

# Unit 3 Science and technology

## 3a No magic answer

### Reading population growth

**Overpopulation** is a complex problem that demands complex solutions. First, let's outline a few basic facts.

Firstly, each person on the planet takes up space, consumes resources, and creates waste. So the more people there are, the greater the problems of dwindling resources, overcrowding, and pollution are going to be.

Secondly, rising standards of living—a product of economic growth—have exactly the same effects. Rich people have bigger houses, buy more consumer goods, and generate more waste. So even if the population remains the same, economic growth will create similar problems.

But economic optimists don't worry about an increasing population because, according to them, people don't deplete resources, they create them. For them, more people mean more human intelligence and more brains to find clever ways to boost resources. One example they give is the "Green Revolution." Over the last 60 years, agricultural food production has grown dramatically—faster than the population, in fact. Through the engineering of better seeds and plants, which are more resistant to disease, experts predict that there will be enough food for all of us in the future.

Another example is the Gates Foundation's work in combating disease in poor countries through a program of vaccination. You would think that saving lives through vaccination would actually increase the population, not decrease it. Parents in under developed countries want to ensure that at least two children will be around to look after them when they are old. So they raise this probability by having more children. However, research shows that when you improve health in such communities, the population growth rate will fall within half a generation. Bill Gates believes that if we continue this work, the world population will peak at 8.3 billion by 2050 rather than the 9.3 billion currently predicted.

### Grammar future forms review

1 Read these comments about the views expressed in the article. Choose the correct option.

- 1 "Bill Gates argues that if you improve health, people *will have / are having* fewer children. But

what he doesn't say is that the result *will be / is about to be* more and more old people."

- 2 "If we *will rely / are going to rely* on new technology to solve this problem, then we're in trouble. New technology creates as many problems as it solves."
- 3 "I'll tell / I'm going to tell you something—I *will be / I'm going to be* very surprised if the population growth rate *won't start / doesn't start* to fall in the next 20 years."
- 4 "I'm suspicious of people like Bill Gates. He made a fortune in business and now he *will save / is going to save* the world."
- 5 "Actually, I'll go / I'm going to hear Bill Gates speak at a climate change conference this week. It *will begin / begins* on Friday."

2 Read the conversation about plans to attend a conference. Complete the sentences using the appropriate future form of the verbs.

Phil: Hi, Anna. <sup>1</sup> \_\_\_\_\_ (you / go) to the Future Foods Fair next weekend?

Anna: Yes, I am. How <sup>2</sup> \_\_\_\_\_ (you / get) there?

Phil: I <sup>3</sup> \_\_\_\_\_ (probably / drive). What about you?

Anna: I haven't decided. Perhaps I <sup>4</sup> \_\_\_\_\_ (go) by train.

Phil: Don't do that—it's so expensive. I <sup>5</sup> \_\_\_\_\_ (give) you a ride.

Anna: That would be great. What time <sup>6</sup> \_\_\_\_\_ (you / leave)?

Phil: Well, the conference <sup>7</sup> \_\_\_\_\_ (start) at 10, so I thought about 8:30.

Anna: That sounds perfect. Do you think it <sup>8</sup> \_\_\_\_\_ (finish) by 6?

Phil: I hope so. I need to be back by 7:30.

### Writing population predictions

3 In your notebook, write your ideas about what you predict will happen with population numbers in the future.



# 3b Smart technology

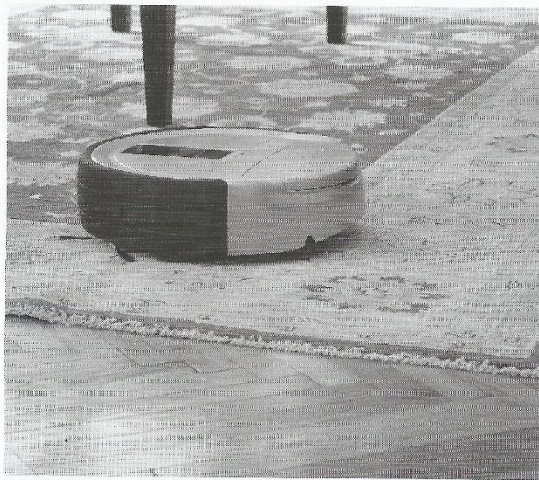
## Grammar future continuous and future perfect simple

- 1 Read the sentences and choose the correct option.
- In a few years, I'm sure we *will be hearing* / *will have heard* a lot more about this technology.
  - In the future, stoves *will be making* / *will have made* our meals for us.
  - We *will all be using* / *will all have used* intelligent fridges when food packaging is intelligent too.
  - In the next ten years, lack of water *will be becoming* / *will have become* a big issue, so we need to find alternatives.
  - In the future, people *will be using* / *will have used* energy fields that isolate a particular space from the rest of the house.
  - I don't think people *will be cleaning* / *will have cleaned* kitchen surfaces either in the future.
  - Soon, we *will be installing* / *will have installed* surfaces that can act as computer or TV screens in almost every room.
  - I think in ten years or so, that kind of technology *will be becoming* / *will have become* quite common in new houses.
  - Next year, our company *will be launching* / *will have launched* a new lighting system for bedrooms that simulates the sunrise.
- 2 Complete these predictions about the use of robots in the home of the future. Put the verbs into the future continuous or future perfect.

When people say that in the future robots <sup>1</sup> \_\_\_\_\_ (do) all the boring chores around the home, most of us have an image of a human-shaped robot with a feather duster in its hand, which <sup>2</sup> \_\_\_\_\_ (clean) the house while we sit with our feet up watching TV.

But if you move forward ten years, that is not actually the way technology <sup>3</sup> \_\_\_\_\_ (develop). In the future, robots in the home will take many forms. Vacuum cleaners that move around the room on their own are already available. In the future, we will see a lot of

micro-robots, which <sup>4</sup> \_\_\_\_\_ (do) the kind of jobs that we tend not to do regularly. When we arrive home, micro-robots <sup>5</sup> \_\_\_\_\_ (be) busy all day organizing items in our cupboards or cleaning our drains. These robots will already be an integral part of the equipment we use: the refrigerator, kitchen sink, cupboard, etc. We <sup>6</sup> \_\_\_\_\_ (not / acquire) them as separate items.



## Vocabulary information technology

- 3 Match the nouns to make collocations.

age	games	graphics	overload
programmer	security	storage	technology

- information \_\_\_\_\_
- data \_\_\_\_\_
- computer \_\_\_\_\_

## 3c The simplest ideas are the best

### Reading lifestraw

An ingenious invention, the Lifestraw may be one answer to the clean drinking-water problem.

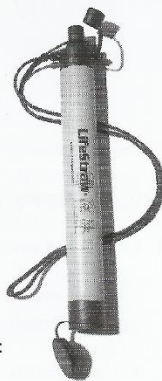
Lifestraw works on a very simple principle. Water is sucked by the user through a filter that traps 99.9% of all waterborne bacteria, including salmonella and *E. coli*. As a result, it provides protection against the killer diseases cholera and typhoid, as well as common stomach infections like dysentery and diarrhea.

The filter contains a substance called PuroTech Disinfecting Resin, or PDR, that kills bacteria on contact. Pre-filters made of textile fabric first remove particles up to 15 microns. Each filter lasts up to a year, and has a cleaning capacity of 185 gallons of water. This equates to a typical daily intake of two liters of water a day. Lifestraw is 12 inches long and is made of plastic. It weighs very little, so it can be comfortably worn around the neck. Each device costs around \$6.

Lifestraw was used successfully in the Haiti earthquake disaster of 2010 and the Pakistan floods of the same year.

1 Read a description of a device called *Lifestraw* and choose the best option (a–c).

- Lifestraw* protects against:
  - all stomach infections.
  - certain deadly diseases.
  - 90% of all bacteria.
- It is operated:
  - with a pump.
  - with a small motor.
  - by sucking.
- In order to get the best out of it, users need:
  - no training.
  - a day's training.
  - a little advice.
- It does not solve the problem of:
  - purifying salt water.
  - traveling to get water.
  - drinking dirty water.



2 Complete these facts about *Lifestraw*. Use the correct verb.

- Lifestraw* \_\_\_\_\_ on a very simple principle.
- It \_\_\_\_\_ protection against the killer diseases cholera and typhoid.

- The filter \_\_\_\_\_ a substance called PuroTech Disinfecting Resin.
- Each filter \_\_\_\_\_ up to a year.
- It \_\_\_\_\_ very little, so it can be worn around the neck.
- Each device \_\_\_\_\_ around \$6.

### Vocabulary useful devices

3 Complete these sentences. The first letter has been given for you.

- Lifestraw* offers a n \_\_\_\_\_ solution to a serious, complicated problem.
- Because you don't need to learn how to use it, it's an excellent example of a \_\_\_\_\_ technology.
- For many people in developing countries, collecting water is a very time-c \_\_\_\_\_ process.
- Lifestraw's* appeal is that it's a very h \_\_\_\_\_ gadget—portable, useful and easy to operate.
- Although it is simple for the user, inside it uses c \_\_\_\_\_-edge technology to filter out bacteria.
- WaterAid is worried that *Lifestraw* is a quick f \_\_\_\_\_ for a more complex problem.

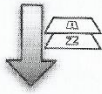


# 3d Computers

## Vocabulary computing

1 Look at the icons. Match the words with the icons.

attach copy cut format highlight open  
paste save search select sort undo



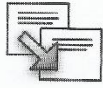
1 \_\_\_\_\_



2 \_\_\_\_\_



3 \_\_\_\_\_



4 \_\_\_\_\_



5 \_\_\_\_\_



6 \_\_\_\_\_



7 \_\_\_\_\_



8 \_\_\_\_\_



9 \_\_\_\_\_



10 \_\_\_\_\_



11 \_\_\_\_\_



12 \_\_\_\_\_

## Real life asking for and offering help

2 Read a conversation about a computer problem.

- Andy: Can you give me a hand? I'm having trouble sending this document.  
 Meg: What do you want to do exactly?  
 Andy: Nothing very complicated. I'm trying to attach this document to an email and it won't let me.  
 Meg: Let me have a look. OK, I see—the document's too large.  
 Andy: Hmm...I thought it might be. The problem is it's got a lot of photos in it, and I can't just cut them.  
 Meg: No, well, you can compress the photos.  
 Andy: What does that involve?  
 Meg: I'll show you. Right-click on the photo...then select format...then compress...then select

"print resolution." If you do that with all of them, that should do the trick.

Andy: Yes, I see, but then that reduces the quality of the photos, doesn't it? What else do you suggest?

Meg: Umm...Have you tried dividing the document into three or four separate documents?

Andy: No, I'll give that a try and see if it works.

Meg: OK. Feel free to ask if you want me to help you compress the photos after all.

Andy: Yeah, OK. Thanks.

3 Answer the questions.

1 What is the problem?

\_\_\_\_\_

2 What are the two possible solutions?

1 \_\_\_\_\_

2 \_\_\_\_\_

3 Why doesn't the first speaker like the first solution?

\_\_\_\_\_

## Vocabulary review information technology

4 Complete the sentences using one of these noun-noun collocations.

computer games	computer graphics
computer programmer	data security
data storage	information age
information overload	information technology

- The most serious issue of the next twenty years will be \_\_\_\_\_: how we protect our personal and private information.
- This post-industrial era that we now live in is called the \_\_\_\_\_.
- Augmented reality means projecting \_\_\_\_\_ onto our view of the real world.
- Bigger \_\_\_\_\_ capacity means that portable devices can hold much more information than in the past.
- People complain that we now have \_\_\_\_\_. In other words, there is more information than we can absorb.

# 3e A technical problem

## 1 Writing skill being polite

Rewrite the sentences so that they are more polite. Use the bold words.

- 1 Is it OK if I bring your memory stick back on my way home from work tonight?  
**please** \_\_\_\_\_?
- 2 Where can I find a battery charger for my old phone?  
**happen** \_\_\_\_\_?
- 3 I want you to send a brochure for your air conditioning units.  
**could** \_\_\_\_\_?
- 4 What is the phone number for Pegasus Computers? I can't find it anywhere.  
**know** \_\_\_\_\_?
- 5 I want to know how to download photos from my X306 camera.  
**show** \_\_\_\_\_?
- 6 What about reducing the price?  
**able** \_\_\_\_\_?
- 7 I need you to come over and fix my Internet connection.  
**mind** \_\_\_\_\_?
- 8 What number should I call to get technical advice?  
**tell** \_\_\_\_\_?

- c Unfortunately, that's because they went out of \_\_\_\_\_ years ago.
- d I'm afraid it's so out of \_\_\_\_\_ that probably no one stocks them anymore.
- e I'm afraid our phone system is out of \_\_\_\_\_ at the moment. Please email me your number and we will call you back as soon as possible.
- f Thank you, but please don't go out of your \_\_\_\_\_.
- g I will put one in the mail to you today. Just out of \_\_\_\_\_, where did you hear about our company?
- h I'm afraid you are out of \_\_\_\_\_ there. We don't deal with the X306 range.

3 Match the requests (1-8) in Exercise 1 with the responses (a-h) in Exercise 2.

## Writing short email requests

4 Write a short email to a friend about a problem you have with your computer. Use the notes below and polite requests.

- tried to call—no answer
- computer keeps crashing
- same problem you had?
- please email instructions for virus removal to my work email
- or call me

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## Word focus out of

2 Complete the phrases with **out of** in these answers using the words below.

business	date	depth	curiosity
luck	order	question	way

- a Sorry, I'm a bit out of my \_\_\_\_\_ there. I don't know about fixing Internet connections.
- b I'm afraid that a discount is out of the \_\_\_\_\_.



### Wordbuilding prefixes

1 Match each prefix in box A to at least two words in box B to form words.

**A** bio hyper mega micro semi ultra

**B** byte chip conscious detached  
degradable diversity market  
sensitive sonic star violet wave

2 Which word is used to describe:

- 1 not fully awake or aware? \_\_\_\_\_
- 2 a piece of cooking equipment? \_\_\_\_\_
- 3 a unit of computer memory? \_\_\_\_\_
- 4 a range of different plants and animals? \_\_\_\_\_
- 5 a piece of silicon with an electric circuit printed on it? \_\_\_\_\_
- 6 a house with another house attached on one side? \_\_\_\_\_
- 7 someone who is abnormally sensitive? \_\_\_\_\_
- 8 a kind of light? \_\_\_\_\_
- 9 above the range of human hearing? \_\_\_\_\_
- 10 a very famous entertainer? \_\_\_\_\_
- 11 non-polluting? \_\_\_\_\_

### Wordbuilding compound nouns (noun + noun)

3 Match a noun from box A with a noun from box B and write the collocations.

**A** address battery credit data  
information news repair travel

**B** life manual protection card  
technology book story advice

_____	_____
_____	_____
_____	_____
_____	_____

### Learning skills personalizing new language

4 The best way to remember something is to make it relevant to you. Read the tips and answer the questions.

#### Grammar

Think about the grammar in this unit. Write sentences about:

- a where you are going to go on vacation next year.
- b what you are doing on the weekend.
- c what your next career step is going to be.
- d which person in your family will be the next to get married.
- e what you will be doing in five years' time.
- f what you hope you will have achieved in ten years' time.

#### Vocabulary

- a Find four words from Unit 3 that relate to your life. What is their relevance?
- b Think about your own predictions for future technology. Describe them using words from this unit.

#### Pronunciation

Think about any words in this unit that you found difficult to pronounce.

- a What were they?
- b Do they remind you of any words in your own language?
- c How do they sound different?

#### Writing

Think of something you really need some help with. Write a short email request in English to a friend asking for their help.

### Check!

5 Complete the sentences. All the answers are in Student Book Unit 3.

- 1 Another word for a device or tool is a \_\_\_\_\_.
- 2 Thomas Malthus said that people were "basically \_\_\_\_\_."
- 3 In today's multi-media world, we all suffer from "information \_\_\_\_\_."
- 4 A great scientific advance is often called a technological \_\_\_\_\_.