Chapter 5: Future Trends

Topics discussed in this chapter:

- Future Trends
-New Technologies: nanotechnology, artificial intelligence, biometrics, smart homes, ubiquitous computing, RFID tags.

Course objectives

- To talk and write about future trends in computing.
- To make predictions about future trends.
- To use future forms correctly.

Language

-Grammar: Future forms: will + verb; will be + present participle; will have + past participle; be going to + verb.
-Vocabulary: Nanotechnology, nanometre, nanocomputer, nanobot, nanomaterials, nanotubes, Artificial intelligence (AI), robot, android, expert systems.
Biometrics: fingerprints, iris patterns.
Smart homes: appliances, home area network, smart devices.
Ubiquitous computing: sensors, embedded.
RFID: radio-frequency identification, tags.

Skills

- Listening: In this section, you will understand specific information about RFID tags.
-Speaking: In this section, you will discuss predictions about future trends.
-Reading: This part will help you match short texts with pictures and understand the main features of new technologies from short texts.
-Writing: In this section, you will write captions for pictures and make predictions about future trends.

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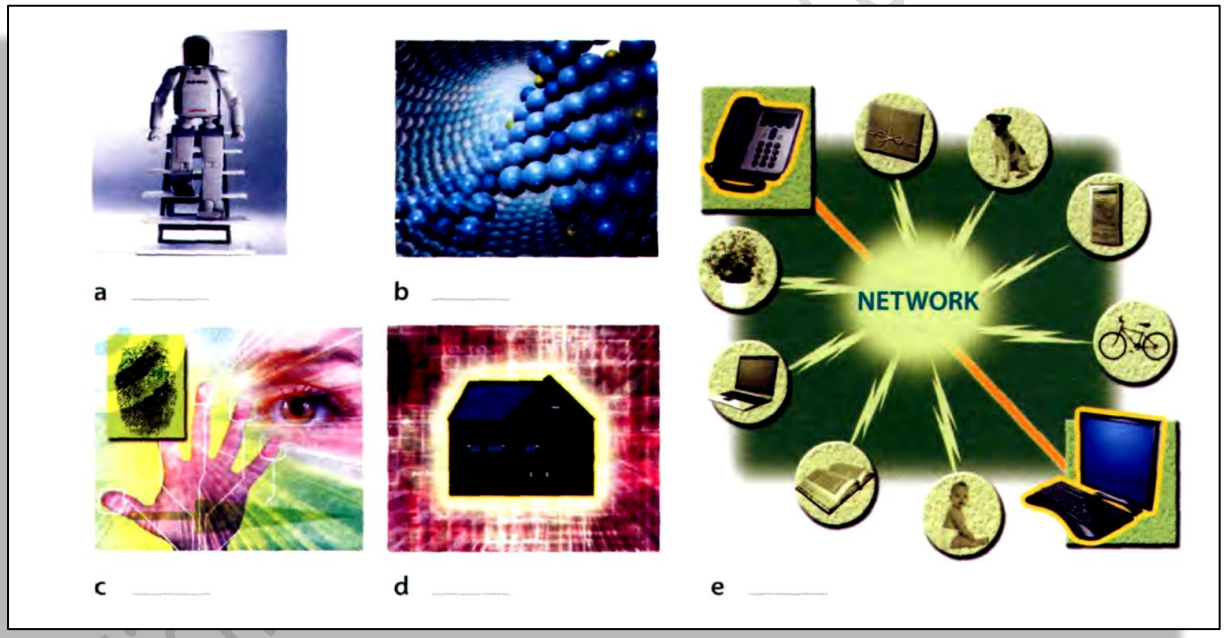
1. Warm up

A. Think about the following questions:

1. What do you think a trend is?
2. What trends in ICT do you think will affect our lives in the future? Make a list.
3. What kinds of changes do you predict for different fields in the future?

B. Match the texts (1-5) with the pictures (a-e). Which trends from your list are mentioned?



1

By all accounts, **nanotechnology** – the science of making devices from single atoms and molecules – is going to have a huge impact on both business and our daily lives. Nano devices are measured in **nanometres** (one billionth of a metre) and are expected to be used in the following areas.

- **Nanocomputers**: Chip makers will make tiny microprocessors with **nanotransistors**, ranging from 60 to 5 nanometres in size.
- **Nanomedicine**: By 2020, scientists believe that nano-sized robots, or **nanobots**, will be injected into the body's bloodstream to treat diseases at the cellular level.
- **Nanomaterials**: New materials will be made from carbon atoms in the form of **nanotubes**, which are more flexible, resistant and durable than steel or aluminium. They will be incorporated into all kinds of products, for example stain-resistant coatings for clothes and scratch-resistant paints for cars.

2

Artificial Intelligence (**AI**) is the science of making intelligent machines and programs. The term originated in the 1940s, when Alan Turing said: 'A machine has artificial intelligence when there is no discernible difference between the conversation generated by the machine and that of an intelligent person.' A typical AI application is **robotics**. One example is ASIMO, Honda's intelligent humanoid robot. Soon, engineers will have built different types of **android**, with the form and capabilities of humans. Another AI application is **expert systems** – programs containing everything that an 'expert' knows about a subject. In a few years, doctors will be using expert systems to diagnose illnesses.

3

Imagine you are about to take a holiday in Europe. You walk out to the garage and talk to your car. Recognizing your voice, the car's doors unlock. On the way to the airport, you stop at an ATM. A camera mounted on the bank machine looks you in the eye, recognizes the pattern of your iris and allows you to withdraw cash from your account.

When you enter the airport, a hidden camera compares the digitized image of your face to that of suspected criminals. At the immigration checkpoint, you swipe a card and place your hand on a small metal surface. The geometry of your hand matches the code on the card, and the gate opens. You're on your way.

Does it sound futuristic? Well, the future is here. **Biometrics** uses computer technology to identify people based on physical characteristics such as fingerprints, facial features, voice, iris and retina patterns.

Adapted from the *Richmond Times-Dispatch*

4

Ubiquitous computing, also known as **pervasive computing**, is a new approach in which computer functions are integrated into everyday life, often in an invisible way. **Ubiquitous devices** can be anything from smartphones to tiny sensors in homes, offices and cars, connected to networks, which allow information to be accessed anytime and anywhere – in other words, ubiquitously. In the future people will interact naturally with hundreds of these **smart devices** (objects containing a microchip and memory) every day, each invisibly **embedded** in our environment and communicating with each other without cables.

5

In the ideal **smart home**, **appliances** and electronic devices work in sync to keep the house secure. For example, when a regular alarm system senses that someone is breaking into the house, it usually alerts the alarm company and then the police. A smart home system would go further, turning on the lights in the home and then sending a text message to the owner's phone. Motorola *Homesight* even sends images captured by wireless cameras to phones and PCs.

Smart homes can remember your living patterns, so if you like to listen to some classical music when you come home from work, your house can do that for you automatically. They will also know when the house is empty and make sure all appliances are turned off. All home devices will be interconnected over a home area network where phones, cable services, home cinemas, touch screens, smart mirrors and even the refrigerator will cooperate to make our lives more comfortable.

Adapted from ***www.businessweek.com***

C. Read the texts again and answer these questions

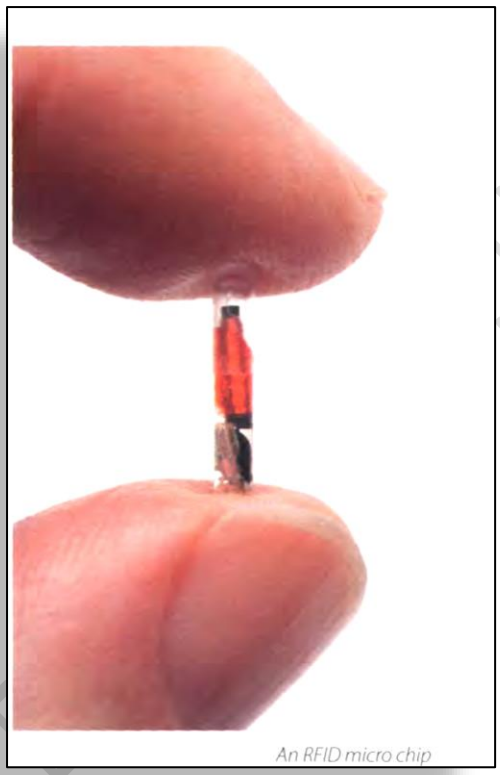
1. Which unit of measurement is used in nanotechnology?
2. What are the advantages of nanotubes over regular materials?
3. What will doctors use expert systems for?
4. What features are analysed by biometrics?
5. Which trend refers to computers embedded in everyday devices, communicating with each other over wireless networks?
6. What will the alarm system do if someone breaks into a smart home?
7. How will devices be interconnected inside the smart home?

D. Find words in the texts with the following meanings

1. A microscopic robot, built with nanotechnology (text 1)……
2. A robot that resembles a human (text 2)……
3. Biological identification of a person (text 3)……
4. Integrated, inserted into (text 4)……
5. Electrical devices, or machines, used in the home (text 5)……

2. RFID tags

A. Listen to Sarah Wood, an ICT teacher, giving a class about RFID tags. Which definition (a-c) best describes RFID?


An RFID micro chip

a. A smart technology worn on the user's body so that they can email and access the wab.
b. A technology that uses radio waves and chip-equipped tags to the automatically identify people or things.
c. A technology that uses microships and bar codes to track people or things at a distance.

B. Listen again and decide which answers (a or b) are correct.

1. RFID stands for
a. **R**adio **F**requency **I**dentification
b. **R**adio **F**requency **I**dentification **D**ownload.

2. Radio tags
a. can only be attached to or embedded into products.
b. Can be attached to or embedded into products, animals and humans.

3. Active RFID tags
   a. have a communication range of several hundred meters.
   b. have a communication range of five metres.

4. RFID chips
   a. will help us track ordinary objects like car keys or books.
   b. won't be able to locate objects when they are lost or stolen.

5. Radio tags may be implanted under the skin
   a. To confirm a patient's identity and cure illnesses.
   b. To give doctors instant access to a patient's medical history.

6. According to consumer organizations, RFID tags
   a. Could be used to track consumers or to steal a person's identity.
   b. Are secure and private; there is no need for concern.

C. Think about how secure you suppose RFID is. Do you agree with the consumer organizations or the manufacturers? Give reasons for your answers.

3. Language work: future forms

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HELP box

Future forms

We use the future simple (**will/won't** + verb) in the following ways:

- To make predictions when you don't have present evidence that something will happen

  *Nanobots **will be injected** into the body's bloodstream to treat diseases.*

- To talk about hopes and promises, especially with the words **expect**, **think**, **hope** and **probably**

  *They hope that people **will interact** naturally with hundreds of smart devices at a time.*

- To describe an instant decision, often when we make an offer

  *Sure, **I'll help** you with your homework.*

- To talk about facts that will inevitably happen

  ***She'll be** 21 in May.*

We use **be going to** + verb in the following ways:

- To describe future intentions

  *She's **going to write** a book about ubiquitous computing.*

- To make predictions when you have present evidence that something is going to happen

  *By all accounts, nanotechnology **is going to have** a huge impact on business and our daily lives.*

We use the future continuous (**will be** + **-ing** form of the verb) to talk about actions in progress at a specific time in the future.

*In a few years, doctors **will be using** expert systems to diagnose illnesses.*

We use the future perfect (**will have** + past participle) to talk about actions finished at a specific time in the future.

*Soon, engineers **will have built** different types of android.*

A. Look at the HELP box and then choose the correct words in parentheses to complete these sentences.

1. In the future, I hope we ('ll have/'re going to have)robots in the home to help us with the housework.
2. Hey, Nick, be careful, you ('re going to spill/'ll spill) that coffee on the computer!
3. It's John's birthday next week. We ('ll give/'re going to give) him a mobile phone.
4. -My laptop has crashed!
   -Don't worry. I ('ll lend/ 'm going to lend) you mine.
5. The Internet (will probably change/ is probably going to change) the way that TV changed the movie industry.
6. Futurists predict that smart technology (will be/is going to be) incorporated into fabrics, so you'll be able to email from your coat.

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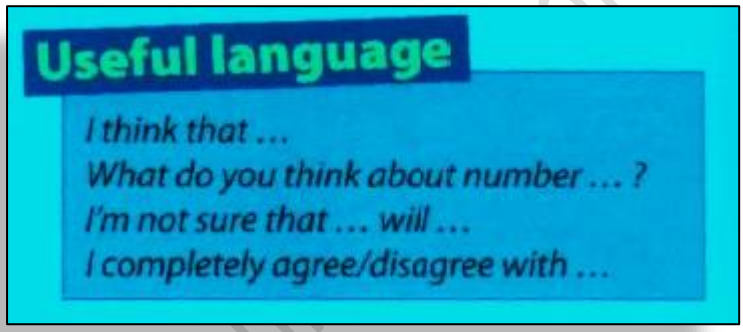
B. Complete these sentences with the correct future form of the verb in parentheses. Use the future continuous.
Use the future continuous or future perfect.

1. Thanks to ICT, by the year 2030 we (find)……..cures for the major diseases of our time.
2. In twenty years' time, some people (live)……..in space, perhaps in a computerizes colony.
3. By this time next week, I (work)……..for IBM.
4. By this time next month, I (buy)……..that BlackBerry that I've been wanting to buy for months.
5. Scientists predict that in twenty years' time nearly everyone (live)……..in smart houses.



C. Think about these predictions. Do you agree or disagree? Give reasons for your choices.
Use the language help box.

1. Some day, we'll be talking to computers manually, like friends.
2. Microchips, implanted in our arms will serve as ID cards and certain our medical records.
3. Robots will learn to build themselves, without human help.
4. Smart homes will be voice-activated.
5. Computers will be ubiquitous and almost invisible, embedded into our homes and integrated in our lives.

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4. Making Predictions

Write your own predictions about these topics

1. Work/jobs

Example: By the year 2030, human labour in industry will have been replaced by robots.

Your prediction……

2. Money

Example: Cash will be replaced by electronic money.

Your prediction……

3. Education

Example: By the end of this century, every student in every school, will have a PC.

Your Prediction……

4. The Internet

Example: People in every country will have high-speed access to the Internet within five years.

Your prediction……

5. Writing

Topic 1

Write a paragraph to explain what you will have done by the year 2030.

Topic 2

Write a paragraph to predict whether teachers will be needed in the future.

Instructions

Indent your paragraph

Use the future, future continuous, and future perfect

Use linking words

Pay attention to punctuation

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