

PRISM

READING AND WRITING 2

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HOW PRISM WORKS

1 Video

Setting the context

Every unit begins with a video clip. Each video serves as a springboard for the unit and introduces the topic in an engaging way. The clips were carefully selected to pique students' interest and prepare them to explore the unit's topic in greater depth. As they work, students develop key skills in prediction, comprehension, and discussion.

WATCH AND LISTEN



ACTIVATING YOUR KNOWLEDGE

PREDICTING CONTENT USING VISUALS

PREPARING TO WATCH

- 1 Work with a partner. Discuss the questions.
 - 1 Look at the clothes you have on now. Where were they made? Who do you think made them?
 - 2 Describe formal clothes for men and women in your country.
 - 3 If you could have one item of clothing specially made just for you, what would that be?
- 2 Work with a partner. Look at the photos from the video and discuss the questions.
 - 1 What industry do you think the men work in?
 - 2 Do you think these clothes are made by machine or by hand?
 - 3 Where would people wear clothes like these?

GLOSSARY

dressed to the nines (idm) wearing fashionable or formal clothes for a special occasion

mow the lawn (v phr) to cut an area of grass, especially near a house or in a park, to keep it short

fabric (n) cloth; material made from cotton, wool, etc., and used to make clothes, curtains, etc.

bespoke tailor (n) a person who makes or sells clothing that is specially made for the customer

client (n) a customer; someone who pays someone else for services

elegantly (adv) in a stylish and beautiful way

102 UNIT 7

2 Reading

Receptive, language, and analytical skills

Students improve their reading abilities through a sequence of proven activities. They study key vocabulary to prepare them for each reading and to develop academic reading skills. A second reading leads into synthesis exercises that prepare students for college classrooms. Language Development sections teach vocabulary, collocations, and language structure.

READING

READING 1



PREPARING TO READ

Predicting content using visuals

The images that accompany a text can provide valuable information about the content. For example, they can tell you where the text is set, what it is about, what kind of text it is (essay, blog post, etc.), what the key points are, and much more. All this information helps you make predictions about what you are going to read, and once you start reading, it helps you focus on the important information in the reading.

PREDICTING CONTENT USING VISUALS

PRISM Open Workbook

- 1 Work with a partner. You are going to read a case study about a new kind of city. Before you read, look at the photos of transportation in two cities and answer the questions.
 - 1 What problem can you see in the first photo? Does your city have this problem?
 - 2 What is the vehicle in the second photo? How could it be a solution to the problem in Question 1? Where do you think the photo was taken?
 - 3 How are the cities in the two photos different?

102 UNIT 1

ACADEMIC WRITING SKILLS

WRITING A CONCLUDING SENTENCE

SKILLS Some paragraphs have a concluding sentence. Usually, this sentence reminds the reader of the topic sentence. It can do this by restating the main idea, but with different words. It can also summarize the main points of the paragraph. Writers often add a concluding comment, such as their opinion or a prediction. Compare these topic sentences and concluding sentences:

Topic sentence: Since 2006, Masdar City has run into serious financial difficulties.

Concluding sentence: If all goes well, Masdar's green solutions to both traffic and environmental problems will outweigh the financial cost of building the city.

- 1 Read the paragraphs. Circle the best concluding sentence for each one.

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Paragraph 1

Riding my bicycle to school has both advantages and disadvantages. The most important advantage is that it saves me time because I don't have to wait in traffic or spend time searching for a parking space. Cycling is great exercise, and it feels good. Also, cycling helps the environment because it does not create any pollution. However, there are two things I dislike about cycling. One is that it can be dangerous if drivers can't see you. Also, some drivers are very rude.

- In other words, some drivers think they own the road and cyclists have no place on it.
- Still, I think the advantages of cycling outweigh the disadvantages, and I will continue to use my bicycle to get around in good weather.
- Because of these disadvantages, I may sell my bike and take the bus.

Paragraph 2

In some cities, such as Seattle and Istanbul, people commute to work by ferry. A ferry carries people, and sometimes cars, over water between two or more places. Sometimes a ferry is the only way to get around because there are no roads or bridges. However, even if a road exists, many people prefer to travel by ferry because it saves time. Ferry passengers don't have to sit in traffic, and they can read or work on their computers. Another benefit is that ferries help the environment by keeping hundreds of cars and trucks off the roads.

- These advantages explain why people in cities all over the world travel to and from work by ferry.
- For me, the best thing about taking the ferry to work is that it is fun.
- Many ferries have a restaurant on board, and passengers can drink coffee or eat a meal while they commute.

ACADEMIC WRITING SKILLS 75

3 Writing

Critical thinking and production

Multiple critical thinking activities begin this section, preparing students for exercises that focus on grammar for writing and writing skills. All of these lead up to a structured writing task, in which students apply the skills and language they have developed over the course of the entire unit.

ON CAMPUS

COMMUNICATING WITH PROFESSORS

SKILLS During their time at college, students need to communicate with their professors on a regular basis. The relationship that professors have with their students is different from a high-school teacher's relationship with their students, and it is important that students communicate with professors in the right way so that they have a positive and respectful relationship with them.

PREPARING TO READ

- You are going to read an email exchange between a student and her professor. Before you read, work with a partner and discuss the questions.
- Have you ever communicated with a professor or instructor outside of class? If so, how did you do it?
- What are some reasons a student might contact a professor?
- In your opinion, what is the best way to contact a professor outside of class?

D On Feb. 12, David Alcott wrote:
To: Sunbaby123@mail.cup.com
Re: Hi

Dear Linda,
Please come see me tomorrow during my office hours.
Sincerely,
Professor Alcott

L On Feb 11, Linda Sun wrote:
hey dave—I had to miss the last few classes because of my work schedule. did i miss something important? can u send me the handouts and your presentation slides? i haven't been able to buy the book yet :(but i will get notes from someone else in the class.
Thank!

100 UNIT 4

4 On Campus

Skills for college life

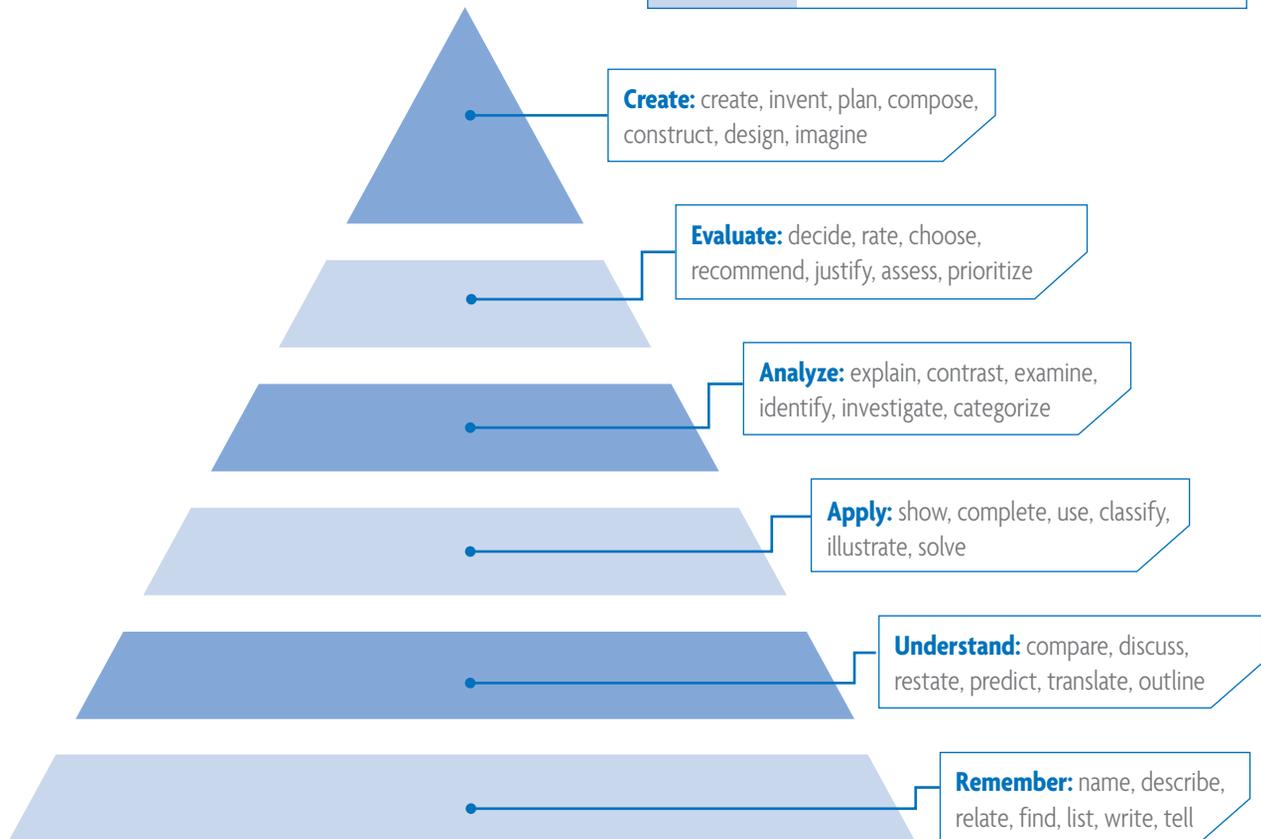
This unique section teaches students valuable skills beyond academic reading and writing. From asking questions in class to participating in a study group and from conducting research to finding help, students learn how to navigate university life. The section begins with a context-setting reading and moves directly into active practice of the skill.

WHAT MAKES PRISM SPECIAL: CRITICAL THINKING

Bloom's Taxonomy

In order to truly prepare for college coursework, students need to develop a full range of thinking skills. *Prism* teaches explicit critical thinking skills in every unit of every level. These skills adhere to the taxonomy developed by Benjamin Bloom. By working within the taxonomy, we are able to ensure that your students learn both lower-order and higher-order thinking skills.

Critical thinking exercises are accompanied by icons indicating where the activities fall in Bloom's Taxonomy.



WRITING

CRITICAL THINKING

At the end of this unit, you will write two comparison paragraphs. Look at this unit's Writing Task below.

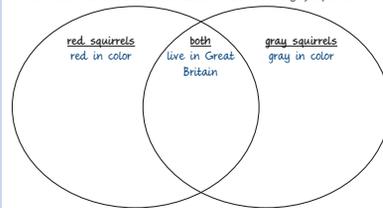
Compare and contrast the two sharks in the diagram.

Using a Venn diagram

A Venn diagram is useful for taking notes on similarities and differences. It consists of two or three overlapping circles. The Venn diagram in Exercise 1 shows some similarities and differences between red and gray squirrels. The special characteristics of red squirrels are listed on the left side of the diagram. The special characteristics of gray squirrels are on the right. The similarities between red and gray squirrels are listed in the center.

UNDERSTAND

1 Use your notes from Exercise 3 on page 22. Complete the Venn diagrams with the similarities and differences between red and gray squirrels.



2 Look at the diagram of the two sharks and read the information boxes on the opposite page. Write a sentence for each feature to explain how the sharks are similar or different.

- 1 Size: _____
- 2 Color: _____
- 3 Skin pattern: _____
- 4 Mouth: _____
- 5 Fins and tail: _____

WHAT MAKES PRISM SPECIAL: CRITICAL THINKING

4 Look at the map again and the possible solutions to the traffic problem. What are the advantages of each problem? What are the disadvantages? Choose four solutions and write their advantages and disadvantages in the chart on the opposite page.

build a tunnel	encourage people to cycle
Cost: \$3 million Time to implement: 2 years	Cost: \$500,000 Time to implement: 3 months
park-and-ride bus system	move the residential area to the other side of the river
Cost: \$2 million Time to implement: 1 year	Cost: \$100 million Time to implement: 10 years
road tax	ferry
Cost: \$100,000 Time to implement: 3 months	\$2.5 million Time to implement: 2 years

5 Look at the four solutions and choose the best two. Write them in the Decision(s) box and write your reasons in the Reason(s) box on the opposite page.

EVALUATE 

Higher-Order Thinking Skills

Create, **Evaluate**, and **Analyze** are critical skills for students in any college setting. Academic success depends on their abilities to derive knowledge from collected data, make educated judgments, and deliver insightful presentations. *Prism* helps students get there by creating activities such as categorizing information, comparing data, selecting the best solution to a problem, and developing arguments for a discussion or presentation.

GRAMMAR FOR WRITING

FUTURE REAL CONDITIONAL

LANGUAGE You can use future real conditionals to persuade or negotiate. Notice the use of *if* and *will* to combine two sentences.

idea/action: The government increases tax on fuel.

consequence: People use their cars less.

If the government increases the tax on fuel, people will use their cars less.

or

People will use their cars less if the government increases the tax on fuel.

Notice:

- The idea/action clause begins with *if*.
- The consequence clause uses *will*.
- *Can* changes to *be able to* in the consequence clause.
- Either the idea clause or the consequence clause can come first. If the idea clause comes first, put a comma after it.

GRAMMAR FOR WRITING 75

WRITING

CRITICAL THINKING

At the end of this unit, you will write two paragraphs of a cause and effect essay. Look at this unit's Writing Task below.

Describe the human causes of climate change and the effects that climate change will have on the planet.

SKILLS Describing causes and effects

Cause and effect is a very common type of academic writing. Sometimes the causes and effects are discussed in separate paragraphs. This is true especially when there is one cause with several effects or one effect with several causes. For example:

Problem: traffic congestion in my city

Cause: too many cars on the road

Effects: air pollution; noise; people are often late to work or school; accidents

However, causes and effects are often connected in a chain of events. When describing a cause-and-effect chain, it is useful to write about several causes and several effects in the same paragraph. For example:

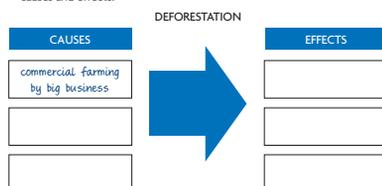
Problem: traffic congestion in my city

Cause 1: a shortage of housing ← **Effect 1:** people live in the suburbs

← **Cause 2:** people live in the suburbs ← **Effect 2:** they must drive to get to work

1 Work in a small group. Look back at Reading 2 and complete the chart of causes and effects.

UNDERSTAND 



CRITICAL THINKING 69

Lower-Order Thinking Skills

Apply, **Understand**, and **Remember** provide the foundation upon which all thinking occurs. Students need to be able to recall information, comprehend it, and see its use in new contexts. *Prism* develops these skills through exercises such as taking notes, mining notes for specific data, demonstrating comprehension, and distilling information from charts.

WHAT MAKES *PRISM* SPECIAL: ON CAMPUS

More college skills

Students need more than traditional academic skills. *Prism* teaches important skills for being engaged and successful all around campus, from emailing professors to navigating study groups.

Professors

Students learn how to take good lecture notes and how to communicate with professors and academic advisors.

Beyond the classroom

Skills include how to utilize campus resources, where to go for help, how to choose classes, and more.

Active learning

Students practice participating in class, in online discussion boards, and in study groups.

Texts

Learners become proficient at taking notes and annotating textbooks as well as conducting research online and in the library.

WHAT MAKES PRISM SPECIAL: RESEARCH

DISCUSSION

- 6 Work with a partner. Use information from Reading 1 and Reading 2 to answer the following questions.
- As the world's climate changes, which places will have too much water? Which places will become drier? Give examples.
 - How do both the melting of the glaciers and deforestation contribute to the extinction of species?

LANGUAGE DEVELOPMENT

ACADEMIC VOCABULARY

- 1 Replace the underlined words in the sentences with the academic words in the box.

annual (adj) areas (n) challenge (n) consequences (n)
contributes to (v) issue (n) predict (v) trend (n)

- The most serious problem that threatens the environment is climate change. _____
- Experts think that there will not be enough fresh water in the future. _____
- Pollution and climate change are the effects of human activity. _____
- Fortunately, we are seeing a pattern where people recycle more and use less packaging. _____
- In some places, the glaciers have melted or even disappeared as a result of higher temperatures. _____
- The yearly rate of species loss in the rainforest is nearly 50,000—that's 135 plant, animal, and insect species each day! _____
- The biggest test we face is to protect the planet. _____
- Human activity causes climate change. _____

SYNTHESIZING

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PROBES

LANGUAGE DEVELOPMENT 47

Vocabulary Research

Learning the right words

Students need to learn a wide range of general and academic vocabulary in order to be successful in college. *Prism* carefully selects the vocabulary that students study based on the General Service List, the Academic Word List, and the Cambridge English Corpus.

GRAMMAR FOR WRITING

VERBS OF CAUSE AND EFFECT

Writers use certain phrases to show the relationship between the causes of a problem and its effects. Look at the sentences below.

cause	linking verb or phrase	effect
Deforestation	leads to causes results in	habitat destruction.
effect	linking verb or phrase	cause
Habitat destruction is	caused by due to the result of	deforestation.

- 1 Complete the chart by adding linking cause-and-effect verbs. More than one answer is possible. The first one has been done for you as an example.

Global warming ① <u>leads to</u> higher temperatures and ② _____ melting glaciers.	Melting glaciers are ③ _____ higher temperatures, which are ④ _____ global warming.
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- 2 Complete the sentences using one linking word or phrase.
- Deforestation _____ in animal extinction and loss of biodiversity.
 - Demand for food and energy are expected to rise _____ to the increase in the world's population.
 - Burning fossil fuels _____ an increase in CO₂ in the atmosphere.
 - Flooding, heat waves, and other extreme weather are all _____ by climate change.
 - Reducing the amount of meat we eat may _____ in lower greenhouse gas emissions.
 - Submerged islands could be the _____ of rising sea levels.

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PROBES

GRAMMAR FOR WRITING 51

Grammar for Writing

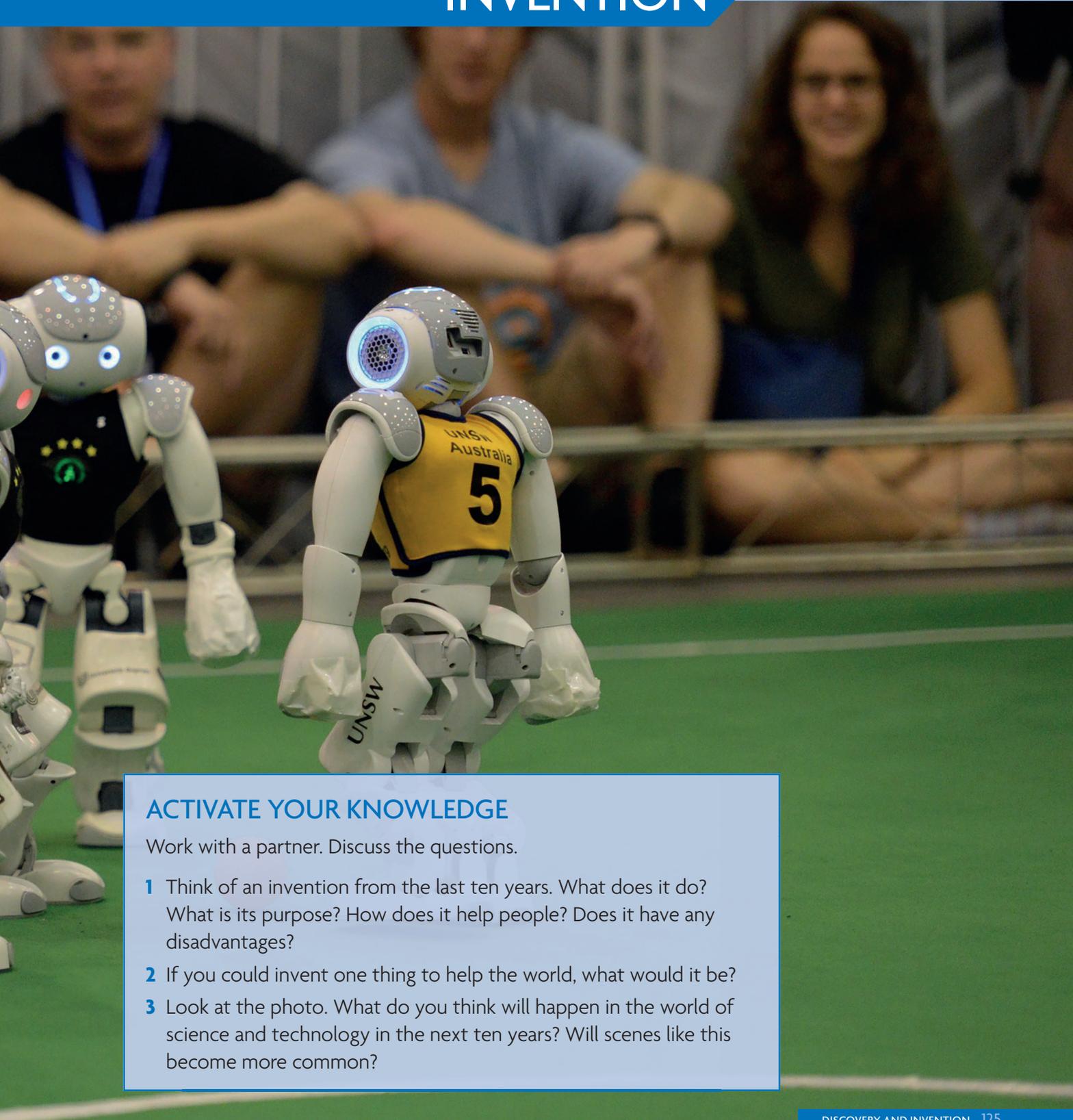
Focused instruction

This unique feature teaches learners the exact grammar they will need for their writing task. With a focus on using grammar to accomplish rhetorical goals, these sections ensure that students learn the most useful grammar for their assignment.

LEARNING OBJECTIVES

Reading skill	Scan to find information
Grammar	Relative clauses; prepositional phrases with advantages and disadvantages
Academic writing skill	Write an introductory paragraph
Writing Task	Write an explanatory essay
On Campus	Annotate texts





ACTIVATE YOUR KNOWLEDGE

Work with a partner. Discuss the questions.

- 1 Think of an invention from the last ten years. What does it do? What is its purpose? How does it help people? Does it have any disadvantages?
- 2 If you could invent one thing to help the world, what would it be?
- 3 Look at the photo. What do you think will happen in the world of science and technology in the next ten years? Will scenes like this become more common?

WATCH AND LISTEN



ACTIVATING YOUR KNOWLEDGE

PREDICTING CONTENT USING VISUALS

PREPARING TO WATCH

- 1 You are going to watch a video about a river in China. Before you watch, work with a partner and discuss the questions.
 - 1 What are some inventions to help us control our natural environment?
 - 2 How does water get into your home?
 - 3 How does water become clean enough to drink?
- 2 Work with a partner. Look at the photos from the video and discuss the questions.
 - 1 Where do you think the video takes place?
 - 2 What do you think these people are building?
 - 3 What problem could this project solve?

GLOSSARY

canal (n) a man-made river built for boats to travel along or to take water where it is needed

frame (n) the basic structure of a building, vehicle, piece of furniture, etc. that other parts are added onto

concrete (n) a hard substance that is used in building and made by mixing sand, water, small stones, and cement

crane (n) a large, usually tall machine used for lifting and moving heavy things

pump (n) a piece of equipment that pushes liquid or gas somewhere, especially through pipes or tubes

WHILE WATCHING

3  Watch the video. Answer the questions.

- 1 Where do most of the people in China live? _____
- 2 What problem does China have? _____
- 3 How is each section of the canal built? _____
- 4 Why does the crane operator have to be very careful?

- 5 When will the project be completed? _____
- 6 Who will the new canal help? _____

4  Watch the video again. Correct the student notes.

- 1 Problem = people in north need food
- 2 Solution = build a lake
- 3 Length = 570 miles
- 4 Weight of each concrete section = 12 tons
- 5 End of each section = 1 meter higher than other end
- 6 Finish date = 2020

DISCUSSION

5 Work in a small group. Discuss the questions.

- 1 List the five most important inventions in the past 100 years.
- 2 Rank the inventions in your list in order of importance.
- 3 Complete the chart. Then, compare your answers with another group.

invention	purpose or reason	positive effect	negative effect

UNDERSTANDING
MAIN IDEAS

UNDERSTANDING
DETAILS

READING 1

UNDERSTANDING KEY VOCABULARY

PREPARING TO READ

- 1 Read the definitions. Complete the sentences with the correct form of the words in bold.

essential (adj) very important or necessary
harmful (adj) able to hurt or damage
helpful (adj) useful
illustrate (v) to show the meaning or truth of something more clearly, especially by giving examples
pattern (n) a set of lines, colors, or shapes that repeat in a regular way
prevent (v) to stop something from happening or stop someone from doing something
unlimited (adj) without end or restriction

- 1 Before the invention of sunscreen, people had no way to protect themselves from the _____ rays of the sun.
- 2 Many cooks say that the food processor was a _____ invention because it saves a lot of preparation time in the kitchen.
- 3 The discovery of vaccines was extraordinarily important because they make it possible for us to _____ millions of deaths from illnesses like polio and smallpox.
- 4 The planet Uranus has an interesting _____ of stripes, which is visible by viewing the planet with a telescope.
- 5 The human brain has an almost _____ memory capacity, far more than that of a computer.
- 6 If you want to be an engineer or a scientist, it's _____ that you get a strong background in science and math.
- 7 The engineer used diagrams to _____ his point about the mechanics of suspension bridges like the Golden Gate Bridge.

- 2 Work with a partner. Discuss the questions.

- 1 *Bio-* is a prefix that means “life.” What words do you know that start with *bio-*?
- 2 Read the introduction and the first paragraph of the article on page 129. What do *mimicry* and *biomimicry* mean?
- 3 Can you think of any inventions that copy their shape or function from something in nature?

USING YOUR KNOWLEDGE

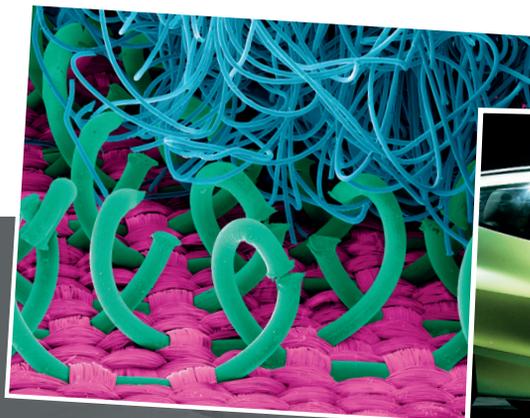
THE MAGIC OF MIMICRY

To *mimic* people means “to copy their speech, dress, or behavior.” However, in science, *mimic* means “copying ideas from nature or

natural processes to solve problems or to create **helpful** products.” This is called *biomimicry*, and its influence can be seen in many everyday products.

1 Perhaps the best-known example of biomimicry is Velcro®. It was invented in 1941 by a Swiss engineer called George de Mestral. One day, Mestral noticed the burdock seeds that stuck to his dog’s hair. Under the microscope, he discovered that these seeds had hooks on them, so they stuck to loops on clothing or hair. Mestral copied this idea and created two strips of material, one with tiny hooks and the other with loose loops. When he put both strips together, they stuck like glue. However, unlike with glue, he could peel the strips apart and reattach them. Velcro® was initially unpopular with fashion companies, but after it was used by NASA to stop items from floating in space, it became popular with children’s clothing companies. Today it is used to fasten everything from lunch bags to shoes.

2 More recently, swimwear has also been influenced by nature. The Speedo Fastskin®, a controversial swimsuit, was seen at the Beijing Olympics in 2008 and worn by 28 of the 33 gold medal winners. The technology is based on the rough **patterns** on a shark’s skin, which allows the shark to swim faster. A shark’s skin also **prevents** bacteria from growing on it, so scientists are copying this surface to design cleaner hospitals.



3 For NASA, protecting astronauts’ eyes from the sun’s rays is very important, but protecting their eyes from other dangerous radiation is also **essential**. Scientists studied how eagles and falcons clearly recognize their prey. Scientists discovered that the birds have yellow oil in their eyes, which filters out **harmful** radiation and allows them to see very clearly. NASA copied this oil, and it is now used by astronauts and pilots in Eagle Eyes® glasses. In addition to protecting eyes from dangerous rays, these sunglasses also improve vision in different weather conditions such as fog, sunlight, or just normal light.

4 To show how biomimicry could be used, Mercedes-Benz developed a concept car that was based on the shape of the tropical boxfish. Opinions were divided about the car’s appearance, but the engineers at Mercedes-Benz chose to copy the boxfish skeleton to make their Bionic Car because of its strength and low weight. The boxfish’s bony body protects the animal’s insides from injury in the same way that a car needs to protect the people inside it. This shape also meant that the car had less air resistance and therefore used less fuel.

5 As these examples **illustrate**, biomimicry appears to have an **unlimited** number of applications. It will be interesting to see which problems nature helps us solve in the future.



WHILE READING

- 3 Read the article. Choose the sentence that best summarizes the main idea of the article.
- a Though sharks can be dangerous, their skin is useful.
 - b In the future, nature can help us solve many important problems.
 - c Many useful products have been designed using biomimicry.
 - d Many useful discoveries have been made by accident.

SKILLS

Scanning to find information

Scanning means reading for specific information. When you scan a text, do not read every word. Look for key words that help you understand what the text is about and specific information. For example, look for names, numbers, pronouns, or groups of words related to a same topic/theme (e.g., words related to spend).

- 4 Scan the magazine article on page 129 quickly to answer the questions.

1 Which products are mentioned in the article?

2 Which plants or animals were copied to produce these products?

- 5 Read the article to find the answers to the questions. Annotate the text as you read. Look at page 85 for what to annotate. Write summary notes in the margin.

1 Which two features of Velcro® make the strips stick together?

2 What are some uses of Velcro®?

3 What product mimics a shark's skin?

4 What does a shark's skin allow the shark to do?

5 Whose eyes did NASA want to protect from dangerous radiation?

6 What special feature of an eagle's eyes was copied to make sunglasses?

7 Which two features of a boxfish's skeleton make it good for engineers to copy?

8 What feature does the car copy that allows it to save fuel?

READING BETWEEN THE LINES

- 6 Work with a partner. Answer the questions.

1 Why do you think Velcro® became popular with children's clothing companies?

2 Why do you think the Speedo Fastskin® swimsuit was controversial during the Beijing Olympics?

3 Why do people have different opinions about the Bionic Car?

DISCUSSION

- 7 Work with a partner. Discuss the questions.
- 1 Do you think biomimicry will be more common in the future? Why or why not?
 - 2 What are the advantages of copying from nature?

READING 2

PREPARING TO READ

- 1 You are going to read an article about technology in the future. Before you read the article, read the definitions below. Complete the sentences with the correct form of the words in bold.

artificial (adj) not natural; made by people
break down (phr v) to stop working
electronic (adj) sent or accessed by means of a computer or other electronic device
movement (n) a change of position or place
object (n) a thing you can see or touch that isn't alive
personal (adj) belonging or used by just one person
power (n) energy, usually electricity, used to provide heat, light, etc.
three-dimensional (adj) not flat; having depth, length, and width

- 1 When working on a computer, you should save your work often so that you don't lose your data if the _____ fails.
- 2 Smartphones allow us to choose what we want to see and use. Each person's phone is very _____ and doesn't look the same as anyone else's.
- 3 You don't need a paper ticket because I've got an _____ one on my phone.
- 4 _____ imaging techniques give doctors a new way to view the inside of the human body.
- 5 The advances in technology for man-made arms and legs allows _____ in all directions so people can continue to live a normal life.
- 6 Since cell phones were invented, it has been much easier for people to get help if their car _____ on the highway.
- 7 Microscopes allow us to see _____ that are too small to see with our eyes.
- 8 _____ legs have become so advanced that people can use them to run in marathons and climb mountains.

UNDERSTANDING KEY VOCABULARY

PRISM^{Online}
Workbook

USING YOUR KNOWLEDGE

- 2 Work with a partner. Answer the questions.
 - 1 Do you think flying cars will be a reality someday? Why or why not?

 - 2 What is a 3D printer? What is it used for?

 - 3 How can robots help people who are missing arms or legs?

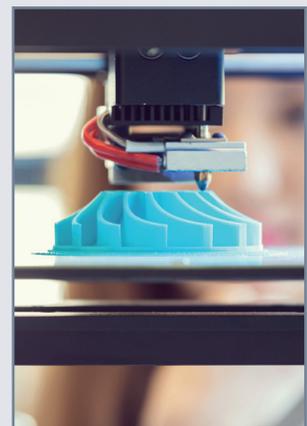
WHILE READING

- 3 Scan the article on page 133 to answer the questions. Look for the bold phrases in the questions.
 - 1 Which paragraph describes a **robot suit**? _____
 - 2 Which paragraph describes a **flying car**? _____
 - 3 Which paragraph describes a **3D printer**? _____
- 4 Read the article and complete the chart with the advantages and disadvantages of each invention.
 - a The process is slow and expensive.
 - b We could avoid speeding tickets.
 - c It could help people walk again.
 - d Mechanical failure might be a big problem.
 - e The cost is too high.
 - f We could make our own plastic products.

invention	advantages	disadvantages
1 flying car		
2 3D printing		
3 a robot suit		

The World of Tomorrow

- 1 What will the world of the future be like? Will it be easier or more difficult? Many people are confident that technology is going to help solve some of the most challenging problems we have on Earth today. Other people are worried that new technology may solve old problems but create new ones. Here are three predictions about the world of tomorrow.
- 2 When we dream about the future, many of us like to think that we will be able to exit our garages and take to the skies in our own **personal** flying car. The advantages are obvious. This technology would allow **three-dimensional** freedom of **movement**. We could fly at 480 kilometers per hour, avoiding traffic lights, busy roads, and speeding tickets. However, some people point to the disadvantages of flying cars. They claim that there are certain to be problems with traffic control. If the cars become popular, there is likely to be a problem with air traffic congestion. Another big problem is mechanical failure. What will happen if the cars **break down**? These are problems we must expect if flying cars become a reality.
- 3 Most of us have printed out an **electronic** document on paper, but think about the possibility of printing out a three-dimensional **object** in plastic. 3D printers build an object using layers of liquid plastic. They build up the layers line by line like a normal printer until the object is complete. Car companies like BMW and Volkswagen already use 3D printers to make life-size models of car parts, and medical technology companies have already used 3D printing to make body parts, such as **artificial** ears. Before long, it might be possible to see a product on a website and then download it to your printer at home. In the future, we could make our own furniture, jewelry, cups, plates, shoes, and toys from designs on our computers. This could be the next big trend in online shopping.
- 4 Finally, imagine having your own Ironman suit. Several companies are trying to build a practical robot “exoskeleton.” This is a suit of robot arms and legs that follows the wearer’s movements. It will allow the wearer to lift heavy objects, walk long distances and even punch through walls! There are obvious military advantages for this technology, but there are also benefits for people with disabilities. The suit might help people walk again after disease or injury. However, the obvious disadvantage at the moment is cost. Even a simple exoskeleton can cost hundreds of thousands of dollars. Another problem is battery life. A suit like this needs a lot of **power**; at the moment, the batteries last only about 15 minutes. One other problem is that a badly programmed robot suit could injure the wearer. You wouldn’t want your robot leg or arm bending the wrong way, for instance.
- 5 In the future, although we might be able to fly to work, print out a new pair of shoes, or lift a car above our heads, there are plenty of problems to solve before all of this will be possible. In the meantime, we can dream!



READING FOR DETAILS

5 Read the article again and write *T* (true), *F* (false), or *DNS* (does not say) next to the statements. Then, correct the false statements.

_____ 1 Flying cars will allow us to avoid traffic congestion on the roads.

_____ 2 Mechanical failure will not be a problem for flying cars.

_____ 3 We might be able to print things like necklaces or chairs in the future.

_____ 4 3D printing was invented in 1984.

_____ 5 BMW and Volkswagen are going to use 3D printing soon.

_____ 6 Robot suits are heavy objects.

_____ 7 The battery life of a robot suit is short at the moment.

READING BETWEEN THE LINES

6 Work with a partner. Answer the questions.

1 Why is mechanical failure a possible problem in a flying car?

2 Why will flying cars cause traffic congestion instead of reducing it?

3 What do you think could be the benefits of robot suits?

4 Why wouldn't you want a robot suit arm to bend the wrong way?

DISCUSSION

7 Work with a partner. Use ideas from Reading 1 and Reading 2 to answer the following questions.

1 Consider all the inventions in Reading 1 and Reading 2. Imagine the year is 2025.

- Which inventions do you think you will use regularly? Why?
- Which inventions are no longer used because something better has replaced them?
- Which inventions failed because they had too many problems?

2 Choose one of the inventions. How would your life be different if you owned it?

MAKING INFERENCES

SYNTHESIZING

MAKING PREDICTIONS WITH MODALS AND ADVERBS OF CERTAINTY

LANGUAGE

Use *will*, *could*, and *won't* with an adverb of certainty before the main verb to talk about future predictions. For example:

100% = *will definitely*

Cars **will definitely** become more efficient in the future.

90% = *will probably*

The next generation **will probably** use more digital devices.

50% = *could possibly*

We **could possibly** see humans walking on Mars soon.

20% = *probably won't*

We **probably won't** have flying cars.

0% = *definitely won't*

We **definitely won't** be traveling to other stars.

- Complete the sentences about the future using modal and adverb phrases with the meaning in parentheses.
 - In years to come, biofuels _____ become more important. (100%)
 - Genetic modification _____ be very controversial before the end of the decade. (30%)
 - In the near future, electronic human implants _____ become very common. (90%)
 - Biomimicry _____ be a growing industry before too long. (90%)
 - Robotic cars _____ be everyday products within the next ten years. (100%)
 - Everyone _____ own a personal Ironman suit within two years. (0%)
 - By 2020, many people _____ have a 3D printer in their homes. (50%)
- Look again at Exercise 1 and underline the phrases that refer to future time.

PREFIXES

LANGUAGE

Prefixes are added to the beginning of a word to make a new word with a different meaning. Understanding the meaning of prefixes can help you guess the general meaning of difficult academic or technical words.

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- 3 Look at these prefixes, their meanings, and the examples. Add your own examples to the chart.

prefix	meaning	example
<i>de-</i>	reverse or go down	decrease, _____, _____
<i>dis-</i>	reverse or opposite	disagree, _____, _____
<i>en-</i>	cause	enable, _____, _____
<i>pre-</i>	before	prevent, _____, _____
<i>re-</i>	again	rebuild, _____, _____
<i>trans-</i>	across, through	transportation, _____, _____
<i>un-</i>	remove, reverse, not	unlikely, _____, _____

- 4 Compare the pairs of sentences. Use the chart above and write whether the sentences have the same or opposite meanings.
- Flying cars are **unsafe**.
Flying cars are dangerous. _____
 - We have to **rethink** the way we use technology.
We have to think again about how we use technology. _____
 - Genetic engineering **dehumanizes** us.
Genetic engineering makes us more human. _____
 - Can this software **translate** a document from French to English?
Can this software change the language of a document from French to English? _____
 - Seat belts in cars **prevent** many injuries and deaths.
Seat belts cause many injuries and deaths. _____
 - This laboratory is very **disorganized**.
This laboratory is neat. _____
 - The font on your presentation is too small. Can you **enlarge** it?
Can you make it bigger? _____
- 5 Work with a partner. Choose words from the chart above and make five predictions about new technology.

WRITING

CRITICAL THINKING

At the end of this unit, you will write an explanatory essay. Look at the unit's Writing Task below.

Choose a new area of technology or invention and discuss its advantages and disadvantages.

SKILLS

T-charts

A T-chart is a kind of graphic organizer. It is useful for examining two sides or aspects of a topic, such as advantages/disadvantages or pros/cons. Look at the example.

Invention: tablet computers	
advantages	disadvantages
lightweight portable fast start-up	no physical keyboard too small for working on multiple documents uncomfortable to use for long periods of time

- 1 Look back at Reading 2 on page 133. Choose one invention from the reading. Complete the T-chart with its advantages and disadvantages.

UNDERSTAND 

invention: _____	
advantages	disadvantages

 REMEMBER

2 Work with a partner. Brainstorm recent inventions in each area of technology below.

areas of technology	inventions
medicine	CT scanner, insulin pump
home	
space	
transportation	
entertainment	
computers	
agriculture	

 APPLY

3 Choose one of the inventions from your chart in Exercise 2. Fill in the T-chart with advantages and disadvantages of this invention.

invention: _____	
advantages	disadvantages

RELATIVE CLAUSES

LANGUAGE

Use relative clauses to give more information about a noun without starting a new sentence. There are two kinds of relative clauses: identifying and nonidentifying. Identifying clauses give essential information about the identity of the noun they modify. They are not separated from the rest of the sentence with commas. In contrast, nonidentifying relative clauses have commas before and sometimes after them. They give extra, nonessential information about the noun. These clauses can be removed from the sentence, but the identity of the noun will still be clear.

identifying clauses	
start with <i>who</i> for people or <i>that</i> for people or things	Velcro® has a unique structure . It allows two strips to stick together. → Velcro® has a unique structure that allows two strips to stick together.
nonidentifying clauses	
start with <i>who</i> for people and <i>which</i> for things	Velcro® was invented in 1941 by George de Mestral. George de Mestral saw the seeds on his dog's hair. → Velcro® was invented in 1941 by George de Mestral, who saw the seeds on his dog's hair.

- Join each pair of sentences to make one sentence with a relative clause. Add commas if necessary.
 - Scientists have already developed new robots. New robots are able to do dangerous work.

 - There is a great deal of technology to help elderly people. Elderly people may have trouble doing some tasks by themselves.

 - There is a huge amount of new investment in biofuels. Biofuels are cleaner and more sustainable than fossil fuels.

 - The Bionic Car has a special design. A special design makes it more fuel efficient.

 - Important research is being done by scientists at the University of Cambridge. Scientists at the University of Cambridge hope to publish its results next year.

PREPOSITIONAL PHRASES WITH ADVANTAGES AND DISADVANTAGES

LANGUAGE

Writers often use prepositional phrases at the start of a new sentence to introduce the advantages and disadvantages of a subject.

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2 Complete the chart with the phrases in bold.

- 1 The main **advantage of** ... is ...
- 2 The main **disadvantage of** ... is ...
- 3 The main **worry about** ... is ...
- 4 One **point against** ... is ...
- 5 One **good thing about** ... is ...
- 6 One **bad thing about** ... is ...
- 7 Perhaps the biggest **concern with** ... is ...
- 8 A real **benefit of** ... is ...
- 9 The main argument **in favor of** ... is ...
- 10 The main argument **against** ... is ...
- 11 The **problem with** ... is ...

positive arguments	negative arguments

3 Choose a negative or positive phrase from Exercise 3 to complete each sentence. More than one answer is possible.

- 1 _____ robots is that they can do dangerous or boring jobs instead of humans.
- 2 _____ genetic engineering is that the new plant species may change human DNA.
- 3 _____ medical imaging is that you can see clearly inside patients' bodies.
- 4 _____ robots is that they take jobs away from people.
- 5 _____ flying cars is that they could crash, causing terrible accidents.

WRITING AN INTRODUCTORY PARAGRAPH

SKILLS

The first, or introductory, paragraph of an essay usually has three parts:

- a hook
- background information
- a thesis statement

The **hook** is a statement or question at the beginning of the paragraph. Its purpose is to get the reader interested in the topic so he or she will want to keep reading.

A good hook can be a thought-provoking question, a surprising fact or statistic, a request to the reader to imagine a situation, an observation, or a quotation.

For example:

In 2014, Americans spent 6.9 billion hours sitting in rush-hour traffic. Now imagine what we could do with all that time if we did not need to commute.

Many nations are in danger of running out of water. However, an Israeli company has invented a device that turns water vapor from the air into water you can drink.

Background information provides context to help readers understand the essay. Background information can include a definition of terms, historical information, data and statistics, or a general explanation of the topic.

The **thesis statement** is usually the last sentence of the introduction. It tells the reader how the essay will be developed. Often a thesis statement has two parts: a topic and a point of view. For example:

topic

point of view

Flying cars may reduce congestion on the ground, but they may create additional problems, such as congestion in the air and pollution.

This thesis statement informs the reader that the topic, flying cars, will be followed by both advantages and disadvantages of flying cars.

1 Read the introduction and the first paragraph of “The Magic of Mimicry” on page 129 again. Answer the questions.

1 What is the hook? Does it get your attention?

2 What kind of background information does the paragraph include?

3 According to the thesis statement, what is the topic of the essay? What is the point of view? How many paragraphs will the body of the essay probably have? What will each paragraph probably discuss?

2 Now re-read the introductory paragraph to “The World of Tomorrow” on page 133. Answer the questions.

1 What is the hook? Does it get your attention?

2 What kind of background information does the paragraph include?

3 According to the thesis statement, what is the topic of the essay? What is the point of view? How many paragraphs will the body of the essay probably have? What will each paragraph probably discuss?

4 Which introduction is better, in your opinion? Why?

WRITING TASK

Choose a new area of technology or invention and discuss its advantages and disadvantages.

PLAN

1 Look at the chart you created in Exercise 3 in Critical Thinking.

2 Plan your essay’s introductory paragraph. Write notes on the following parts of the introduction.

Hook:

Background information:

Thesis statement:

3 Outline the body of your essay. How many paragraphs will it have? Make sure the number of paragraphs matches the point of view in your thesis statement. Be sure to include advantages and disadvantages.

- 4 Plan your concluding paragraph. It should repeat your thesis statement and make a prediction about the future.

- 5 Use the Task Checklist below as you prepare your essay.

WRITE A FIRST DRAFT

- 6 Write the first draft of your essay using your essay plan.

REVISE

- 7 Use the Task Checklist to review your essay for content and structure.

TASK CHECKLIST	✓
Did you write about advantages and disadvantages?	
Did you include an introductory paragraph that has a hook, background information, and a thesis statement?	
Does the number of paragraphs in the body match the point of view in the thesis statement?	
Do the main body paragraphs have a topic sentence, supporting sentences, and a concluding sentence?	
Does the concluding paragraph repeat the thesis statement and make a prediction about the future?	

- 8 Make any necessary changes to your essay.

EDIT

- 9 Use the Language Checklist to edit your essay for language errors.

LANGUAGE CHECKLIST	✓
Did you use modals and adverbs of certainty to make predictions about the future?	
Did you use <i>who</i> , <i>that</i> , and <i>which</i> correctly in sentences with relative clauses? Did you use commas correctly?	
Did you introduce advantages and disadvantages with prepositional phrases?	

- 10 Make any necessary changes to your essay.

ANNOTATING TEXTS

PREPARING TO READ

- 1 You are going to read a blog from the Peer Tutoring Center. Before you read, work with a partner and discuss the question.
 - 1 As you read a textbook, what do you do when you ...
 - a see new vocabulary?
 - b have ideas or opinions about the text?
 - c have questions about the text?
 - d identify important information?

The screenshot shows a web browser window with a dark header bar. On the left and right sides of the header are icons of a building. The text in the header reads "West Bridge College Peer Tutoring Center". Below the header, the main content area has a title "ANNOTATING" in bold. Underneath is a paragraph defining "Annotating" as writing in a text to organize or explain that text. This is followed by a section titled "Why should I annotate my text?" with a paragraph explaining the benefits. Then, a section titled "How do I annotate my text?" is followed by two numbered lists of suggestions for annotation, such as using a pencil, underlining main ideas, and writing questions in the margin.

WHILE READING

- 2 Read the blog. Write *T* (true) or *F* (false) next to the statements. Underline where you found the information in the text.
 - _____ 1 Annotated texts are helpful for reviewing quickly for a test.
 - _____ 2 It's a good idea to write your comments with a pen.
 - _____ 3 All students should learn to annotate in the same way.
 - _____ 4 Your own ideas or opinions are also part of an annotation.
 - _____ 5 It's a good idea to write a summary at the bottom of each page.

PRACTICE

- 3 Look at the annotated text. Complete each sentence below with the correct word or phrase from the box.

causes definition effect example key word question

The main causes of deforestation are commercial farming by big business and farming by local people.
Huge commercial farms have taken over large areas of forest in many countries. In Brazil, for example, large areas of the Amazon rainforest are cleared to grow soya and vegetable oil. However, after two or three years, the land can no longer be used, so the farmer moves to another piece of land. Normally it takes around ten years for cleared land to recover, but in populated areas, the land is never allowed to recover. This constant reuse of land leads to heavy erosion—the loss of the top layer of soil that protects the ground. Erosion, in turn, can cause flooding in heavy rain.

How can they afford to do this? Do they own the land? →

Cause ①

Cause ②

ex.

effect ①

effect ②

effect ③

def.

- 1 Indonesia is one _____ of commercial agriculture.
- 2 The reader marks the word “erosion” because the text includes a _____ .
- 3 “Deforestation” is an example of a _____ .
- 4 The reader indicates that flooding is one _____ of deforestation.
- 5 The reader includes a _____ about the movement of farmers.
- 6 In the first sentence, the reader underlines two _____ .

REAL-WORLD APPLICATION

- 4 Work with a partner. Look at the article “The World of Tomorrow” on page 133 and annotate the following:
- the predictions that the author makes
 - the important details in **paragraph 2**
 - an example in **paragraph 3**
 - a definition in **paragraph 4**