currently have a pet . . . nearly two out of three . . . and that certain groups are more likely to have pets than others . . . women are more likely than men . . . and that was 68 percent to 57 percent . . . Gen Xers and Baby Boomers are more likely to have pets than the youngest generation and the oldest generation . . . regionally they found that people in the Midwest were more likely to have pets while those in the East were least likely to have pets . . . 67 percent in the Midwest . . . 58 percent in the East . . . when they looked at race and ethnicity they found that 67 percent of whites and 68 percent of Hispanics had a pet compared to just 35 percent of African-Americans . . . in terms of education . . . people who had more education were less likely to have a pet . . . so for people with less than a high school education, two-thirds had a pet . . . while people who had postgraduate education—and these are the extremes—there were only 54 percent who had pets . . . so again the tendency to have a pet seems to have gone down with education . . .

OK . . . what kind of pets do people have? . . . as anyone can tell you just by spending a little time here, dogs and cats are the most popular of house pets . . . seven in ten pet owners have a dog . . . compared to just over half . . . 52 percent . . . who have a cat . . . Now we said that there were more cats in the country but that’s owing to
the idea that statistically cat owners are more likely to have more than one . . . while dog owners are more likely to have just one dog . . . but what about other pets? . . . 15 percent have fish . . . 7 percent have a bird . . . 12 percent have some other type of pet . . . And imagine this . . . 13 percent of pet owners have six or more pets . . . six or more pets . . . since I’m not a pet owner myself, it’s hard for me to imagine that . . . though I do have a cousin with three dogs and three cats and a couple of hamsters . . .

Anyway . . . when people were asked if they considered their pet as a member of the family . . . and this was only asked of the people who said that they had a pet . . . here’s what they said . . . 88 percent said yes . . . 7 percent said no . . . 4 percent said not sure . . . and females said “yes” much more than males . . . 93 percent to 84 percent . . .

Now if pets are widely . . . hugely considered as part of the family . . . then there are responsibilities and expectations here . . . And here’s an area that I think is kind of fun . . . what do people do with their pets? . . . because if pets are members of the family then they’re entitled to certain things . . . and pet owners make sure their pets get those things . . . And of course we’ve all seen pictures and heard stories about the crazy things that people do with and for their pets . . . so they asked what do you do with your pets? . . . and here are some of the answers . . . Do your pets sleep on your bed ever? . . . over two thirds of pet owners . . . 69 percent let their pets sleep in the bed with them . . . women more likely than men to share their bed with their pets . . . 72 percent versus 64 percent . . . Gen Xers are also more likely to share their bed . . . as almost three quarters let their pets sleep with them . . . and cats seem more likely to get on the bed than dogs . . . 78 percent versus 70 percent . . .

What about buying gifts? . . . because of course this is what we’re talking about when we’re thinking about businesses and marketing . . . almost two thirds have bought their pet a holiday present . . . And over one third have bought their pet a birthday present . . . Dogs get presents more than cats do . . . seven in ten dog owners have bought their pet a holiday present . . . poor cats . . . only 63 percent of cat owners have bought those same things . . . Same is true of birthday presents . . . 42 percent of dog owners have gotten their pet a present compared to only one third of cat owners . . . How about cooking especially for your pet? . . . 23 percent of pet owners have done so . . . Dressing them in some kind of clothing? buying clothing for their pet? . . . 18 percent . . . Taking them to work? . . . 10 percent . . .

So . . . overall so what does this tell you? what conclusions can we draw in terms of . . . market outreach . . . advertising campaigns . . . predictions about the market . . . and what about internationally? . . . now before we go into those areas let me make a disclaimer . . . this poll was taken among adults who were online and agreed to be part of the survey . . . so that already limits our group . . . this is a population who works online . . . who are comfortable online . . . so take the survey with a little grain of salt because again the sample is based on those who agreed to participate in this particular panel . . . and it is not truly random even though the survey conductors did make efforts to weigh responses to reflect the composition of the adult population . . .

So before we again talk about market outreach . . . market campaigns . . . industry expectations . . . this has been a look at American culture . . . I’m going to end with some international perspective . . . China . . . This came from a marketing research newsletter in 2007 . . . according to that newsletter, China’s pet population has grown by a remarkable 20 percent in five years from 240,799,000 in 1999 . . . 240,799,000 . . . in 1999 . . . to . . . 291,315,000 in 2004 . . . so from a little over 240 million to a little over 291 million . . . in 5 years . . . and they forecasted that this would continue to grow strongly . . .

In that same period, 1999 to 2004, the percentage of the population who owned dogs and cats increased as well . . . For dog ownership, it went from 5 percent of the population in 1999 to 7 percent in 2004 . . . For cat ownership, it went from 14 percent to 15 percent in that same period . . . and of course as market research is reporting to business they’re interested in this phenomenon as it relates to new products . . . new markets . . . and they estimate the sales of dog and cat food reached nearly 1.6 billion RMB in 2004 . . . RMB . . . that’s Renminbi . . . Chinese currency . . . so that . . . that, they said, represented a value growth of 13 percent over the previous year . . .

So again let’s talk about what we’re going to do . . . we’re business people . . . we’re looking at investment . . . we’re looking at market research . . . We’re looking at market outreach . . . we’re looking at advertising campaigns . . . we’re looking at investment . . . what’s the implication of all this?

**Activity 3: Example Notes, page 49**

Survey data

Draw conclusions, make predictions about markets; investment decisions.

- # owned dogs U.S.: 74.8 mil
- # " cats " : 90 mil
- spending on pets: 36 billion in 2006

- on food, shelter, health, luxuries

- industry-one of fastest growing subsectors in U.S. econ:
  ~ 6%/yr.

Survey about pets (2007): 2455 adults

Looked at age, race & ethnicity, education, region
Age Groups:  
Baby Boomers: born 1946–1964  
Gen X: " 1965–1976  
Echo Boomers: " 1977–1989  
Matures: " < 1945

Who has a pet?  2/3 (63%) Americans
- ♀ 68% > ♂ 57%
-Gen X + Baby Boom > younger/older gen.
-Midwest 67% > East 58%
-67% White, 68% Hispanic, 35% African Am.
- ↑ ed: ↓ pets (no H.S. 2/3 (66%); post grad 54%)

What kinds of pets?
-dogs & cats most popular
-7 in 10 pet owners: dog
-52% cat
-cat owners more likely have >1 cat; dog owners: 1
-fish: 1 in 6 (15%)
bird: 7%
other type pet: 12%
13% own 6+ pets!

Pet member of family?
-88 Y; 7% - N; 4% not sure
-♀ 93% Y = ♂ 84% Y

What do w/ pet?
-let sleep on bed? > 2/3 (69%)
-♀ 72% > ♂ 64%
Gen X ~3/4
-gifts for pets?
65%-holiday pres.
>1/3-birthday pres.
Dogs ↑ pres. th. Cats:
71% dogs-holiday pres. 63% cats
42% dogs-birthday pres. 1/3 cats
-cook for pets? 23% Y
dress pets? 14% cats, 23% dogs
take pets to work? 10%

Disclaimer: poll taken w/ adults online; not truly random although tried to weigh responses to reflect pop.

China? (fr. market research newsletter)
-pet pop ↑ 20% in 5 yrs! fr. 240,799,000 in 1999 → 291,315,000 in 2004
-forecast-continue ↑
- % pop. Owning dog cat

1999: 5% 14%

2004: 7% 15%

-sales dog/cat food: 1.6 bil RMB (Chinese $) in 2004 = 13% ↑ from 2003

Implications for market outreach? Investment? Advertise?

Activity 4: Replay Questions (Audioscript), page 50

1. And imagine this . . . 13 percent of pet owners have six or more pets . . . six or more pets . . . since I’m not a pet owner myself, it’s hard for me to imagine that . . . though I do have a cousin with three dogs and three cats and a couple of hamsters . . .

2. Now before we go into those areas, let me make a disclaimer . . . this poll was taken among adults who were online and agreed to be part of the survey . . . so that already limits our group . . . this is a population who works online . . . who are comfortable online . . . so take the survey with a little grain of salt because again, the sample is based on those who agreed to participate in this particular panel . . . and it is not truly random even though the survey conductors did make efforts to weigh responses to reflect the composition of the adult population . . .

Answers:
1. b
2. Don’t trust this information completely; be skeptical.

Activity 5: “Other Voices” Follow-Up (Audioscript), pages 50–51

Professor: Any questions?

Student A: Yeah . . . um . . . I was wondering . . . um . . . you just mentioned at the end of the lecture a little bit about China and I was curious to know . . . why . . . they’re seeing such an increase in China . . . um . . . in the past five years . . . Do you know of any particular reasons for what they’re seeing?

Professor: That’s a really good question. Why don’t I throw it back to you and see if anyone else has any ideas about that? Anyone? Why is it changing in China?

Student B: Maybe it has something to do with the one-child families?

Professor: Yeah . . . I think that’s a great point, actually. As the family size has gotten smaller in China, we’re seeing that more and more people are starting to see these animals as extensions of the family . . . not just animals but extensions of the family . . . They’re seen as companions to the kid . . . and then when the child grows up and leaves home . . . even a source of comfort to the parents . . . so yeah . . . definitely . . . That would be very true . . . any other ideas about these changes that are taking place in China?

Student C: You know, here there are people who have animals to show off . . . to look good . . .

Professor: Well actually you’re right . . . that is . . . more with younger people than with older people . . . but we’re seeing more there of people keeping pets . . . getting pets . . . as a fashion and identity statement . . . This is how I want to be seen . . . that’s definitely an urban phenomenon . . . and actually that’s not the only urban phenomenon because we’re also seeing . . . among urban dwellers . . . they have disposable income . . . they’re willing to spend money on pets . . . so that . . . you know China has been changing . . . unprecedented change . . . Anything else that you can think of?

[long pause]

Well . . . you know . . . I don’t hear anything else but I think that in some ways for the same reason that in Western societies people often have pets . . . they know that they’re good . . . pets are healthy for people . . . many times pets relieve stress and loneliness . . . so I think the same thing is happening in Chinese society . . . as interpersonal relationships change . . . as people move apart . . . as the family dynamics change . . . people are depending on pets to relieve stress and loneliness . . . so again these are all really important reasons to consider . . . you know why do certain things change . . . why do habits change . . . and of course that feeds our marketing decisions . . . so we’ll talk more about that . . .

Answers:
1. b
2. b, c, d, f, g
3. Answers will vary.
Activity 6: Using Your Notes, page 51

Answers:
1. F (almost 75,000,000)
2. F (90 million)
3. F (6 percent)
4. T
5. T
6. F (less often: 67 percent-White; 68 percent-Hispanic; 35 percent-African American)
7. T
8. T
9. T
10. T
11. T
12. T
13. F (pets have also become increasingly popular in China)
14. T
15. T
16. F (the sale of dog and cat food in China grew by 13 percent)
17. F (the survey was conducted online)
18. T

Activity 9: Academic Word List Vocabulary, pages 52–53

Answers:
Group 1: e, b, a, d, c
Group 2: d, b, c, e, a
Group 3: c, d, b, e, a

Activity 10: Using Vocabulary, page 54

Answers:
(1) investment (2) research (3) sectors (4) campaign

Lecture 4: Tobacco Through the Millennia

Activity 2: Preparing for the Lecture (Audioscript), page 57

What we’re going to talk about today is tobacco... and nowadays when people think about tobacco they think cigarettes... but tobacco... the product... the crop... its history... its importance... how it’s been used... and abused... its marketing... the industry’s representations... misrepresentations... it’s a crop that has... that has so much impact... in so many deeply conflicting ways... over the centuries... millennia... lots of stuff... so if I asked you to free-associate with the word “tobacco” what would come up?... Now your answer would have a lot to do with who you are... where you live... where and when you were brought up... what century you were brought up in... there are cultures in the world even now... which use tobacco for religious ceremonies for example... on the other hand and much more dangerously... there is still marketing of cigarettes in parts of the world... targeting younger smokers, targeting women... appealing to people’s ideas of sophistication... worldliness... despite the well-known and documented dangers.

So what I’m going to do is just go through a history of this crop... this product... so let’s start with a little background... I’m going to go way, way back... back to its earliest history...

Activity 2: Preparing for the Lecture, page 57

Answer: 3. c

Lecture Outline, page 58

Use this outline if you’d like to deliver the lecture yourself.

INTRODUCTION: Tobacco—the product, the crop, its history, its importance, how it’s been used and abused, its marketing, the industry’s representations, misrepresentations. It’s a crop that had so much impact in deeply conflicting ways over centuries and millennia. Your view of tobacco has a lot to do with who you are, where you live, where and when you were brought up. There are cultures in the world even now which use tobacco for religious ceremonies. On the other hand, there is still marketing of cigarettes in parts of the world, targeting younger smokers, targeting women, appealing to people’s ideas of sophistication despite the well-known and documented dangers.
I. Background: history of tobacco

A. Earliest history
   1. It is believed that tobacco began growing in the Americas about 6,000 B.C.E.
   2. Tobacco grows natively in North and South America.
      a. It is in the same family as the potato and pepper.
   3. As early as 1 B.C.E., indigenous people in the Americas began using tobacco, cultivating it and primarily smoking it in pipes, though also chewing it—particularly in ceremonial and medicinal practices.
      a. Tobacco was believed to be a cure-all
         (1) used to dress wounds
         (2) used as a pain killer
         (3) chewing it was believed to relieve the pain of a toothache
   4. 470–630 C.E.: Indian groups at the time: Mayas, Toltecs (who created Aztec Empire) scattered and spread out and borrowed tobacco practices.
      a. Hierarchy of smokers: leaders/priests smoked pipes with great ceremony after evening meal.
      b. Lower-ranked Indians rolled tobacco leaves together to form a crude cigar.
      c. Each tribe adapted smoking to its own religion, believing that the gods revealed themselves in the rising smoke.
      d. A complex system of religious and political rites was developed around tobacco.

B. Commercialization and expansion of tobacco use
   1. On October 15, 1492, Christopher Columbus received dried tobacco leaves as a gift from American Indians.
   2. Columbus brought a few tobacco leaves and seeds with him back to Europe, as did other sailors, but most Europeans didn’t get their first taste of tobacco until the mid-16th century.
      a. Adventurers and diplomats began to popularize its use.
      b. Tobacco was introduced to France in 1556
      c. Portugal in 1558
      d. Spain in 1559
      e. England in 1565
      f. Turkey in 1580
      g. In the 1590s, Japan—which obtained contact with tobacco through Dutch & Portuguese merchants—invaded Korea and introduced the practice of smoking there.
   3. The first successful commercial crop was cultivated in Virginia in 1612 by Englishman John Rolfe.
   4. In 1614, King Philip III established Seville as tobacco center of the world. Philip required all tobacco grown in the Spanish New World to be shipped to that central location. Seville became the world center for the production of cigars.
   5. In 1615, King James I of England made the import of tobacco a royal monopoly.
   6. Within seven years of its commercialization, it was the colony’s largest export.
   7. The major reason for tobacco’s growing popularity in Europe was its supposed healing properties—curing almost anything from bad breath to cancer!
   8. During the 1600s, tobacco was so popular that it was frequently used as money!
   9. Backlashes occurred:
      a. In 1620, tobacco use was prohibited in Japan.
      b. In 1633, Sultan Murad IV threatened tobacco users with execution in Turkey.
      c. In 1634, in Czarist Russia a second offense for smoking was execution.
      d. 1638 in China, an imperial edict forbade the planting and use of tobacco.
   10. 1776: American Revolution
      a. From a 19th century historical record: So prominent is the place that tobacco occupies in the early records of the middle Southern States, that its cultivation and commercial associations may be said to form the basis of their history. It was the direct source of their wealth, and became for a while the representative of gold and silver; the standard value of other
merchantable products; and this tradition was further preserved by the stamping of a tobacco-leaf upon the old continental money used in the Revolution. —19th century historian

b. Powerful product! Helped finance American revolution. Served as security for loans to finance the war.

11. Eventually the growth of tobacco as a cash crop fueled the demand for slave labor.

12. Types of tobacco use
   a. Prior to 1900s, tobacco was produced mainly for pipe-smoking, chewing, and later cigars.
   b. It wasn’t until the 1900s that the cigarette became the major tobacco product made and sold.

13. The use of cigarettes exploded during World War I.  
14. Companies begin to market cigarettes to women in the 1920s.

C. Recognition of dangerous effects
   1. By the early 20th century, with the growth in cigarette smoking, articles addressing the adverse effects of smoking began to appear in scientific and medical journals.
   2. It wasn’t until the mid 20th century that some leading medical and governmental groups were clear about the causal relationship between smoking and lung cancer and even then, many such groups took even longer.
      a. It wasn’t until 1970 that the World Health Organization (WHO) took a public position against cigarette smoking.
   3. The tobacco industry was strong: denying claims, countering studies, marketing “healthier” cigarettes.
   4. Tobacco opponents have been working steadily to weaken their power and discourage smoking: warnings on cigarette pack, banning of advertising, lawsuits, banning of smoking on transportation, workplaces, more and more public places.

CONCLUSION:

• There are currently over a billion smokers in the world today . . . and reports say if current trends continue . . . this number will increase to 1.6 billion.
• 500 million people alive today will eventually be killed by tobacco.
• Smoking-related diseases are responsible for 1 in 10 adult deaths worldwide.
• The problem is particularly acute in developing countries . . . Reports say that currently approximately 80% of the world’s smokers live in developing countries. That’s where smoking has been growing.
• By 2030, 70% of all deaths from tobacco will occur in developing countries, up from around 50% today.
• China leads the world in cigarette consumption and production.
• Every day, approximately 80 to 100,000 young people around the world become addicted to tobacco.

It’s a crop whose impact has been enormous. And it still is.

Lecture Audioscript, page 58

This audioscript shows one speaker’s delivery of the lecture, as recorded in the audio program. Use it as a resource.

What we’re going to talk about today is tobacco . . . And nowadays when people think about tobacco they think cigarettes . . . but tobacco . . . the product . . . the crop . . . its history . . . its importance . . . how it’s been used . . . and abused . . . its marketing . . . the industry’s representations . . . misrepresentations . . . it’s a crop that has . . . that has so much impact . . . in so many deeply conflicting ways . . . over the centuries . . . millennia . . . lots of stuff . . . so if I asked you to free-associate with the word “tobacco” what would come up? . . . now your answer would have a lot to do with who you are . . . where you live . . . where you were brought up . . . what century you were brought up in . . . there are cultures in the world even NOW . . . which use tobacco for religious ceremonies for example . . . on the other hand and much more dangerously . . . there is still marketing of cigarettes in parts of the world . . . targeting younger smokers, targeting women . . . appealing to people’s ideas of sophistication . . . worldliness . . . despite the well-known and documented dangers . . .

So what I’m going to do is just go through a history of this crop . . . this product . . . so let’s start with a little background . . . I’m going to go way way back . . . back to its earliest history . . . And it’s believed that tobacco started growing in the Americas—about 6000 B.C.E . . . we’re talking about 8000 years ago . . . a product of the Americas . . . it’s a product that grows natively in North and South America . . . and it’s in the same family as the potato . . . the pepper . . .
As early as 1 B.C.E., there are reports of Indians . . . indigenous people of these areas . . . using tobacco . . . cultivating it . . . and primarily smoking it in pipes . . . but not only that . . . also chewing tobacco . . . and it was particularly in ceremonial . . . or for medicinal . . . purposes . . . for ceremonial and medicinal reasons . . . and it was considered to be a cure-all . . . a miracle drug . . . they used it to dress wounds . . . They used it as a pain killer . . . they even believed that chewing tobacco could relieve the pain of a toothache . . .

Jumping ahead a number of . . . quite a bit of time . . . if we look at between 470 and 630 C.E. . . . between 470 . . . and 630 C.E. . . . we’re looking at the powerful Indian empires in the Americas at that time . . . the Maya . . . the Toltec . . . who later created the Aztec empire . . . There was movement . . . scattering . . . and the ritual use of tobacco spread among the different groups . . . and to larger and larger areas . . . and among Indian groups there were different types of smokers . . . there was a hierarchy . . . a caste system you might say . . . with the highest level of leaders . . . of priests . . . smoking pipes with great ceremony and reverence after evening meals and in rituals . . . and then the poorer Indians . . . the lesser Indians in the hierarchy . . . they rolled tobacco leaves together to form crude cigars . . . so it had its ceremonial purposes . . . it had its daily purposes . . . and as smoking spread among tribes . . . each tribe adapted smoking to its own religion . . . believing that the gods revealed themselves in the rising smoke . . . so a complex system of religious and political rites and rituals developed around tobacco . . .

Again . . . we’re going to jump many years . . . and we’re going to start now looking at what happened in 1492 . . . up until then, the native people . . . the indigenous people . . . lived in the Americas . . . there hadn’t been any European impact . . . but in 1492, Christopher Columbus came to the Americas . . . and there are reports that on October 15th . . . we even have the date . . . October 15th of that year, he received dried tobacco leaves as a gift from American Indians . . . he brought them back . . . the leaves and even the seeds . . . back with him to Europe . . . as did other sailors . . . but most Europeans didn’t get their first taste of tobacco until many decades later . . .

50 . . . 60 years later . . . until the mid 16th century . . . and that’s when adventurers and diplomats began to popularize its use . . .

So here are some dates when tobacco actually arrived to certain places . . . tobacco was introduced to France’s general population in 1556 . . . to Portugal in 1558 . . . England 1565 . . . to Turkey in 1580 . . . Japan was introduced to tobacco through Dutch and Portuguese merchants and the Japanese, in turn, brought it to Korea when they invaded that country . . . and that was in the 1590s . . . so tobacco was really spreading in the late 1500s . . .

So what was happening in the Americas is they thought . . . well! . . . this is a great commercial crop . . . and so the first successful commercial crop was cultivated in the Americas . . . in Virginia . . . in 1612 . . . by an Englishman, John Rolfe . . .

And the wheels of business kept spinning in Europe too . . . so in 1614 . . . 1614 . . . in Spain . . . King Phillip III was establishing one of his cities, Seville, as a tobacco center of the world . . . and there was a sense of . . . people knew that this was a product . . . a commodity . . . that had great value . . . and so King Phillip III was starting to require that ALL tobacco that was growing in the Spanish New World . . . the Americas . . . needed to be shipped to this central location . . . Seville, Spain . . . what he wanted . . . he wanted to have control over the production and distribution of this commodity . . . and Seville did become a world center for the production of cigars . . . and actually if you’ve seen the opera Carmen or you’ve heard the opera Carmen, it’s set in a tobacco . . . a cigar rolling factory even . . . um . . . yes, I think that is Seville . . . anyway, Seville became a world center for the production of cigars . . . and King Phillip III wasn’t the only one who saw the potential riches possible with tobacco . . . over in England, King James I wasn’t going to be outdone . . . and in 1615 he made the import of tobacco from the British colonies in the Americas . . . a royal monopoly . . . so within ten years of its commercialization . . . tobacco was the colonies’ largest export . . . remember we’re talking about colonies at that time . . . there was no U.S. . . . it wasn’t independent . . . we’re far from the Declaration of Independence at that time . . .

So by the early 1600s . . . 1622 to be specific . . . it was the colony’s largest export . . . and you know at that time . . . the major reason given for tobacco’s growing popularity in Europe . . . was not even for relaxation . . . but for healing . . . curing almost anything . . . from bad breath . . . to cancer . . . for the most part, that was the attitude . . .

In the 1600s, tobacco grew so popular that it was frequently used instead of money . . .

And . . . and . . . just as an aside, tobacco wasn’t welcomed everywhere all the time . . . in the early part of the 17th century, there was some backlash . . . there were places where it was banned . . . to the point that users or smokers were threatened with execution . . . in 1620 it was prohibited in Japan . . . in 1633 in Turkey, the sultan threatened tobacco users with execution . . . with death . . . in 1634 in Russia, if you smoked and were caught a second time, you were executed . . . in 1638 in China, using and even planting tobacco was forbidden by an imperial edict . . . anyway these bans never lasted that long . . . but they were serious . . .

So again . . . this is not a minor product at all . . . this is a product that had a lot of power economically . . . a lot of power socially and politically . . . and even for some religiously . . .

But anyway back to the history . . . as I said in the 1600s, tobacco was so powerful a crop that it was used as money . . . Moving a century later to the American Revolution . . . the American Revolution . . . we’re talking 19 . . . not 19 . . . I’m sorry, 17 . . . 1776 . . . 1776 . . . and let me just read to you from a 19th century historian talking about the importance of tobacco at that time . . . here’s what he wrote . . . and I quote . . . “so prominent is the place that tobacco occupies in the early records of the middle Southern States that its cultivation and commercial associations may be said to form the basis of their history . . . it was the direct source of their wealth . . . and became for a while the representative of gold and silver, the standard value of other merchantable products . . . and this tradition was further preserved by the stamping of a tobacco leaf upon the old continental
money used in the Revolution...” Wow! This was a powerful product... especially in the South... but really for the establishment of the whole country... even to the point of stamping a tobacco leaf on old money used at the time... tobacco, it is said, helped finance the American revolution... It served as security... collateral... for loans... to finance the war... So tobacco was the product of the time... the product of the American South... the most important product... of enormous value... and what happened too is that the growth of tobacco as a cash crop... fueled the demand in North America for slave labor... so the history of slavery is deeply intertwined with the history of tobacco... Slave labor being used to keep up with the demand... keeping prices down and profits high...

Now prior to the 1900s tobacco was mostly used for pipe smoking... chewing tobacco... later cigars... but not cigarettes... it wasn’t until the 1900s that cigarettes became a common product... and that’s another history... the marketing of cigarettes in the 20th century... to soldiers during World War I... to women later in the 1920s... well, you know the marketing and spread... and I’ll have to save the details of that for another time...

Now of course at some point there was talk of the dangers of cigarettes and smoking... by the early part of the 20th century, articles began to appear in scientific and medical journals addressing the health effects... this time not the positive ones but the possibly negative ones... the adverse effects... of smoking... but it wasn’t until the mid 20th century that leading medical and governmental groups were clear about the causal relationship between smoking and lung cancer... and it wasn’t until as late as 1970 that the World Health Organization took a public position against cigarette smoking... The power of the tobacco industry was so strong... countering studies... marketing “healthier” cigarettes... etcetera, etcetera... we know the modern history... The problem still continuing today... with marketing efforts targeting developing countries... women... young people... And strong efforts... continually strong efforts... on the part of tobacco opponents to prohibit advertising, sales, use... anyway... you’re aware of this part of the history...

Before I end, let me leave you with some statistics about the current state of tobacco use:

- There are currently over a billion smokers in the world today... and reports say if current trends continue... this number will increase to 1.6 billion... 1.6 billion by 2025...
- 500 million people alive today will eventually be killed by tobacco... 500 million...
- Smoking-related diseases are responsible for one in ten adult deaths worldwide... one in ten adults...
- The problem is particularly acute in developing countries... Reports say that currently approximately 80 percent of the world’s smokers live in developing countries. That’s where smoking has been growing.
- By 2030, 70 percent of all deaths from tobacco will occur in developing countries, up from around 50 percent today.
- Who leads the world in cigarette consumption and production? China.
- And very sobering... statistics about our youth... every day, approximately 80 to 100,000 young people around the world become addicted to tobacco... 80 to 100,000.

As I said... it’s a crop whose impact has been enormous. And it still is.

Activity 3: Example Notes, pages 58–59

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td><strong>History:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Date</strong></td>
<td><strong>Event</strong></td>
</tr>
<tr>
<td>6000 BCE</td>
<td>Tobacco began growing in the Americas... same family as potato, pepper</td>
</tr>
<tr>
<td>1 BCE</td>
<td>Indigenous people used tobacco—mostly smoking for ceremony/medicine... Believed cured lots!</td>
</tr>
<tr>
<td>470–630 CE</td>
<td>Maya &amp; Toltec Indians spread/borrowed tobacco customs... Hierarchy of smokers: priests (pipes/ritual) &amp; poor Indians (cigar)... Tribes adopt use... Religious/poli. rites develop</td>
</tr>
<tr>
<td>1492</td>
<td>Christopher Columbus: rec’d gift tobac fr. Indians; brought → Europe</td>
</tr>
<tr>
<td>1556</td>
<td>Tobacco introduction to world: France</td>
</tr>
<tr>
<td>1558</td>
<td>Portugal</td>
</tr>
<tr>
<td>1565</td>
<td>England</td>
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<tr>
<td>1580</td>
<td>Turkey</td>
</tr>
<tr>
<td>1590s</td>
<td>Japan, then Korea</td>
</tr>
</tbody>
</table>
1612 Virginia: John Rolfe: 1st commercial tobac. crop
1614 King Philip III of Spain: Seville ctr all tobac import fr. Sp. Americas
1615 King James I of England: royal monopoly tobac
1622 Tobacco, colony's largest export! Used for $!
   Why tobacco popular?
   Not for relax. For healing!

   Some backlash:
   1620: prohibit Japan
   1633: Turkey- use tobacco → death
   1634: Russia - 2x ****
   1638: China use/plant - forbid

1776 Tobacco's importance: American Revolution:
   Helped finance Rev.
   Security for loans
   Tobac leaf stamped on $$

   Slave demand ↑
   Why? ↑ need for labor w/ ↑ demand tobac.

   Types of tobacco use
   ← 1900s: pipe, chew tobac, cigars
   1900 → : cigarettes (WWI - a lot; 1920s → etc.)

   Recognition of adverse effects & reactions
   Start talking dangers - early 20th c.
   Only mid-cent. - saw causal health danger
   1970 World Health Org-public against smoke

Current Tobacco Statistics
   • + bill. + smokers in world if continue → 1.6 bill. by 2025
   • 500 mill alive now will be killed by tobac.
   • Smoke-related diseases responsible for 1 in 10 adult deaths worldwide
   • Developing countries ~ 80% of world's smokers
      • By 2030, 70% of all deaths fr. tobacco (now 50%)
   • Highest cig. consumption & production: China
   • Daily, ~80 → 100,000 youth addicted to tobac

Activity 4: Replay Question (Audioscript), page 59

   Moving a century later to the American Revolution . . . the American Revolution . . . we're talking 19 . . . not 19 . . . I'm sorry, 17 . . . 1776 . . . 1776 . . . and let me just read to you from a 19th century historian talking about the importance of tobacco at that time . . . here's what he wrote . . . and I quote . . . "so prominent is the place that tobacco occupies in the early records of the middle Southern States that its cultivation and commercial associations may be said to form the basis of their history . . . it was the direct source of their wealth . . . and became for a while the representative of gold and silver, the standard value of other merchantable products . . . and this tradition was further preserved by the stamping of a tobacco leaf upon the old continental money used in the Revolution . . ." Wow! This was a powerful product . . . especially in the South . . . but really for the establishment of the whole country . . . even to the point of stamping a tobacco leaf on old money used at the time . . . tobacco, it is said, helped finance the American Revolution . . . It served as security . . . collateral . . . for loans . . . to finance the war . . . So tobacco was the product of the time . . . the product of the American South . . . the most important product . . . of enormous value . . .

Activity 4: Replay Question, page 59
   Answer: a

Activity 5: “Other Voices” Follow-Up (Audioscript), page 60

   Student (very hesitant, with Chinese accent): (knocking): Excuse me . . . can I come in? . . . I'm having . . . a little trouble in the class and I thought maybe I can talk to you about it . . .

   Professor: Sure . . . Have a seat . . .
Student: Well . . . you know . . . this is . . . this is my first year here . . . in the United States . . . and . . . well . . . Sometimes there are . . . like names and places . . . that I . . . I . . . I don't think I have the . . . background . . . in American history . . . that everybody else has . . . Sometimes I miss a lot of points . . . um . . . I . . . I . . . think they know so many things about American history of course . . . I know some things . . . but I miss a lot . . . like you talked about . . . the . . . um . . . the . . . um . . . Revolutionary War . . . And of course I know a little bit . . . but I don't know much . . . and you said something about colonies? . . . and . . . they know a lot about it but I just know a little bit . . .

Professor: Well . . . what you’re saying is very understandable . . . if I went to China, I would certainly not have anywhere near a thorough knowledge of Chinese history . . . Probably I wouldn’t even have the equivalent of a grade school . . . or a public school child . . . I would have perhaps the basics from what I might have read . . . but not being a specialist, I would only have the basics . . . We always learn our own country’s history better than we learn other people’s histories . . . What I’d recommend doing . . . I . . . you know . . . it is something that will come up in this class and probably in other classes . . . and . . . um . . . You might want to go to the library and get perhaps a middle school or a high school American history book . . . I wouldn’t . . . obviously you don’t need to go into great, great detail . . . but . . . you know even . . . even go online perhaps and see if there are some sites that just show key points in American history . . . maybe that seems like even a better idea than looking at a textbook . . . because you don’t want to spend your life reading these textbooks . . . yeah I can see why there are certain important dates . . . certain important places . . . certain important people . . . that every American-raised child . . . or child that has gone through the school system here would know . . . that you might not know . . . I’m . . . you know . . . maybe I can talk to one of my colleagues in the history department . . . to see if they know of a Web site or a textbook that they can recommend that would be just kind of a quick and easy way to get some highlights . . .

Student: That would be helpful . . .

Professor: And in the meantime . . . certainly come in if you have any questions . . . if you miss something . . . feel free to come in . . . I’m glad you came in right now . . . I’d be happy to help you.

Student: Thank you . . . I feel better.

Activity 5: “Other Voices” Follow-Up, page 60

Answers:
1. d 2. b 3. c
4. Possible answers include to find out more about the professor’s expectations, to find out how to improve one’s class grade, to find out about additional resources, to explain an absence or unusual circumstances.

Activity 6: Using Your Notes, page 61

AudioScript and Answers:
1. 1. d; 2. c; 3. b; 4. c; 5. a
2. a. The first commercial tobacco plantation in the Americas was in 1612. (T)
   b. Tobacco was introduced to Turkey in 1518. (F-1580)
   c. In the 19th century, people smoked mostly cigarettes. (F- in the 20th century)
   d. The World Health Organization took a public position against smoking in 1970. (T)
   e. Tobacco began growing in the Americas in 8000 B.C.E. (F- 6000 B.C.E. or 8000 years ago)
   f. 1.6 billion people smoke in the world today. (F- if the rates continue, 1.6 billion will smoke by 2025)
   g. Every day, 800,000 youth become addicted to tobacco. (F- 80,000 to 100,000)
   h. Tobacco was introduced in Portugal before it was introduced in England. (T)

Activity 8: Post-Lecture Discussion, page 62
1. Allow students to come up with their own ideas from their own experience.
2. Some possible crops to discuss are silk, certain dyes, coffee, cotton, spices, opium.
3. Allow students to come up with their own ideas from their own experience.

Activity 9: Academic Word List Vocabulary, pages 62–63

Answers:
Group 1: c, d, a, e, b
Group 2: b, a, d, c
Group 3: d, a, e, b, c

Activity 10: Using Vocabulary, page 63

Answers:
despite, addicted, relax, ritual, attitude
Focus on Lecture Organization (Part 1)

Unit Summary: Units 6, 7, and 8 teach students to recognize and use cues to lecture organization and direction in order to comprehend, predict, and note better. Students first practice with each organizational plan, taking notes from short excerpts from authentic university lectures. Then, students work with longer lectures, doing pre-lecture and post-lecture activities that aid comprehension, build background and cultural knowledge, and develop academic reading, writing, speaking, listening, and vocabulary skills and strategies.

Exercise 1, Audioscript, page 68

Example:

There are several essential abiotic . . . nonbiological . . . factors necessary to life in an ecosystem . . .

1. there are organisms which are not capable of converting solar energy . . . and there are two sorts of these . . . and you need to be aware of these terms . . . the herbivores . . . the organisms which eat green plants directly . . . in other words . . . the plant-eaters . . .
2. you’re figuring out what terminology . . . what vocabulary . . . to use a less polite word . . . what jargon . . . this topic is discussed in . . .
3. now exogamy is marriage outside of one’s kin group . . . one’s family group . . .

Exercise 1, page 68

Possible Answers:

1. plant-eaters
2. vocabulary
3. family

Exercise 2, Audioscript, pages 68–69

Example:

Kohlberg’s moral development . . . Kohlberg’s moral development . . . what does moral development mean anyway? . . . it means what’s the reasoning behind why you choose to do something or why you choose NOT to do something . . . Kohlberg . . . it’s the reasoning behind why you chose to do something or why you chose not to do something . . . which absolutely makes no sense until we get into it here you know . . .

1. Now exogamy is marriage outside of one’s kin group . . . one’s family group . . . it can also operate with respect to other social groups . . . the town . . . the race . . . and so on . . . marriage outside of some kind of group . . . and endogamy is marriage within a given group . . .
2. We need to know one important distinction here before you start work on your homework assignment and that is just a concept of “emic” and “etic” and again it’s in your text but let’s make sure we have it clear . . . emic means the point of view of a member of the culture or an insider’s view of a culture . . . a subjective view from within a culture . . . whereas an etic analysis would be from the point of view of an outsider . . . a person outside the culture or subculture . . . supposedly an objective person perhaps a scientific observer . . .
3. Let’s talk about egocentrism . . . egocentrism . . . means my way is the only way . . . my way is the only way . . . let me add something to it . . . what I’m doing you’re doing . . . what I’m looking at you’re looking at . . . my way is the only way . . . what I’m doing you’re doing . . . I’ll give you lots of examples of this . . . what I’m looking at you’re looking at . . . My way is the only way . . . so . . . Egocentrism . . .

Exercise 2, page 69

Possible Answers:

1. a. marriage outside of group (family, town, etc.) b. marriage inside of group (family, town, etc.)
2. a. insider’s view of culture b. outsider’s view of culture
3. my way is the only way

Exercise 3, Audioscript, pages 70–71

Example:

You might ask well how did the researchers judge psychological distress? . . . they used five measures . . . the first measure was anxiety . . . how much anxiety did the woman report in her life? . . . how often did she complain of anxiety? . . . the second one . . . irritability . . . how often did she complain of being irritated? . . . the third one . . . somatic complaints . . . somatic meaning bodily . . . complaints relating to the body . . . in other words . . . how often did the woman complain about having headaches or backaches? . . . the fourth one . . . depression . . . how often did the woman complain about being depressed . . . feeling depressed? . . . the fifth one was difficulty with thinking and concentrating . . . how often did the woman complain about having this sort of problem? . . . added together these measures formed a way of judging how much psychological distress was in someone’s life . . .

1. There are certain essential abiotic . . . nonbiological . . . factors necessary to life in an ecosystem . . . and the sorts of things with which we’re concerned obviously are going to be . . . light . . . because there’s the driving force for the whole of energy . . . you’re going to need temperature . . . you’re going to need nutrients . . .
you're going to need moisture . . . and you can keep on going quite a way because those factors . . . those
abiotic factors which I've just been talking about often interact with one another . . . you see the availability
of nutrients for plants often depends upon the soil and the amount of moisture . . . so those are very simple
categories with which to begin the discussion . . .

2. So roughly two things are happening as you survey your topic and clarify unfamiliar terms . . . one . . . you’re
getting a broad picture of the topic and testing out your interest in that topic . . . am I really interested in
doing research on this topic? . . . and secondly . . . you’re figuring out what terminology . . . what vocabulary
. . . to use a less polite word . . . what jargon this topic is discussed in and you’re allowing yourself then to go
and define words that are not familiar to you . . . so when you start reading more in depth on a particular
topic in more scholarly literature . . . you understand the language . . . you’re comfortable with what you’re
doing . . .

3. This has been thought about for a long time, I suppose since the dawn of time, people wondered, hey, uh,
how do you remember? Yeah. How does that happen? What goes on here? And that was thought about for a
long time. Well, at least this thinker here has got it right and that’s a very recent discovery and that is, the
thinking and the learning goes on in that part of the body, the head, goes on in the brain. But that wasn’t
really decided for sure until the early 19th century. Up until that period of time, there was considerable
argument about where the mental faculties of all kinds, including learning and memory resided. The Greeks,
as you know, had it in the heart. The Egyptians not only had it in the heart, but had it in the kidney. That’s
an interesting thought. You can worry about that--you can wonder about that when you get up in the middle
of the night. Say, hum, now I remember.

Exercise 3, Example Notes, pages 70–71

1. Essential Abiotic Factors for Life in Ecosystem
   1. light
   2. temperature
   3. nutrients
   4. moisture

2. While Surveying Topic & Clarifying Terms
   1. get broad picture of topic
   2. find out vocab. of . . .

3. How to remember? Where are mental faculties (incl. learning, memory)?
   1. head (since early 19th c.)
   2. heart - Greeks
   3. Egyptians - heart + kidney

Exercise 4, Audioscript, pages 72–73

Example: OK . . . let's go to 1940 . . . and you know that 1940 was pretty much close to the beginning of World War II
. . . it was prewar more or less . . . what do you think happens before a war? . . . any ideas? . . . people get married
yes . . . I think that a lot of times people get married much more quickly than they would have in normal times
because men are going off to war . . . they want to get married first . . . and then they go . . . well that's what
happened . . . the marriages in 1940 . . . there were 1,595,879 marriages . . . and this occurred at a rate of 12.1
per 1,000 . . . so that you can see the great increase in the number of marriages . . .

1. So far we haven’t seen any great increases in divorces . . . OK . . . but 1945 . . . what happened then? the
men came home . . the men who did come home . . what do you think happened then? . . well let's look
at marriages first . . . the marriage rate stayed about the same . . . there were 12.2 per 1,000 and the number
of marriages was 1,612,992 . . . that was about the same as in 1940 . . . the number of divorces was 485,000
and that occurred at a rate of 3.5 per 1,000 . . . so you can see that the divorce rate soared . . . and we can
probably draw some conclusions about what separations do for marriages . . . some people think . . . what’s
the saying? . . absence makes the heart grow fonder . . other people think . . . out of sight out of mind . . .
and I think the last one might hold better as seen in these statistics . . .

2. Professor: OK why do females want males who are slightly older?
   Student: Maturity?
   Professor: Maturity . . . OK . . . good luck . . . The . . .
   Students: (laughter)
Professor: The evolutionary psych argument is . . . the reason is . . . the . . . resource argument . . . I’m sure that maturity doesn’t hurt either . . . but it’s the resource argument . . . A guy has more time . . . has had a chance to accumulate more resources if he’s a little older . . . so you’ve got these endless . . . um . . . sometimes literally endless . . . big thick . . . 19th century romance novels . . . that you read in lit at some point . . . where . . . he loves her . . . but they can’t get together for 800 pages . . . because he’s got to go out and collect resources in some fashion . . . until he can come back and show daddy . . . that he can . . . that he can support . . . um . . . the daughter . . .

3. OK as we know acid rain has increased with industrialization . . . we have not always had acid rain . . . when they look at glaciers from about 200 years ago they find that the water had a pH close to what we’d expect of theoretically pure water . . . so what can we do about this problem of acid rain then? . . . we do need to put some controls . . . or possibly put some controls on the production of acid rain . . . perhaps by shifting to alternative nonpolluting sources of energy . . . solar power . . . wind power . . . and so on . . . or . . . another way is to create technology to reduce the release of sulfur and nitrogen . . . the two chemicals which are primarily responsible for acid rain . . . technology to prevent these chemicals from being released into the atmosphere . . . the problem with both of these ideas is that they both cost money . . . so the costs and benefits need to be weighed . . .

Exercise 4, Example Notes, page 73

1. 1945—Men come home fr. war
   ↓
   divorce
   Why? "out of sight, out of mind"?
2. Why ♂ want ♀ slightly older?
   —Resources! (evolutionary psych argument)
   Older ♂ has more time to get
3. Acid rain ↑ w/ industrialization
   Solutions? control production of a.r.
   shift to nonpolluting energy?
   create tech. to reduce sulfur & nitrogen?
   BUT both cost $!

Lecture 5: How To Deal with Stress

Activity 1: Pre-Lecture Reading and Discussion, pages 74–76

Answers:

1. Answers will vary.
2. No. There are a number of items (e.g., vacation, Christmas, marriage) that most would consider positive.
3. Answers may vary. Some may point out that most items relate to adult life events and issues; a scale for teens would probably put more emphasis on dating, friendship, relations with siblings and parents, and school. Some may point out that there is a cultural bias in the scale as shown, for example, by the inclusion of Christmas and the concept of mortgages.
4. This research alone would not be sufficient to prove a cause-and-effect relationship. Answers may vary regarding the reason. Some possibilities: It is only one study and would need more research; one might question how the study was conducted and whether the procedures were sound; additional research would need to be done to show that stress was the key and causal factor in the development of the major illness, rather than anger or another factor.
5. Answers may vary. Students might suggest specific dietary changes (e.g., drinking herbal tea), lifestyle changes (e.g., waking up early to meditate), and attitude changes (e.g., giving people the benefit of the doubt more frequently).

Activity 2: Preparing for the Lecture (Audioscript), page 77

OK . . . as you all know it’s easy to relax when there’s nothing causing tension . . . when you have no . . . uh . . . problems . . . no school . . . but that’s pretty unrealistic . . . life always has stressors . . . things which are causing us stress . . . and living without stress is virtually impossible . . . and no one is immune to stress . . . so . . . if we have to live with stress we may as well find out more about what it . . . what it is . . . how we can deal with it and so on . . . OK . . . um what is stress? . . .
**INTRODUCTION:** It’s easy to relax when there’s nothing causing tension—no problems, no school, no job. But life without stressors (things that cause stress) is virtually impossible. No one is immune to stress. So if we have to live with stress, we may as well find out more about it—what it is, how it can be dealt with.

**I. What is stress?**
   **A.** The term was originally used in physics to describe the force exerted between two touching bodies.

   **B.** In the thirties, Dr. Hans Selye of Montreal first adapted this term to describe the body’s nonspecific response to any demand placed on it, pleasant or not.
      1. This response includes accelerated breathing and heart rate, increased blood pressure, and muscle tension.

   **C.** Stress may be both negative and positive.
      1. Positive stress (eustress) occurs in a life situation toward which one feels positively.
         a. e.g., Pressure in a job may give some people added incentive and excitement.
         b. e.g., Notice on the “stress test” that you did that items such as “vacation,” “Christmas,” “marriage,” and “outstanding personal achievement” all have stress values. Even though these events are considered good or happy events, they still cause stress.

      2. Negative stress occurs in a life situation toward which one feels negatively.
         a. e.g., test-taking, a close friend’s death

   **D.** Stress, in itself, is not hazardous; rather, the danger is in the individual’s reaction to the stress.

**II.** By developing appropriate ways to cope with stressful situations, individuals can reduce the physiological harm caused by stress.

   **A.** Find ways to deal with stress appropriately.

      1. Learn to recognize stress signals.
         a. Individuals should monitor themselves for stress signals so that attention can be focused on minimizing or acknowledging stress before it becomes out of control.
         b. Common early signals include irritability, insomnia, rapid weight loss or gain, increased smoking or drinking, increases in small or “dumb” errors, physical tension, nervous tics, and tightness of breath.
         c. Individuals can consider ways to protect themselves when confronted with early signs of stress. This might involve withdrawing from the stressful situation or rewarding themselves with equal amounts of low-stress activity time.

      2. Pay attention to demands of the body.
         a. Exercise and good nutrition can decrease the effect of stress on both the body and mind.
         b. Exercise often provides a stress-free environment away from the usual stressors.

      3. Make plans and act when appropriate.
         a. Rather than wasting energy on worrying, an individual can direct his/her energy to plan steps and act.
         b. Not only does the process of planning and acting decrease stress, but the results of one’s plans and actions may actually serve to remove or weaken the source of one’s stress; that is, the worrisome job might get done!

      4. Hand in hand with acting when appropriate, learn to accept situations that are out of one’s control and cannot be acted on.
         a. Individuals need to distinguish between those situations that are worth the energy invested in changing them and those situations that are unchangeable regardless of the energy invested in them.
            (1) e.g., Lateness caused by traffic is out of the hands of an individual.
            (2) It only increases stress to waste energy trying to resist what is inevitable.
5. Pace activities.
   a. Break a task into manageable parts and start fresh each day.
   b. Recognize that there are 24 hours in a day and set reasonable daily goals for yourself.

B. Remember that the problem is not in stressful experiences themselves; the problem is in one’s reactions to these experiences.

CONCLUSION: Each individual has his/her own limits for stress, his/her own ways of coping with stress, and his/her own ways of balancing the costs and benefits of stress. Perhaps your strategies were mentioned in this lecture; perhaps you have your own ways that you would like to share with the class.

Lecture Audioscript, page 77
This audioscript shows one speaker’s delivery of the lecture, as recorded in the audio program. Use it as a resource.

OK . . . as you all know it’s easy to relax when there’s nothing causing tension . . . when you have no . . . uh . . . problems . . . no school . . . but that’s pretty unrealistic . . . life always has stressors . . . things which are causing us stress . . . and living without stress is virtually impossible . . . and no one is immune to stress . . . so . . . if we have to live with stress we may as well find out more about what it . . . what it is . . . how we can deal with it and so on . . . OK . . . um what is stress? . . . the term was originally used in physics . . . to describe . . . the force exerted . . . between two touching bodies . . . it was strictly a term describing a physical reaction . . . in the 1930s um . . . a doctor named Hans Selye . . . S-E-L-Y-E . . . of Montreal . . . first used this term to describe a human’s reaction to a demand placed on it . . . the human body’s reaction . . . its nonspecific response . . . to any demand placed on it . . . pleasant or not . . . let me repeat that . . . the body’s nonspecific response . . . to any demand placed on it . . . pleasant or not . . . um so he really didn’t put any value judgment on that . . . and he included in this response things like um accelerated breathing . . . accelerated heart rate . . . increased blood pressure . . . muscle tension . . . and so on . . .

And . . . and notice that I said that stress can be pleasant or not . . . this response can be pleasant or not . . . and stress can be both negative and positive . . . and positive stress . . . he named “eustress” [writes on board] . . . and eustress occurs in a life situation toward which one feels positively . . . and as you saw in the exercise at the beginning . . . uh you saw on the stress scale things like Christmas . . . um getting married . . . usually positive events . . . but still stressful nonetheless . . . um another example is that pressure in a job can give some people incentive to work and excitement but it still is stress . . . or as I said before, Christmas . . . marriage . . . achievement . . . are all positive things but they certainly add stress to your life . . . negative stress is what most of us think of when we think of stress and negative stress occurs . . . logically enough . . . in situations toward which one feels negatively . . . and those examples could be uh . . . test-taking . . . uh a friend’s death . . . and so on . . . but a thing to remember is that stress in itself is not hazardous . . . rather the danger is in the individual’s reaction to the stress . . . so stress is not a negative or a positive word . . . it’s not dangerous in itself . . . the danger is in the individual’s response to the stress . . . and psychologists have found that if we develop appropriate ways to cope with stressful situations . . . individuals can reduce the physiological harm which is caused by stress or which can be caused by stress . . . and that’s what I want to talk a bit about . . . what are these appropriate ways to deal with stress . . . to minimize any negative reactions? . . .

The first thing that most psychologists suggest is to learn . . . to recognize . . . your own stress signals . . . and we all have different types of stress signals . . . but individuals should monitor themselves for stress signals . . . so that they can focus on minimizing or acknowledging the stress before it gets out of control . . . and common early signs for many people include irritability . . . uh insomnia . . . weight loss . . . weight gain . . . smoking . . . drinking . . . increases in small or “dumb” errors . . . uh tension . . . tics . . . tightness of breath . . . all kinds of things . . . that people get which could be an early signal of stress . . . and if you’re aware of your early signs of stress . . . and as I said people might have different early signs of stress . . . you can consider ways to protect yourself when you start seeing these signs coming on . . . so you might decide to withdraw from a stressful situation . . . or uh reward yourself with equal amounts of low-stress activity time . . . but once you recognize the stress signals you can do something . . . to prevent them . . . from getting out of hand . . . so that’s really the first . . . important way to deal with stress appropriately . . .

A second very important way to deal with stress is to pay attention to your body’s demands . . . most psychologists are finding that a good exercise program . . . good nutrition . . . decreases the amount of stress . . . or the effect of stress . . . on the body . . . in the mind . . . and this seems quite apparent because exercise can provide a stress-free environment away from your usual stressors and it keeps your body busy and preoccupied with nonstressful things . . .

OK . . . uh . . . the third thing psychologists suggest should be done to reduce stress . . . is to make plans and act . . . when appropriate . . . and I’ll get back to that “when appropriate” comment, OK? . . . but what they suggest is rather than wasting energy on worrying . . . an individual can direct his or her energy to plan the steps and act . . . and often just the planning of the action helps to reduce the stress because it reduces the worrying . . . and also the results of the plans or actions may serve to remove or weaken the original cause of the stress . . .

OK but notice that I said “when appropriate” . . . and this next suggestion has to do with that idea “when

FOCUS ON LECTURE ORGANIZATION (PART 1) 33
appropriate” . . . the third suggestion was to make plans and act when appropriate rather than just sit around and worry . . . but the fourth plan . . . or fourth idea says to learn to accept situations which are out of your control . . . which you cannot act on . . . OK . . . these two then go hand in hand . . . they’re very important . . . you can make plans and act when it’s appropriate . . . but . . . when it’s not appropriate . . . or when it’s impossible . . . the only way . . . the thing to do is to learn to accept that some things are unchangeable and out of your hands . . . OK . . . so for example if you’re in traffic . . . lateness caused by traffic is out of your hands . . . there’s no sense in getting really all crazy about that . . . other things are . . . well . . . just in general it only increases your stress to waste energy trying to resist what’s inevitable . . . what can’t be avoided . . .

The last item that psychologists suggest is to pace your activities . . . and by pace I mean . . . give yourself some manageable task to do at a regular . . . uh a reasonable speed . . . don’t try to jump into something all at a whirlwind speed . . . then get exhausted and burnt out . . . but go at a speed that you can handle . . . break your task into manageable parts rather than try to deal with the whole task all at once . . . so as an example in your lives as students . . . a whole term paper might feel overwhelming . . . but if you say to yourself “today I’m going to go to the library and gather resources” . . . “tomorrow I’m going to read three articles” . . . and so on . . . you’ll have broken this one large task . . . writing a term paper . . . down into many smaller and more manageable tasks . . . reducing your stress . . . and the important thing to do is recognize that there are only twenty-four hours in a day . . . you can’t possibly do more than is feasible in twenty-four hours a day . . . so plan a manageable amount of items to do in a period of time . . . and start fresh each day . . .

OK . . . so remember . . . the problem is not in the stressful experiences themselves . . . we all experience stress and stressful events . . . the problem is in one’s reaction to these experiences . . . and each of us has our own limits for stress . . . our own ways of coping with stress . . . our own way of balancing the costs and benefits of stress . . . stress can be positive for some . . . more positive for others . . . negative for some . . . etc. . . . perhaps your strategies for dealing with stress were mentioned in this lecture . . . and perhaps some of you have your own ways that you’d like to share with the class . . . so uh why don’t we open the floor to comments . . . suggestions . . . questions from you before we go on.

Activity 3: Listening for the Larger Picture, page 77
Answer: c

Activity 5: Defining Vocabulary (Audioscript), page 78

1. virtually: Life without stress is virtually impossible.
2. immune: He thought that he would never get sick if he took vitamins every day and exercised. However, when everyone in the office got the flu, he got it, too. That taught him that no one is immune to disease!
3. adapt: She bought a computer that was on sale, but she needed to adapt it because it really didn’t fit her needs in her office. She added additional power and a larger monitor.
4. hazardous: Smoking is hazardous to your health.
5. monitor: The doctor was worried about the development of the baby. Therefore, she asked the parents to bring him into her office each week so that she could monitor his development.
6. regardless of: Regardless of the amount of work I do, I can never satisfy my boss. I think it’s impossible.
7. out of one’s hands: I know you really want that job, but now that the interview is over, you should just relax because the decision is out of your hands.
8. inevitable: Everyone experiences the loss of a loved one sometime. Death is inevitable.
9. pace: Long-distance runners know not to run at the maximum speed at the beginning of a race. They need to pace themselves so that they have energy left if they have to speed up toward the end of the race.

Activity 5: Defining Vocabulary, page 78

Answers:

1. b 2. a 3. c 4. c 5. b 6. a 7. c 8. c 9. a

Activity 6: Listening and Note-Taking, page 79
See Appendix D, page 189 in the textbook for example notes.

Activity 7: Replay Questions (Audioscript), page 80

1. The last item that psychologists suggest is to pace your activities . . . and by pace I mean . . . give yourself some manageable task to do at a regular . . . uh a reasonable speed . . . don’t try to jump into something all at a whirlwind speed . . . then get exhausted and burnt out . . . but go at a speed that you can handle . . . break your task into manageable parts rather than try to deal with the whole task all at once . . . so as an example in your lives as students . . . a whole term paper might feel overwhelming . . . but if you say to yourself “today I’m going to go to the library and gather resources” . . . “tomorrow I’m going to read three articles” . . . and so on . . . you’ll have broken this one large task . . . writing a term paper . . . down into many smaller and more manageable tasks . . . reducing your stress.

Answer: b
2. Perhaps your strategies for dealing with stress were mentioned in this lecture . . . and perhaps some of you have your own ways that you’d like to share with the class . . . so uh why don’t we open the floor to comments . . . suggestions . . . questions from you before we go on.

Answer: The lecturer wants to give others an opportunity to talk.

Activity 8: “Other Voices” Follow-Up (Audioscript), page 80

Student A: Well that was interesting . . .

Student B: Yeah . . . but easier said than done . . . I mean . . . pace activities? I just feel like I’m so overwhelmed . . . I’ve got so much going on . . . and I know there are only 24 hours in a day . . . but . . . I’m just trying to do everything . . .

Student A: I know what you mean . . . I know what you mean . . . but . . . you know I think that’s what she said . . . she said that all you can do is break the jobs down into more manageable pieces and start new each day . . . so maybe we’re just expecting too much from ourselves . . .

Student B: Yeah . . . it’s really a balancing act, isn’t it . . . actually, there is one thing that I don’t think she talked enough about . . . and that’s learning how to prioritize . . . I mean she’s right . . . there are only 24 hours . . . but it’s not just breaking the tasks down into manageable parts . . . I think it’s also about being selective about which tasks are just more important than others and focusing on those . . . otherwise we just get all caught up in doing things that are really not that important . . . don’t you think?

Student A: Hmmmm . . .

Answer: c

Activity 10: Using Your Notes, page 81

Answers:

1. c 2. physics 3. stress caused by events about which one feels positively 4. learn to recognize stress signals; pay attention to demands of body; make plans and act when appropriate; learn to accept situations which are out of your control; pace activities 5. False 6. b

Activity 12: Academic Word List Vocabulary, page 82

<table>
<thead>
<tr>
<th>VERB</th>
<th>NOUN</th>
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<tr>
<td>achieve</td>
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<td>acknowledge</td>
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<td>respond</td>
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<td>benefit</td>
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Activity 13: Using Vocabulary (Audioscript), page 83

What a Night!

1. He had virtually no sleep last night.
2. Because of his insomnia, he is very irritable today.
3. There is a lot of noise outside of the window. However, his wife seems to be immune to it.
4. Traffic speeds by outside regardless of the hour of night.
5. The husband is now in the process of monitoring the noise levels so that he can support his case when he complains to the city council.
Burnout

1. “Burnout” is a term used to describe physical and emotional exhaustion as a result of long-term stress. It’s a feeling of not wanting to or not being able to cope with all or part of one’s life.
2. Psychologists warn that burnout may be inevitable if people do not know how to pace themselves.

Activity 13: Using Vocabulary, page 83

Answers:

What a Night! 1. c 2. a 3. a 4. c 5. b
Burnout: 1. b 2. a

Lecture 6: Acid Rain

Activity 1: Pre-Lecture Reading and Discussion, pages 86–87

Answers:

1. LaBastille mentions the following effects around her home: her lake has grown increasingly clear with a strange layer of algae spreading across the bottom; certain fish, frogs, and birds are now rare; a large number of the spruce trees have died; the lake is measuring a more acidic pH; copper and lead plumbing have corroded. She mentions the following effects worldwide: Certain fish and trees/forests are threatened; buildings are being damaged; certain animal organs are unfit to eat. 2. Answers will vary. 3. Answers will vary.

Activity 2: Preparing for the Lecture (Audioscript), page 88

Acid rain . . . that’s what I’m going to talk about today . . . and as you’ve read, this thing called acid rain has caused direct damage to architectural structures by corroding very famous monuments . . . such as the Acropolis in Greece . . . the Taj Mahal in India . . . the Lincoln Memorial in the United States . . . and . . . as you also read . . . architectural damage is not all that it does . . . it has also damaged forests . . . agriculture . . . aquatic ecosystems . . . health and water systems . . . OK? . . . so what I’d like to do is talk about this substance that is causing so much damage . . . First . . . what is it? . . . acid rain is . . .

Answer: c

Lecture Outline, page 88

Use this outline if you’d like to deliver the lecture yourself.

INTRODUCTION: As you read in the introductory reading in this section, acid rain has caused direct damage to architectural structures, corroding such famous monuments as the Acropolis in Greece, the Taj Mahal in India, and the Lincoln Memorial in the United States.

And as you also read, acid rain is not just a problem for man-made objects. We see the damage to materials, forests, agriculture, and aquatic ecosystems as well.

What is this substance that is causing so much damage? What is acid rain? That is what I would like to talk about today.

I. Acid rain is any form of precipitation—rain, snow, sleet, fog—that contains high levels of acid, particularly sulfuric acid and nitric acid.
   A. The scale for measuring acidity is the pH scale—with a pH of 7 being considered neutral.
   B. Theoretically pure rainwater has a pH of 5.6.
   C. Near L.A., scientists have found water with a pH of 2.8—almost 1,000 times more acid than usual—dripping from pine needles.
   D. The most acidic rainfall in the United States to date is pH 1.4 in West Virginia—this is not much above battery acid, which has a pH of 1.
   E. Monitoring has shown that broad areas of North America as well as most of Europe and other industrialized regions of the world are regularly experiencing precipitation that is between 10 and 1,000 times more acidic than usual.
II. What causes acid rain?

A. When nitrogen and sulfur are released into the atmosphere, they combine with oxygen and hydrogen in the atmosphere to form nitric acid and sulfuric acid.
   1. The chemical symbols are $\text{HNO}_3$ and $\text{H}_2\text{SO}_4$, respectively.

B. The nitrogen and sulfur necessary for this chemical reaction come from a few different sources. These are statistics from the U.S. in 2002.
   1. Nitrogen sources are as follows.
      a. 54% of nitrogen emissions come from transportation—cars, trucks, buses, etc.
      b. 22% of nitrogen emissions come from electric utilities, that is, from the fuels burned to produce electric power.
      c. 17% of nitrogen emissions come from other fuel combustion.
      d. 7% of nitrogen emissions come from industrial and other sources.
   2. Sulfur sources are as follows.
      a. 67% of sulfur emissions come from electric utilities—mostly coal-burning power plants.
      b. 19% of sulfur emissions come from fuel combustion outside of electric utilities.
      c. 9% of sulfur emissions come from other industrial sources.
      d. 5% of sulfur emissions come from transportation.
   3. On the whole, air pollution from the burning of fossil fuels—gas, coal, oil—is the major cause of acid rain. Power plants burn coal and oil to produce electricity. We burn oil and gas to heat our homes. Cars, trucks, and planes use gasoline, another fossil fuel.

III. The effects of acid rain are numerous.

A. Fish populations decrease or disappear in certain areas. As water in aquatic ecosystems—such as lakes, ponds, and streams—becomes acidified, there is a rapid dying of many organisms, either because the acidified water kills them or because it keeps them from reproducing.
   1. In Norway and Sweden, fish have died in at least 6,500 lakes.
   2. In Ontario, Canada, in the 1980s, approximately 1,200 lakes harbored no life. And though there have been improvements over the last couple of decades, recovery has been slower than expected.
   3. The physical appearance of such lakes is deceiving. From the surface, they are clear and blue—the outward signs of a healthy condition. However, under the surface, there is not a sign of life.

B. Forests become damaged.
   1. Certain trees die in great numbers (spruce, pine, aspen, birch) because the acidity strips them of their protective waxy surface, leaving the trees vulnerable to water loss and disease.
   2. In the late 20th century, this was a major issue. However, there is evidence that the damage to forests due to acid precipitation has leveled off—primarily because sulfur emissions have been declining due to greater pollution controls.

C. Architectural structures are damaged.
   1. Monuments and buildings that have stood for hundreds or even thousands of years with little change are now dissolving and crumbling.
   2. This costs billions of dollars a year for replacement in the United States.

D. No adverse health effects are directly attributed to acid waters, but there is concern that highly acidic levels of water can lead to illness because the acidity can leach toxic metals (such as lead) from pipes.

CONCLUSION:

A. Acid rain has increased with industrialization.
   1. Water (preserved in glaciers) from 200 years ago (prior to the Industrial Revolution) has a pH of approximately 5—close to the pH of theoretically pure rainwater.

B. In order to put some controls on the production of acid rain, we need to consider shifting to alternative, nonpolluting energy sources and/or creating technology to reduce the release of sulfur and nitrogen.
   1. This is happening worldwide, though the problem is still a serious one.
      a. Laws and policies have been created with specific goals and plans for the reduction of pollutants in the atmosphere.
      b. There have been agreements between countries to reduce emissions that cross national boundaries.
Acid rain... that’s what I’m going to talk about today... and as you’ve read, this thing called acid rain has caused direct damage to architectural structures by corroding very famous monuments... such as the Acropolis in Greece... the Taj Mahal in India... the Lincoln Memorial in the United States... and... as you also read... architectural damage is not all that it does... it has also damaged forests... agriculture... aquatic ecosystems... health and water systems... OK?... so what I’d like to do is talk about this substance that is causing so much damage...

First... what is it?... acid rain is any form of precipitation... that is rain... snow... sleet... fog... any form of precipitation... that contains high levels of acid... particularly sulfuric acid and nitric acid... now the scale for measuring acidity is called the pH scale... and on this scale a pH of 7 is considered neutral... rainwater... theoretically pure rainwater has a pH of about 5.6... now just so you can get an idea of how bad the problem of acid precipitation has gotten... imagine that the most acidic rainfall in the United States to date had a pH of 1.4... that was in West Virginia... to get an idea of how acidic that is... consider that battery acid has a pH of 1!... another example was near Los Angeles where scientists have found water with a pH of 2.8 dripping from pine trees... this is almost 1,000 times more acid than usual... and this is not only a problem affecting the United States... monitoring has shown that broad areas of North America... as well as most of Europe... and... other industrialized regions throughout the world... are regularly experiencing precipitation that is between 10 and 1,000 times more acid than usual... OK... so there’s a big... this is something that we’re talking about that really is affecting many of us...

Where does this come from?... acid rain comes from nitrogen and sulfur that is released into the atmosphere... what happens when this occurs?... when nitrogen gets released into the atmosphere it combines with oxygen and hydrogen to form... what?... nitric acid... the chemical symbol for that is H... N... O... 3 [writing on board]... H... N... O... 3... when sulfur gets released into the atmosphere it also combines with oxygen and hydrogen to form an acid... sulfuric acid... and the chemical symbol for that is H... 2... S... O... 4 [writing on board]... sulfuric acid... H... 2... S... O... 4... so where does all this nitrogen and sulfur come from in the first place?... it comes from a few different sources but as you’ll see in a minute, there are a couple of sources that dominate... first of all... the nitrogen... 54 percent of all nitrogen sources in the United States... and this is as was reported in 2002... come from transportation... cars... trucks... buses... and so on... our convenience comes at a price... 22 percent of nitrogen emissions come from electric utilities... that is... from the fuels burned to produce electric power... when coal and other fuels are burned to generate power, nitrogen is released into the atmosphere... eventually forming nitric acid... 17 percent comes from fuel combustion for other purposes... finally... 7 percent of nitrogen emissions in the U.S. come from industrial and other sources...

As for sulfur... 67 percent of sulfur emissions in the United States come from electric utilities... mostly coal-burning power plants... so just as nitrogen is released into the atmosphere as a result of fuel combustion... so is sulfur... you can see that the predominant source of sulfur emissions... at least in the U.S. is the burning of fuel to generate electric power... another 19 percent of sulfur emissions come from fuel combustion for other purposes... the remainder of sulfur comes from... well... 9 percent comes from other industrial sources... and 5 percent comes from transportation... transportation-related sources...

So in general we can say that the major cause of acid rain is air pollution caused by the burning of fossil fuels... coal... oil... gas... this is the general cause... what happens is that power plants burn coal and oil to produce electricity... the electricity that we use daily... and the electricity that industry uses daily... day in... day out... we also contribute when we burn oil and gas to heat our homes, businesses, and factories... cars, trucks, and airplanes use gasoline... another fossil fuel... so what it all comes down to is that acid rain is caused by the burning of fossil fuels... by the pollution created by this burning... and we all contribute to it...

OK... as I said... the effects have been pretty numerous... it’s caused architectural damage... ecological damage... and for example... it has caused fish populations to decrease or disappear in certain areas... what happens is... as water in aquatic ecosystems... such as lakes... ponds... streams... becomes acidified... what happens is that there is a rapid dying of organisms... either because the acidified water kills them or because it keeps them from reproducing normally... as an example... in Norway and Sweden... fish have died in at least 6,500 lakes... in Ontario, Canada, in the 1980s approximately 1,200 lakes harbored no life... and though there have been improvements over the last couple of decades, recovery has been slower than expected... and the physical appearance of these lakes can be deceiving... you look at them and they appear clear and blue... beautiful... outwardly they seem healthy... but under the surface... there’s no life... no life...

Other ecological results are that forests and trees... certain trees... are damaged... certain trees have died in great numbers... particularly some types of spruce, pine, aspen, and birch... what happens is that these trees are sensitive to the acidity and it destroys their protective waxy surface... their protection... and this leaves the
trees vulnerable to water loss and disease that kills the trees... in the late part of the 20th century this was a major issue... however... now... there appears to be evidence that the damage to forests due to acid precipitation has leveled off... primarily we think because sulfur emissions have been declining due to greater pollution controls... 

What else? Architectural damage... I mentioned before... monuments and buildings that have stood for hundreds or even thousands of years with little change are now dissolving and crumbling... there's a picture of that in your book... and repairs and replacements are expensive... the United States alone... billions are spent each year to replace and repair damage to structures caused by acid rain...

As for your question as to whether there are any health risks... so far scientists haven't found any adverse health effects... directly attributed to acid rain... notice I said directly attributed to acid rain... there is concern that there could be an indirect influence... so for example... the acid rain could leach... or remove some kind of toxic metal from pipes... such as lead... and then this toxic metal can contaminate our drinking water... so it's not a direct result but it could be an indirect result...

OK... as we know... acid rain has increased with industrialization... we have not always had acid rain... OK... when they look at glaciers from about 200 years ago... they find that the water had about a pH of about 5... that was close to theoretically pure rainwater... so 200 years ago rainwater wasn't yet acidified...

OK... what can we do... we do need to put some controls... or possibly put some controls on the production of acid rain... perhaps by shifting to alternative nonpolluting energy sources... harness the energy of the sun or the wind, for example... or we need to create technology to reduce the release of sulfur and nitrogen into the atmosphere...

This is happening worldwide... though the problem is still a serious one... nations are passing laws and creating goals for reducing pollution emitted by industry and by cars and other vehicles... there have been agreements between countries to reduce emissions that cross national boundaries... much has been successful... but with the world's continuing and increasing demand for power and transportation... we still have work to do in this area...

The important thing to remember is that this is not a problem that just concerns one area... OK?... because acid rain is airborne, it is not a problem that has boundaries... everyone really needs to be concerned.

Activity 3: Listening for the Larger Picture, page 88

Answers:

1. Possible answers: to get the audience's interest; to stress the importance of the topic  
2. b, c, d, e

Activity 5: Defining Vocabulary (Audioscript), pages 89–90

1. corrosion: When engineers plan to build a metal structure that will stand unprotected outdoors, they must consider the possibility of corrosion caused by rain.

2. ecosystem: An ecosystem is a delicate balance. For example, in a low desert ecosystem, if there is an extremely cold winter, one species of plant may suffer. The loss of that one species can cause the loss of food for one small animal. If this animal dies in great numbers, this can affect a higher order species and so on. In an ecosystem, all parts are interrelated and interdependent.

3. precipitation: Last year was a record year for precipitation in the desert. More than six inches of rain fell.

4. source: If he loses his job, he will have no money. His job is his only source of income.

5. emission: Some people are urging the government to put more controls on automobile emissions. They warn that if this is not done, air pollution will only get worse.

6. vulnerable: Nations are especially vulnerable to an attack when they are unprepared or preoccupied with internal difficulties.

7. predominant: That country's predominant export is oil; it doesn't produce much else.

8. level off: The cost of new homes has leveled off. For a while, it seemed that prices would never stop rising, but now they have stayed at the same price for a few months.

9. adverse: Smoke not only has adverse effects on smokers but also harms people around smokers.

10. attribute: People attributed his death to the fact that he smoked four packs of cigarettes a day.

11. toxic: All toxic material should be kept on high shelves so that small children do not drink or eat dangerous substances.

12. glacier: Visitors to Alaska often take boat trips to view the many glaciers that exist there. If you're on a boat that pulls close to a glacier, you may feel surrounded by blue walls of ice, pieces of which occasionally break off and splash into the water.

13. alternative energy: Many believe that alternative energy, such as energy from the sun, wind, tides, heat of the earth, is too expensive to use on a large scale.

14. airborne: I was nervous before we got on the plane, but once we were airborne I seemed to relax.

15. eventually: She said she would call me right back. She eventually did but by the time she called, it was too late and I had made other plans.

Activity 5: Defining Vocabulary, pages 89–90

Answers:

Activity 7: Replay Questions (Audioscript), page 92

OK... what can we do... we do need to put some controls... or possibly put some controls on the production of acid rain... perhaps by shifting to alternative nonpolluting energy sources... harness the energy of the sun or the wind, for example... or we need to create technology to reduce the release of sulfur and nitrogen into the atmosphere...

This is happening worldwide... though the problem is still a serious one... nations are passing laws and creating goals for reducing pollution emitted by industry and by cars and other vehicles... there have been agreements between countries to reduce emissions that cross national boundaries... much has been successful... but with the world's continuing and increasing demand for power and transportation... we still have work to do in this area...

The important thing to remember is that this is not a problem that just concerns one area... OK... because acid rain is airborne, it is not a problem that has boundaries... everyone really needs to be concerned.

Answers: 1. c 2. d

Activity 8: “Other Voices” Follow-Up (Audioscript), pages 92–93

Professor: OK... so let's hear what you’ve come up with in... in... your groups... I asked you to look at ways that we personally can cut down our own contributions... to acid rain... so who wants to start?

Student A: I guess we can... We mostly talked about transportation issues... um... we really thought that since for both nitrogen and sulfur emissions, transportation was an issue... Obviously it’s more of an issue with nitrogen... but it still is a source of both chemicals... so we focused on transportation... and uh... some of the things we came up with are walking or riding your bike or taking a bus or train or carpooling... um... those would be really important... um... If you could buy a hybrid, that would be great... You know or some kind of alternative fuel... that would be really good... um... We talked about in our houses, what we should probably do is really try to cut down on the use of um... electricity... so buying energy-efficient appliances... what else? um... Turn out the lights in empty rooms... Use fluorescent bulbs... instead of the high-wattage bulbs... that’s what we came up with...

Professor: Thanks... that’s a pretty good list that you’ve got there... OK how about a second group?... What did you come up with that’s different from what you just heard? Who’s going to speak for this group?

Student B: Well... they took all of our ideas...

Professor: Of course...

Students: (laughter)

Professor: No... continue...

Student B: Well... we did talk about the same issues with transportation... you know riding bikes... taking buses... trains... but we also talked a little more about the house... we talked about specifically how... you know... about appliances... you know we shouldn’t use a dishwasher unless there’s a full load... same thing with washing machines... With the dishwasher maybe let dishes air-dry... same thing with laundry... sometimes we can just hang clothes up to let them dry... um... also we talked about insulation in houses... you can weatherstrip your doors and windows... make sure they’re well sealed from drafts... keep cold air out so that you don’t have to heat so much... Maybe we shouldn’t heat as much as we do anyway... live with a cooler house in the winter... And live with a warmer house in the summer... not air condition as much as we do... That I guess is a lot of what we said in addition to the transportation stuff...

Professor: Great... good job... very good job... how about the third group?... obviously you’re last, so... so you don’t... let’s try not to repeat ourselves... but any other suggestions that you had?

Student C: We talked about shopping also... we talked about how if you can buy local products rather than products that are imported, it doesn’t... you don’t have to... you’re not factoring in energy costs for transportation... so we thought that that was a good idea and um... even when we’re talking about our own transportation, we talked about even if we do our own driving and have our own car, we can still cut down on the number of trips we need to take each day by doing a lot of errands together instead of making lots of small trips... and then let’s see... these are kind of minor... but with your car... keep your engine tuned... and make sure that the pressure in your tires is correct... I think that’s it...
Professor: OK those are good... anybody have any other ideas? ... nothing? ... well... I think you really covered an awful lot of ideas... there’s just one more about transportation... you know they say that if you drive at moderate speeds rather than speeding... you’re using fuel more efficiently... so I know that some of us like to step on that gas pedal but we might want to reduce that... but overall... I think you’ve got some great ideas...

Activity 8: “Other Voices” Follow-Up, pages 92–93

*Answers:*

Have students share the suggestions they noted. Add additional suggestions and go over new vocabulary with a second listening.

<table>
<thead>
<tr>
<th>Suggestions related to the home</th>
<th>Suggestions related to shopping</th>
<th>Suggestions related to transportation</th>
</tr>
</thead>
<tbody>
<tr>
<td>cut down on use of electric.</td>
<td>buy local products—not imported</td>
<td>walking</td>
</tr>
<tr>
<td>buy energy-efficient appliances</td>
<td>(lower transport costs)</td>
<td>bike</td>
</tr>
<tr>
<td>turn out lights</td>
<td></td>
<td>bus</td>
</tr>
<tr>
<td>fluorescent bulbs...low-watt</td>
<td></td>
<td>train</td>
</tr>
<tr>
<td>dishwasher--full load</td>
<td></td>
<td>carpool</td>
</tr>
<tr>
<td>washing machines--same</td>
<td></td>
<td>hybrid or altern. fuel</td>
</tr>
<tr>
<td>let dishes air-dry</td>
<td></td>
<td>cut down on # of car trips:</td>
</tr>
<tr>
<td>hang laundry</td>
<td></td>
<td>group errands</td>
</tr>
<tr>
<td>insulate houses</td>
<td></td>
<td>keep tuned engine</td>
</tr>
<tr>
<td>weatherstrip doors/windows--</td>
<td></td>
<td>√ air pressure tires</td>
</tr>
<tr>
<td>so no drafts</td>
<td></td>
<td>don’t speed</td>
</tr>
<tr>
<td>less heat and air cond.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Activity 10: Using Your Notes, page 94

*Answers:*

1. HNO₃

2.

<table>
<thead>
<tr>
<th>Source of Nitrogen in U.S.</th>
<th>%</th>
</tr>
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<tbody>
<tr>
<td>Transportation</td>
<td>54</td>
</tr>
<tr>
<td>Electric utilities</td>
<td>22</td>
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<tr>
<td>Other fuel combustion</td>
<td>17</td>
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<tr>
<td>Industrial &amp; other sources</td>
<td>7</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Source of Sulfur in U.S.</th>
<th>%</th>
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<tbody>
<tr>
<td>Electric utilities</td>
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</tr>
<tr>
<td>Fuel combustion outside of electric utilities</td>
<td>19</td>
</tr>
<tr>
<td>Other industrial sources</td>
<td>9</td>
</tr>
<tr>
<td>Transportation</td>
<td>5</td>
</tr>
</tbody>
</table>


Activity 12: Academic Word List Vocabulary, pages 94–95

<table>
<thead>
<tr>
<th>NOUN</th>
</tr>
</thead>
<tbody>
<tr>
<td>generation</td>
</tr>
<tr>
<td>domination</td>
</tr>
<tr>
<td>attribution</td>
</tr>
<tr>
<td>contribution</td>
</tr>
<tr>
<td>transportation</td>
</tr>
<tr>
<td>approximation</td>
</tr>
<tr>
<td>alternation</td>
</tr>
</tbody>
</table>

1. approximation  2. attribute  3. transport  4. contribution  5. alternate  6. generate  7. dominate
Activity 13: Using Vocabulary, page 95
Use this outline if you’d like to deliver the mini-lecture yourself.

I. An effect of acid rain in southern Norway
   A. Acid rain had a negative effect on the fish population over a 33,000-square-kilometer area.
      1. Within this 33,000-square-kilometer area, there were 13,000 square kilometers where all the fish
died.
   B. Acid rain played an indirect and a direct role in this damage to the fish population.
      1. Directly, the acid rain entered the lake and thus raised the acid level of the water.
      2. Indirectly, the acid in the acid rain caused aluminum in the soil to leak into the lake, which then
raised the acid level of the water.
   C. There were far-reaching effects of this damage.
      1. Because of the loss of the fish, higher-level animals lost a major source of food and the ecosystem
was disrupted.

Activity 13: Using Vocabulary (Audioscript), page 95
This audioscript shows one speaker’s delivery of the lecture, as recorded in the audio program. Use it as a
resource.

Now acid rain had some serious effects in certain parts of um southern Norway . . . It had an especially bad
effect on the fish population there . . . over an area of about 33,000 square kilometers . . . and within this 33,000
square kilometer area, there were about 13,000 square kilometers . . . I’d say about almost a third of this area
where all the fish died . . . and researchers are saying that acid rain has played both an indirect . . . and a direct
role in this damage to the fish population there . . . they say that directly the acid rain entered the lakes . . . and
raised the acid level of the water . . . and this led to the death of the fish . . . but they’re also saying that indirectly
. . . the acid in the acid rain went into the soil . . . and it caused aluminum that’s in the soil . . . to leak into the
lake . . . so it wasn’t directly raising the acid level of the lake . . . but it was causing the aluminum from the soil .
. . . to go into the lake . . . which in turn raised the acid level of the water . . . so no matter how you look at it . . .
the acid level of the water was being raised . . . and the fish died from that . . .

What were the effects of this damage? Well the effects were quite far-reaching . . . what we saw was that
because of the loss of the fish . . . the higher-level animals, the game . . . uh . . . the animals that feed on the fish
. . . they lost a major source of food . . . and in this way, the whole ecosystem was disrupted . . .

Activity 13: Using Vocabulary, page 95

Answers:
1. vulnerable  2. adverse effects  3. attribute  4. toxic  5. ecosystem  6. source

UNIT 7  FOCUS ON LECTURE ORGANIZATION (PART 2)

Unit Summary: Unit 7 continues to teach students to recognize and use cues to lecture organization and
direction. Students gain practice with three new organizational plans, taking notes from short excerpts and longer
lectures, doing pre-lecture and post-lecture activities that aid comprehension, build background and cultural
knowledge, and develop academic reading, writing, speaking, listening, and vocabulary skills and strategies.

Exercise 1, Audioscript, page 99

Example:

What about procedural memories . . . Well procedural memories are memories that we have for physical things
. . . The classic example is riding a bike . . . or using the gearshift or the stick shift on your car . . . so let’s say that
you’re starting to learn how to use a standard type of car transmission . . . Now, you’re getting in the car with a
stick shift and you start to drive . . . after you’ve done this for a period of time . . . you start to get better at it
until you don’t have any problems with doing this . . .

1. With the cold-blooded plants and animals the chemical reactions depend upon the temperature of the environment
. . . their body temperature depends on how cold or how warm the surroundings are . . . they don’t have a stable
temperature as humans do . . . let’s say you go into the desert at night you’ll find that lizards are virtually asleep
. . . it is so cold . . . they can’t do anything . . . as the morning warms up . . . then the lizards and other things like
that all begin to start moving . . . until you get into the heat of the day and they then use up so much energy by
any activity at that temperature that once again they are torpid . . . they’re asleep . . . so the temperature
requirements of a lot of animals in the desert have to be very carefully manipulated by their environmental habits
. . . going into the shade during the day . . . going into a hole in the ground during the night.
2. We might note that cousin terms... terms for cousins... vary a great deal in languages and we'll be coming back to this... in English cousins of both sexes are referred to as a *cousin*... in Spanish you differentiate by sex... you say *primo* and *prima*... male cousin and female cousin... in Chinese it turns out that there are going to be eight terms for cousins...

3. If you're going to, um, communicate with your child... they're 2, 3, 4, 5 years old, you want to do it symbolically for them to understand it... you want to do it symbolically... and before we get to that, let's talk about animism... animism so I can work this in together... animism means that everything is alive... everything is alive at that age... I mean the dog and the cat... you've got the dog and the cat there in the house... I mean it's not unusual to see a 2, 3, 4, 5 year old child carrying on a conversation with the dog and the cat... and calling them by different names and you're going himm... anyway, so they're carrying on conversations... with dogs and cats... and oh! All their stuffed animals... all their stuffed animals can have names... they're all alive... they all have personalities... they communicate with the stuffed animals and... so that's animism... animism means... everything in this child's life is alive during this period of time... and if you're going to communicate with them and get them to understand what's going on... you've got to do it symbolically... which means... through their dolls and toys... I mean you can't sit there and carry on a big high-level conversation...

Exercise 1, Example Notes, page 99

1. *w/ cold-blooded animals, chem. reactions depend on temp. of environ.*

   e.g. lizards—night/cold—can't move  
   day warms—active  
   too hot—sleep

2. Terms for "cousin" vary in diff. languages  
   e.g. Eng.—both sex—same word  
   Span.—diff. for  
   Chin.—8 terms

3. To communicate *w/ child, do it symbolically.*
   "animism": everything is alive for children  
   e.g. dogs, cats, stuffed animals, dolls, toys

Exercise 2, Audioscript, pages 101–102

*Example:*

Professor: All right... now... the first Neanderthal find... and we're going to talk about Neanderthals to a much greater extent later on in the course but just to give you a flavor of what's occurring here... this fossil was found in the Neander Valley in Germany... uh... uh... the farmer who found it... obviously not knowing... looking at the face and said "whoa... this looks sort of human..."... takes it to the local teacher... at the gymnasium... at the high school... who has... obviously he's an educated individual... has some background and he begins... he begins to define what this particular fossil is... and he defines it as an *early human*... now... prior to this... there's nothing... right... no one's talking about any... no other findings have been made... right... so this is the first one... he has nothing to compare it to except modern human skulls... and obviously this [indicating slide] looks quite a bit different than the modern human... but it looks... there is... there's so much similarity that he could not miss the fact that it *had to* somehow be related to us... now this was found in 1856... this is... it's not really talked about too much until around 1865... why do you think?... what happens in 1859?...

Student: Darwin.

Professor: Darwin... right... the publication of?... On the Origin of Species... right... which then re-... restarts... biological investigation in relation to us... and so then all of a sudden Neanderthal takes on much much more importance.

1. We live on a planet... 6.3 billion people... about 3 billion people by the end of this year will have cellular connectivity... and it will take about another two years to connect the next two billion after that... and I mention this because if we want to design for that future we need to understand what those people are about... And that's kind of what I see what my job is and what our team's job is...

2. I'm going to start out with a few slides, which are sort of techie-science slides, but the point is just to show you the amount of variation in brain activity across the night. Now, a night of sleep is not a continuous period of sleep, but one that goes along in a cycle that lasts about 90 minutes all night long. If you're young or if you're tired, it
starts out with a period of very light sleep when you’re just falling asleep. It takes about ten minutes on average for a person who’s not feeling anxious to fall asleep. And then over the next 45 minutes or so, you descend into deeper and deeper stages of sleep. We in the sleep research field are very clever people so we come up with these names like stage one and stage two and stage three and four. So you descend down into this deep, deep sleep here and then after about an hour or so, surprisingly, your sleep starts to lighten up. And then you come up to this period where you have rapid eye movement sleep or REM sleep. For the high school students, this is not named after the band. Actually, the band is named after the sleep stage. And it’s the only sleep stage that has a successful band named after it. There’s no band called any of these others.

So you start out with these 90-minute cycles that are pretty continuous all night long.

3. The fourth step asks you to estimate the quantity . . . the amount of information . . . that you’re going to need to write a paper . . . the quantity of information is often based on the length of the paper . . . if you have to write a 10-page paper you’ll need to do less research than if you’re asked to write a 300-page paper . . . at least I think that’s true . . . quantity also depends on what’s available . . . sometimes because a lot of people choose to do their research on topics that are relatively new . . . they’re in the news right now . . . they’re just now happening . . . so there’s not going to be 100 years’ worth of scholarship or thought or writing on a particular topic . . . so quantity is sometimes determined by availability of information . . .

Often when you hear the word quantity people automatically think of its partner word which is quality . . . quality and quantity are often thought of in the same sentence . . . so after you’ve estimated the quantity of information or material that you need, you need to think about the quality of the information that you’re going after . . . quality in terms of information which you find in a library can be judged in a couple of different ways . . . you can find out who wrote the book you’re thinking about reading . . . is this person a scholar? is this person well-known or well thought of in her field? OK so who wrote the book can say something about the quality . . . our library subscribes to 15,000 different periodicals . . . magazines . . . journals . . . newspapers . . . and they’re of different quality . . . so quality can sometimes be determined just by the magazine or the journal that you’ve read a particular article in . . . so you need to think about quantity in terms of amount of information and quality in terms of the value of that information . . .

The next of these steps . . . the sixth step . . . is the one that I personally have the hardest time with and that’s thinking about budgeting my time . . . think about all the things I have to do in terms of writing a research paper . . . in terms of doing research . . . processing the information . . . and then of course sitting down and writing the paper in absolutely flawless beautiful English . . . you have to budget your time because each of those aspects or elements takes a lot of time . . . so the sixth step is to look at everything you have to do to get this paper written . . . and think about the amount of time it will take you to do each of these steps . . .

Exercise 2, Example Notes, pages 101–102

1. Cell phone use:

   Current world pop.: 6.3 billion

   Cellular connectivity (by end of yr.): 3 bill.

   ~2 yrs. more: 2 bill. more

   to design for future, must understand these people

2. Stages of sleep: not a continuous period of sleep but 90 min. cycles all night

   - 10 min: start w/ very light sleep

   - (over next 45 min.) descend deeper & deeper sleep

   - (after about 1 hr.) sleep lightens

   - begin rapid eye movements REM

3. First 8 Steps for Library Research

   1. survey topic (look for broadest discussion) and clarify unfamiliar terms

   2. break topic into simple subtopics

   3. look for types of info. needed to research subject

   4. est. quantity of info. needed

   5. est. quality " " "

   6. budget time
Anyway the households and its constituents are a very good thing to look at cross-culturally . . . let me just review the types quickly that the book gives us . . . well first of all . . . patrilocal with the husband’s father . . . where the newly married couple goes to live with the husband’s father . . . this patrilocal extended family would be living together . . . “virilocal” . . . another term . . . V-I-R-I . . . local . . . this means going to live with the husband’s family or any of his relatives . . . that is with his family not with his father . . . any of the husband’s relatives . . . obviously a bigger range of possibilities than just going to live with the husband’s father . . . similarly with the next two terms . . . “matrilocal” . . . going to live with the wife’s mother . . . and “uxorilocal” . . . going to live with the wife’s family or any relative . . . your book has a whole little chart of these . . . I’m just giving the main important types . . . another important type that we’ll be talking a bit more about on Thursday . . . is . . .

1. What people normally do is they divide up the period of development in the womb into three basic periods . . . the first one is what’s called the germinal period . . . that’s G-E-R-M-I-N-A-L, germinal . . . which basically encompasses the first two weeks . . . so it’s a period which lasts from conception to about two weeks later . . . the second period is the embryonic period . . . that’s E-M-B-R-Y-O-N-I-C . . . the embryonic period . . . which lasts longer . . . from about the second week on until the third month . . . and finally we’ve got what’s called the fetal period which runs from the third month on to term . . . usually the ninth month . . .

2. The third step means . . . you need . . . asks you to look at types of information that you might need to successfully research this particular subject . . . and by types of information I mean something very specific here . . . two very specific types of information . . . one type that’s known as primary information . . . and another type which is known as secondary information and in terms of a very simple and not exactly accurate definition, primary information or a primary source is an eyewitness account . . . somebody who was actually there at the time is reporting on an event as it happened . . . there are all kinds of primary sources . . . an interview with somebody is a primary source . . . somebody’s diary or personal papers are a primary source . . . if you’re a scientist and you keep a laboratory notebook that charts every step in an experiment . . . that’s a primary source . . . secondary sources or secondary information is that from a distance in time has looked at the primary source and has analyzed it, criticized it, worked it through some sort of critical process and written about it . . . most of what we read in journals, magazine articles, textbooks, encyclopedias are secondary source documents . . . so you have to think about your particular topic . . . whatever subject you’re going to do research on . . . and think about the available primary and secondary sources of information . . .

3. There are two kinds of polygamy which is plural spouses . . . there is polygyny . . . P-O-L-Y-G-Y-N-Y . . . polygyny . . . where the plural spouses are women and polyandry, P-O-L-Y-A-N-D-R-Y . . . polyandry . . . where the plural spouses are men . . . now for polygyny again there are two kinds . . . there’s general polygyny where the women are not specially related to each other in any way . . . they’re co-wives but they may be from very different origins from very different places and there’s the very special kind of polygyny which is sororal polygyny [writes on board] where the co-wives are sisters . . . and this is fairly common especially among Native Americans . . . now the general type of polygyny is more common in Africa and in Melanesia . . . and again there are two kinds of polyandry . . . and as you might guess with our example from polygyny the first kind . . . fraternal polyandry where the co-husbands are brothers . . . we already had some discussion of this in the last lecture in the Himalayan example of fraternal polyandry . . . the co-husbands are brothers . . . the other case being nonfraternal and this is very rare unlike the case with general polygyny which is quite common where the co-wives are not sisters . . .

Exercise 3, Example Notes, page 104

1. 3 periods of development in womb
   
   1. germinal—first 2 wks.      2. embryonic—2nd wk. → 3rd mo. 3. fetal—3rd mo. → birth

2. 3rd step—Look for types of info. needed to research subject
   
   —primary info.—eyewitness
   
   e.g., interview, diary

   —secondary info.—looks at prim. source, analyzes it
   
   e.g., journals, mag.
Two kinds of polygamy (pl. spouses)

<table>
<thead>
<tr>
<th>Polygyny (♀)</th>
<th>Polyandry (♂)</th>
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<tr>
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<td>Nonfraternal</td>
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<td>♀ not related</td>
<td>♀ sisters</td>
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<td>♂ brothers</td>
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common-Africa, Melanesia | common-Native Am., Himalayas, rare

Lecture 7: Archaeological Dating Methods

Activity 1: Pre-Lecture Reading and Discussion, pages 105–107

Students’ answers will vary, allow them to guess and consider the different possible sources of information. For example, for number 2, perhaps the researchers found bright beaded necklaces at the site, or perhaps they found females buried with these necklaces.

Activity 2: Preparing for the Lecture (Audioscript), p. 108

OK . . . what you just did is you looked at a composite sketch which as I said is really not a real sketch . . . most of the time in one site they’re not going to get all of this information . . . this was taken from pieces of information from many different sites . . . but they’re all pieces of information that the sites were able to give at some point . . . in this short lecture that I’m going to give, and I can’t go into all the methods that archaeologists use . . . but I’m going to focus on some of the major methods used to date materials . . .

Answer: False

Lecture Outline, page 108

Use this outline if you’d like to deliver the lecture yourself.

INTRODUCTION: In the previous activity, you read a composite sketch created to demonstrate the wealth of information that archaeologists are able to discern from remains. Clearly, in a short lecture, I cannot go into all the methods that they use in order to get this information, so what I would like to do is just focus on some of the major methods used to date material.

I. Tree-ring dating—“dendrochronology”—one of oldest dating techniques

A. A cross section of each tree shows a series of concentric rings consisting of alternating pale and dark rings.
   1. The pale rings indicate spring.
   2. The darker rings indicate winter.
   3. The light/dark pattern is repeated for each year of the tree’s life.

B. Each year, trees grow a new layer that varies in size with climatic changes.
   1. Thin rings mean a drought or cold spell that stunted growth.
   2. Thick rings mean abundant water and sunlight.

C. Scientists don’t need to count all the rings to date an object; rather, they start at outer layers, where the rings can be matched with recorded climatic events and work back from that point.

D. Using dendrochronological methods, archaeologists have been able to date objects thousands of years old.

II. Carbon-14 dating method

A. This method is based on the concept that all living things contain radioactive C-14 isotopes, which are unstable and disintegrate.
   1. **Note:** An isotope is an element with the same number of protons but a different number of neutrons. (e.g., Chlorine-35 has seventeen protons and eighteen neutrons, while chlorine-37 has seventeen protons and twenty neutrons.)

B. Beginning at death, an organism’s C-14 level diminishes at a fixed rate (one-half of the total every 5,730 years).
   1. The point at which one-half of the C-14 diminishes is called the “half-life.”
C. Using a Geiger counter, a scientist can tally the C-14 electric signals emitted by an ancient specimen and compare this with the signals emitted by a living sample.

1. For example, if the live sample emits 75 disintegrations per minute and the ancient sample emits 37.5, the scientist knows the find is 5,730 years old.

2. The problem with this method is that it requires a relatively large sample, which is destroyed in the process of dating—up to ten ounces of some materials—and some objects are too important to be destroyed.

D. Recent advances have focused on measuring the C-14 atoms themselves rather than the electric signals emitted by C-14 deterioration.

1. This uses a method called accelerator mass spectrometry (AMS).

2. The advantage of this latter method is that it requires much smaller samples—1,000 times smaller (just one to two milligrams) than systems that measure the electric signals.

E. Carbon-14 dating is limited to about 60,000 years.

1. This is because past that date, there is an extremely small amount of C-14 present in the sample (since ten half-lives have passed).

F. Items older than 60,000 years must be dated by other techniques.

CONCLUSION:

A. There are other methods; this list is not conclusive.

B. For most accuracy, methods are cross-checked.

1. For example, an estimate based on C-14 present in the sample (since ten half-lives have passed) is confirmed with a dendrochronological estimate of the age of other materials found at the site.

Lecture Audioscript, page 108

This audioscript shows one speaker’s delivery of the lecture, as recorded in the audio program. Use it as a resource.

OK . . . what you just did is you looked at a composite sketch which as I said is not really a real sketch . . . most of the time in one site they’re not going to get all of this information . . . this was taken from pieces of information from many different sites . . . but they’re all pieces of information that the sites were able to give at some point . . . in this short lecture that I’m going to give, and I can’t go into all the methods that archaeologists use . . . but I’m going to focus on some of the major methods used to date materials . . .

OK . . . the first method I’d like to look at is a method called dendrochronology and that’s D-E-N-D-R-O-C-H-R-O-N-O-L-O-G-Y . . . and someone might remember what exactly that was . . . and it was the study of . . . tree rings . . . the concentric circles in tree rings . . . and using them . . . these concentric circles . . . to draw conclusions about the age of objects . . . and that is the oldest method of dating . . . materials . . . or dating remnants . . . OK? . . . and part of this method is the assumption that every year that a tree grows . . . it grows a new ring . . . and this ring varies in size depending on changes in climate . . . OK and so if you look at a cross section . . . of a tree . . . you would see variations in the tree rings . . . it would vary from pale to dark . . . thick to thin . . . and these variations mean something . . . OK so in the spring the tree rings would be pale . . . in the winter they would be darker . . . OK . . . and, and it’s repeated every year for the tree’s life . . . and thin rings then would mean a drought . . . or a cold spell . . . that stunted the growth . . . and thick rings would mean abundant rain . . . that could increase the growth . . . OK? . . . and you might think . . . oh come on . . . are scientists going to count all of these rings? . . . no they don’t need to do all that . . . what scientists do is they look for what they’re sure of . . . so if they’re sure of a certain climatic change . . . say in . . . the year 1000 A.D. . . . that means they can just look for . . . let’s say a thick pale ring at this time and then date back from there . . . so they don’t always have to recount . . . they can tell . . . they can match trees and say “AHA!” . . . that year we know there was a drought . . . so we can find that particular ring and date back . . . OK this method is the oldest but it’s certainly not the most efficient because . . . archaeologists can only work back a few thousand years with it . . . OK . . . but a few thousand years really doesn’t get us that far with archaeology . . .

Now the second method that I want to talk about is something called the C-14 [writes on board] or carbon-14 dating method . . . now this is more modern technology for dating material . . . some of you might know that all living things contain an isotope called C-14 . . . carbon-14 . . . which is radioactive . . . all right . . . and this radioactive isotope is unstable and it disintegrates . . . and beginning at death then . . . the organism’s level of C-14 decreases . . . or diminishes . . . at a fixed rate . . . and this rate is . . . half of the total of the C-14 decreases every 5,730 years . . . every 5,730 years the organism loses half its total C-14 . . . the term for this is “half-life” . . . the time it takes for one-half of a specific isotope to undergo radioactive decay . . . so the half-life for C-14 is 5,730 years . . . anyway using a machine similar to a Geiger counter . . . an archaeologist can tally the carbon-14 electrical emissions that come out of a specimen and compare this with what would normally come out of a living specimen . . . and . . . let me give an example . . . if the live specimen emitted 75 disintegrations per minute . . .
and the ancient sample emitted 37.5... how old would this be?... any idea?... if the live sample emitted 75... and the ancient sample emitted 37.5... and then one-half of the total disintegrates every 5,730 years... how old would the item be?... it would be 5,730 years old... does that make sense?... because the specimen had half the number of carbon-14 emissions... so that's equal to one half-life... 5,730 years...

Now there are drawbacks to this method... one of the drawbacks is that it requires a large sample... or a relatively large sample... which is destroyed in the process... and you can imagine that if the archaeologists find something that is very important... the last thing they would want to do is destroy it by dating it... OK and you can imagine for example... there's a shroud in Italy... that people claim is the shroud of Jesus... that's the garment worn when one dies... no one is going to want to try to date it to prove its authenticity by this method... because in the process they would destroy it... all right... so that's a drawback to this method...

Now there have been some improvements in this dating technique... and what they do is rather than measuring the emissions... it measures the atoms of C-14 themselves... they use a smaller sample... a much smaller sample... about 1,000 times smaller... usually one or two milligrams is sufficient... the term for this new measuring technique is accelerator mass spectrometry... AMS for short...

Now the carbon-14 dating methods... whether using techniques which measure the electrical signals or using techniques which measure the C-14 atoms themselves are limited to dating back only to about 60,000 years... this is because past that date, there is an extremely small amount of C-14 present in the sample... if one half-life equals 5,730 years... then we're talking about more than ten half-lives... and by that time there's just not that much C-14 left in the sample... so items older than 60,000 years must be dated by other techniques...

OK there certainly are other methods... this just gives you an idea of some of the methods used... and for most accuracy... most methods are cross-checked... so if they're going to do a dendrochronological analysis for example... archaeologists would usually check it with another kind of analysis to make sure they're accurate.

Activity 3: Listening for the Larger Picture, page 108

Answers: dendrochronology; C-14 dating; improvements

Activity 5: Defining Vocabulary, page 109

Answers:

1. h
2. k
3. l
4. i
5. j
6. c
7. f
8. g
9. b
10. a
11. e
12. d

Activity 6: pages 110–111

See Appendix D, page 192 in the textbook for example notes.

Activity 7: Replay Question (Audioscript), page 111:

Now there are drawbacks to this method... one of the drawbacks is that it requires a large sample... or a relatively large sample... which is destroyed in the process... and you can imagine that if the archaeologists find something that is very important... the last thing they would want to do is destroy it by dating it... OK and you can imagine for example... there's a shroud in Italy... that people claim is the shroud of Jesus... that's the garment worn when one dies... no one is going to want to try to date it to prove its authenticity by this method... because in the process they would destroy it... all right... so that's a drawback to this method...

Answer: b

Activity 8: “Other Voices” Follow-Up (Audioscript), page 112

Part 1:

Student: Can I talk to you?
Professor: Yes.
Student: You know this is the first anthro course that I'm taking... and I really really really like the class... and... and I haven't figured out a major... I don't really know what I'm doing and... and... I was just wondering... um... maybe... you know... I am thinking maybe anthropology might be a major... but I don't know what I'd do with it... or what kinds of things I'd take...
Part 2:

Professor: Well, so far in this class . . . what have you heard or read that really grabs you?
Student: I think the idea of looking at ancient cultures . . . you know that kind of stuff . . . is really fascinating . . .
Professor: You remember in class we talked about anthropology having four subfields . . . archaeology . . . biological anthropology . . . linguistics . . . and cultural anthropology . . . so maybe you find archaeology the most interesting . . .
Student: I think so . . .
Professor: So that’s great . . . Are you interested in any particular part of the world?
Student: (slowly, pensively) Ooooh . . . um . . . well . . . I haven’t traveled much . . .
Professor: OK . . . well where would you like to . . .
Student: Where would I like to go . . . ummmmm . . .
Professor: I mean there’s the pyramids of Egypt . . . the Great Wall of China . . . uh uh . . . you can go to . . .
Student: They’re all fascinating . . .
Professor: OK so they’re all fascinating . . . so good . . . and that’s what will happen . . . I mean you start reading all these things . . . you know usually what will happen is you’ll go through the process . . . and some culture . . . some history some background is going to sound more fascinating to you . . . or as you read you’re going to find out that there’s holes in what we know . . . and you want to fill that hole . . . that’s something that you’d like to answer . . . that would be your contribution in a sense to what we don’t know . . . and . . . but that usually comes through the process of studying anthropology . . . you first have to get some basics . . . background . . . and then eventually you’ll find something . . . if you like it . . .
   And . . . you know if you tell someone you want to do anthropology they’ll look at you, especially parents, and say . . . Are you crazy? What are you going to do with something like that? You need to do something where you can get a job . . . I mean go into business . . . my advice is follow your heart because if you follow your heart, you may not have lots and lots of stuff but what you’re going to get out of it is you’re going to be happy . . . and you’re going to do well because you enjoy it . . . you’re going to get up in the morning and say WOW I get to do this today . . .
Student: That’s really important to me . . . so . . .

Activity 8: “Other Voices” Follow-Up, page 112

Answers:
1. What could she do with an anthropology major? What kinds of courses should she take?
2. What have you heard or read in this class so far that grabs you? Are you interested in a particular part of the world? (Where would you like to go?)
3. You’ll figure out what you care about as you read more, take more classes in anthropology, get the basics; don’t worry about a job; do what you love.
4. b
5. Some possible answers: How did you get into anthropology? What degrees are necessary? What are some specializations in the field of anthropology? What schools are good to go to?

Activity 10: Using Your Notes, page 115

Answers:
1. a 2. c 3. True 4. b 5. e 6. 5,730 years 7. The new method requires much smaller samples. 8. They match rings to known climatic events; then, they count from that ring. (They don’t count all the rings.)

Activity 12: Academic Word List Vocabulary, pages 116–117

Answers:
Group 1: 1. c 2. d 3. a 4. e 5. b
Group 2: 6. a 7. d 8. b 9. c
Group 3: 10. b 11. d 12. c 13. a 14. c

Activity 13: Using Vocabulary (Audioscript), page 117

1. According to stories that have been passed down from generation to generation, a race of supermen lived at this particular spot. Archaeologists have dug up the area in order to find out the truth.
2. An analysis of a cross section of the tree indicates that there was a long period of time without water during the year 2000 B.C., which caused the food supply to get smaller and smaller.
3. The primary disadvantage of the older C-14 dating method is that it requires a fairly large sample.
4. In 1450, there was a great deal of rainfall, and this caused the people who lived in the area to move to higher ground.
5. In 1550, there was a period of freezing weather and scientists believe that this is the reason people moved again.
Lecture 8: Pheromones

Activity 2: Preparing for the Lecture (Audioscript), pages 120–121

OK as we discussed earlier when we were looking at the studies of ants . . . bees . . . et cetera . . . animals obviously communicate with each other . . . and yet we know that they don’t communicate with words as humans do . . . and one way they communicate is by emitting a chemical substance . . . which sends signals to other members of the species . . . and this substance is called a pheromone [writes on board] . . . OK . . . what is a pheromone? . . . and I’m going to give you a regular scientific definition of that . . . a pheromone is . . . a chemical substance . . . released by an organism . . . into the environment . . . to evoke a response . . . from the members of the same species . . . let me repeat that . . . it’s a chemical substance . . . released by an organism . . . into the environment . . . to evoke a response from the other members of the same species . . . and these chemicals may be detected by either the sense of smell or taste . . . and as I’ll talk about later on . . . you’ll see that these pheromones are widely used within the animal kingdom . . . in a variety of species ranging from one-celled animals all the way to higher primates . . . a group which includes monkeys, apes, and man . . . and the special characteristics of pheromones . . . and that I’ll talk about again later . . . are that one . . . they’re highly sensitive . . . an animal can release one microgram of a pheromone and get a response and one microgram as you probably know if you’ve done scientific experiments is extremely extremely small . . . and the other special characteristic is that it’s highly specific . . . each species responds only to its own species’ pheromones . . . and these pheromones have no effect on members of other species . . . so if a pheromone is released by a bee . . . it will have an effect on other bees and not on other species . . .

Activity 2: Example Notes, pages 120–121

Pheromone:

chem. substance released by organism into environment to evoke response fr. members same species
–detected by smell or taste
–widely used w/i animal kingdom (1-cell → primates)
–highly sensitive (only need small amt.)
–highly specific (works ONLY w/ own species)

Lecture Outline, page 121

Use this outline if you’d like to deliver the lecture yourself.

INTRODUCTION: Animals obviously communicate with each other, yet they do not communicate with words as humans do. One way they communicate is by emitting a chemical substance that sends signals to other members of the species. This substance is called a pheromone.

I. Definition of pheromone: Chemical substance released by an organism into the environment to evoke a response from the other members of the same species [repeat once]
   A. These chemicals may be detected by either the sense of smell or taste.

B. These pheromones are widely used within the animal kingdom in a variety of species ranging from one-celled animals to higher primates (a group including monkeys, apes, and humans).

C. Special characteristics of pheromones
   1. Pheromones are highly sensitive—an animal can release one microgram of a pheromone and get a response.
   2. Pheromones are highly specific—each species is responsive to only its own species’ pheromones and those pheromones have no effect on members of other species.
II. Two types of pheromones

A. Primer pheromones: cause physiological changes in the organism and affect its development and later behavior
   1. e.g., the queen bee gives off a primer pheromone that prevents the reproductive development of female worker bees.

B. Releaser pheromones: produce rapid and reversible responses and immediate changes
   1. There are four types of releaser pheromones divided along functional lines that are *not* mutually exclusive.
      a. Alarm pheromones: used to warn others of danger; released in response to a threatening situation such as an attack by any enemy
         (1) Response to an alarm pheromone may be dispersal to an area of safety or gathering followed by aggressive behavior.
         (2) e.g., a mouse releases an alarm pheromone and this odor causes other mice to flee.
      b. Aggregation pheromones: used to call members to one locale
         (1) This pheromone may be for the purpose of food, shelter, or mating, among other things.
         (2) e.g., honeybees recognize the entrance to their specific colony by an odor (which is distinct from one colony to another). This odor not only enables identification of the correct home colony, but it also acts as a stimulant causing the returning insects to enter the nest.
      c. Sex pheromones: used to sexually arouse and attract members of the species
         (1) e.g., mature female snails emit a sex pheromone to attract immature sexually undifferentiated (neither male nor female) snails to them. Once the immature snail attaches itself to the female snail, the female releases a primer pheromone, which causes the immature snail to develop into a male so that they can mate.
      d. Terrestrial trail pheromones: used as a navigational guide for others to follow
         (1) This pheromone is “terrestrial” because it is deposited on a solid base and “trail” because species maintain contact with the pheromone while they move along a trail.
         (2) e.g., an ant moving from a food source toward its nest deposits a secretion on the ground as it moves along. Ants follow this trail to reach the food source. When they return from this food source, they deposit additional terrestrial trail pheromones as long as there is still food remaining at the source. Once the food source is exhausted, the returning ants no longer deposit terrestrial trail pheromones and the pheromone dries up.

CONCLUSION:

A. The study of pheromones is very important to agriculture because pheromones can be used to control animal behavior for protecting crops.
   1. Pheromones can lead insects to traps where they can be killed or away from crop locations.
   2. Traditional insecticides contain poisons (which can harm helpful animals and can harm people who eat food sprayed with the insecticide), but pheromones cannot harm other species.

B. Pheromone communication clearly is not comparable to human language, but each system does have its own complexity and usefulness.

Lecture Audioscript, page 121

This audioscript shows one speaker’s delivery of the lecture, as recorded in the audio program. Use it as a resource.

OK as we discussed earlier when we were looking at the studies of ants . . . bees . . . et cetera . . . animals obviously communicate with each other . . . and yet we know that they don’t communicate with words as humans do . . . and one way they communicate is by emitting a chemical substance . . . which sends signals to other members of the species . . . and this substance is called a pheromone [writes on board] . . . OK . . . what *is* a pheromone? . . . and I’m going to give you a regular scientific definition of that . . . a pheromone is . . . a chemical substance . . . released by an organism . . . into the environment . . . to evoke a response . . . from the members of the same species . . . let me repeat that . . . it’s a chemical substance . . . released by an organism . . . into the environment . . . to evoke a response from the other members of the same species . . . and these chemicals may be detected by either the sense of smell or taste . . . and as I’ll talk about later on . . . you’ll see that these pheromones are widely used within the animal kingdom . . . in a *variety* of species ranging from one-celled animals all the way to higher primates . . . a group which includes monkeys, apes, and man . . . and the *special* characteristics of pheromones . . . and that I’ll talk about again later . . . are that one . . . they’re highly sensitive
... an animal can release one microgram of a pheromone and get a response and one microgram as you probably know if you’ve done scientific experiments is extremely extremely small ... and the other special characteristic is that it’s highly specific ... each species responds only to its own species’ pheromones ... and these pheromones have no effect on members of other species ... so if a pheromone is released by a bee ... it will have an effect on other bees and not on other species ...

OK I’m going to divide this talk up according to the different classifications that scientists have given pheromones ... and primarily they divided pheromones into two types ... primer pheromones ... and releaser pheromones ... now the primer pheromones cause physiological changes in the organism ... and affect its development and later behavior ... now as an example of that and we talked about it ... the queen bee ... gives off a primer pheromone and this primer pheromone prevents the reproductive development of female worker bees ... so it allows the queen bee to be the sole reproducer in the hive ... OK so ... her primer pheromone changes ... causes physiological changes ... in the other females ... OK now the releaser pheromones on the other hand produce rapid and reversible responses ... and immediate changes ... so whereas the primer pheromones are long-range ... not reversible ... the releaser pheromones are rapid ... immediate ... and reversible ... and there are four types of releaser pheromones that scientists have come up with and primarily they’re divided along functional lines ... and they’re not mutually exclusive ... so different pheromones or different activities can belong to a number of the different categories ...  

OK ... the first type of releaser pheromone that the scientists have come up with is called an alarm pheromone ... and as you can guess from the name ... it’s used to warn others of danger ... and it’s released in response to a threatening situation ... such as an attack by an enemy ... and usually the response to an alarm pheromone may be dispersal to an area of safety ... or gathering followed by aggressive behavior ... so for example ... a mouse would release an alarm pheromone which would cause other mice to flee ... another type of animal might release an alarm pheromone which would cause other animals to gather ... and attack ...

OK the second type of releaser pheromone is called an aggregation pheromone ... let me write that [writes on board] ... and again as you might guess by its name it’s used to call members to one location ... or one locale ... and this could be for the purpose of food ... shelter ... mating ... among other things ... and primarily it’s used to call members to one location ... an example of this would be honeybees ... who recognize the entrance to their specific colony by an odor ... which is separate and distinct from one colony to another ... so the honeybees know which colony is theirs by the odor which is present at the entrance of the colony ... and this odor not only enables them to identify their home colony but it also acts as a stimulant to get them to return to their home colony ... I’ll bet some of your parents wish they had such a technique!

OK ... the third kind of releaser pheromone is the sex pheromone ... and as you can see the names adequately describe each of these pheromones ... the sex pheromone is used to sexually arouse and attract members of the species ... and one of the most interesting examples I know of is the example of the snail ... when a female snail is mature ... a mature female snail ... she emits a sex pheromone to attract immature ... sexually undifferentiated ... snails to her ... so what she does ... she’s mature ... she’s female ... she attracts immature snails to her ... and immature snails are neither male nor female ... they’re sexually undifferentiated ... so she attracts these immature snails to her ... and once she attracts these immature snails to her ... she releases a primer pheromone ... which causes the immature snail to develop into a male ... so they can mate ...

OK so here’s an example where pheromones work in two different ways ... the sex pheromone attracts the immature snail to the female ... and the primer pheromone changes the immature snail to a male ... so that they can mate ...

OK finally ... the last type of releaser pheromone is called a terrestrial trail pheromone ... and terrestrial of course means having to do with the land ... and this type of pheromone is used as a navigational guide for others to follow ... and as I said ... the pheromone is “terrestrial” because it’s deposited on a solid base ... on land ... and “trail” ... because the species maintain contact with the pheromone while they move along the trail ... and you can probably guess the example I’m going to give you ... ants ... ants moving from a food source towards their nest deposit a trail pheromone on the ground as they move along ... and this tells other ants to follow the trail to reach a food source ... when they return from the food source they deposit an additional trail pheromone as long as there’s still food remaining at the source ... and the interesting thing is that once the food source is exhausted ... the returning ants no longer deposit the pheromone ... and the pheromone dries up ... and ants no longer follow it ... so that explains how ants can follow this long path continuously ... not getting lost ... until the food dries up ...

OK ... you might wonder why the study of pheromones is so important ... well it’s very important to agriculture ... among other things ... of course it’s very important to our knowledge about how species communicate ... but in terms of a practical use it’s very important to agriculture ... and that’s because pheromones can be used to control animal behavior to protect crops ... so for example ... they can lead harmful insects to traps where they can be killed ... or they can lead helpful insects to a particular location ... and they’re much better than traditional insecticides which contain poisons ... obviously these poisons in the traditional insecticides not only harm the insects which could hurt the plants but also could harm people who eat the plants or worked with the plants ... but remember pheromones are highly specific ... they have no effect on members of other species ... so pheromones are much safer ...

So pheromone communication clearly is not comparable to human language but each system does have its own complexity and usefulness ... are there any questions?
Activity 3: Listening for the Larger Picture, page 121

**Answers:**

1. a, c, d  
2. a, c, f, g  
3. Primer pheromones cause physiological changes and affect the organism’s development and later behavior; releaser pheromones produce rapid and reversible responses.

### Activity 5: Defining Vocabulary (Audioscript), pages 122–123

1. **emit**: The skunk emitted a smell that was so powerful that everyone had to leave.
2. **evoke a response**: Her screams evoked an immediate response from her neighbors; they were at her door in seconds.
3. **physiological**: That drug causes physiological changes such as an increased heart rate and a tightening of the muscles.
4. **mutually exclusive**: The two types of pheromones—primer and releaser pheromones—have opposing characteristics. One is reversible and immediate; the other affects later behavior and development. Because of these opposing characteristics, pheromones can never be both at the same time. They are mutually exclusive categories.
5. **disperse**: At the scene of the crime, people gathered to watch. The police told the crowd to disperse because they were afraid that someone would get hurt if so many people stayed around.
6. **flee**: The house went up in flames and the residents had to flee with only the clothes they were wearing. There wasn’t a moment to waste.
7. **stimulant**: Caffeine in coffee is a stimulant. I wouldn’t advise drinking coffee close to bedtime. You’ll have a hard time falling asleep.
8. **arouse**: Snails emit a pheromone which sexually arouses immature snails. This pheromone ensures mating and thus the continuation of the species.
9. **terrestrial**: Humans are basically terrestrial creatures, while fish are aquatic.
10. **navigational guide**: Sailors often use the stars as navigational guides while they are sailing the oceans at night. The position of the stars gives them directional information.
11. **exhaust**: Some geologists believe that if we continue with our present use of oil and gas, we may eventually exhaust our supply.
12. **insecticide**: Insecticides must be powerful enough to kill specific insects. This may be a problem, however, because they may be poisonous to other useful species of insects as well.

**Activity 5: Defining Vocabulary, pages 122–123**

**Answers:**

1. b  
2. b  
3. a  
4. b  
5. a  
6. c  
7. b  
8. b  
9. a  
10. c
11. b  
12. b

**Activity 6: Listening and Note-Taking, page 124**

See Appendix D, page 193, in the textbook for example notes.

**Activity 7: Replay Question (Audioscript), page 125**

Primarily they divided pheromones into two types . . . primer pheromones . . . P-R-I-M-E-R . . . and releaser pheromones . . . now the primer pheromones cause physiological changes in the organism . . . and affect its development and later behavior . . . OK now the releaser pheromones on the other hand produce rapid and reversible responses . . . and immediate changes . . . so whereas the primer pheromones are long-range . . . not reversible . . . the releaser pheromones are rapid . . . immediate . . . and reversible . . .

**Answers:** on the other hand; whereas

**Activity 8: “Other Voices” Follow-Up (Audioscript), page 125**

**Student**: Excuse me, professor . . . I came by to drop this off to you . . . I was just online and I was looking at . . . to see . . . you know the discussion we had in class was really interesting about the pheromones and the animals . . . so last night I was doing a little Web surfing and I found this article that I thought was interesting . . .

**Professor**: Sure . . . come in . . . sit down . . . I have a moment . . . so you were Web searching for pheromones . . . not human ones, were you?

**Student**: Well, I came across lots of that too . . . but I was just interested in the idea for animals in general because I’m thinking about working with animals in the future . . . I’m not sure . . . maybe as a vet . . . maybe animal protection . . . or research . . . anyway it just interests me . . .

**Professor**: So what did you find?

**Student**: Well . . . you know we were talking about ants . . . and . . . and . . . um how they communicate about the source of food . . . and here . . . this is from the *New York Times*. . . Here’s this article talking about how these people at a university in England . . . they discovered the ants not only tell each other where the food is . . . But . . . they um
they tell them where the food isn’t . . . so . . . they’ll actually show where the trail splits off and becomes non-productive . . . it’s almost like saying . . . well the article said it was like putting a sign up saying “Don’t enter here” . . . and they’d deposit the pheromones indicating that wherever an unproductive trail split off . . .

Professor: Cool . . . that’s interesting . . . yeah . . . what kind of ants were they looking at?

Student: An ant called a pharaoh ant . . .

Professor: That’s a pretty common one . . .

Student: Anyway it was interesting to me . . .

Professor: I’m glad you shared it with me . . . I like it when students hear something in class and it gets them excited . . . and wanting to know more . . . and sometimes what students find is news to me too . . . I can’t keep up with everything either . . . so thanks . . . You seem to be doing well on tests . . .

Student: Everything is good . . . But you know I do have a question about the paper we’re supposed to turn in next month . . .

Answers:
1. b 2. b, d

Activity 9: Post-Lecture Reading and Discussion, pages 126–127

Answers:
1. Answers will vary. 2. a. Three. Monti-Bloch and Berliner found pheromones that elicit an electrical response in humans. McClintock found that women who lived together tended to synchronize menstrual cycles. Researchers at the University of Bern found that women tend to choose T-shirts worn by men whose immune systems were most different from their own.  
   b. Because his research has not been replicated and because he seems to have rushed to make a profit.  
   c. No. It says that “supporting evidence is slowly accumulating” showing the existence of pheromonal responses.  
   d. The article seems to indicate that these claims are premature. (“Don’t spend any money on a pheromonal spritz.”) However, the article also seems to support the idea that pheromones do still exist in humans.

Activity 10: Using Your Notes, page 127

Answers:
1. Chemical substance released by an organism into the environment to evoke a response from the other members of the same species  
2. a. T  b. F  c. T  d. F  e. F  f. T  g. F  h. F  
3. “Highly sensitive” means that only a tiny amount of the pheromone is required to evoke a reaction. “Highly specific” means that each species is responsive only to its own species’ pheromones.  
4. A primer pheromone causes physiological changes in the organism and affects its development and later behavior. A releaser pheromone produces rapid and reversible responses and immediate changes. The former is permanent and long-lasting; the latter is temporary and immediate.  
5. An alarm pheromone warns others of danger (e.g., mouse pheromone warns other mice to flee danger); an aggregate pheromone calls members together (e.g., honeybee pheromone helps bees recognize their colony and causes them to return to it); a sex pheromone arouses and attracts members (e.g., snails attract immature undifferentiated snails for mating purposes); a terrestrial trail pheromone acts as a navigational guide (e.g., ants notify others of the existence and location of food through these pheromones).

Activity 12: Academic Word List Vocabulary, pages 128–129

Answers:
Group 1:  1. c  2. b  3. d  4. e  5. a  
Group 3:  11. a  12. c  13. e  14. b  15. d

Activity 13: Using Vocabulary (Audioscript), pages 129–130

1. Workers in a chemical company complained of stomach pains. When scientists examined the chemicals they were using, they found that these chemicals acted to speed up bodily processes.  
2. The refugees were forced to run from their homeland, but rather than leave together, they split up and went separate ways. This made them less noticeable as a group and thus was less dangerous. Of course, they hoped to be reunited in a new country. When people throughout the world heard of the situation of these refugees, they felt sorry for them and offered help.  
3. The chemical used for killing insects worked well on land-based insects but did not work as well on water-based insects.  
4. The hikers were lost in the mountains and worried because their flashlight batteries were weak and thus were only giving off a faint light, and they were almost out of food. They tried to use a compass to lead them in the
right direction and luckily, it did. They made it to the road. People were extremely curious and interested in their story, and many news articles were written about them.

Activity 13: Using Vocabulary, pages 129–130

**Answers:**

1. stimulants; physiological changes  
2. flee; disperse; evoked a response  
3. insecticides; terrestrial  
4. emitting; exhausted; navigational guide; aroused

**UNIT 8 FOCUS ON LECTURE ORGANIZATION (PART 3)**

**Unit Summary:** Unit 8 continues to teach students to recognize and use cues to lecture organization and direction. Students gain practice with three new organizational plans, taking notes from short excerpts and longer lectures, doing pre-lecture and post-lecture activities that aid comprehension, build background and cultural knowledge, and develop academic reading, writing, speaking, listening, and vocabulary skills and strategies.

**Exercise 1, Audioscript, pages 133–134**

**Example:**

There’s research now on the structure of the brain . . . that shows actually _where_ we have more positive versus more negative neural pathways . . . for instance . . . in the prefrontal cortex . . . people who tend toward the positive have a relatively large left side of the neofrontal cortex . . . relative to their right side . . . in other words that’s where the action is . . . when we interpret an event positively . . . and what has been shown through research by Davidson and others . . . is that for people who are positive . . . this part of the brain is larger and there is more activity there . . . then like a river . . . there’s more water there and as a result of that water, it gets even bigger . . . more activity there . . . as a result of this activity, it becomes even more fortified . . . an upward spiral . . . versus the opposite . . . it can be a downward spiral . . . it’s a negative . . . pathway . . .

1. You know Homo Erectus . . . certainly about a million and a half years ago . . . had a cranial capacity that ranged into modern humans . . . in other words very similar in brain size to modern humans . . . Uh but obviously we can see these big brow ridges . . . larger teeth . . . so forth . . .

2. This is where we start talking about all the technical antecedents . . . the things . . . the things that uh came first . . . to make motion picture possible . . . we start by taking a look at something called the camera obscura . . . and this idea comes from a very simple concept that when . . . when a large amount of light . . . travels through . . . a very small hole . . . through glass . . . it projects an image . . . and essentially . . . in the 1800s windows were made out of leaded glass . . . and uh if you had let’s say a shade pulled . . . and it had a very small pinhole in it . . . the light . . . the light could travel through that leaded glass into the shade and project that image of what was happening on the streets outside . . . onto your wall upside down . . . and . . . uh . . . this concept . . . uh . . . was utilized to make something called a camera obscura . . . which is basically a lens on a small wooden box . . . and the light travels through the lens in the box . . . hits the mirror in back . . . and turns the image right side up . . . and this allowed the image to basically be projected and this allowed for 3D tracing . . . now this is sort of similar to an overhead projector . . .

3. Each house has two beds inside it . . . if we were to draw the inside of the house you’d see a man’s bed and a woman’s bed . . . the man’s bed is not for the husband to sleep in . . . it’s for male guests . . . it’s for adult sons . . . these beds are built on platforms with cowhide on top . . . there’s a little wood fire in the middle of the house . . . there aren’t really windows in these houses . . . there are small airholes near the beds which are stuffed with rags if it’s cold outside . . . so you have a lot of smoke . . . the wood fire is kept going constantly and it’s very smoky inside . . . the dimensions here are about twenty-five feet long and about fifteen feet wide . . . fairly small houses . . . and usually goats and sheep . . . goats and sheep are penned up at one end of this house . . . so this is what the house looks like . . .
3. wife's House in Masai Village
   - 2 beds (for C & F )
     - not husband, for guests, adult sons
     - built on platforms w/cowhide on top
   - wood fire in middle of house
   - no windows, just airholes nr. beds . . . SMOKY
   - 25 ' long x 15 ' wide
   - goats/sheep also in house

Exercise 2, Audioscript, pages 137–138

Example:

And we move now . . . I should say about . . . 12 to 14 million years later . . . we have fossils of another kind of being . . . it’s called Australopithecus and . . . this fossil was or is representative of men and women . . . it’s very clear huh? . . . it walked upright um . . . every indication it . . . every indication shows that they looked essentially like us . . . there were some differences . . . Australopithecus did not have this great uh uh bulbous development up here . . . this cranium development . . . Australopithecus was very flat here . . . when you go home today grab . . . grab a hold of the first alley cat you see and take a look at it . . . their nose is here and right from the nose the head line goes back . . . it’s very flat from the nose . . . the nose is there . . . and there’s no . . . there’s no cranium . . . no bulbous cranium . . . Australopithecus was like that . . . also . . . Australopithecus did not have a chin . . . however Australopithecus walked upright just like we do and not like this ape . . .

1. And the final thing we’ll talk about . . . is . . . should happiness be . . . our end? Aristotle thinks so . . . Aristotle said that happiness is and ought to be the end . . . of all of our pursuits . . . but other people are saying no . . . it’s narcissistic . . . selfish . . . unhelpful for self, society . . . if we have this approach . . . I will argue . . . for the fact that happiness is and ought to be the ultimate end . . . and what I will argue is that it leads to a win-win situation . . . certainly for us but also for society at large . . .

2. You see this class takes two different approaches from traditional psychology . . . one way that it’s different is that it’s positive psychology . . . it will focus on positive psychological research mostly . . . yes, I’ll talk about psychopathology . . . but mostly positive psychology . . . the second way in which it is different . . . is that not only will it study positive psychology . . . it will also study the best within people . . . as opposed to the average . . . [ . . . ] we wouldn’t study the average runner to know how fast human beings can run . . . [ . . . ] ultimately everyone benefits by studying the best . . . everyone . . . the average . . . the common person . . . the person at the bottom of the pack all benefit from studying the peak . . . if you wanted to study great teaching . . . or just teaching . . . would you go to the average teacher? . . . or would you go to Marva Collins . . . and learn from her or people like her . . . and then apply it to everyone else? . . . or a study of meditation . . . if you wanted to study meditation . . . would you take a random sample from this class? . . . or would you go to Tibet to a monastery . . . and study the best? . . . You see the difference between studying the average and studying the best that is the average describes . . . It will describe what my life as a whole is . . . it will describe what relationships have been throughout history . . . it will describe what the average teacher does or what the average student goes through in an inner city . . . it doesn’t prescribe . . . studying the best prescribes . . . This is when we become . . . when we study the best . . . the scribes . . . in our lives . . . when we determine what our future is . . .

3. The critical difference between digging stick, hoe agriculture, which is called horticulture . . . and plow agriculture are these characteristics . . . it tends to be true that with digging stick agriculture . . . with horticulture . . . people move to fresh land . . . every three or four years . . . they don’t keep using the land . . . they use the land for three or four years . . . and then move on . . . cut down trees on some new land that’s kind of fresh and productive and move on to that . . . leaving the old one to grow over again and kind of refresh itself . . . um . . . this means that you need more land per person than you would use . . . um . . . and so this technology tends to limit the group size . . . not as much as hunting-and-gathering technology but quite a bit . . . so again group size is 500 to 5,000 . . . the next transition, the big one, is the plow . . . and that has a lot of implications which I’ll go into detail later . . . so that anthropologists . . . usually distinguish between plow agriculture and horticulture . . . and the plow agriculture tends to be associated with societies that have urban centers . . . they’re more settled . . . they tend to be very large societies . . .

Exercise 2, Example Notes, pages 137–138

1. Should happiness be our end?
   - Aristotle: YES
   - Others: No . . . selfish, unhelpful for self, society
   - Lecturer: YES → win/win situation for us & society
2. **Traditional Psychology** This class  
- more on psychopathology - focus on positive psych research  
- studies average - studies best w/ people  
- describes life, history - prescribes  
- gives idea for future

3. Diff. betw. horticulture (digging stick/hoe agriculture) & plow agriculture 

/  
\  
- move every 3–4 years - settled  
- need more land per person \ limits size (500–5,000) - urban center  
- large society

*Example Rewritten Notes*

<table>
<thead>
<tr>
<th>Horticulture</th>
<th>Plow Agriculture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of land</td>
<td>move every 3–4 yrs.</td>
</tr>
<tr>
<td>Size of society</td>
<td>500–5,000; ltd. because need land</td>
</tr>
</tbody>
</table>

**Exercise 3, Audioscript, pages 140–141**

*Example:*

A major question would be which one is emotionally and physically more beneficial . . . let me first look at the physical side of the question . . . previously we knew that men had a higher heart attack rate than women did and that most people blamed that on the fact that they worked outside of the home and women didn’t . . . work in the job market being more stressful than staying at home . . . however . . . now with more than 50 percent of women in the job market and still there is an uneven heart attack rate . . . this theory has lost credibility . . . in fact research has shown that women who work outside the home appear to be at no greater risk than women who stay at home . . . for heart disease at least . . . so . . . it seems that physically there is no benefit in working outside the home or not . . . they seem to be about equal . . .

1. Harvard students are generous . . . Upon graduation, many Harvard students go on . . . make a lot of money . . . and contribute to society . . . again I don’t see them as two opposite sides of an extreme . . . they’re two sides of the same coin . . . contribute to society . . . in fact in recent research at HBS . . . Harvard Business School . . . 57 percent of graduates were on not-for-profit or social enterprise boards . . . contributing out of their own time . . . 57 percent . . . it would be much higher if you took away the youngest generation . . . because the youngsters are still very busy in the rat race . . . making money . . .

2. Now . . . there are cases . . . I don’t know exactly how many . . . where a bilingual . . . you know . . . someone who speaks two languages fluently . . . where bilinguals have suffered brain damage . . . and they’ve lost their first language completely . . . but they can still speak their second language . . . and this seems to mean that the two languages are stored in different parts of the brain . . . but at the moment we’re not sure about that . . .

3. Well, once this information is in short-term memory . . . and it’s rehearsed or not forgotten . . . it then moves into the next particular system that we call long-term memory . . . The question then is, “What is the duration of long-term memory?” . . . The answer seems to be, once you get information stored in long-term memory, it lasts forever . . . the classic example of this was done by Penfield . . . the great neurosurgeon from Canada . . . What Penfield basically did was pioneer a technique called neuromapping . . . neuromapping . . . What he would do was when he was doing brain surgery, is he’d take little dots . . . put a number on them . . . and he would put these dots on different parts of the brain . . . To understand what particular brain structures were involved, he would provide small amounts of electrical stimulation to the patient . . . who is conscious during all of this because the brain has no sensory receptors . . . the patient would then tell Dr. Penfield what was going on . . . What Penfield found was that when he examined or touched certain parts of the brain . . . and it didn’t matter where it was . . . the patients would recall with great detail and clarity . . . memories that they had had in their early childhood . . . which they had forgotten for 20, 30, or 40 years . . . So it seems, once you get the system material into the system you basically keep it in there forever.
Exercise 3, Example Notes, pages 140–141

1. Harvard students are generous
   - study: Harvard Business School 57% of grads on non-profit boards
   - if took young people out: ↑ Why? still in rat race . . . $$$

2. Case of bilinguals w/brain damage
   - lose 1st lang. but keep 2nd?
   . . . 2 langs. stored diff. parts of brain???

   - study: Penfield: neurosurgeon Canada
     - pioneered neuromapping:
       during brain surgery, put # dots on brain, stimulate w/ electricity, see response
     - findings? If touch certain parts, patient recall childhood memory
       (forgot 20 30 40 yrs.)

Lecture 9: The Near Side of the Moon

Activity 2: Preparing for the Lecture (Audioscript), page 143

OK . . . the picture that you have in your hand is as we said . . . is the moon . . . it’s hard to believe that this moon is the same moon that we see at night and the same moon that astronauts have walked on . . . but through these moon walks . . . we’ve gotten firsthand information about what the moon’s surface looks like . . . and though few of us will get the opportunity ourselves to see this . . . in person . . . although who knows! . . . what this talk will do . . . or I’d like to do . . . is familiarize you in some detail with the features . . . the surface features of . . . the surface of the near side of the moon . . . the side closest to us . . . and to give you an idea of what you would see and feel if you were on that surface of the moon . . . and the near side is that side which is perpetually turned towards the Earth . . . OK . . . so there are different features for each side but I’m going to talk about the near side of the moon . . . and I’m going to use a bit of subject-specific vocabulary that you really won’t hear about unless you’re talking about the features of the moon . . . ’cause they’re specific for that . . . so I’d like you to listen for that and make sure you get those . . .

Answer: Give details about the surface features of the near side of the moon

Lecture Outline, page 144

Use this outline if you’d like to deliver the lecture yourself.

INTRODUCTION: It is hard to believe that the same moon that we see in the night sky is the moon that Apollo astronauts have walked on. Through these “moon walks,” we have received firsthand information about what the moon’s surface looks like and feels like. Though few of us will ever get the opportunity ourselves to see and touch this surface (though, who knows?), this talk is meant to familiarize you in some detail with the features of the surface of the near side of the moon (the side that is perpetually turned toward the Earth) and to let you get an idea about what you would see and feel if you were on the surface of the near side of the moon.

I. Distinctive surface features of the near side of the moon
   A. The most obvious distinction that can be made in the surface features of this side of the moon is between the flat lowlands called maria /ma’ riy uh/ (singular = mare/ma’ ray/) and the highlands (mountain ranges).
      1. The lowlands—the dark areas of the picture
         a. The lowlands are called maria—which means “seas.” But don’t imagine “seas” as oceans and huge bodies of liquid water as we see on the earth—that doesn’t exist on the moon.
         b. The lowlands are fairly smooth and represent valleys and basins that were filled in by molten lava at some stage in the moon’s evolution.
            (1) Basalt (an igneous rock similar to lava on earth) is common in these maria.
c. Certain of these maria are areas of high concentration of mass called mascons (the darkest of the dark areas of the picture).

(1) Spacecraft flying over these mascons have experienced increased gravitational attraction.

d. Circular maria (associated with mascons) may range in diameter up to 702 miles, with irregular maria being significantly larger.

2. The highlands

a. The highlands appear lighter in color and brighter than the maria.

b. The highlands are dominated by craters (surface depressions).

(1) These craters generally don’t occur in maria.

(2) These craters range in size up to 150 miles.

c. The highlands extend for hundreds of miles and reach heights of over 3¼ miles above the level of the maria.

II. The issue of water on the moon

A. Up until recently, the scientific community was unanimous in its opinion that there was no water on the moon.

1. It was believed that since the moon lacked an atmosphere, it could not maintain liquid water on the surface.

2. It is because of the earth’s atmospheric pressure that we have liquid water on our surface.

B. However, the issue of water on the moon is much more in question now, with unmanned lunar probes in 1998 suggesting the possibility of frozen crystals of water in the soil.

1. The probe sent back data indicating the possibility of ice crystals sprinkled sparsely and embedded in soil in the craters of the lunar poles—places where the temperature allows the ice crystals to remain permanently frozen.

2. If this turns out to be true, the existence of ice crystals on the moon creates great possibilities for space exploration, because the ice could provide the basic components of rocket fuel on the moon’s surface—a lunar refueling station.

3. Scientists believe these data require more examination and stress that the technological know-how to mine and use these ice crystals is not available.

4. In any case, the strong possibility of ice crystals on the moon’s poles raises exciting questions and offers great potential.

III. Temperature of the near side of the moon

A. There are drastic temperature changes on the moon.

1. Temperatures on the moon range from 215 degrees F (102 degrees C) when it is directly under the sun to -285 degrees F (-176 degrees C) when it is at its coldest point.

B. This wide variation of temperature can only occur on a body devoid of atmosphere.

1. The earth’s atmosphere provides a moderating blanket that limits the difference between daytime and nighttime temperatures.

IV. Light and darkness on the near side of the moon

A. There is no such thing as twilight and dawn on the near side of the moon.

B. When the sun rises or goes down, darkness or light is immediate except for a small number of reflections from nearby peaks above the observer’s head.

C. Again, this can be attributed to the moon’s lack of atmosphere, which does not reflect light.

CONCLUSION: The moon is 238,600 miles away. Chances are slim that we ourselves will visit, but through the research of astronomers, we are able to “visit,” at least in our minds.

Lecture Audioscript, page 144

This audioscript shows one speaker’s delivery of the lecture, as recorded in the audio program. Use it as a resource.
do . . . or I'd like to do . . . is familiarize you in some detail with the features . . . the surface features of . . . the surface of the near side of the moon . . . the side closest to us . . . and to give you an idea of what you would see and feel if you were on that surface of the moon . . . and the near side is that side which is perpetually turned towards the earth . . . OK . . . so there are different features for each side but I'm going to talk about the near side of the moon . . . and I'm going to use a bit of subject-specific vocabulary that you really won't hear about unless you're talking about the features of the moon . . . 'cause they're specific for that . . . so I'd like you to listen for that and make sure you get those . . .

OK . . . if you were on the moon . . . the most distinctive things that you would see . . . and the most apparent things that you would see . . . would be the differences between the highlands and the lowlands . . . OK . . . and these flat lowlands . . . and I'll talk about each one separately . . . but the flat lowlands . . . are called mare [writes on board] . . . M-A-R-E . . . mare . . . and that's the singular form . . . the plural form is maria . . . spelled like the name . . . but pronounced differently . . . M-A-R-I-A [writes on board] . . . maria . . . and these are the flat lowlands . . . the highlands would be what we call here mountain ranges . . .

OK . . . these lowlands or maria are called "seas" . . . maria means "seas" in Latin . . . uh but don't imagine any oceans or great bodies of water on the moon . . . they're not there . . . so remember they mean "seas" but we're not talking about oceans or rivers or lakes . . . or even puddles . . . and I'm going to come back to this issue of water on the moon later because . . . well . . . recent moon explorations have raised questions and possibilities in this area . . . anyway I'll talk about that in a minute . . .

First . . . what do the lowlands look like? . . . well they're very smooth or fairly smooth . . . and they include valleys and basins that were filled in with molten lava at some stage in the moon's evolution . . . and most of the rock in these maria is basalt [writes on board] . . . B-A-S-A-L-T . . . basalt . . . and basalt rock . . . if you didn't know . . . is . . . uh a rock that's found on the earth as well . . . and it's a rock that is . . . an igneous rock . . . a rock that is made of molten lava . . . molten lava is melted rock from volcanic activity . . . OK so these maria are associated with this kind of molten lava . . . this rock . . .

Now there are specific types of maria called "mascons" [writes on board] . . . M-A-S-C-O-N-S . . . mascons . . . these are a certain type of maria . . . and what happened is when spacecraft flew over these mascons . . . they found that the gravitational pull was much stronger than usual . . . and these mascons are extremely dense portions of the maria . . . OK . . . there's a high concentration of mass in these mascons . . . and if you look at the picture in fact I think you can see some differences . . . where's my picture here . . . here it is . . . so if you look at the dark areas these are the maria . . . and the darkest dark in the dark areas . . . are the mascons . . . OK you can't see the mascons very clearly in this picture but you can see some shadows . . . OK? . . . the darkest parts are the mascons . . . the dark parts are the maria . . . and all these areas that are lighter are the highlands . . .

OK . . . how big are the maria? . . . the circular maria . . . which are mostly associated with mascons . . . can range in diameter up to 702 miles . . . and irregular maria are even larger . . .

What about the highlands? as you can see from the picture there's definitely a difference . . . the highlands appear lighter in color and brighter than the maria and if you were on or in . . . the highlands . . . you would see that they are dominated by craters . . . and a crater . . . if you've ever seen a volcano . . . is the part of the volcano . . . the hole from which the lava had erupted? . . . OK . . . so the highlands are dominated by these craters . . . and these craters range in size up to 150 miles across . . . the highlands may extend for hundreds of miles and they reach heights of over 3¼ miles . . . heights similar to some of our tallest mountains here on earth . . . 3¼ miles above the level of the maria . . .

OK . . . now just a minute ago . . . I said I'd talk about the issue of water on the moon . . . very interesting . . . until recently . . . the past few years . . . scientists were generally unanimous in their belief that the moon was devoid of water . . . and this stems from the belief that since the moon lacks an atmosphere . . . it could not possibly maintain water . . . or I'd like to do . . . is familiarize you in some detail with the features . . . the surface features of . . . the surface of the near side of the moon . . . the side closest to us . . . and to give you an idea of what you would see and feel if you were on that surface of the moon . . . and the near side is that side which is perpetually turned towards the earth . . . OK . . . so there are different features for each side but I'm going to talk about the near side of the moon . . . and I'm going to use a bit of subject-specific vocabulary that you really won't hear about unless you're talking about the features of the moon . . . 'cause they're specific for that . . . so I'd like you to listen for that and make sure you get those . . .

So what would you see if you were on the surface of the moon? . . . what would you feel? . . . well there are drastic temperature changes on the moon . . . OK 'cause again the moon has no atmosphere so there's no blanket . . . to keep heat in . . . or . . . to protect the surface from these extremes in heat when the sun goes down . . . heat and cold . . . so there are drastic temperature changes . . . temperatures on the moon range from 215 degrees Fahrenheit when it's directly under the sun . . . 215 degrees Fahrenheit . . . what's that in Centigrade? . . . um . . . about 102 degrees . . . and I'd hate to live under that . . . and it ranges to minus 285 degrees Fahrenheit when it's at its coldest point . . . minus 285 degrees . . . that's equal to minus 176 degrees Centigrade . . . OK . . . and this could all be in the passage of one day . . . these extremes in temperature . . . and as I said these wide variations in temperature could only occur on a body that is devoid of atmosphere and our earth's atmosphere provides a . . . a moderating blanket for us . . .
there’s no twilight and dawn . . . we think of twilight . . . we think of dawn . . . as these periods when we can watch the transition between day and night . . . OK? . . . but on the moon there’s no atmosphere to reflect light . . . and so the time . . . there is very little . . . switching time OK? . . . you might see a little bit of reflection but on the whole . . . when the sun rises or goes down . . . darkness and light would be immediate except for a very very small number of reflections from some nearby peaks over the observer’s head OK? . . . but you wouldn’t have that feeling of twilight and dawn which is a lengthy period of time on earth because of the reflection of light on the earth’s surface . . .

OK . . . in this short lecture I tried to give you a little bit of a feeling of what it would be like to either be on the moon’s surface . . . or . . . be an observer . . . the moon is 238,600 miles away . . . and chances are slim that we ourselves will visit but through the research of astronomers and some of the work of astronauts . . . we’re able to at least visit in our minds.

Activity 6: Listening & Note-Taking, page 146
See Appendix D, page 194 in the textbook for example notes.

Activity 7: Replay Questions, page 147
See Appendix D, page 194 in the textbook for example notes.

Activity 8: “Other Voices” Follow-Up (Audioscript), page 148
Well, the first thing that happens when you land is you experience the most quiet moment in your entire lifetime. I mean when you’re coming down everything’s dynamic: It’s shaking, the engines are running, you’re flying, you’re landing and you get close and you hear Jack talking, you’re listening. You’ve got dust and all of a sudden you shut down. And wow, you are now where no man has ever been before. It’s quiet, it’s still. There’s nothing moving, there’s no wind, there’re no trees. I mean, you look around, and it’s almost like science fiction. I mean, I’m looking at these mountains, I’m looking at these craters around us. We just landed on another world somewhere in this universe. That’s the way I felt. And, of course, the first thing we wanted to do was make sure
we were capable of getting out of there if we had to. And once we were satisfied the spacecraft was still in one piece and there were no hisses and pops and noises and what have you, we began to open our eyes wide and begin to look out and see what we could see and try to describe a little bit about what we were looking at. And the magnificence of it all: I think it was described by one of my peers as “magnificent desolation,” and that’s what it was. But we were truly the first flight, maybe the only—well if we were the first we were certainly the only because we were the last—to land in a valley that had these magnificent mountains just surrounding us, encompassing us on all sides. And they were very prevalent. You couldn’t really appreciate the size of them. Because you had no trees, no telephone poles, no cars, no houses to gauge size and distance with. And oftentimes I go into the mountains now, and I keep thinking, You know, that’s high, but when I was on the moon the mountains I was looking at were twice as high as the top of the Rockies from a valley in the middle of Colorado.

Activity 8: “Other Voices” Follow-Up, page 148
Answers: 1. b, c  2. c  3. a  4. b

Activity 9: Post-Lecture Reading and Discussion, pages 149–150
Answers:
1. Answers will vary.  2. a. He is a hotelier.  b. He imagines “moonbound tourists traveling by space ferry to a Lunar Hilton with 100 guest rooms and a dining room serving everything from reconstituted martinis to freeze-dried steaks.”  c. They have hired an architect to design a lunar hotel and have spent about $300,000 to explore building a glass-domed inn with thousands of pressurized guest rooms, galactic viewing platforms, and a medical center.  d. Skeptics are pointing out the huge costs, complex engineering challenges, and potential safety risk. Others consider the project feasible.  3. Answers will vary.

Activity 10: Using Your Notes, page 151
Answers:
1. a. lowlands of moon (pl.)  b. lowlands of moon (sing.)  c. maria with particularly high concentrations of mass
2. a. lowlands—smooth, basalt is common, valleys and basins, darker in pictures  b. highlands—appear lighter in pictures, dominated by craters
3. a. no liquid water because there is no atmospheric pressure  b. great temperature extremes because no atmosphere to retain heat after sun goes down  c. no twilight or dawn because no atmosphere to reflect light after sun goes down
4. b  5. c  6. ranging from 215 degrees F (102 degrees C) to -285 degrees F (-176 degrees C)

Activity 12: Academic Word List Vocabulary, pages 152–153

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Activity 13: Using Vocabulary (Audioscript), page 153

1. In January 1977, Voyager 2 was launched.
2. In 1986, it passed Uranus and its moons and took photographs. These photographs showed that Ariel, one of Uranus’s moons, is dominated by broad, curving valleys and huge canyons.
3. Presently, a visitor to Uranus’s south pole would experience something that would feel like perpetual sunlight, although it will only last about twenty or so more years.
4. Scientists attribute this phenomenon to the fact that Uranus lies on its side with respect to the sun and the south pole is now facing the sun.
5. Uranus’s atmosphere is probably devoid of oxygen. It consists primarily of hydrogen, helium, and methane.

Activity 13: Using Vocabulary, page 153

Answers:
1. a 2. b 3. a 4. a 5. b

Activity 14: Retaining Vocabulary, pages 154–155

Answers:
1. appears inactive but may become active again 2. unlikely to ever erupt again 3. cup-like depression at the mouth of the volcano 4. b 5. d 6. e 7. a 8. c

Lecture 10: Drink Your Green Tea!

Activity 2: Preparing for the Lecture (Audioscript), page 157

If you go to Italy . . . you can’t go anywhere without finding a café on the corner . . . you’ll get a coffee there . . . a cappuccino . . . if you go to England . . . you’ll find coffee . . . but what England is usually known for is the tea . . . tea is a tradition . . . you have afternoon tea . . . high tea . . . usually it’s black tea and it’s served with milk and sugar . . . if you go to India . . . the English tea tradition has been continued there except the tea that is served is much stronger and much sweeter with cream . . . if you go to a Japanese restaurant or spend time in Japan . . . you’re likely to be offered green tea . . . in fact in many Asian countries . . . including China, Japan, and India . . . green tea is held in very very high esteem . . . it’s a brew that’s thought to purify the body . . . delight the senses . . . um lift the spirits . . . OK so . . . what do I want to do in this talk? . . . what I want to do is talk specifically about green tea . . . not about coffee . . . not about cappuccino . . . not about black tea . . . but green tea . . . and its effects on health . . . because there has been some surprising research that has been showing some positive connections between green tea and health . . .

Um . . . before I do that . . . uh what I’m going to do first is I’m, I’m going to give a brief overview about tea in general . . . uh where it’s grown . . . different types of tea . . . what makes them different . . . and then I’m going to talk in detail about the specific health properties of green . . . tea . . .

So . . . let’s start . . . how does green tea differ from other teas? . . . well um all teas are the same in that they all . . . come from the same plant . . . they all come from a plant called Camelid Sinensis . . . [writes on board] . . . they all come from this same plant . . . it’s a . . . it’s an evergreen with white blossoms that thrives in tropical and semitropical climates . . . so all teas come from this particular genus . . . and as I said . . . it’s an evergreen with white blossoms that thrives in tropical and semitropical climates . . .

Activity 2: Preparing for the Lecture, page 157

Answers:
1. c 2. An evergreen with white blossoms that thrives in tropical and semitropical climates OR it’s the plant that all teas come from 3. How green tea is similar and different from other teas (and then later, the health benefits of green tea)

Lecture Outline, page 157

Use this outline if you’d like to deliver the lecture yourself.

INTRODUCTION: If you go to Italy, you’re likely to drink a lot of coffee. If you go to England, you’re likely to be invited to have tea—afternoon tea, high tea, morning tea—and it’s usually a black tea, often served with cream and sugar. In India, the English tradition has been continued—however, the Indian version is much sweeter than the average English tea. If you go to a Japanese restaurant or spend time in Japan, you’re likely to be offered green tea.

In fact, in many Asian countries, including China, Japan, and India, green tea is held in high esteem. It is a brew thought to purify the body, delight the senses, and lift the spirits.
What I’d like to do in this lecture is talk specifically about green tea and its effects on our health. However, before I do that, I’d like to give a brief overview about teas, in general—where they are grown, the different types of tea, what makes them different—and then I’ll talk in some detail about the specific health properties of green tea.

I. How does green tea differ from other teas?
   A. All tea comes from *Camellia sinensis*, an evergreen with white blossoms that thrives in tropical and semitropical climates.

   B. There are three ways to process tea leaves, resulting in three kinds of teas: green, oolong, and black tea.

      1. Green tea is the virgin of tea manufacturing, the least processed, the youngest, the freshest.
         a. To make it, the tea leaves are (1) immediately steamed and heated to soften them (and stop a process called oxidation—interaction with oxygen), then (2) rolled out under pressure (to remove most of the moisture), and (3) spread out and dried for a short period of time to dry a bit more.
         b. The whole process—from steaming to drying—takes about three hours.

      2. In contrast, black tea requires more elaborate processing.
         a. Black tea requires a chemical process called fermentation, which means that the tea is allowed to interact with oxygen. This changes the chemical structure of the tea leaf.
         b. Therefore, instead of steaming the tea leaves to soften them and prevent oxidation (fermentation), when manufacturers want to make black tea, they spread the leaves out in a cool, humid place to allow the leaves to interact with the oxygen and thus ferment. The leaves wither and change color as they oxidize.
         c. Oxidation continues for a few hours.
         d. Then the leaves are exposed to hot, dry air for 15 to 25 minutes to stop oxidation.

      3. To make oolong tea, the leaves are only semi-fermented, resulting in a green-brown leaf.

   C. In world tea production, only about 4% is oolong. Green tea represents about 20%, and the rest—about 75%—is black tea.

II. Green tea is good for you!
   A. Studies in China found that green tea could reduce the incidence of cancer of the esophagus (the long muscular tube that leads into the stomach).

      1. The Chinese studies showed that the risk for esophageal cancer was reduced by 57% for men and by 60% for women by drinking green tea.
      2. A tea drinker was defined as someone who drank at least one cup of tea per week for six months or longer.

   B. Studies in Japan have shown lowered rates of lung cancer, stomach cancer, and skin tumors, and lowered blood cholesterol among people who drink green tea every day.

      1. Some researchers are suggesting that green tea may help explain why smokers in Japan have a lower rate of lung cancer than smokers in other parts of the world.

   C. Green tea also contains vitamin C; the amount varies depending on the type of leaf, but the average in two small cups of brewed tea is nearly equal to that in a cup of orange juice.

   D. A U.S. research team at the University of California, Berkeley, found a substance in green tea that may help protect against dental cavities.

III. Continuing research on green tea
   A. Green tea is on the list of foods being studied in the Designer Food Program of the National Institute of Health.

      1. The 40 foods on the list are thought to have unusually powerful disease-fighting abilities.
         a. Other foods being studied include garlic, licorice, soy, cranberry juice, and carrots.
      2. Scientists believe that if the disease-fighting elements in these foods were isolated and synthesized, they could be designed for use as preventative medication.
      3. The problem is finding what element in any one food is the preventative agent.
         a. The research is focusing on polyphenol, a main component of green tea.
         b. Polyphenols are a class of compounds that seem to inhibit cancer cell growth.
CONCLUSION:
A. According to some researchers, green tea has no known toxicity; it’s not going to hurt you, and it may very well help you.

B. So next time you reach for a cup of coffee or a cup of black tea, consider green tea!

1. Green tea is a mild stimulant, but it contains less caffeine than black tea and half the caffeine of coffee.

Lecture Audioscript, page 157
This audioscript shows one speaker’s delivery of the lecture, as recorded in the audio program. Use it as a resource.

If you go to Italy . . . you can’t go anywhere without finding a café on the corner . . . you’ll get a coffee there . . . a cappuccino . . . if you go to England . . . you’ll find coffee . . . but what England is usually known for is the tea . . . tea is a tradition . . . you have afternoon tea . . . high tea . . . usually it’s black tea and it’s served with milk and sugar . . . if you go to India . . . the English tea tradition has been continued there except the tea that is served is much stronger and much sweeter with cream . . . if you go to a Japanese restaurant or spend time in Japan . . . you’re likely to be offered green tea . . . in fact in many Asian countries . . . including China, Japan, and India . . . green tea is held in very very high esteem . . . it’s a brew that’s thought to purify the body . . . delight the senses . . . um lift the spirits . . . OK so . . . what do I want to do in this talk? . . . what I want to do is talk specifically about green tea . . . not about coffee . . . not about cappuccino . . . not about black tea . . . but green tea . . . and its effects on health . . . because there has been some surprising research that has been showing some positive connections between green tea and health . . .

Um . . . before I do that . . . uh what I’m going to do first is I’m, I’m going to give a brief overview about tea in general . . . uh where it’s grown . . . different types of tea . . . what makes them different . . . and then I’m going to talk in detail about the specific health properties of green tea . . .

So . . . let’s start . . . how does green tea differ from other teas? . . . well um all teas are the same in that they all come from the same plant . . . they all come from a plant called Camellia sinensis . . . they all come from this same plant . . . it’s . . . it’s an evergreen with white blossoms that thrives in tropical and semitropical climates . . . so all teas come from this particular genus . . . and as I said . . . it’s an evergreen with white blossoms that thrives in tropical and semitropical climates . . .

How do you get your different teas? . . . well there are three ways to process tea leaves . . . and that results in three different kinds of teas . . . the three types are green tea . . . black tea . . . those are the ones that everyone knows . . . and one more type called oolong . . . OK . . . and these are the three different types of tea and they simply result from the three different processes . . . applied to this Camellia sinensis plant . . .

Um . . . so let me talk first about green tea . . . green tea is the . . . virgin . . . of tea manufacturing . . . what do I mean by the virgin of tea manufacturing? . . . it’s the least processed . . . it’s the youngest . . . it’s the freshest . . . of all of those teas . . . how is it made? . . . simply—the tea leaves are gathered . . . and then they’re immediately steamed and heated to soften them . . . and this not only softens them but it also stops a process called oxidation [writes on board] . . . oxidation means interaction with oxygen . . . and I’ll talk a bit more later about what happens to tea when it oxidizes . . . but anyway . . . this heating and steaming prevents oxidation . . . and then the tea is rolled . . . it’s rolled under pressure to remove most of the moisture . . . and finally it’s spread out and dried for a short period of time to remove more of the moisture . . . that’s all . . . so they gather the leaves . . . they heat and steam them . . . they roll them . . . and they dry them . . . that’s the simplest process . . . OK . . . so it’s gathered . . . it’s stream heated . . . it’s rolled up . . . and then it’s dried . . . and this whole process . . . from steaming to drying . . . takes about . . . three hours . . .

OK . . . black tea . . . is the one that takes the most processing and it requires the most elaborate processing . . . it requires a chemical process called fermentation [writes on board] . . . and fermentation means that the tea is allowed to interact with oxygen in a way that changes the chemical structure of the tea leaf . . . so . . . instead of steaming the tea leaves to soften them and prevent oxidation . . . which is what they do with green tea . . . instead of doing this . . . when manufacturers want to make black tea . . . they . . . spread the leaves out in a cool . . . humid . . . place just so that they can allow the leaves to interact with the oxygen and ferment . . . and what happens is that the leaves wither . . . and they change color as they oxidize . . . and they allow this oxidation or fermentation process to continue for several hours . . . OK so . . . so there’s a process here . . . it’s, it’s much . . . there’s a more complicated process . . . but what’s important is that there’s oxidation . . . it’s a process of oxygen interacting with the enzymes in the leaves . . . so this interaction begins the process called oxidation . . . fermentation . . . and that continues until the leaves are heated to stop it . . . the leaves are exposed to hot dry air for about um fifteen to twenty-five minutes . . . and this stops the oxidation . . . you can see that there’s this process in there . . . which encourages um this process called fermentation . . . and what happens . . . as the leaves oxidize . . . they turn black . . . OK so all the leaves are the same to begin with . . . they’re all green . . . but in the case of black tea . . . as the leaves are exposed to oxygen for a long period of time . . . as they ferment . . . they turn black . . .

All right um what about oolong tea? . . . it’s just right in the middle . . . OK in this case the leaves are only semidemented . . . so they’re partially exposed to oxygen . . . they’re partially fermented . . . and this results in a leaf that’s greenish-brown . . . it’s kind of in the middle of the other types . . . greenish-brown . . . OK so we have green tea . . . we have black tea . . . and then oolong is a green-brown tea . . .
All right then . . . in world tea production . . . only about 4 percent of tea is oolong tea . . . so only 4 percent of world production of tea is actually oolong tea . . . green tea makes up 20 percent of world production . . . and black tea . . . 75 percent . . . so that you can see that most of the world drinks black tea . . . 75 percent of the world’s production is black tea . . .

But let’s get to the important part of the lecture . . . because uh what I want to talk about is the idea that green tea is actually good for you . . . and that’s what science and research are showing . . . OK . . . I . . . I want to tell you about some studies that were done . . . to show . . . that green tea . . . is good for you . . . uh the first ones . . . were done in China . . . and what they found is that green tea seems to reduce the incidence of cancer of the esophagus . . . so it’s a specific type of cancer . . . uh but in these studies from China . . . they were able to see . . . there seems to be a relationship between drinking green tea . . . and a reduction . . . in the incidence of cancer of the esophagus . . . everyone knows what the esophagus is? . . . it’s um a long muscular tube that leads into the stomach . . . these Chinese studies found that the risk of esophageal cancer in men was reduced by 57 percent and for women . . . by 60 percent . . . when they drank green tea regularly . . . and they defined a tea drinker as someone who drank at least one cup of tea per week for six months or longer . . . so not a great amount . . . anyway that’s one example of a study that seems to indicate that there is a relationship between drinking green tea and improved health . . .

OK . . . um there has also been research in Japan . . . where a lot of green tea is actually consumed . . . and studies in Japan have shown . . . among people who drink green tea . . . lower rates of lung cancer . . . lower rates of stomach cancer . . . lower rates of skin tumors . . . and lowered blood cholesterol . . . some researchers are even suggesting that green tea may help to explain why smokers in Japan have a lower rate of lung cancer than say . . . smokers in the United States . . . or in other parts of the world . . . so again . . . they’re finding all of these factors among people who drink green tea every day . . . lower rates of lung cancer . . . lower rates of stomach cancer . . . lower rates of skin tumors . . . and lowered blood cholesterol . . . so a lot of benefits . . . this is a . . . a pretty good argument . . . it looks like for drinking green tea . . .

Another thing you might want to know about green tea is that they found that green tea contains vitamin C . . . this is another bit of research that they’ve done . . . uh green tea contains vitamin C . . . and most people don’t think of tea containing vitamin C . . . we think of . . . what contains vitamin C? . . . uh orange juice . . . citrus fruits . . . but they found that on average . . . two small cups of green tea . . . were nearly equal to a cup of orange juice . . . in vitamin C . . . two small cups of green tea were nearly equal to the vitamin C in a cup of orange juice . . .

And lastly . . . um a U.S. research team . . . at the University of California at Berkeley . . . found a substance in green tea . . . which they say . . . may help protect against dental cavities . . . wouldn’t that be great . . . anyway . . . uh another area to research further . . . green tea’s properties in protecting against dental cavities . . . uh we’ll probably see green tea toothpaste soon . . .

OK . . . um where are they going with this research on green tea? . . . what’s the future of the research? . . . right now . . . the National Institute of Health has a program called their Designer Food Program . . . and what they’re doing is looking at forty different foods . . . that are shown to have powerful disease-fighting properties . . . they have a list of forty different foods that this particular program . . . the Designer Food Program of the National Institute of Health is looking at . . . um these forty foods that they think have disease-fighting properties . . . and some of the other foods they’re looking at are . . . uh . . . garlic . . . licorice . . . um soy . . . carrots . . . cranberry juice . . . and green tea is one of those . . . and what the scientists want to do . . . is they want to see if they can . . . isolate . . . and then recreate . . . synthesize . . . the disease . . . fighting . . . content . . . or element . . . in these foods . . . OK so they’re uh . . . what they’re trying to do is to find out what is it in green tea . . . or what is it in carrots for example . . . that can fight disease . . . and what they’d like to do is isolate it . . . and synthesize it . . . or recreate it . . . why? . . . so they could use it in medicine . . . the problem seems to be that it’s hard to find that one element . . . they know that the food itself seems to work . . . but they’re not sure exactly what element in the food is the preventative agent . . . what is it exactly that is causing the disease-fighting characteristics? . . . the research is pointing to a class of compounds called polyphenols . . . [writes on board] . . . poly, P-O-L-Y, phenols, P-H-E-N-O-L-S . . . polyphenols . . . this class of compounds which seem to inhibit cancer cell growth . . .

OK . . . so . . . green tea . . . has no known toxicity . . . there’s nothing that can hurt you with green tea . . . and . . . according to some researchers . . . it may very well help you . . . so the next time you reach for a cup of coffee . . . a cup of black tea . . . consider green tea . . . like the others, green tea is a mild stimulant . . . so it will wake you up a bit . . . but it contains less caffeine than black tea . . . and half the caffeine of coffee . . . so if you need a little pick-me-up . . . maybe green tea is a healthier answer.

Activity 3: Listening for the Larger Picture, page 157

Answers: a, c, e

Activity 5: Defining Vocabulary (Audioscript), pages 158–159

1. hold in high esteem: Everyone holds that artist’s work in very high esteem. The art critics are praising her new show and people are willing to pay quite a bit for her paintings.

2. steam: After my eight-hour plane ride, everything in my suitcase was wrinkled. I didn’t have an iron, so I turned on the hot water in the shower and closed the bathroom door. I hung all my clothes in the bathroom. In about five minutes, the steam had removed all the wrinkles.
3. **roll**: In order to make a good pie crust, take flour, water, and butter and make a dough. Then, use a rolling pin to roll the dough into a thin and even crust.

4. **humid**: In deserts, the climate is often hot and dry. However, in tropical areas, the climate is often hot and humid.

5. **wither**: The roses were beautiful on the first day. However, by the third day, the leaves and some of the petals had withered and fallen off.

6. **incidence**: The incidence of serious car accidents has increased because of the greater number of cars on the road.

7. **isolate**: One of the horses on the ranch seemed very sick, so the rancher isolated it until it got better. He kept it in a separate stable because he didn’t want the other animals to get sick.

8. **inhibit**: I don’t like wearing high heels because they inhibit my ability to move about freely and easily.

9. **toxicity**: Those chemicals have a high level of toxicity. You should wear a mask when you use them so you don’t breathe in poisonous fumes.

10. **stimulant**: Don’t drink coffee before you go to bed. It’s a stimulant and will keep you awake.

**Activity 5: Defining Vocabulary, pages 158–159**

*Answers:*

1. b  2. c  3. c  4. c  5. a  6. c  7. a  8. a  9. c  10. b

**Activity 6: Listening and Note-Taking, page 160**

See Appendix D, page 195 in the textbook for example notes.

**Activity 7: Replay Question (Audioscript), page 161**

Uh . . . so let me talk first about green tea . . . green tea is the . . . virgin . . . of tea manufacturing . . . what do I mean by the virgin of tea manufacturing? . . . it’s the least processed . . . it’s the youngest . . . it’s the freshest . . . of all of those teas . . . how is it made? . . . simply—the tea leaves are gathered . . . and then they’re immediately steamed and heated to soften them . . . and this not only softens them but it also stops a process called oxidation [writes on board] . . . oxidation means interaction with oxygen . . . and I’ll talk a bit more later about what happens to tea when it oxidizes . . . but anyway . . . this heating and steaming prevents oxidation . . . and then the tea is rolled . . . it’s rolled under pressure to remove most of the moisture . . . and finally it’s spread out and dried for a short period of time to remove more of the moisture . . . that’s all . . . so they gather the leaves . . . they heat and steam them . . . they roll them . . . and they dry them . . . that’s the simplest process . . .

*Answer: 2, 4, 3, 1*

**Activity 8: “Other Voices” Follow-Up (Audioscript), page 161**

**Student**: Hi professor . . . can I talk to you?

**Professor**: Sure. Have a seat. What can I do for you?

**Student**: Well . . . I just got back the results from the test that you gave last week and I didn’t do well . . .

**Professor**: No . . . no you didn’t.

**Student**: I just wanted to know if I can pass the class . . . if you think I can pass the class.

**Professor**: Why don’t we pull up your other scores and talk about what you’ve done and what you need to do . . . OK . . . [time to look on the computer] here you are . . . well we’ve had three tests so far . . . You missed one of them . . . and the other one you failed . . . and then this one that you just took . . . that’s not passing either . . . what’s going on?

**Student**: Well . . . I’m taking a lot of classes . . . and . . . and . . . I’m working . . . and I just haven’t been able to study much . . . and I just don’t really . . . it’s too much for me . . .

**Professor**: Well that is a problem. Have you talked to a counselor about the number of credits you’re carrying?

**Student**: No, I guess I should.

**Professor**: That would be one place to start.

**Student**: Yeah.

**Professor**: Well, what can I tell you? We’re nearly 2/3 through the course. The tests so far are 45 percent of your grade. You still have one more test, a paper, and the final. How are you coming along with your research paper?

**Student**: Um . . . I’m still not sure what I want to write about.

**Professor**: This is another problem. If you remember, I encouraged students to meet with me a few weeks ago if they wanted to brainstorm topics for their paper. You’re starting late.

**Student**: . . .

**Professor**: OK here’s what I suggest. You will definitely not pass this class if you continue the way you are going. So the question to ask yourself is whether you’re willing to pick up your efforts and make time for the class. Truthfully, if you want to pass the course, you’re going to have to do really well on the test and the paper and the final—As or Bs. It’s up to you.

**Student**: I’m going to try.
Professor: Well, I’m here if you have any questions about the material. And again, I really do encourage you to see a counselor. You know, another idea is to stop in the Study Skills Center . . . You know where that is?
Student: It’s in the library.
Professor: Right. Every few weeks, they give a workshop on Time Management. That might be helpful for you too.
Student: Thanks. I appreciate your help. I’m going to do better.
Professor: OK . . . see you in class next week.

Activity 8: “Other Voices” Follow-Up, page 161
Answers: 1. d 2. d 3. c

Activity 9: Post-Lecture Reading and Discussion, pages 162–163
Answers:
1. There have been no human studies to date in which people have been given green tea and then observed to see if they develop cancers at a lower rate. Rather, the evidence has been epidemiologic; that is, starting with people who have cancer and asking them to reflect on their consumption of tea (and then comparing the consumption rates of this group to the rates of a group without cancer). There are problems with this method of study: (1) people may not remember their tea consumption patterns accurately, and (2) there is no clear proof that it is the tea, and not something else in their lifestyle, that affected their cancer risk. Finally, another concern about the studies is that the results have been mixed.
2. More and better controlled investigations in humans need to be done.
3. This is open for discussion. The article’s tone and content seem to encourage readers to be cautious about accepting the findings 100 percent at this time, but they also seem to encourage optimism about the possibility that tea will be found to provide health benefits. The article also seems to encourage a balanced perspective, concluding that tea, even if found to be healthy, will not be a “miracle cure” and will never replace the importance of a healthy, balanced diet and a lifestyle including exercise. (The first two paragraphs clearly explain why readers should be skeptical. The third paragraph counters one of the concerns. The fourth paragraph is very optimistic, quoting a doctor who says, “the evidence from studies thus far is encouraging enough to provide incentive for additional research in the area.” The last paragraph reminds readers that exercise and a healthy diet are ultimately more important than tea consumption, regardless of the findings.)

Activity 10: Using Your Notes, pages 164–165
Answers:
1.

<table>
<thead>
<tr>
<th>a. It's the least processed tea.</th>
<th>✓</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>b. It requires semifermentation.</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>c. It's the youngest tea.</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. It's allowed to oxidize for the longest time.</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>e. It's the freshest tea.</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>f. Its processing takes about 3 hours.</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>g. It accounts for 4% of world tea production.</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

2. a. T  b. F  c. T  d. F  e. F  f. T  g. F
3. b, d, e, g
4. First, spread the leaves out in a cool, humid place to allow the leaves to ferment for a few hours. Then, expose the leaves to hot, dry air for fifteen to twenty-five minutes to stop fermentation.
5. They hope to isolate the disease-fighting elements in these foods and then synthesize or recreate those elements for use in medicines.

Activity 12: Academic Word List Vocabulary, pages 165–166
Answers:
Group 1: 1. e 2. a 3. f 4. d 5. b 6. c
Group 2: 7. b 8. a 9. e 10. f 11. d 12. c

Activity 13: Using Vocabulary (Audioscript), pages 166–167
1. The life expectancy in many countries is increasing because of improved diets.
2. The doctor is held in very high esteem.
3. Generally, vitamins are beneficial; however, consuming too much of certain vitamins can be toxic.
4. The factory regularly releases steam into the environment, which is reported to contain carcinogenic substances.
5. In one isolated island in the Pacific, there is a high incidence of birth defects.

Answers:
1. b  2. c  3. b  4. b  5. b

UNIT 9 TYING IT TOGETHER: END-OF-COURSE EVALUATION

Unit Summary: In Unit 9, students practice all they have learned throughout the book. Students receive less preparation before the lecture and no guidance during note-taking. A week later, students take a quiz, allowing them to see the effectiveness of their notes.

Lecture 11: Voter Turnout in the United States

Activity 1: Pre-Lecture Discussion, pages 170–172

Answers:
1. Answers may vary. However, students should notice that more people register than vote and that the number of people reporting that they voted dropped drastically in 1996, seemed to be on a rising trend, but may be leveling off again. 
2. Answers may vary. However, students should notice that females tend to register and vote more than men; whites more than blacks, and Hispanics more than Asians; those with more education more than those with less education; and older people more than younger people.

Lecture Outline, page 172

Use this outline if you'd like to deliver the lecture yourself.

INTRODUCTION: Originally the right to vote in the United States was in the hands of a small group of property-owning white males.

The first step in the expansion of the right to vote went to white men without property. Then black men gained the right to vote. Finally, in 1920, black and white women gained the right to vote.

No step in the battle for voting rights was easy. Often even after winning the right to vote, the actual voting was easier said than done.

With such a long history of struggle for voting rights, one might expect a high rate of voter turnout in the United States. In fact, voter turnout has often been remarkably low. (Tomorrow we'll talk about the impact of the election of Barack Obama, an African-American man, as President in 2008.) To offer some examples from presidential election years prior to Obama’s election, the actual voter turnout for voting age citizens in 1992 was 68%; in 1996 it dropped all the way down to 58%; in 2000, it was 59%; and in 2004, it was 64%.

Why has this been so low?

I. Causes of low voter turnout

A. People assume that the reason people haven’t voted is apathy, but this is basically not true.

B. There are two main reasons for nonvoting: institutional reasons and political reasons.

1. The institutional barriers are problems with the mechanism of voting, particularly problems with registration and absentee ballot requirements.
   a. e.g., People forget to register in time.
   b. e.g., People may have moved too recently to register.
   c. e.g., People may think registration is time-consuming.

2. Far more important than the institutional obstacles and far more difficult to change are the political obstacles to voting.
   a. Millions of Americans fail to show up at the polls because they feel that it is not worth the trouble.
      (1) They feel that their real interest is not reflected in the “system.”
      (2) They feel that there is no real choice between candidates or parties.
      (3) They mistrust politicians and believe they make promises that they fail to carry out.
   b. These people are not apathetic about politics; rather, they believe that politics is apathetic about them.

TYING IT TOGETHER: END-OF-COURSE EVALUATION  69
C. A poll asking why people didn’t vote was taken.
   1. 38% of respondents said they didn’t vote because they didn’t register. It is difficult to tell from this statistic whether the reasons for not registering were apathy, institutional reasons, or political reasons.
   2. 14% of respondents gave explicitly political reasons—e.g., they did not like the candidates.
   3. 18% of respondents gave explicitly institutional reasons—e.g., they were sick or disabled, new residents in an area, away from home, unable to leave their jobs, or unable to get to the polls.
   4. 10% of respondents stated that they were not interested in politics.
   5. 10% of respondents said they had no particular reason for not voting.
   6. The remaining 10% of respondents either were not U.S. citizens or gave other reasons.

II. Voter/nonvoter characteristics
   A. Generally, as education goes up, the likelihood of voting goes up regardless of race or ethnicity.
      1. Those who finish grammar school are more likely to vote than those who don’t.
      2. High school grads tend to turn out more than grammar school grads.
      3. College grads turn out more than high school grads.
   B. Generally, those with higher incomes and with higher-status careers are more likely to vote than those with lower-status jobs.
   C. Generally, the older (until about age 78) you are, the more likely you are to vote.
      1. Persons 18 to 24 and persons over 78 have a very poor voting record.
   D. Generally, whites go to the polls more frequently than blacks, who go more frequently than Hispanics, who go more frequently than Asians.
   E. Women are slightly more likely to vote than men.
   F. The general trend that has emerged has been that the poor, the uneducated, and members of racial minorities have been seriously underrepresented in the voting booth.
      1. According to Burns, Peltason, and Cronin in their textbook Government by the People, their nonvoting has not been accidental, but has been part of a larger political and psychological environment that has discouraged political activity by minority groups.

CONCLUSION:
   A. Perhaps the picture is not so bleak.
      1. It should be noted that Americans conduct far more elections and types of elections than many other countries.
      2. It also should be noted that Americans, in addition to having the right to vote, have the right not to vote. No one is forced to vote or threatened if they don’t vote, as they may be in other countries.
   B. Perhaps with the 2008 election of Obama, an African-American man, and the huge increase in interest in electoral politics among young people and African-Americans (groups with historically lower turnout) during that election, along with the increased incidence of women and ethnic minorities running for higher office, disillusionment with the system will decrease somewhat.

Lecture Audioscript, page 172
This audioscript shows one speaker’s delivery of the lecture, as recorded in the audio program. Use it as a resource.

Not too long ago, in 2008, the United States had a historic election . . . and I say it was historic because an African American man—who only four years earlier had been virtually unknown on the national scene—rose to prominence . . . I should say sky-rocketed to prominence . . . and was elected President . . . Barack Obama . . . The 44th President of the U.S. . . . and it was historic of course because he was the first African-American to hold that position in the U.S. . . . and it was also historic because it energized sectors of the voting population that had historically felt disenfranchised . . . disconnected . . . alienated from politics . . . from electoral politics . . .

Now I’m going to talk a lot more about that tomorrow . . . Obama’s election and how that impacted American electoral politics, but today, what I want to talk about is voting . . . voting rights . . . voter turnout . . . prior to that election . . .

OK . . . the right to vote . . . Now, originally . . . as you might know . . . the right to vote in the United States was in the hands of a small group of property-owning white men . . . so it wasn’t even all white men . . . and the
first step in the expansion of the right to vote went to white men without property . . . now it’s been a long struggle for voting rights . . . it hasn’t been . . . giving the rights to everyone . . . it’s been step by step . . . sometimes a slow and painful step by step . . . after that . . . black men gained the right to vote . . . finally in 1920 . . . black and white women . . . gained the right to vote . . . so you can see . . . it took hundreds . . . it took 200 years before everyone really had the right to vote in this country . . . and no step in the battle for voting rights has been easy . . . because even after winning the right to vote . . . often actually voting was difficult because people were prevented from voting . . . or prevented from registering . . . often by intimidation . . . so you would think that with such a long history of struggle to get voting rights . . . that we’d expect a high rate of voter turnout on election days . . . but the fact is that voter turnout has been at times remarkably low . . . just to give you some examples . . . in presidential election years . . . let’s see . . . the, the actual voter turnout --and this is just counting citizens of voting age--- in 1992 was 68 percent . . . in 1996 it was 58 percent . . . in 2000 it was 59 percent . . . in 2004 . . . it was 64 percent . . . I think this is pretty shocking because it indicates that more than one third of the eligible voters in this country just haven’t voted at times . . . and what I’m especially going to talk about is why this has been so . . . and that’s the main reason for this talk . . .

So . . . what explanations have been given for this low voter turnout? . . . well, most people assume that the reason people don’t vote is apathy but this basically is not true . . . the main reasons not to vote are . . . well . . . there are two particular reasons . . . one are institutional reasons . . . and one are . . . um and the other . . . are political reasons . . . and we’ll go into each one in particular . . . the institutional reasons have to do with the mechanism of voting . . . the procedures required to vote . . . for example people forget to register in time . . . people might have moved and they didn’t register again . . . or they may think that registration is too time-consuming . . . or they don’t know how to get an absentee ballot and they can’t get to the polls . . . so institutional reasons then are the reasons . . . the reasons which are based on the mechanisms of voting . . . the procedure required to vote . . . and the institutional reasons for not voting are the procedural problems that make it difficult to vote . . . OK . . . so it’s not easy enough to vote . . . things like inconvenient hours for registration . . . early deadlines for registration . . . are primary reasons for lowering voter turnout . . . but in truth . . . these institutional reasons are not the main reasons . . . and far more important than the institutional blocks are political blocks to voting . . . for example . . . millions of Americans don’t turn up at the polls because they feel that it’s really not worth the trouble . . . for example . . . they feel that their real interest is not reflected in the system . . . they feel that the candidates don’t reflect their interests . . . they feel that the candidates are the same . . . they don’t believe that any candidate is honest . . . they mistrust politicians . . . you can see the difference between this . . . and apathy . . . these people are not apathetic about politics . . . but rather they believe that politics is apathetic about them . . . that politics does not really meet their needs . . . OK? . . . it’s not that they don’t care . . . but they don’t feel that politics is meeting their needs . . . so these are the two major blocks that prevent people from voting . . . the institutional . . . and the political . . .

Now let me tell you about a poll that was taken asking people why they didn’t vote . . . listen to this . . . in this poll . . . 38 percent of the respondents said they didn’t vote because they didn’t register . . . now this could be an institutional reason . . . but it’s really hard to tell from the statistic what the reason actually was . . . it could be apathy . . . it could be an institutional reason . . . it could be a political reason . . . we really can’t tell . . . now . . . 14 percent of the respondents gave explicitly political reasons . . . that is they didn’t like the candidates . . . they didn’t think they were represented . . . they said they all seemed alike . . . OK? . . . 18 percent of the respondents gave explicitly institutional reasons . . . such as they were sick or disabled . . . they were new residents in the area . . . they were away from home . . . they couldn’t leave their job . . . they had no way to get to the polls . . . etc. . . . OK . . . 10 percent of the respondents said that they were not interested in politics . . . so this is your apathetic group . . . they’re simply not interested . . . another 10 percent said they had no particular reason for not voting . . . they just didn’t vote . . . so we might say that they’re apathetic too in a different way . . . OK? . . . and the remaining 10 percent of the respondents in the sample either were not U.S. citizens or gave some other reason . . . so it’s not a great poll . . . it doesn’t give you a lot of information but it does give you some idea of the different reasons that cause people not to vote . . .

Well what are some characteristics of the voter versus the nonvoter? . . . generally we find that as education goes up . . . the likelihood to vote also goes up . . . and that’s regardless of race or ethnicity . . . and you can see that at all levels . . . people who’ve finished grammar school are more likely to vote than those who don’t . . . high school graduates are more likely to vote than high school dropouts . . . college graduates go out more than high school graduates . . . they also find that those with higher income and higher-status careers are more likely to vote than those with lower-status jobs and lower income . . . OK . . . another factor they found is generally the older you get . . . and that goes until about the age of seventy-eight . . . so the older you get . . . the more likely you are to vote . . . and exceptions to this are people over seventy-eight . . . who have a very poor voting record . . . OK . . . so now they found that in terms of age . . . the range is from twenty-four to seventy-eight . . . is the best voting record . . . people below the age of twenty-four or above the age of seventy-eight . . . have pretty poor records . . . now . . . what about race? . . . generally whites go to the polls more frequently than blacks . . . who go more frequently than Hispanics . . . who go more frequently than Asians . . . OK . . . what about sex? . . . women are more likely to vote than men . . . we’ve seen that regularly over the years . . .

OK . . . what kinds of trends have we seen? . . . most times what most analysts see is that the general trend has been that the poor . . . the uneducated . . . members of racial minorities . . . have been seriously underrepresented in the voting booth . . . now . . . has this been an accident? . . . again most analysts don’t think that this has been accidental . . . but they believe . . . or at least the author of your text believes . . . that this has been part of the larger political and psychological environment that has discouraged political activity by certain groups . . . so groups that do not have power in this country have not been encouraged to vote . . . they haven’t been
So the picture has, at times, looked a little bleak . . . but it’s really not as bad as it sounds . . . there are two things we might want to note about American electoral policy . . . the first one is that Americans conduct far more elections and far more types of elections than many other countries . . . so we’re looking at this as a really bad situation but when we realize that Americans vote one or two times a year . . . then maybe it’s not that bad . . . so Americans vote far more . . . or they have far more elections . . . than most countries . . . and also . . . the other thing is that Americans in addition to having the right to vote also have the right not to vote which in many countries . . . people do not have that right . . . where people are afraid for their lives if they don’t vote . . . here we have the right both to vote and not to vote . . . so that makes the picture a little more optimistic . . . even though on the whole . . . I think it’s pretty sad that so few people have in the past taken on the responsibility . . .

Now in terms of the future . . . there is reason to be optimistic . . . as I said before, 2008 was a landmark year with the election of Barack Obama, an African-American, as President . . . there was a huge increase in general electoral interest and in particular an increase among young people and African-Americans . . . groups whose turnout in the past has tended to be lower . . . So perhaps because of the increased incidence of women and ethnic minorities running for office . . . some of the disillusionment that a lot of minorities . . . a lot of under- or unrepresented groups feel . . . may change . . . we’ll certainly see what happens over the long term . . . and as I said at the beginning of the lecture, we’ll talk about that more tomorrow.

Activity 3: Listening for the Larger Picture, pages 172–173

Answers:
1. voting rights
2. low voter turnout
3. reasons for not voting; institutional; political
4. people didn’t vote
5. poor; uneducated; members of racial minorities
6. the United States has more elections than many countries; Americans have the right not to vote
7. more women and ethnic minorities are running for office (including the successful campaign of President Barack Obama in 2008) so under- or unrepresented groups may feel less disillusioned.

Activity 4: Defining Vocabulary (Audioscript), pages 173–175

1. eligible: You are eligible for financial aid. Do you want to apply for it?
2. struggle: Learning to read was a struggle for the child. He had to work twice as hard as the other kids.
3. apathy: People were dying yet nobody did anything. I couldn’t understand that kind of apathy.
4. procedure: In this hospital, there are certain procedures we must follow when we admit a new patient. First . . .
5. deadline: I am stressed because the deadline for paying my taxes is tomorrow and I’m not ready.
6. income: Her income tripled after she got a college degree. That extra money allowed her to buy a lot more for her family.
7. time-consuming: I spent twenty-five minutes filling out papers at the voting booth. It turned out to be quite a time-consuming task.
8. obstacle: She had to overcome a number of obstacles in order to reach her goal of being an engineer. She was poor and didn’t have money for books or school. Also, she was a woman in a field traditionally dominated by men.
9. explicit: He gave me explicit directions regarding how to fill out the ballot because he wanted to make sure I did it correctly.
10. respondent: I sent out hundreds of questionnaires but only received twenty-five replies. However, those twenty-five respondents gave me the information that I needed.
11. likelihood: What is the likelihood of winning the lottery? Pretty low, I’ve been told.
12. regardless of (something): Equal opportunities should be given to all. All people, regardless of age, race, sex, or religion, should have the same chances.
13. resident: The residents of the neighborhood called for increased police services after a series of robberies.
14. status: The position of mayor in small towns is often a job that has high status but low pay. People take the job because it commands respect.
15. versus: They’re trying to decide the pros and cons of buying a home versus renting one.
16. trend: After examining statistics regarding voting habits, we can see one clear trend: Voter participation has been increasing over the past decade. That’s a good sign.
17. discourage: Don’t discourage your children from trying new things. It’s important for them to experiment even if they don’t succeed the first time.
18. minority: It is important that societies make sure that minorities also have a voice. Otherwise, the majority viewpoint will be the only one that is heard.
19. optimistic: Even though she has experienced a lot of problems, she maintains an optimistic attitude about the future.
20. bleak: The president of the country painted a bleak picture for the future, saying that costs and taxes were going to increase, and unemployment was unavoidable.
Activity 4: Defining Vocabulary, pages 173–175

Answers:
1. c  2. a  3. c  4. a  5. c  6. b  7. b  8. c  9. c  10. b  
11. a  12. c  13. c  14. a  15. a  16. b  17. c  18. a  19. c  20. b

Activity 6: Post-Lecture Reading and Discussion, page 176

Answers:
1. Answers will vary.
2. a. Four types are mentioned: (1) the plurality system (“winner takes all”); (2) approval voting (everyone casts one vote per candidate, and the candidate that most voters approve of wins); (3) cumulative voting (“each voter has as many votes as candidates and can distribute those votes among the candidates or give them all to one candidate”); and (4) preference voting, also known as the transferable ballot (“each voter ranks each candidate first, second, third, and so forth [b]ut if after an initial count, someone’s first-place choice seems doomed to defeat, then that voter’s second-place vote is counted instead”).
b. The plurality system is generally used in the United States. The article says that it “can encourage extremism, reward name-calling, alienate voters, and fail to reflect the wishes of most of the people much of the time.”
c. Answers will vary.

Quiz for Lecture 11
Give students the quiz on the next page about one week after they listen to the lecture. Allow them to use their notes to answer the questions.

Quiz Answers:
1. a. As education goes up, the likelihood to vote goes up regardless of race or ethnicity.
   b. Generally, those with higher incomes and with higher-status careers are more likely to vote than those with lower-status jobs.
   c. Generally, the older (until about age 78) you are, the more likely you are to vote.
   d. Women are slightly more likely to vote than men.
   e. Generally, whites go to the polls more frequently than blacks, who go more frequently than Hispanics, who go more frequently than Asians.
2. a. 38 percent  b. 14 percent
Quiz for Lecture 11

Use your notes to answer the following questions.

1. Describe the relationship between voting patterns and each of the following factors.
   a. education ____________________________________________________
   _________________________________________________________________
   b. income ______________________________________________________
   _________________________________________________________________
   c. age _________________________________________________________
   _________________________________________________________________
   d. sex __________________________________________________________
   _________________________________________________________________
   e. race or ethnicity ______________________________________________
   _________________________________________________________________

2. In the poll that asked why people didn’t vote,
   a. what percentage answered that they didn’t register? ________________
   b. what percentage gave explicitly political reasons for not voting? ______

3. Give one example of an institutional reason for not voting.
   ______________________________________________________________

4. Give one example of a political reason for not voting.
   ______________________________________________________________

5. True or False?
   _____ a. As educational level rises, the likelihood that a person will vote goes up regardless of race or ethnicity.
   _____ b. There are primarily three types of reasons for not voting: institutional reasons, political reasons, and personal reasons.
   _____ c. Those with higher status jobs are more likely to vote than those with lower status jobs.
   _____ d. The primary reason for not voting is simply apathy.
   _____ e. According to the lecturer, the institutional obstacles to voting are more difficult to change than the political obstacles.
   _____ f. The lecturer believes that the increased incidence of women and minorities running for office will not affect the voter turnout rates.
Lecture 12: The Pyramids of Egypt: An Engineering Feat

Activity 1: Pre-Lecture Reading and Discussion, pages 179–181

Answers:

1. different pyramids located in Egypt
2. a. an eight-mile road and rock-cutting saws
   b. At the time of its construction, the road ended at a quay on the shore of a lake. This lake was at one time connected to the Nile. The road was used to transport stone blocks from the quarry to barges that waited at the lake, eventually going down the Nile (to the monument sites, including the pyramids).
   c. The road is a major engineering achievement. The road is dated earlier than researchers thought possible. The discovery of the rock-cutting saws and the road challenges previous views that the Egyptians lacked them.

Lecture Outline, page 181

Use this outline if you’d like to deliver the lecture yourself.

INTRODUCTION: The pyramids of ancient Egypt never cease to ignite the human imagination. Is it their age? Is it their power—standing tall in the harsh desert? Is it the mysteries surrounding them—the mysteries of the people who built them, who were buried in them? Is it the awe we feel when we see this feat of human engineering—structures built when we didn’t have cranes, bulldozers, and other machinery?

The focus of this lecture is the design and engineering of the pyramids.

I. Background on pyramids of Egypt
   A. Between 2700 and 1640 B.C., more than eighty pyramids were built along the Nile.
   B. Pyramids were built as tombs for kings.
      1. According to the religious beliefs of the ancient Egyptians, when the king died, he joined the gods.
      2. By preserving the king’s body and keeping it safe, his spirit would be able to return to it and his power would preserve Egypt.
      3. The pyramids were designed to keep the king’s body safe forever in a burial chamber deep inside the monument.

II. Pyramid design and engineering
   A. No one really knows why the ancient Egyptians chose the pyramid shape.
   B. There are some possible reasons.
      1. It is a very stable, strong shape.
      2. It is a practical shape in that the majority of the stone is in the bottom half; the higher one goes, the fewer stones that are needed.
      3. It developed in a gradual and natural progression from earlier burial practices.
   C. There are three main types of Egyptian pyramid: the step pyramid, the bent pyramid (only one exists of this type), and the straight-sided pyramid.
      1. See picture of “step pyramid”—these were the oldest pyramids and are basically a series of supporting walls surrounding a central core, with the walls varying in height, thus creating the step appearance.
         a. The step pyramid may have been a symbolic stairway to the stars.
2. See picture of “bent pyramid.” This began as a straight-sided pyramid, but halfway up the engineers may have panicked and thought the angle was too steep, so they changed to a more gentle slope.
   a. There is only one in existence.

3. See picture of “straight-sided pyramid”; this is the smooth-sided pyramid that most of us associate with Egyptian pyramids.
   a. Some experts believe that it represents the rays of the sun, upon which the king can climb to join the gods.
   b. The core of the straight-sided pyramid is essentially a step pyramid. Additional blocks filled the “steps” to create the straight sides. Often, a better and whiter stone was added as a casing stone, surrounding the initial blocks.

D. The building process
1. A site was chosen along the west bank of the Nile, above the flood level, and on a solid rock base.
2. The position of the pyramid was important, and the priest studied the stars to calculate true north.
3. The work force included priests, architects, surveyors, metalworkers, stonemasons, carpenters, painters, sculptors, scribes (to keep records), and laborers.
4. Workers made a level base for the pyramid.
   a. Since modern surveying instruments didn’t exist, leveling was a procedure in which a wall was built around the proposed site and flooded with water.
   b. By cutting holes and trenches into the ground and measuring and equalizing the level of the water, builders were able to level the site.
5. Stone was quarried.
   a. To break the stone into rough blocks, laborers used wooden wedges that were soaked with water. As the wood swelled, the stone would break away. Recent research has also suggested the possibility of rock saws.
   b. Each block weighed nearly three tons.
   c. The blocks were roughly squared by stonemasons with a copper chisel (iron had not yet been made) and wooden mallet.
   d. The blocks were transported from the quarries by ship. Each year, the Nile River flooded, so if the workers dragged the blocks to the edge of the flood zone and waited until the flood season, the stones could be floated right up to the edge of the desert by ship.
6. A path was built leading from the water to the pyramid site.
   a. Blocks were dragged using ropes, sledges, and a great deal of human labor.
   b. Although the Egyptians had the concept of the wheel (and used it for several purposes), they did not use wheeled vehicles or wheels for transporting material.
7. A room was constructed in the center of the pyramid to contain the stone coffin, the sarcophagus.
   a. A number of burial chambers contained descriptions of the changes the king would go through until he became a god.
   b. On the walls of the chamber were false doors, through which it was believed the king’s spirit could pass.
   c. Surrounding rooms and chambers often contained food and objects for the king’s eternal comfort.
8. The sides were built one layer at a time, using ramps.
   a. Once the blocks had been hauled up the ramp, ropes and levers were used to maneuver the huge blocks into position.
   b. When the pyramid reached its planned height, a casing stone was put on the rough stone. This casing stone was made of a white limestone. The top may have been capped with gold.
9. Once the stones were in place, workers would remove the ramp, polishing the sides of the pyramid as they went so that the white limestone shone in the sun.
   a. Sadly, over the years, most of the casing blocks have been stolen.
10. The path leading to the pyramid was broken up and destroyed.

III. The Great Pyramid of Khufu (Greek name—Cheops)
A. It was the burial tomb for Khufu, who ruled from 2551 to 2528 B.C.
B. This is the largest pyramid and the largest stone building in the world.
   1. It was originally 481 feet (146.5 m) tall but now is only 449 feet (137 m) due to the loss of the white limestone casing.
   2. It was built with about 2,300,000 blocks, with an average block weight of two and a half tons.

C. It is located at Giza, near Cairo.

D. It is a straight-sided pyramid. The blocks fit so perfectly that you cannot get a knife blade between them.

E. It probably took more than twenty years to build and a labor force of 20,000 or so (though estimates vary).
   1. Who were these 20,000 and what was their life like? Another lecture.

CONCLUSION: The pyramids of ancient Egypt allow us glimpses into a long-ago world. It makes me wonder—what legacy will we pass down to our descendants? What will remain of us and our technological achievements 8,000 years in the future? These are questions worth pondering.

Lecture Audioscript, page 181
This audioscript shows one speaker’s delivery of the lecture, as recorded in the audio program. Use it as a resource.

The pyramids of ancient Egypt just never cease to ignite the human imagination... people just continue to look at them in awe... people dream of going to Egypt to see them... what do you think it is... is it their age... is it their power... just standing so tall in the harsh desert... is it the mystery surrounding them... the mysteries about the people who built them... the people who are buried there and the culture they had... is it the awe we feel when we see this feat of human engineering... structures that were built when we didn’t have cranes and bulldozers and other machinery that we have today...

What I’m going to do in this lecture is talk about the design... and engineering... of the pyramids... to give you a sense of what went into the building of these incredible structures... first let me give you some background on the pyramids...

The pyramids were built... and they’re... when we see pictures, we usually see pictures of the same group of three or four pyramids... but actually there are more than eighty pyramids that were built along the Nile River... and those were built over a... almost a thousand-year period primarily... between 2700... and 1640 B.C. 2700 and 1640 B.C. and they were built as the tombs... for kings... they were royal tombs... burial places... that was their function... and the idea behind it was that... according to the religious beliefs of the ancient Egyptians... when the king died, he was going to join the gods... and by preserving the king’s body and keeping it safe... they believed that his spirit would be able to return to the body... and in this way his power would continue to safeguard... to preserve Egypt... so in general we have to remember that the pyramids are tombs first and foremost... they’re royal tombs... and they were designed to keep the king’s body safe forever... and so the burial chambers are deep deep within the monuments... very often they’re at the center of the monuments... to protect the king’s body... 

Now actually the design and engineering... no one is really sure exactly why the ancient Egyptians chose the shape of the pyramid... there is speculation... for one thing... a pyramid is a very stable strong shape... so... the idea, remember, is to protect the body forever... so they have a design that is very very stable... it’s also a very practical shape... when you have... when you don’t have cranes and bulldozers and other machinery... it’s a practical shape because the majority of the stone that’s needed is in the bottom half... and the higher you go... the fewer stones that you need... and of course it’s the higher part that would require that much more labor to go up... so there’s less work involved in building a pyramid than perhaps other structures... and also... if we look at the progression of burial structures in ancient Egypt... we can see that there was a gradual and natural progression from earlier practices... and I’m not going to go into exactly what those practices were... but over time... you can see how a pyramid would have developed from earlier styles of burial structures...

If you look in your book... you can see that there are three main types of Egyptian pyramids... we have what’s called a step pyramid... the bent pyramid... and the straight-sided pyramid... and the straight-sided pyramid is the one we usually think of when we think of a pyramid... but these other two pyramids are also types that you can actually see if you go to Egypt... the step pyramid is the oldest pyramid... or they’re among the oldest pyramids... and they’re actually basically a series of walls surrounding a central core... and the walls vary in height... each wall is progressively smaller than the last one... so it creates the step appearance that you see in the picture... and people have speculated that this might have been a symbolic stairway to the stars... OK so these are the oldest pyramids... another pyramid is the bent pyramid... and you can see that picture as well... and this might have actually been a mistake... it began as a straight-sided pyramid... but halfway up it changes... and it changes into a more gentle slope... and the idea behind it is... we wonder if maybe the engineers who created it started getting a little nervous... maybe they panicked... and they thought that the angle was just too steep... and so they changed to a more gentle slope midway... and there’s only one of these in existence... 

TYING IT TOGETHER: END-OF-COURSE EVALUATION 77
Most of the pyramids you see today in Egypt are what we call straight-sided pyramids... they're the smooth-sided pyramids... that most of us imagine when we think of Egyptian pyramids... again... there is speculation as to what the shape means... just as I said the step pyramid may have been a symbolic stairway to the stars... some experts believe that the straight-sided pyramid... the smooth-sided pyramid represents the rays of the sun upon which the king can climb to join the gods... the connection between the sun and the king... the king joining the gods after death... now regarding the engineering... the core of the straight-sided pyramid is basically a step pyramid... and what the later designers did is they added additional blocks to fill the steps to create these straight sides... and as we'll talk about later... often a better and a whiter stone was added on top... as a layer on top... as a casing stone... to surround the initial blocks and it gave an even smoother and brighter appearance... 

OK the building process... what was the process that was involved in building these incredible structures?... the first thing that would happen is that a site needed to be chosen... along the west bank... always the west bank of the Nile River... and it had to be above the flood level... and on a solid rock base... and this idea of the Nile River flooding... it flooded regularly... and this flooding actually played a very important role in the building of the pyramids... but the site had to be above the flood zone... or else once a year the pyramid would be surrounded by water and they didn't want that... and they also calculated... they spent time calculating the position of the pyramid... because the directions that the pyramid faced were very important... so the priest would study the stars to calculate true north... and then position the pyramid accordingly...

The work force was huge... it included priests... architects... surveyors... metalworkers... uh stonemasons... carpenters... painters... sculptors... scribes... who are the ones that kept the records... and thousands and thousands of laborers...

What would happen is the workers would first make a level base for the pyramid... they have to look at the ground and figure out a way to make it level for this huge structure... and since at that time they didn't have our modern surveying instruments... they had a special procedure for leveling the ground... what they did first was build a wall around the proposed site... and then they flooded the site with water... and then what they'd do is they'd cut holes and trenches into the ground... and they'd measure the level of the water... and mark off the same water height in each hole and trench... and this mark would give them guidance in leveling the ground... the next thing they would have to do is quarry the stones... now they had to have a method for breaking the stone into rough blocks... and the method they would generally use required wooden wedges... and the laborers would take pieces of wood... and put them into cracks in the rock... and they would soak the wooden wedges with water... which would make them swell... and as the wood swelled the stone would break... and... only most recently... as you read... there have also been suggestions that they might have had rock saws as well... a saw that would have helped them cut the rock... but on the whole... they used this technique of soaking wood with water... and having the wood expand enough to force the rock to break along a crack... now we're not talking about little blocks here... we're talking about rocks that weighed nearly three tons... so once the blocks were quarried... they were roughly squared by stonemasons... and the tools they used for this were copper chisels... they didn't have any iron yet... they'd use a chisel... a copper chisel... and a mallet... a wooden hammerlike instrument... and they would roughly square these stones...

Then they had to figure out how do we transport these blocks from the quarry... to the pyramid site... and this is where the ingenuity of the ancient Egyptians really becomes apparent... they knew that every year the Nile River flooded... so if the workers dragged the rocks to the edge of the flood zone... and then they waited until the flood season... the stones then could be floated right up to the edge of the desert... by ship... OK... so when they were cutting the blocks from the quarry... it was the dry season... but if they managed to move those rocks to the point where they'd be within the flood zone... they could eventually then kind of float it right onto the boats... down to the pyramid site...

So... imagine that they've gotten the rocks onto the boats... down the river... then they need to build a path from the water to the site of the pyramid... and this is where you might have seen pictures of laborers dragging these huge huge blocks... using ropes... uh sledges... and a great deal of human labor... you know the Egyptians had the concept of the wheel... but interestingly enough... they didn't use wheeled vehicles or wheels for transporting materials... so really... these blocks... these three-ton blocks... were dragged... using ropes... sledges... like sleds... but mainly a lot of human labor...

OK... then they would first construct a room in the center of the pyramid which would contain the coffin of the king... the word used for this stone coffin is sarcophagus... writing on board... S.A.R.C.O.P.H.A.G.U.S... sarcophagus... what was inside of the burial chamber... in addition to the sarcophagus... many of the chambers had on the walls... descriptions of the changes the king would go through until he became a god... there are also some false doors in the room... people believed that the king's spirit could pass through these doors... and surrounding the burial chamber there were often some other rooms... which contained food and other objects for the king's eternal comfort... and it is these rooms... with the food... and objects... which have provided an incredible amount of information about the lifestyles of ancient Egypt...

Now the sides of the pyramid were built one layer at a time... and they would use ramps... remember again... no cranes... no machines to lift the rocks... but they would build ramps... going up... and they'd haul the rocks up the ramps using ropes and levers... to maneuver the huge blocks into position... and finally when the pyramid reached the planned height... they would put a casing stone... as I said earlier... the casing stone was put over the rough stone... and this casing stone was made of a very white limestone...

Now once the stones were in place... workers would remove the ramp... and polish the sides of the pyramid as they went down... so that the white limestone shone in the sun... and it's too bad... because over the years most of the casing blocks have been stolen or used for other projects... and so what we see nowadays in
Activity 4: Defining Vocabulary (Audioscript), pages 182–183

1. tomb: In the national cemetery, there is a tomb called the “Tomb of the Unknown Soldier.” This structure was built over the remains of a soldier whose body had not been identified and was created in memory of all soldiers whose bodies were never found or identified.
2. spirit: Many religions believe that the body dies, but the spirit lives on.
3. steep slope: The hill had such a steep slope that she couldn’t bicycle up it. She had to walk with the bicycle until they came to a part of the trail that was flatter.
4. progression: A progression of arguments caused the couple to break up. They just got tired of arguing over and over.
5. symbolic: Typically, the design of a flag is symbolic. For example, the 50 stars in the U.S. flag represent the 50 states.
6. core: The two countries were at war, fighting over many things, but the core of the problem was a piece of land. Both sides would not give up ownership.
7. level: Don’t put the glass on that table. The ground isn’t level so the table is a bit shaky.
8. soak: Why don’t you let the dishes soak in the sink? That will make it easier to scrub them later.
9. swell: He hit his head on the ground when he fell. Though he wasn’t bleeding a lot, a bump appeared and the injury started to swell. He put an ice pack on the injury to stop the swelling.
10. drag: The bag full of concrete was too heavy to lift, so he dragged it along the ground until he found someone to help him carry it.
11. coffin: In some religions, people are buried in coffins. In other religions, dead bodies are wrapped in white sheets and placed directly in the ground.
12. layer: Try this cake; there’s a layer of fruit, a layer of whipped cream, and a layer of chocolate inside.
13. ramp: Many buildings have ramps alongside stairs to accommodate the needs of those in wheelchairs who cannot use the stairs.
14. speculate: Many people speculated about the reasons for the divorce; however, no one was sure.
15. ponder: I pondered the offer for hours. Even after all that consideration, I still didn’t have an answer.

TYING IT TOGETHER: END-OF-COURSE EVALUATION
Activity 4: Defining Vocabulary, pages 182–183

Answers:
1. b  2. a  3. c  4. c  5. a  6. b  7. a  8. c  9. a  10. c  
11. a  12. b  13. c  14. a  15. c

Quiz for Lecture 12
Give students the quiz on the next page about one week after they listen to the lecture. Allow them to use their notes to answer the questions.

Quiz Answers:
1. a. F (They were built over a period of more than 1,000 years, from 2700–1640 b.c.)
   b. T
   c. F (They were outside of the flood zone.)
   d. T
   e. F (The sarcophagus is the stone coffin.)
2. Any three of the following answers are appropriate: a. It is a very stable shape.
   b. It is a practical shape in that more stone is required at the bottom and fewer stones are required at the top (where it would be harder to build and reach).
   c. It was a natural and gradual development from previous burial practices.
   d. It represented their beliefs about the king’s relation to the gods (e.g., the steps that the king would ascend to reach the stars or the rays of the sun upon which the king could climb to join the gods).
   e. F (The sarcophagus is the stone coffin.)
3. See Lecture Outline section II.C.
4. The religious beliefs of the time included the idea that the king’s spirit could return to the body (if preserved) and its power would preserve Egypt.
5. The pyramids of today do not have the outside white limestone casing. Therefore, the stones are rougher (unpolished) and a different color. Also, because of the loss of this casing, the pyramids we see today are smaller. The top of the original pyramids may have been capped with gold.
6. See Lecture Outline section III. Any five features are appropriate.
7. See Lecture Outline section II.D.
Quiz for Lecture 12

1. True or False? If false, correct the sentence.
   
   ___ a. The pyramids were all built during the same century.
   ______________________________________________________________________________________

   ___ b. More than eighty pyramids were built along the Nile River.
   ______________________________________________________________________________________

   ___ c. The pyramids were built in the flood zone of the Nile River.
   ______________________________________________________________________________________

   ___ d. Although the ancient Egyptians had the concept of the wheel, they didn’t use wheeled vehicles to transport material.
   ______________________________________________________________________________________

   ___ e. The sarcophagus is the name of the boat that transported the rocks from the quarry.
   ______________________________________________________________________________________

2. State at least three possible reasons why the ancient Egyptians chose the pyramid shape.
   ______________________________________________________________________________________
   ______________________________________________________________________________________
   ______________________________________________________________________________________

3. Contrast the types of Egyptian pyramids in terms of appearance. What speculations have researchers made regarding the reasons for each design?
   ______________________________________________________________________________________
   ______________________________________________________________________________________

4. Why was it so important for the ancient Egyptians to preserve the king’s body?
   ______________________________________________________________________________________

5. How do the pyramids that we see in Egypt today differ from those that ancient Egyptians saw?
   ______________________________________________________________________________________

6. Name five features of the Great Pyramid of Khufu.
   ______________________________________________________________________________________
   ______________________________________________________________________________________

7. In a paragraph, describe the process used by the ancient Egyptians to build the pyramids.
   ______________________________________________________________________________________
   ______________________________________________________________________________________
   ______________________________________________________________________________________
   ______________________________________________________________________________________
Activity 8: Beyond the Lecture, page 185

These questions are open-ended. Therefore, a variety of responses are possible. Essays may include the following information.

Possible Answers:

1. Students may talk about the significance of the pyramids from a perspective of the knowledge that we have gained about ancient religions (based on the design of the pyramids, the location of the sarcophagus, the drawings in the inner rooms, etc.), the social structure of an ancient society (e.g., who was buried in the pyramids, who did the work), or ancient technology (e.g., how stone blocks were moved and manipulated, how a pyramid was built). In addition, students may talk about how this knowledge has significance to our present lives by, as examples, allowing us to gain insight about our own human history of civilization, the rise and fall of civilizations, our own mortality, or human potential and ingenuity.

2. a. Students may use information from the lecture to talk about life in Egypt 5,000 years ago relating to the role of kings and workers, religious leaders, and beliefs.

   b. Students’ responses must take into account what elements in our civilization are likely to last into the future and what kind of message they will leave about our age. Will our buildings last? Which ones? The temples? The office buildings? The malls? If it is the bank vaults that last, what does that say about our society? Or will radioactive waste last? Or will the remains of satellites or rockets last? What would that say about our society?

3. a. Students may use information from the lecture to speculate about why the pyramids were built the way they were (e.g., the religious reasons for using a pyramid design, the practical reasons). In addition, students may write about the environment of ancient Egypt and the use of nature and the seasonal flooding of the Nile to allow huge boulders to be transported without machinery or wheeled vehicles.

   b. Students’ responses must focus on one location and the buildings in that location. Students should consider the materials used (e.g., brick, adobe), the typical architectural choices (e.g., skyscrapers, single-story designs, buildings with few windows), the typical layout, the typical building process. For example, do families get together and build a structure together? Do companies build communities with look-alike houses? Finally, students should consider how these choices relate to the culture and the environment. For example, in an area where there is snow, windows may be smaller. In an area where there is a high risk of fire, wood may rarely be used. More socially significant examples relate to the layout of houses. For example, an area in which a large number of bedrooms are the norm may indicate a priority on privacy. The design of a community around a central marketplace may indicate that the marketplace is the common meeting place and center of activity.