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# SCOPE AND SEQUENCE

## UNIT OUTCOMES

### THE BRAIN: THE FANTASTIC PLASTIC BRAIN  
**pages 2–33**  
*Listening 1: An Interview with a Brain Researcher*  
*Listening 2: The Merits of Unitasking*

### 2 LYING: IS HONESTY THE BEST POLICY?  
**pages 34–61**  
*Listening 1: Interview with a Psychiatrist*  
*Listening 2: Family Secrets*

## LISTENING

- Make and confirm predictions  
- Identify and take notes on main ideas and details  
- Identify a speaker’s point of view  
- Recognize language that signals a revision of previously held beliefs  
  - MyLab Vocabulary and Listening Skill Practice

## SPEAKING

- Express and support opinions  
- Paraphrase a speaker’s ideas  
- Connect statements to specific speakers  
- Interpret graphs  
- Use expressions to correct a myth or misconception  
  - **Task:** Prepare and deliver an oral presentation using “rich pictures”  
    - MyLab Speaking Skill Practice and Speaking Task

## INFERENCE

- Infer a speaker’s degree of certainty

## PRONUNCIATION

- Recognize emphasis through stress  
  - MyLab Pronunciation Skill Practice

## VOCABULARY

- Recognize synonyms
- Recognize and use commonly confused words  
  - MyLab Vocabulary Practice

## GRAMMAR

- Recognize and use verbs + gerund or infinitive with a change of meaning  
  - MyLab Grammar Practice

## VIDEO

- **MyLab** Memory Boost, ABC News, Video Activity  
- **MyLab** Why Do Kids Lie? ABC News, Video Activity

## ASSESSMENTS

- **MyLab** Check What You Know, Checkpoints 1 and 2, Unit 1 Achievement Test  
- **MyLab** Check What You Know, Checkpoints 1 and 2, Unit 2 Achievement Test
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- Make and confirm predictions
- Summarize main ideas and details
- Recognize persuasion with parallel structure
  - English Lab: Vocabulary and Listening Skill Practice
- Express and support opinions
- Summarize others’ opinions
- Prepare and deliver a mini-lecture
- Incorporate parallel structure to speak persuasively
  - Task: Prepare for and participate in a simulation of a public meeting
  - English Lab: Speaking Skill Practice and Speaking Task
- Infer a speaker’s purpose for examples
- Infer meaning by recognizing a speaker’s assumptions about the listeners
- Recognize variations in how final consonants are joined
  - English Lab: Pronunciation Skill Practice
- Infer word meaning from context
- Recognize and use synonyms
- Distinguish between literal and figurative language
  - English Lab: Vocabulary Practice
- Recognize and use the passive voice and the passive caustive
  - English Lab: Grammar Practice
- Recognize and use present, past, and mixed unreal conditionals
  - English Lab: Grammar Practice
- Interlochen Arts Academy, Video Activity
- Young Innovators, CBS News, Video Activity
- Check What You Know, Checkpoints 1 and 2, Unit 7 Achievement Test
- Check What You Know, Checkpoints 1 and 2, Unit 8 Achievement Test

Scope and Sequence xvii
1. For years, scientists thought that the brain's structure could not be changed—that the brain we were born with was the brain we were going to have forever. In recent years, a new science emerged, neuroplasticity, which confirmed that our brains are not fixed, or hard-wired; rather they are “plastic,” meaning flexible. Look at the picture and the title of the unit. Why is this discovery important? How might it change our lives?

2. Look at the picture again. What is the artist trying to tell us about the way our brains work?

3. Working with a partner, decide if each statement is a fact (F) or a myth (M). Read the article on pages 4–5 to check your answers.
   
   a. ______ We only use 10% of our brain.
   
   b. ______ Brain damage is always permanent.
   
   c. ______ Our working memory can only store seven digits.
   
   d. ______ We get new brain wrinkles when we learn something.
   
   e. ______ It is possible for us to simply think ourselves into being positive, calmer, and more compassionate.

GO TO MyEnglishLab TO CHECK WHAT YOU KNOW.
VOCABULARY

Read and listen to the article published in a popular science magazine. Pay attention to the bold-faced words. Then read the list of definitions that follows. Work with a partner. Write the number of the bold-faced word or phrase next to its definition.

THE BRAIN: MYTH AND FACT

1. We only use 10% of our brains.
   This (1) astounding myth has been around for a long time. This myth has persisted because, at any given time, people may (2) perceive they are using 10% of their brains, especially when they are resting, thinking, or taking a walk. It turns out, however, that with the advent of brain imaging technology, neuroscientists have proven that most parts of our brains are continually active over a 24-hour period. This fact has now been (3) authenticated in numerous studies.

2. Brain damage is always permanent.
   Not so, say neuroscientists. It is simply not true that a brain injury resulting in brain damage (4) renders the brain permanently damaged in every case. In some cases, the (5) affected brain cells, or neurons, may be permanently damaged. In other cases, these neurons connect to other neurons to form networks. The new connections, or networks, form new pathways. In this sense, the brain has the capacity to (6) rewire, and thus repair, itself.

3. Our working memory can only store seven digits.
   This is true, and it’s why many telephone numbers don’t go beyond seven digits. In 1956, Harvard psychologist George Miller did a (7) rigorous study to confirm that most people can only hold seven things in short-term memory. That said, there are rare memory champions, (8) the best and the brightest, who can outperform this “number seven” memory constraint.¹ Most of us, however, notice that a new thought, perception, or number (9) does not register immediately and is easily forgotten.

¹ constraint: something that limits freedom; restriction
while ago, people thought that these wrinkles were (10) **animate**, but now it is widely known that they do not grow and change as other brain structures and functions do. Instead, their role is to help squeeze the human brain inside of our relatively small skull. During our long evolution, the brain grew (11) **incrementally** in order to manage the higher-order thinking functions, such as creativity, (12) **ingenuity**, and imagination. Without the wrinkles, the brain would be as big as a pillowcase!

5. **It is possible for us to simply think ourselves into being positive, calmer, and more compassionate.**

   In fact, this is true. Tibetan Buddhists have long claimed that meditation changes them in positive ways. They call this “le-su-rung.” (13) **Skeptics** have doubted them. Yet hundreds of Buddhist monks have (14) **gone through** careful testing. (15) **Meticulous** scientists have concluded from their studies that “le-su-rung” is another name for neuroplasticity. In other words, our brain can change with experience.

___ a. alive  
___ b. careful, detailed  
___ c. exact, precise  
___ d. causes to be  
___ e. cleverness  
___ f. doubters  
___ g. endured  
___ h. increasingly  
___ i. changed  
___ j. is not noticed  
___ k. most talented  
___ l. notice  
___ m. proven  
___ n. reconnect  
___ o. surprising
PREVIEW

Dr. Norman Doidge is a neuroscientist who studies the brain. In the interview, he tells the story of a 90-year-old gentleman, Stanley Karanski, who had trouble performing certain activities due to aging. Karanski had trouble with several daily-life activities: remembering, focusing, driving.

Work with a partner. Predict the effects that a brain training program had on Karanski’s performance of daily activities. Then listen to the excerpt to verify your predictions.

1. ____________________________
2. ____________________________
3. ____________________________

MAIN IDEAS

Look at the chart. Listen to the interview and take notes on the main ideas. Use the key phrases in the left column to help you. Use a separate piece of paper if necessary. (You will note details later.) Work with a partner to compare and revise your notes.

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<td>Reasons the metaphor is wrong</td>
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<td>Problem/treatment/reasons behind 1st treatment choice</td>
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<td>Reason for eye surgeon example</td>
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<td>Assumption behind Taub’s therapy</td>
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<td>Taub’s reputation in scientific community</td>
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<td>Michael Merzenich’s contribution to brain research</td>
<td>Examples of brain plasticity applications with children and adults</td>
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DETAILS

Read the chart again. Fill in as many details as possible to support the main ideas. Then listen to the interview again to check your work. Work with a partner to compare and revise your notes.

GO TO MyEnglishLab FOR MORE LISTENING PRACTICE.
MAKE INFERENCES

RECOGNIZING DEGREES OF CERTAINTY

An inference is an educated guess about something that is not directly stated, but which you believe is true based on the intention, attitude, voice, pausing, and word choices of the speaker. Dr. Norman Doidge, a neuroscientist speaking to laypeople on the radio, presents surprising and important information about our brains. He expresses varying degrees of certainty about the results of scientific practices.

Listen to and read the example. Then answer the question and read the explanation.

Example

Doidge: And it turns out that that metaphor was actually just spectacularly wrong.

Think about the way in which Dr. Doidge expresses certainty about this claim about the brain. What is Doidge's degree of certainty about his assertion? What are the clues that helped you decide?

a. not very certain
b. certain
c. absolutely certain

The answer is c. There are two clues which indicated his absolute certainty: 1) use of the word “spectacularly” meaning “totally” and 2) tone of voice. Doidge places emphasis and stress on the word “spectacularly” to convey he is completely convinced that the mechanistic view of the brain is wrong.

Listen to each excerpt. Decide how certain Doidge is about his assertions and note the clues that helped you decide.

Excerpt One

1. What is Doidge's degree of certainty? What are the clues?

   a. not very certain
   b. certain
   c. absolutely certain

Clues:

(continued on next page)
Excerpt Two

2. What is Doidge's degree of certainty? What are the clues?
   a. not very certain
   b. certain
   c. absolutely certain

Clues:


Excerpt Three

3. What is Doidge's degree of certainty? What are the clues?
   a. not very certain
   b. certain
   c. absolutely certain

Clues:


Express Opinions

1. Discuss the questions with the class. Give your opinions and give reasons for them.

1. After hearing about “the fantastic plastic brain” in this interview, what changes could you make in your life to strengthen the power of your brain? In other words, how would you exploit neuroplasticity for your own benefit? What implications might the research have for your parents, grandparents, and/or children?

2. Brain injuries, such as strokes or concussions, or learning disabilities, such as dyslexia, can create serious challenges. Have you or someone you know ever suffered a brain injury or had to cope with overcoming a learning disability? What was the recovery process like? How might you have applied this research to helping you or someone you know with this injury or disability?
3. Doidge believes that we can increase our mental fitness by doing “neurobic exercises,” or activities to strengthen our brain functions.

2 Look at this list of activities. Prioritize which activities you would like to do in order to increase your brain power. Number 1 is your first choice and number 11 is your last choice. Share your list with a partner and explain your reasons. Discuss why these activities might be useful in improving brain function.

___ learning and playing a musical instrument
___ eating “superfoods”: blueberries, wild salmon, nuts & seeds, avocados, whole grains
___ exercising daily
___ playing games such as crossword puzzles, chess, or complex video games
___ memorizing long poems
___ learning Braille
___ doodling
___ napping
___ meditating
___ learning to juggle
___ (add your own)

GO TO MyEnglishLab TO GIVE YOUR OPINION ABOUT ANOTHER QUESTION.

LISTENING TWO THE MERITS OF UNITASKING

VOCABULARY

1 Read the sentences. You will hear the bold-faced words in the next listening selection. Notice them as you listen.

- The switching of attention from one task to another, task shifting, occurs in the part of the brain behind our foreheads in the brain’s prefrontal cortex.
- Multitasking, or doing several things at once, is a competency particular to humans. Animals cannot multitask.
- We have fooled ourselves into thinking that women are better at multitasking, but actually there is no scientific evidence supporting that view.

(continued on next page)
- In addition, many people have bought into the myth that members of the Net Generation are better at multitasking than members of older generations.
- Some researchers disagree with the idea that multitasking degrades innovation. They see multitasking as an efficient, dynamic process which leads to innovation.

2 Match the expressions on the left with the definitions or synonyms on the right. Write the corresponding letter in the blank.

   ___ 1. task shifting           a. skill
   ___ 2. competency              b. completely convinced about
   ___ 3. fool oneself into thinking  c. diminishes the importance of
   ___ 4. bought into              d. trick oneself into believing
   ___ 5. degrade                  e. changing from one thing to another

**COMPREHENSION**

Listen to the interview. M.I.T. Professor Sherry Turkle offers her opinions about multitasking. Check (√) all statements that represent her point of view.

Turkle believes that multitasking

1. ___ is an unavoidable 21st century phenomenon.

2. ___ is an important learning skill.

3. ___ is an ability supported by research.

4. ___ worsens our performance on certain tasks.

5. ___ is a tragically bad habit.

6. ___ is a rewarding, positive experience which makes us feel good.

7. ___ is definitely useful in situations such as filing or checking email.

8. ___ should be valued as much as unitasking.
LISTENING SKILL

REVIEWING ASSUMPTIONS AND LISTENING FOR REVISIONS

In the second listening, Professor Sherry Turkle debunks the myth that multitasking—doing several things at once—is a skill that promotes effective performance. She believes that we need to value uni-tasking—the art of doing one thing at a time—over multitasking. She supports her thesis with statements that revise previously held beliefs and assumptions.

Read and listen to the example. Then answer the questions and read the explanation.

Example

**Turkle:** We believed for so long that multitasking was a 21st century alchemy, that we could make more time by doing all of these things together. . . . And now we know the research is clear that we can multitask. But we degrade our performance for every task we multitask.

The earlier belief is that multitasking was efficient and effective.

1. What language does Turkle use to introduce the revised belief? ______________________

2. What is the revised belief? _____________________________________________

Turkle introduced the revised belief by saying, “And now we know.”

The revised belief is multitasking is not effective and in fact our performance worsens when we multitask.

Listen to Turkle’s comments. Identify the language used to introduce the revised belief and then paraphrase the new belief in a single sentence.

**Excerpt One**

The earlier belief is that people can look like they are multitasking in certain situations.

*Language used to introduce the revised belief: ____________________________

Revised belief: ____________________________________________

**Excerpt Two**

The earlier belief is that you can think you are multitasking and you think all is going well because the brain is producing chemicals that make you feel like you are doing better.

*Language used to introduce the revised belief: ____________________________ and
____________________________ and ____________________________

Revised belief: ____________________________________________

(continued on next page)
**Excerpt Three**

The earlier belief is that it is OK to task shift when you are doing minor tasks.

**Language used to introduce the revised belief:**

**Revised belief:**

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**CONNECT THE LISTENINGS**

**STEP 1: Organize**

Both speakers, Dr. Doidge and Dr. Turkle focus on brain functioning. Yet each addresses the topic from a slightly different perspective. Review your notes on page 6.

Imagine that you have interviewed both Doidge and Turkle for a variety of tips for effective brain functioning. Unfortunately, your notes are a mess and now you can’t remember who said what. Kick your frontal lobe into action and use your best analytical and problem solving skills to figure out who said what! Write the appropriate tip in the speech bubble above the appropriate photo.

**TIPS for EFFECTIVE BRAIN FUNCTIONING**

- Face a wall when working
- Turn off all social media links if you want to get something done while on your computer
- Take a different route to school or work at least twice a week
- Memorize phone numbers instead of putting them automatically in your mobile phone
- Take one very interesting photo each day
- Take a nap each day
- Stir your coffee or tea backwards after putting in sugar or milk
- Learn how to juggle
STEP 2: Synthesize

Work with a partner. Imagine you are either Dr. Doidge or Dr. Turkle. You are giving a talk together about effective brain functioning to 200 professionals between the ages of 65–85 years old.

Below are two slides both of you will use. Practice by telling each other what you intend to say about each of the slides. Use tips from Step 1 on the previous page. Ask each other questions to get further information. Use these expressions:

Student A: On this slide you see . . . the point I would like to make here is . . .

Student B: Could you be a bit more specific . . . I think you need to give an example . . . so what you are saying is . . .

GO TO MyEnglishLab TO CHECK WHAT YOU LEARNED.
VOCABULARY

REVIEW

Taxi drivers in London are known as the “Olympic athletes” of memory according to Joshua Foer, author of the bestselling book *Moonwalking with Einstein: The Art and Science of Remembering Everything*. Dr. Janet Alcalde, professor of neuroscience, recently spoke about the book to an audience at a community event for senior citizens. Alcalde discusses a well-known study detailed in Foer’s book.

Read and listen to a transcript of the discussion. Notice the **bold-faced** words.

**AUDIENCE MEMBER 1:** Tell us . . . do London taxi drivers really grow bigger brains simply by navigating their routes? It’s tough for me to **buy into** the idea that we can **rewire** our brains just by driving a taxi!

**ALCALDE:** Yes, I know. There are a lot of **skeptics** out there who don’t buy into this conclusion. But listen. **Meticulous** research was conducted by a British neuroscientist named Ellen Maguire who wanted to find out what effect all the driving around the spaghetti-like, higgledy-piggledy London streets might have on the cabbies’ brains. A few years later, this initial study was **authenticated**, and it **rendered** the same conclusion. The results are simply **astounding**.
AUDIENCE MEMBER 2: Professor Alcalde, I am not sure I understand. Are you saying that the drivers' brains were affected by the driving itself?

ALCALDE: Not exactly. Let me back up a bit. In order to be certified as a cab driver in London, you have to go through a really challenging process, which involves memorizing the locations and traffic patterns of all 25,000 maze-like streets, 20,000 landmarks and 320 routes connecting all of it—an incredibly confusing landscape. Then the cabbies have to take a rigorous test called “the Knowledge” in which they have to produce by heart all of this information. The ones that pass the test are not necessarily the best and the brightest or the cabbies displaying creativity or ingenuity or anything like that. Rather, success depends on hours and hours of practice and the competency to mentally register and have memorized all the names and landmarks.

AUDIENCE MEMBER 2: OK. Well, so why are these cabbies called the Olympic athletes of memory?

ALCALDE: The neuroscientist, Maguire examined the cabbies' brains and found that the right posterior hippocampus, the part of the brain responsible for spatial navigation was 7% larger than normal. Don't fool yourself into thinking that that percentage is not a big deal. Trust me. It is small, but very significant. So, she concluded that the act of finding your way around London physically altered the structure of the brain. In addition, the effects grew incrementally each year the cabbies weaved their way through those London streets.
Look again at the bold-faced words and phrases in the transcript on pages 14–15. Work with a partner and guess the meaning from the context of the transcript. Then cross out the word in each group below that does not have a meaning similar to the word as it is used in the conversation.

1. buy into
   a. believe  
   b. accept 
   c. create

2. rewire
   a. reconnect 
   b. replace  
   c. change

3. skeptics
   a. disapprovers 
   b. doubters 
   c. disbelievers

4. meticulous
   a. careful, detailed 
   b. detailed 
   c. cautious

5. authenticated
   a. proven 
   b. realized 
   c. documented

6. rendered
   a. revealed 
   b. made 
   c. caused to be

7. astounding
   a. bewildering 
   b. shocking 
   c. surprising

8. affected
   a. impacted 
   b. attacked 
   c. changed

9. go through
   a. endure 
   b. experience 
   c. explain thoroughly

10. rigorous
    a. inflexible 
    b. demanding 
    c. strict

11. the best and the brightest
    a. the most famous 
    b. the most talented 
    c. the cream of the crop

12. ingenuity
    a. cleverness 
    b. wittiness 
    c. flexibility
13. competency
   a. skill   b. personality   c. ability
14. register
   a. enroll   b. notice   c. show up
15. fool (into thinking)
   a. trick   b. force   c. deceive
16. incrementally
   a. increasingly   b. progressively   c. rapidly

EXPAND

1 Read the following statements, and then read about confusing pairs of words. Notice the bold-faced words.
   - The stroke caused a loss of brain cells which, in turn, affected her ability to move her legs.
   - After the stroke, the doctors encouraged her to do crossword puzzles saying that the “brain gymnastics” would effect a change in brain functioning.
   - After 8 weeks of the “brain gymnastics,” she and her doctors perceived the positive effects of the rigorous mental exercise.

“Affect” and “effect” are words that are often confused. “Affect” as a verb means to influence. “Effect” as a verb means to bring about. It is nearly always followed by the word “change,” such as “effect a change.” “Effect” is more commonly used as a noun meaning “result.”

Listen to and repeat each set of confusing pairs. Some differ in pronunciation; others do not.

1. accept/except
2. access/excess
3. advise/advice
4. assure/ensure
5. affect/effect/effect
6. council/counsel
7. disinterested/uninterested
8. eminent/imminent
9. imply/infer
10. principal/principle
Read the sentences. Use the context to identify the meaning of each **bold-faced** word. Then write the letter of the appropriate sentence next to each definition.

1. **a.** The twin girls both wanted to compete in the World Memory Championships, but the judges allowed only one child per family. The parents allowed the teacher to choose which child could compete. They made every effort to remain **disinterested**.
   
   b. The twins had always been **uninterested** in memorizing boring facts for school exams, but they were very motivated to compete in memory challenges.

   ____ impartial
   ____ not curious about

2. **a.** The **principal** reason the journalist Joshua Foer entered the USA Memory Championship was to master the powerful techniques used by world class “mental Olympians.”
   
   b. These mental Olympians use **principles** of remembering and learning once employed by the ancient Greeks and Romans, who memorized long speeches and books.
   
   c. The **principal**, a two-time World Memory Champion herself, insisted each child in the school memorize a poem a week.

   ____ beliefs
   ____ main
   ____ director of a school

3. **a.** Last year, the **eminent** Grand Master Simon Reinhard, broke the World Record in the Abstract Images category. He recalled 396 images after 15 minutes of memorization.
   
   b. However, most fans of the World Memory Championships predict that the loss of Reinhard's championship title is **imminent** this year.

   ____ about to happen
   ____ outstanding

4. **a.** In training for the USA Memory Championship, Foer's coach **advised** him to push himself to remember more and more until he felt uncomfortable.
   
   b. The coach's **advice** was to fail often and learn from mistakes.

   ____ an opinion about what someone should or shouldn't do
   ____ gave an opinion about what someone should or shouldn't do
5. a. Foer’s memory coach had a responsibility to **ensure** Foer understood the “art of remembering”—the ability to create imagery in one’s mind that is so unusual and colorful that it is likely to be remembered.

   b. The other World Memory Championship competitors **assured** Foer that he would not be eliminated in the first round.

   _____ make sure or certain that something happens
   _____ tell someone something to lessen their worries

6. a. Years ago, we had no **access** to external tools which could store our memories.

   b. Clearly there is no **excess** of digital devices that can hold our memories for us. Foer believes we have “forgotten how to remember” because of external devices.

   _____ surplus
   _____ way to enter

7. a. Sadly, Foer **implied** that memory training was a lost art.

   b. From the interview, we can **infer** that “mental athletes” are not naturally talented: They have simply learned and mastered a long lost tradition.

   _____ conclude; derive meaning
   _____ suggest; hint at

8. a. In training for the memory competition, Foer **accepted** the widely held belief that memorization was a creative process, not boring or rote.

   b. As soon as he **accepted** his prize for winning the USA Memory Championship, Foer tried to forget the details of the competition.

   c. Foer says his memory techniques help him remember lots of things, **except** maybe where he left his car keys.

   _____ apart from
   _____ receive
   _____ agree to

   *(continued on next page)*
9. a. The World Memory Sports Council is the independent governing body of the mind sport of memory and regulates competitions worldwide. Tony Buzan is president of the council.

b. The leading mentalists counsel new competitors to start practicing by memorizing phone numbers and dates.

c. One of the competitors accused another competitor of cheating. The judges had to call in legal counsel to settle the dispute

   ___ advise
   ___ an attorney
   ___ official group

10. a. How did the hours and hours of “shuffled deck” memorization affect Foer’s life?

b. Foer admitted that the memorization techniques he mastered had no effect on his long-term memory skill.

c. His experience in the Memory Championships affected a huge change in his views on learning.

   ___ have an influence on
   ___ cause to happen
   ___ consequence

CREATE

Work with a partner. Look at the graphs. Take turns discussing the graphs with your partner. Use the sentence starters to help.

1. 

   a. It is astounding that . . . we forget information so quickly.
   b. The amount of information declines incrementally probably because . . .
   c. Probably a basic learning principle is . . .
   d. I am assuming that if the person is uninterested in the information . . .
2. From the chart, it seems we build **competency** by . . .

b. If I were a teacher I would definitely **advise** the students to . . .

c. It is interesting to see that information is **registered** best when . . .

d. The information presented here **assures me** that if . . .

3. **On a scale of 1 to 5, what do you think is the most dangerous of all the distractions while driving?**

- Drinking/driving under the influence: 5
- Driving with friends in the car: 3
- Texting: 4
- Talking on the phone: 3
- Eating: 2
- Putting on makeup: 4
- Driving when you are sleep deprived: 4

a. From this graph, we can **infer** that . . .

b. The information given seems to **imply** that . . .

c. It is obvious that we only **fool ourselves into thinking** that . . .

d. I know people who would refuse to **buy into** . . .

*GO TO MyEnglishLab FOR MORE VOCABULARY PRACTICE.*
GRAMMAR

Examine the sentences and discuss the questions that follow with a partner.

- He stopped recalling important memories after a serious concussion on the soccer field.
- He stopped to recall some of his favorite childhood memories.

1. What is the difference in meaning of the verb stop in the two sentences?

2. What other verbs can be followed by either a gerund or infinitive with a change in meaning?

VERBS FOLLOWED BY GERUNDS OR INFINITIVES WITH A CHANGE IN MEANING

Some verbs must always be followed by a gerund (base form of verb + ing). Other verbs must be followed by an infinitive (to + base form of verb). Others can be followed by either a gerund or an infinitive with no change in meaning.

However, certain verbs that can be followed by either a gerund or an infinitive do have a change in meaning. Sometimes the change is subtle; sometimes it is very obvious. Look at the verbs forget and stop.

<table>
<thead>
<tr>
<th>Verb</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forget + gerund</td>
<td>To forget an experience—usually one that is particularly good or bad</td>
</tr>
<tr>
<td>He will never forget winning the championship even though he ended up in the hospital with a traumatic brain injury (TBI).</td>
<td></td>
</tr>
<tr>
<td>Forget + infinitive</td>
<td>To forget to perform an action</td>
</tr>
<tr>
<td>After his TBI, which was caused by heading the ball in the soccer match, he often forgot to do simple daily tasks.</td>
<td></td>
</tr>
<tr>
<td>Stop + gerund</td>
<td>To stop doing something for an extended period time</td>
</tr>
<tr>
<td>He stopped playing soccer after the injury.</td>
<td></td>
</tr>
<tr>
<td>Stop + infinitive</td>
<td>To stop doing something for a short period of time in order to do something else</td>
</tr>
<tr>
<td>When he realized how much his head hurt, he stopped to get medical help.</td>
<td></td>
</tr>
</tbody>
</table>

NOTE: Some other verbs like this are mean, quit, regret, remember, and try.
2 Read the sentences. From the context, choose the best meaning of the **bold-faced** verb. Write the letter of the appropriate sentence next to the correct definition.

1. a. His parents **tried** to convince him not to play American football since the game was too dangerous and his father had gone through a long recovery from a serious football injury.
   
   b. Knowing how dangerous football was, he **tried** playing gentler sports such as ping pong, but the game just wasn't the same.

   ____ experimented with
   ____ attempted

2. a. He can't **forget** making the decision to play American football even though he knew the very real and serious risks to his health.
   
   b. He **forgot** to tell the doctor that in addition to the severe headaches, he had problems concentrating, remembering simple things, and speaking clearly.

   ____ not remember something unpleasant
   ____ did not remember to do a task or duty

3. a. He told the doctor he **remembered** feeling the blood all over his hand after the ball smacked into his head.
   
   b. The doctor wondered if he had **remembered** to wear the new helmets designed to provide more protection.

   ____ kept something in mind
   ____ recalled

4. a. After he received the depressing diagnosis of traumatic brain injury, the soccer star, one of the best and brightest players on the team, **regretted** ever learning to play soccer.
   
   b. His coach **regretted** to inform him that heading the ball thousands of times during the year could render memory loss.

   ____ felt sad about telling someone something or to do something
   ____ felt sad about something that happened in the past

5. a. Knowing the danger, the coach **stopped** asking the kids to head the balls during practice.
   
   b. The young player **stopped** to check on his fellow teammate who had collapsed right after making the winning goal.

   ____ finished in order to do something else
   ____ quit
6. a. The boxer finally **quit** competing. The latest jolt to his brain felt like a 15 pound bowling ball traveling at 20 miles per hour.

b. He **quit** to teach young people about the dangers of certain sports like football, soccer, boxing, cycling, and horseback riding, and to teach them how to protect themselves from injury.

   ____ stopped

   ____ stopped temporarily in order to do something else

7. a. The professional football player knew that playing the game **meant** risking long-term mental health, so he refused to let his son play.

b. The coach **meant** to remind the young player to wear his helmet, but forgot. The child suffered a traumatic brain injury and his parents are now suing the coach for millions of dollars.

   ____ intended; planned

   ____ signified; involved

**PRONUNCIATION**

**STRESSING IMPORTANT WORDS**

In a sentence, one or two words usually express the most important information. These are words that the speaker wants the listener to notice.

Listen to how the capitalized words are stressed in these sentences.

**Example One**

I’ve **GOT** to get some more sleep.
I **REALLY** need to check my email again.

We stress the most important words by saying them on a high pitch, or with strong stress: the stressed vowel is long and loud.

When you speak, make sure your voice is high enough when you stress an important word. In English, we emphasize new information (in English, new information is usually the last important word of the sentence), and we emphasize information that contrasts or corrects.

**Example Two**

Today we’re **GOING** to talk about MULTItasking.
The kids are doing email instead of HOMEwork.
Listen to the sentences. Underline the words that are stressed. Some sentences may have more than one stressed word. Then practice saying the sentences with a partner.

Mohammed
1. Mohammed was listening to hours and hours of lectures on brain plasticity.
2. He was eating lots of “brain food” every day.
3. Wild salmon was his absolute favorite.
4. He was desperate to change his brain.

Patricia
5. Multitasking was making her crazy.
6. She couldn’t concentrate on a single thing for more than five minutes.
7. Something was totally destroying her brain cells.
8. She couldn’t get rid of her smart phone fast enough.

Read the conversation. Work with a partner and underline the words you think will be stressed. Then listen to the conversation to check your answers. Correct any errors. Practice reading the conversation with your partner, emphasizing the stressed words.

A: Multitasking isn’t so bad. Some people are really good at it.
B: Others think they are, but they’re just fooling themselves.
A: Agreed, but success at any cost may not be such a good thing.
B: Yeah, that makes me think of my father. He was so hooked on work. When he drove, he was on his cell phone; at red lights, he checked his email.
A: You must be joking. That’s multitasking at its best!
B: Well, not exactly. He lost his driver’s license after his third accident, which was also his fifth ticket.
DEBUNKING MYTHS AND REVISING MISCONCEPTIONS

When research actually creates new knowledge, we have to change our ideas. We often call this process “debunking myths” or “revising misconceptions.” It can take a long time for people to learn about and accept the new science. Doidge and Turkle are involved in spreading the new research and debunking myths.

Example

A: Our brains shut down when we sleep.
B: Actually, that’s not true. For the longest time, we thought our brains shut down when we sleep, but it turns out our brains never shut down.
A: Our brains stop developing after we are about 7 or 8 years old.
B: Sorry, but that’s no longer an accepted fact. We used to believe that brain development stopped during childhood, but now we know our brains continue to grow and change throughout our life span.
A: We only use 10% of our brains.
B: Actually, that’s been proven false. A while ago, people thought we used only 10% of our brains, but now it’s widely known that all parts of our brain are continually active.

Useful Expressions for Debunking Myths and Revising Misconceptions

• Actually, that’s not true . . . For the longest time, we thought . . . but it turns out . . .
• Sorry, but that’s no longer an accepted fact. We used to believe . . . but now we know . . .
• Actually, that’s been proven false. A while ago, people thought . . ., but now it’s widely known that . . .
• That’s a myth. For centuries people believed . . . but now we have clear proof that . . .

Work with a partner.

Student A: Read each of the three myths on the next page aloud.

Student B: Cover the left column. Correct each myth using one of the expressions listed above and the information provided. Switch roles after item 3.

Example

A: (Myth) Genes determine the fate of our brains.

B: (Correcting the myth) That’s a myth. For centuries people believed that, but we now have clear proof that our experiences can shape our brains’ capabilities.
<table>
<thead>
<tr>
<th>STUDENT A</th>
<th>STUDENT B</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Myth</strong></td>
<td><strong>Correcting the myth</strong></td>
</tr>
<tr>
<td>1. People are either “right brained” or “left brained.”</td>
<td>1. People use both sides of their brains to perform everyday tasks.</td>
</tr>
<tr>
<td>2. Male and female brains are very different.</td>
<td>2. There may be small differences, but basically males and females learn in the same way.</td>
</tr>
<tr>
<td>3. Most of our learning occurs between the ages 0–3.</td>
<td>3. Many connections between brain cells are formed during this time, but learning occurs throughout our lives.</td>
</tr>
</tbody>
</table>

Now switch roles.

<table>
<thead>
<tr>
<th>STUDENT A</th>
<th>STUDENT B</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. There is only one way to train your brain.</td>
<td>4. You can improve brain function through a number of ways such as physical and mental exercise, meditation, brain games, etc.</td>
</tr>
<tr>
<td>5. Our brain functions automatically degrade as we age.</td>
<td>5. There is nothing fixed or determined in the way our brains function as we age.</td>
</tr>
<tr>
<td>6. Children exposed to two languages from birth become confused or will fall behind in school.</td>
<td>6. Bilingualism is a form of mental exercise, provides brain training, and physically remolds parts of the brain.</td>
</tr>
</tbody>
</table>

GO TO MyEnglishLab FOR MORE SKILL PRACTICE AND TO CHECK WHAT YOU LEARNED.
FINAL SPEAKING TASK

In this task, you will use “Rich Pictures” to discuss case studies. During the Middle Ages, people seemed to know that words accompanied by imagery are much more memorable. Nowadays, brain scientists have proven that associating images and pictures with words enhances memory and learning. One technique used by students and professionals in all disciplines is the “rich picture technique.” A Rich Picture is a picture that uses symbols, sketches, or “doodles” to present a problem or situation. Rich Pictures are an illustrative and creative way of conveying an understanding of a particular situation. Try to use the vocabulary, grammar, pronunciation, and listening and speaking skills that you learned in this unit.*

Example

Case Study: Michael’s Story

Michael Bernstein was an eye surgeon, classical pianist, and tennis player. One day while playing tennis, half of his body was rendered completely immovable. He was given 6 weeks of rehabilitation but then sent home and was still not able to move half of his body. Another doctor had the ingenuity to try something different. He put the good limb in a sling or cast so Michael couldn’t use it and then incrementally trained the affected limb. It worked. Dr. Bernstein is now practicing medicine and playing tennis.

Work in groups of 3. Imagine that you are in a science class studying the brain. Read Case A, B, or C on pages 29–31. Follow the steps to create a brief oral presentation using the Rich Picture technique. In your presentation, be sure to include 1) the problem; 2) the solution; 3) the science behind the solution. Use the vocabulary, grammar, and speaking skills you have learned in the unit.

STEP 1: Study the case.
- Read and discuss the case with your group.
- Discuss the problem, the solution, and the science behind the solution.

STEP 2: Draw
- Draw a Rich Picture that depicts the problem.
- Use any symbols, sketches, or doodles that you think will clearly illustrate the problem.

* For Alternative Speaking Topics, see page 33.
STEP 3: Present

- Deliver your oral presentation to the class.
- Remember to include the problem, the solution, and the science behind the solution. Be sure to use your Rich Picture as a prop to visually support your presentation.

STEP 4: Reflect

After all case studies have been presented, discuss these questions with the class:

- How effective were the Rich Pictures for conveying the complexity of the case?
- Which case interests you the most? Why?

Case Studies

A.

Jill’s Story

In 1996, Jill Bolte Taylor, a Harvard trained neuroanatomist who had studied the brain for years, had an opportunity few brain scientists could ever imagine. One morning, she realized that she herself was having a massive stroke. For several days, she felt her brain functions slip away one by one, speech, movement, understanding, and memory. While her brain functions continued to degrade, she was able to apply her scientific training and study and remember every moment.

Her mother led her rehabilitation process which included strategies such as 1) ensuring she slept as often and how much as she wanted; 2) forcing her to finish sentences she started in order to find the “brain network” on her own; 3) breaking large challenges into small steps to keep her motivated towards recovery; and 4) typing on a computer in the early days when she could not read or write.

It took Jill 8 years to recover, a recovery period which she documented in her book, A Stroke of Insight, published in 2008. In addition, Jill gave a TED talk describing her experience. This talk has become one of the 10 most popular TED talks ever given. In her book, Taylor chronicles her eight-year full recovery, which proves the plasticity and strength of the human brain.

(continued on next page)
Debbie’s Story

Debbie Smith was vacationing on the island of Bali in Indonesia when she had a severe bicycle accident. With just minutes to spare before dying, Debbie arrived at the hospital and fought for her life for the next few weeks. After two weeks, severe gangrene set in and the doctors amputated her leg.

She returned home to the UK soon after, only to begin experiencing excruciating pain and shock-like feelings in the same area where her leg used to be. Doctors diagnose this condition as “phantom limb syndrome.” Most medical experts believe that phantom limb pain is caused by the brain having to adjust the feedback it gives to the body as the territory of the body changes. Different areas of the body are controlled by different parts of the brain. In other words, the areas of the brain responsible for the limb that is no longer there are receiving information from other areas after the limb has been amputated.

Debbie was treated with a famous technique using a “mirror box.” For thirty minutes a day, Debbie reflected her remaining leg in a mirror so that the other leg appeared to be still present. Surprisingly enough, this treatment reduced her pain. The visual pathway to the brain was strong enough to convince it that the “territory” of the leg was still there. After three weeks of treatment, Debbie experienced almost no pain and could even move her “phantom toes.”
Ben's Story

At the age of two, Ben was diagnosed with cancer of the retina. He had his eyes removed at the age of 3. When he turned 5, he discovered that he was able to identify the location of objects simply by making clicking noises with his tongue and then listening for the returning echo. Using this technique Ben was able to play basketball, cycle, rollerblade, skateboard, and play football.

Other blind individuals have mastered this technique now known as echolocation. Echolocation is a way of locating sounds that reflect off surrounding objects in order to identify their location. Dolphins, whales, and bats are expert echolocators.

Remarkably though, researchers have discovered that these blind human echolocation experts do not use the “auditory” part of the brain to register the echos. Rather they use the “visual” parts of the brain, those areas that normally process visual information in sighted individuals. The brain areas used to process auditory information are not activated. The brain seems to be able to perceive information from a variety of sources of which we are not aware.

UNIT PROJECT

Topic 1

STEP 1: Choose one of these topics:

1. Hyperthymesia—total recall disease
2. Hoarding and the brain
3. Asperger’s Syndrome
4. The teenage brain

STEP 2: Research the topic using the Internet or the library. Organize your research into three parts:

1. Definition and explanation of the topic
2. A story or example of the topic
3. Information about the brain as it relates to the topic

STEP 3: Present your research to the class.

(continued on next page)
Topic 2

**STEP 1:** There are many brain fitness games or activities to improve brain fitness on the Internet. Research these games and select one that you think would be effective. Prepare to teach it to a small group in your class.

**STEP 2:** In a small group, try out your game with your classmates. Observe and record their reactions.

**STEP 3:** After all group members have introduced their games, discuss these questions:

1. Which game did you like best? Why?
2. Which one was most or least effective? Why?
3. Why do you think these “brain fitness” games have become so popular?

**ALTERNATIVE SPEAKING TOPICS**

Discuss one of the topics. Use the vocabulary and grammar from the unit.

**Topic 1**

For several years, Jeremy Gleick, a sophomore majoring in neuroscience at the University of California, Los Angeles, devoted an hour a day to learning something new. He had one rule: It could not be related to his university work; nor could it be simply reading a book. Wherever he was, Jeremy simply said, “I am sorry, but I need to have my ‘learning hour.’” He recently passed his 1,400th hour of “learning hours.” Over the years, he has learned about the Aztecs (3 hours), Punic Carthaginian military commander Hannibal Barca (14 hours), the Korean War (4 hours), Confucianism (1 hour), the 700-verse Dharmic scripture Bhagavad Gita (14 hours), voodoo (4 hours), juggling (39 hours), piano (65 hours), astronautics (4 hours), volcanology (1 hour), robotics (2 hours), knife-throwing (1 hour), American sign language (9 hours), guitar (102 hours), card tricks (17 hours), the American Revolutionary War (27 hours), Parkour or urban acrobatics (8 hours), and wushu (28 hours).

What would you like to learn if you challenged yourself the way Mr. Gleick has? Create a list of your top 5. Work in groups of 3 and share your list. With passion and enthusiasm, explain why you have chosen what you have chosen.
Topic 2

Jose Luis Borges, the world renowned Argentinian writer, wrote a short story called “Funes the Memorious.” In the story, Borges describes a man who is unable to forget anything. His memory is too good, and he cannot tell the difference between things that are important and things that are not. Borges concludes the story by saying that “forgetting, not remembering, is the essence of what makes us human. To think is to forget.” Do you agree with Borges’ view that in order to understand the world we must be able to prioritize, to order, to filter? Why? What message is Borges trying to convey? How do our memories shape who we are?

Topic 3

Work with a partner. What do you think should be done to minimize the potential for serious brain injuries in certain sports such as football, soccer, cycling, etc.? Football and boxing in particular, are two of the most dangerous of these sports. Should they be banned? Should people watch them even though they know that players can suffer serious brain injuries? Why or why not?

GO TO MyEnglishLab TO DISCUSS ONE OF THE ALTERNATIVE TOPICS, WATCH A VIDEO ABOUT TRAINING YOUR BRAIN, AND TAKE THE UNIT 1 ACHIEVEMENT TEST.
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**LISTENING & SPEAKING 5**

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