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## **Computers 'to match man by 2029'**

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21<sup>st</sup> February, 2008

## THE ARTICLE

A leading US scientist has predicted that computers will be as intelligent as humans by 2029. Futurologist Dr Ray Kurzweil told the American Association for the Advancement of Science that in the near future, machine intelligence will overtake the power of the human brain. He said that within two decades computers will be able to think quicker than humans. Dr Kurzweil painted a picture of us having tiny robots called nanobots implanted in our brain to boost our intelligence and health. He told reporters that these microscopic nanobots would work with our brains to make us think faster and give us more powerful memories. Kurzweil explained that we are already "a human machine civilization" and that the upcoming technology "will be a further extension of that."

Dr Kurzweil was one of 18 top intellectuals asked by the US National Academy of Engineering to identify our greatest technological challenges. Other experts included Google founder Larry Page and the human genome pioneer Dr Craig Venter. Kurzweil has a very impressive background in science and innovation. He was an innovator in various fields of computing, including the technology behind CDs. He also pioneered automatic speech recognition by machines. He predicts the pace of new inventions will increase greatly from now, saying: "...the next half century will see 32 times more technical progress than the past half century." This means scenes from science fiction movies, like *Blade Runner*, *The Terminator* and *I Robot*, will become more and more a part of our everyday lives.

## WARM-UPS

**1. INTELLIGENCE:** Walk around the class and talk to other students about intelligence. Change partners often. After you finish, sit with your original partner(s) and share what you found out.

**2. CHAT:** In pairs / groups, decide which of these topics or words from the article are most interesting and which are most boring.

*scientists / intelligence / the future / the human brain / nanobots / memory / intellectuals / our greatest challenges / innovation / pioneers / science fiction*

Have a chat about the topics you liked. Change topics and partners frequently.

**3. OUR CHALLENGES:** With your partner(s), talk about some of these 21<sup>st</sup>-Century technological challenges (identified by the US National Academy of Engineering). Change partners and share what you talked about.

Challenge	Possible?	How?	When?	Benefits?
a. Make cheap solar energy				
b. Reduce carbon emissions				
c. Provide access to clean water				
d. Understand the entire brain				
e. Prevent nuclear terrorism				
f. Make cyberspace safe				
g. Improve our cities				
h. Make better medicines				
i. Advance personalized learning				

**4. NANOBOTS:** With your partner, talk about for which of the things below you would put nanobots into your body. Rank them in order of most important to you. Change partners and share your ideas and findings

- \_\_\_\_\_ to live to be 125
- \_\_\_\_\_ to play an instrument like a concert performer
- \_\_\_\_\_ to speak a new language fluently
- \_\_\_\_\_ to play computer games like the world's best player
- \_\_\_\_\_ to be happy all day, every day
- \_\_\_\_\_ to look very young for all of your life

**5. ROBOT:** Spend one minute writing down all of the different words you associate with the word 'robot'. Share your words with your partner(s) and talk about them. Together, put the words into different categories.

**6. QUICK ROLE PLAY:** Students A **strongly** believe that robots will one day take over and control the world; Students B **strongly** believe this idea is just science fiction. Change partners again and talk about your roles and conversations.

## BEFORE READING / LISTENING

**1. TRUE / FALSE:** Look at the article's headline and guess whether these sentences are true (T) or false (F):

- |  |       |
|--|-------|
| a. Computers will match men and women in perfect marriages.                        | T / F |
| b. Machines will be more intelligent than humans within two decades.               | T / F |
| c. A leading scientist likes painting pictures using very small robots.            | T / F |
| d. The scientist suggested that machines inside us is natural progress.            | T / F |
| e. A US organization asked scientists for 18 21 <sup>st</sup> -Century challenges. | T / F |
| f. The scientist in the article has no background in computing.                    | T / F |
| g. Technology developments will increase by 50 times in 32 years.                  | T / F |
| h. Things we see in sci-fi movies will become commonplace in reality.              | T / F |

**2. SYNONYM MATCH:** Match the following synonyms from the article:

- |                     |                |
|---------------------|----------------|
| 1. leading          | a. speed       |
| 2. predicted        | b. point out   |
| 3. within           | c. future      |
| 4. upcoming         | d. developer   |
| 5. extension        | e. top         |
| 6. identify         | f. specialists |
| 7. experts          | g. forecast    |
| 8. pioneer          | h. inside      |
| 9. pace             | i. sci-fi      |
| 10. science fiction | j. addition    |

**3. PHRASE MATCH:** Match the following phrases from the article (sometimes more than one combination is possible):

- |  |                               |
|--|-------------------------------|
| 1. computers will be as intelligent      | a. part of our everyday lives |
| 2. overtake the power                    | b. 18 top intellectuals       |
| 3. tiny robots                           | c. powerful memories          |
| 4. make us think faster and give us more | d. as humans                  |
| 5. technology will be a further          | e. called nanobots            |
| 6. one of                                | f. challenges                 |
| 7. identify our greatest technological   | g. speech recognition         |
| 8. a very impressive                     | h. extension of that          |
| 9. He also pioneered automatic           | i. of the human brain         |
| 10. more and more a                      | j. background in science      |

## WHILE READING / LISTENING

**GAP FILL:** Put the words into the gaps in the text.

A leading US scientist has \_\_\_\_\_ that computers will be as intelligent as humans by 2029. Futurologist Dr Ray Kurzweil told the American Association for the Advancement of Science that in the \_\_\_\_\_ future, machine intelligence will \_\_\_\_\_ the power of the human brain. He said that \_\_\_\_\_ two decades computers will be \_\_\_\_\_ to think quicker than humans. Dr Kurzweil painted a picture of us having tiny robots called nanobots implanted in our brain to \_\_\_\_\_ our intelligence and health. He told reporters that these microscopic nanobots would work with our brains to make us \_\_\_\_\_ faster and give us more powerful memories. Kurzweil explained that we are already "a human machine civilization" and that the upcoming technology "will be a \_\_\_\_\_ extension of that."

*able**near**boost**further**overtake**predicted**think**within*

Dr Kurzweil was one of 18 \_\_\_\_\_ intellectuals asked by the US National Academy of Engineering to \_\_\_\_\_ our greatest technological challenges. Other experts included Google \_\_\_\_\_ Larry Page and the human genome pioneer Dr Craig Venter. Kurzweil has a very impressive background in science and innovation. He was an innovator in various \_\_\_\_\_ of computing, including the technology \_\_\_\_\_ CDs. He also pioneered automatic speech recognition by machines. He predicts the pace of new inventions will increase greatly from now, saying: "...the next half century will see 32 times more technical \_\_\_\_\_ than the past half century." This means \_\_\_\_\_ from science fiction movies, like *Blade Runner*, *The Terminator* and *I Robot*, will become more and more a part of our \_\_\_\_\_ lives.

*progress**identify**behind**fields**everyday**top**scenes**founder*

**LISTENING: Listen and fill in the spaces.**

A leading US scientist has predicted that computers \_\_\_\_\_ intelligent as humans by 2029. \_\_\_\_\_ Dr Ray Kurzweil told the American Association for the Advancement of Science that \_\_\_\_\_ future, machine intelligence \_\_\_\_\_ power of the human brain. He said that within two decades computers will be able to think quicker than humans. Dr Kurzweil painted a picture \_\_\_\_\_ tiny robots called nanobots implanted in our brain \_\_\_\_\_ intelligence and health. He told reporters that these microscopic nanobots would \_\_\_\_\_ brains to make us think faster and give us more powerful memories. Kurzweil explained that we are already "a human machine civilization" and that the upcoming technology "will be a \_\_\_\_\_ of that."

Dr Kurzweil \_\_\_\_\_ 18 top intellectuals asked by the US National Academy of Engineering \_\_\_\_\_ greatest technological challenges. Other experts included Google founder Larry Page and the \_\_\_\_\_ pioneer Dr Craig Venter. Kurzweil has a very impressive background in science and innovation. He was an innovator \_\_\_\_\_ of computing, including the technology behind CDs. He also pioneered automatic speech recognition by machines. He predicts \_\_\_\_\_ new inventions will increase greatly from now, saying: "...the next half century will see 32 times more technical progress than \_\_\_\_\_ century." This means scenes from science fiction movies, like *Blade Runner*, *The Terminator* and *I Robot*, will become \_\_\_\_\_ a part of our everyday lives.

## AFTER READING / LISTENING

**1. WORD SEARCH:** Look in your dictionaries / computer to find collocates, other meanings, information, synonyms ... for the words 'near' and 'future'.

<b>near</b>	<b>future</b>
-------------	---------------

- Share your findings with your partners.
- Make questions using the words you found.
- Ask your partner / group your questions.

**2. ARTICLE QUESTIONS:** Look back at the article and write down some questions you would like to ask the class about the text.

- Share your questions with other classmates / groups.
- Ask your partner / group your questions.

**3. GAP FILL:** In pairs / groups, compare your answers to this exercise. Check your answers. Talk about the words from the activity. Were they new, interesting, worth learning...?

**4. VOCABULARY:** Circle any words you do not understand. In groups, pool unknown words and use dictionaries to find their meanings.

**5. TEST EACH OTHER:** Look at the words below. With your partner, try to recall exactly how these were used in the text:

<ul style="list-style-type: none"> <li>• as</li> <li>• near</li> <li>• within</li> <li>• boost</li> <li>• powerful</li> <li>• further</li> </ul>	<ul style="list-style-type: none"> <li>• identify</li> <li>• founder</li> <li>• background</li> <li>• behind</li> <li>• 32</li> <li>• everyday</li> </ul>
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## STUDENT ROBOTS SURVEY

Write five GOOD questions about robots in the table. Do this in pairs. Each student must write the questions on his / her own paper.

When you have finished, interview other students. Write down their answers.

	STUDENT 1 _____	STUDENT 2 _____	STUDENT 3 _____
Q.1.			
Q.2.			
Q.3.			
Q.4.			
Q.5.			

- Now return to your original partner and share and talk about what you found out. Change partners often.
- Make mini-presentations to other groups on your findings.



## **DISCUSSION**

### STUDENT A's QUESTIONS (Do not show these to student B)

- a) What did you think when you read the headline?
  - b) What springs to mind when you hear the word 'robot'?
  - c) Are you looking forward to a world full of robots?
  - d) How will the world change if computers and robots became more intelligent than humans?
  - e) Do you think robots really could take over the world?
  - f) Would you like to be implanted with nanobots that would boost your intelligence and memory?
  - g) What would you like your robot to do?
  - h) What could a robot do if it were 1,000,000 times more intelligent than us?
  - i) What would humans be able to do better if they could think faster?
- 

### STUDENT B's QUESTIONS (Do not show these to student A)

- a) Did you like reading this article?
- b) What do you think are our greatest technological challenges?
- c) What do you know about the human genome project?
- d) What invention would you like to see?
- e) If you were a pioneer, in what field would you like to be an innovator?
- f) Do you think life is becoming like a sci-fi movie?
- g) Will all this amazing technology and innovation solve all of the world's problems?
- h) What questions would you like to ask Dr Ray Kurzweil?
- i) Did you like this discussion? Why (not)?

## LANGUAGE

**CORRECT WORD:** Put the correct words from a–d below in the article.

A leading US scientist has (1) \_\_\_\_\_ that computers will be as intelligent as humans by 2029. Futurologist Dr Ray Kurzweil told the American Association for the Advancement of Science that in the (2) \_\_\_\_\_ future, machine intelligence will overtake the power of the human brain. He said that (3) \_\_\_\_\_ two decades computers will be able to think quicker than humans. Dr Kurzweil painted a picture of us having tiny robots called nanobots implanted in our brain to (4) \_\_\_\_\_ our intelligence and health. He told reporters that these (5) \_\_\_\_\_ nanobots would work with our brains to make us think faster and give us more powerful memories. Kurzweil explained that we are already "a human machine civilization" and that the upcoming technology "will be a further (6) \_\_\_\_\_ of that."

Dr Kurzweil was one of 18 top intellectuals asked (7) \_\_\_\_\_ the US National Academy of Engineering to identify our greatest technological challenges. Other experts included Google (8) \_\_\_\_\_ Larry Page and the human genome pioneer Dr Craig Venter. Kurzweil has a very impressive background (9) \_\_\_\_\_ science and innovation. He was an innovator in various fields of computing, including the technology (10) \_\_\_\_\_ CDs. He also pioneered automatic speech recognition by machines. He predicts the (11) \_\_\_\_\_ of new inventions will increase greatly from now, saying: "...the next half century will see 32 times more technical progress than the past half century." This means scenes from science fiction movies, like *Blade Runner*, *The Terminator* and *I Robot*, will become more and more a part of our (12) \_\_\_\_\_ lives.

- |     |               |                |                 |                 |
|-----|---------------|----------------|-----------------|-----------------|
| 1.  | (a) predict   | (b) prediction | (c) predicted   | (d) predictably |
| 2.  | (a) near      | (b) nearly     | (c) nears       | (d) nearness    |
| 3.  | (a) without   | (b) therein    | (c) herein      | (d) within      |
| 4.  | (a) boot      | (b) boost      | (c) boast       | (d) beast       |
| 5.  | (a) microchip | (b) microscope | (c) microscopic | (d) micros      |
| 6.  | (a) extended  | (b) extends    | (c) extended    | (d) extension   |
| 7.  | (a) by        | (b) for        | (c) to          | (d) bye         |
| 8.  | (a) finder    | (b) founder    | (c) fonder      | (d) fender      |
| 9.  | (a) on        | (b) as         | (c) for         | (d) in          |
| 10. | (a) rear      | (b) back       | (c) behind      | (d) beyond      |
| 11. | (a) race      | (b) pace       | (c) space       | (d) ace         |
| 12. | (a) everyday  | (b) every day  | (c) all day     | (d) today       |



## **HOMEWORK**

**1. VOCABULARY EXTENSION:** Choose several of the words from the text. Use a dictionary or Google's search field (or another search engine) to build up more associations / collocations of each word.

**2. INTERNET:** Search the Internet and find out more about Dr Ray Kurzweil, his work and his predictions. Share what you discover with your partner(s) in the next lesson.

**3. INVENTIONS:** Make a poster about the inventions you think we will see in the future. Show your work to your classmates in the next lesson. Did you all have similar things?

**4. ROBOT ATTACK:** Write a magazine article about how super-intelligent robots try to take over the world. Include imaginary interviews with the robot leader and the robot creator.

Read what you wrote to your classmates in the next lesson. Write down new words and expressions.

**5. LETTER:** Write a letter to futurologist Dr Ray Kurzweil. Ask him three questions about what he thinks the future will be like. Give him three predictions of your own. Read your letter to your partner(s) in your next lesson. Your partner(s) will answer your questions.

## ANSWERS

### TRUE / FALSE:

a. F      b. T      c. F      d. T      e. F      f. F      g. F      h. T

### SYNONYM MATCH:

- |                     |                |
|---------------------|----------------|
| 1. leading          | a. top         |
| 2. predicted        | b. forecast    |
| 3. within           | c. inside      |
| 4. upcoming         | d. future      |
| 5. extension        | e. addition    |
| 6. identify         | f. point out   |
| 7. experts          | g. specialists |
| 8. pioneer          | h. developer   |
| 9. pace             | i. speed       |
| 10. science fiction | j. sci-fi      |

### PHRASE MATCH:

- |  |                               |
|--|-------------------------------|
| 1. computers will be as intelligent      | a. as humans                  |
| 2. overtake the power                    | b. of the human brain         |
| 3. tiny robots                           | c. called nanobots            |
| 4. make us think faster and give us more | d. powerful memories          |
| 5. technology will be a further          | e. extension of that          |
| 6. one of                                | f. 18 top intellectuals       |
| 7. identify our greatest technological   | g. challenges                 |
| 8. a very impressive                     | h. background in science      |
| 9. He also pioneered automatic           | i. speech recognition         |
| 10. more and more a                      | j. part of our everyday lives |

### GAP FILL:

#### Computers 'to match man by 2029'

A leading US scientist has **predicted** that computers will be as intelligent as humans by 2029. Futurologist Dr Ray Kurzweil told the American Association for the Advancement of Science that in the **near** future, machine intelligence will **overtake** the power of the human brain. He said that **within** two decades computers will be **able** to think quicker than humans. Dr Kurzweil painted a picture of us having tiny robots called nanobots implanted in our brain to **boost** our intelligence and health. He told reporters that these microscopic nanobots would work with our brains to make us **think** faster and give us more powerful memories. Kurzweil explained that we are already "a human machine civilization" and that the upcoming technology "will be a **further** extension of that."

Dr Kurzweil was one of 18 **top** intellectuals asked by the US National Academy of Engineering to **identify** our greatest technological challenges. Other experts included Google **founder** Larry Page and the human genome pioneer Dr Craig Venter. Kurzweil has a very impressive background in science and innovation. He was an innovator in various **fields** of computing, including the technology **behind** CDs. He also pioneered automatic speech recognition by machines. He predicts the pace of new inventions will increase greatly from now, saying: "...the next half century will see 32 times more technical **progress** than the past half century." This means **scenes** from science fiction movies, like *Blade Runner*, *The Terminator* and *I Robot*, will become more and more a part of our **everyday** lives.

### LANGUAGE WORK

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