



Computers 'to match human brains'

Computing has come a long way since the first time a computer beat world chess champion Garry Kasparov in 1996.

1. Computer power will match the intelligence of human beings within the next 20 years, according to a leading scientific "futurologist".
2. There will be 32 times more technical progress during the next half century than there was in the whole of the 20th century. As a result, artificial intelligence could be as advanced as human intelligence by the 2020s, said the American computer guru Ray Kurzweil.
3. Machines will become smarter than humans and will soon be able to solve some of the most difficult problems of the 21st century, said Dr Kurzweil, one of the most radical thinkers in the field of technological prediction.
4. Dr Kurzweil was originally a pioneer in various fields of computing and automatic speech recognition by machine. In his speech to the American Association for the Advancement of Science (AAAS), he described a future where machines will be far more intelligent than humans as they learn how to communicate, teach and replicate among themselves.
5. His prediction is based on the fact that the computer chip has doubled in power every two years for the past half century, which has led to accelerating progress and miniaturisation.
6. Dr Kurzweil told the annual meeting of the AAAS in Boston: "in the next half century, there will be 32 times more technical progress than the last half century. Computing, communication, biological technologies and human knowledge in general are all accelerating fast."
7. Computers have so far been based on two-dimensional chips made from silicon, but three-dimensional chips with greatly improved performances are being developed. There are even plans to construct them out of biological molecules that can be miniaturised even more than metal-based computer chips.
8. "The hardware for machines with human-level intelligence will be based on three-dimensional, molecular computing. The software will be developed by studying and analysing the human brain in detail. Already, 24 regions of the human brain have been modelled and simulated," he said.
9. Although the brain is not as efficient as a computer at storing and retrieving information, it can associate different pieces of information, look ahead and plan. It can also be imaginative and creative, which is at the heart of human existence. But Dr Kurzweil is one of several computer scientists who believe that computers will soon create a "post-human" world where a second, intelligent being exists next to people.
10. "When non-biological intelligence matches the level of human intelligence, it will very quickly overtake it because of continuing technological progress, as well as the ability of machines to instantly share their knowledge," Dr Kurzweil said.

Adapted from The Independent, 16 February 2008, by Steve Connor



4

Find the words

Find a word or phrase in the text which means

1. made a lot of progress (**phrase, SUBTITLE**) _____
2. happening or developing faster and faster (**verb -ing, P5**) _____
3. build something from different parts (**verb, P7**) _____
4. to think about the future (**phrasal verb, P9**) _____
5. something that exists (**noun, P9**) _____
6. go past something after reaching the same level as it (**verb, P10**) _____

5

Grammar - Comparing and contrasting

Look at the following sentences from the text. Study how the comparative forms of adjectives and the structure '(not) as ...as' are used to compare two things.

*Machines will become **smarter than** humans.*

*Artificial intelligence could be **as advanced as** human intelligence.*

*Machines will be **far more intelligent than** humans.*

*The brain is **not as efficient as** a computer at storing and retrieving information.*

Put the following adjectives into the correct category below and write the comparative forms.

boring	cheap	comfortable	dark	deep	difficult	exciting	expensive
far	fit	good	green	healthy	hot	lazy	noisy
pretty	rude	sad	bad	clear	funny	polite	thin

+ -er

clear - clearer

double letter + -er

thin - thinner

change -y to -ier

funny - funnier

more + adjective

polite - more polite

irregular

bad - worse



6

Practice

Complete the sentences below using the adjectives in brackets in their correct comparative form (-er ... than, more ... than, as ... as, not as ... as):

1. Many English learners find phoning much _____ (easy) writing a letter.
2. Old-fashioned light bulbs are _____ (economical) modern light bulbs.
3. Southern Europe is much _____ (warm) northern Europe, but it is _____ (hot) Africa.
4. The Amazon River is generally considered to be slightly _____ (short) the Nile. However, some Brazilian studies have suggested that the Nile is _____ (long) the Amazon.
5. James is _____ (old) Michael. They are twin brothers.
6. Travelling by plane is much _____ (quick) by ship, but I find travelling by ship far _____ (pleasurable).
7. Modern laptops are much _____ (small) old desktop computers, but they are _____ (portable) smart phones.
8. Many people considered the book to be a lot _____ (interesting) the film, but I found the film a bit _____ (entertaining) the book.

Now compare the animals in the picture using the adjectives below. Use both the comparative forms and the structure '(not) as ... as'.

colourful

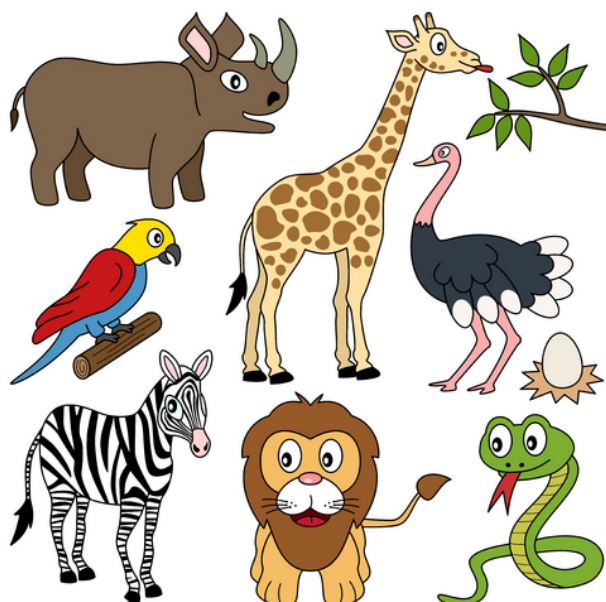
dangerous

fast

heavy

intelligent

tall



7

Talking point

Do you think computers will become as intelligent as humans by 2030? What will be the advantages and disadvantages of living with intelligent machines?

Key

4. Find the words

- | | | |
|--------------------|-----------------|--------------|
| 1. come a long way | 2. accelerating | 3. construct |
| 4. look ahead | 5. being | 6. overtake |

5. Grammar - Comparing and contrasting

If necessary, remind students of the rules for forming comparatives: add -er to one-syllable adjectives, e.g. clear-clearer. When the adjective ends in a consonant following a single vowel, double the consonant, e.g. thin-thinner. Change -y ending in two-syllable adjectives to -ier, e.g. funny - funnier. Multisyllable adjectives are usually preceded by more, e.g. polite - more polite. With a more advanced class, you could skip this task and move on to Exercise 6.

-er: cheap - cheaper, dark - darker, deep - deeper, green - greener, rude - ruder

double letter + -er: fit - fitter, hot - hotter, sad - sadder

change -y to -ier: healthy - healthier, lazy - lazier, noisy - noisier, pretty - prettier

more + adjective: boring - more boring, comfortable - more comfortable, difficult - more difficult, exciting - more exciting, expensive - more expensive

irregular: far - further, good - better

6. Practice

1. easier than
2. not as economical as
3. warmer than; not as hot as
4. shorter than; not as long as
5. as old as
6. quicker than; more pleasurable
7. smaller than; not as portable as
8. more interesting than; more entertaining than

Pre-teach any names of animals that the students may not be familiar with, e.g. rhinoceros, ostrich. Encourage the students to use qualifying phrases, e.g. a little/slightly/much/a lot/far more ... than and with a more advanced class just/nearly/not quite/not nearly as ... as.

Possible answers:

1. The lion is as dangerous as the rhinoceros.
2. The parrot is not as dangerous as the lion./The lion is a lot more dangerous than the parrot.
3. The snake is not as tall as the giraffe./The giraffe is much taller than the parrot.
4. The lion is not as colourful as the parrot./The parrot is more colourful than the lion.