11 Progress

Technology, design

Technology

1.1 Choose one or more of the adjectives in the boxes to complete the sentences about mobile phones.

essential annoying convenient unsafe fun invasive

I think mobile phones are …

connected safe unhealthy harassed lonely anxious

My mobile phone makes me feel …

1.2 Think of three things you use every day which are dependent on technology. Why are they important?

2.1 Read the passage and note the six advantages and one disadvantage of technological advances.

Advances in technology have done much to change the way we live and communicate, but no breakthrough revolutionised life as much as the advent of wireless technology, according to a panel of experts assembled by CNN in 2010. Back in 1980, when it came to communication technology, telephones were stuck to walls, facts were found in books, and people had to browse shelves in a record store if they wanted to buy the latest music. However, developments that occurred at the start of the twenty-first century meant we could access all that information just by reaching into our pockets for our mobile phone. From the very beginning of the Information Age, having immediate access to data was fundamental to progress. In some cases, technological advances served to overhaul industries at a lightning-fast pace. For example, the internet helped tech-savvy music lovers to force changes in the way the music industry did business, while text messaging over cellphones made written communication more immediate.

We embraced information technology to such an extent that having computer access in our homes was not quite enough. We wanted to use these tools everywhere. Wireless hot spots popped up in cafés, airports, universities – even whole city blocks. And just as computer use worldwide exploded, the brains behind them – the processors – became increasingly smaller. A computer chip that you could balance on your fingertip could hold massive amounts of data. This ability to store tons of information in cellphones or digital cameras allowed us to keep computer technology portable. The entertainment industry harnessed satellite technology to give consumers more choice, and video game technology developed to the point where it became a $10 billion a year industry, producing games that invite players into a virtual world of fantasy, sport and even war.

However, there was a downside. This cutting-edge, more sophisticated technology brought with it a whole new set of problems. When the Information Age dawned, the World Wide Web seemed like a paradise. However, within a relatively short space of time, we were mired in problems caused by things like online scams and viruses – traps aimed at crashing our computers and even stealing our identity.

2.2 Answer the following questions with *NO MORE THAN THREE WORDS* from the passage.

1 What term refers to the era we live in now?

2 What is the name for areas where anyone can access the internet?

3 What adjective describes a game experience that is close to real?

4 Name one hazard associated with the internet.

2.3 COLLOCATION **Highlight or underline each occurrence of the word *technology* in the passage and note the words used with it.**

3.1 **Complete the disadvantages column of the table below about the internet with the words and phrases in the box. Then try to think of possible solutions.**

internet addiction   illegal downloads   internet fraud
health problems   ~~cyberbullying~~   information overload

	Advantage	Disadvantage/s	Possible solution/s
1	less isolation; easier to make friends	cyberbullying	take care when giving out personal information
2	researching a subject is a lot easier		
3	shopping or banking online		
4	provides hours of entertainment	1 _____ 2 _____	
5	you can access music more easily and get the songs you like		

3.2 **Now write sentences about the advantages and disadvantages of the internet, and possible solutions.**

Design

4.1 **Cross out the odd one out in each of the following lists. Give a reason for your answer.**

1 brick   steel   metal   plastic   timber   ~~plumber~~   _all of the others are materials_

2 brick   stone   foam   rock   marble   _____

3 timber   log   plank   cable   _____

4 plastic   cotton   polyester   concrete   _____

5 cloth   thread   fibre   fabric   dye   _____

6 demolish   design   innovate   invent   _____

7 turn   revolve   spin   strike   rotate   _____

8 tower   pillar   support   prop   _____

4.2 COLLOCATION Match the verbs in box A with the nouns in box B. There may be more than one possible answer.

A

| push | pull | turn | hit | drill | hammer |
| dig | pour | light | operate | press |

B

| a dial | a hole | a machine | liquid | a button |
| a fire | a lever | a nail | a screw | a wheel | a tap |

4.3 Which of the verbs are also objects in the home?

5.1 ▶21 You will hear a talk about Leonardo da Vinci. Listen and complete the notes below with *NO MORE THAN ONE WORD* for each answer.

> 💡 Test tip
>
> For questions where you need to write a word or words, they will appear in the text in exactly the same form – you do not need to change them. The words in the question will usually be synonyms of the information in the text.

Introduction
- he was an artist, scientist, engineer and inventor
- his inventions could not be built in his day due to *expense* and a lack of the necessary [1]_____
- examples of his *futuristic* inventions: the helicopter, *obtaining energy from the sun*, the [2]_____

His legacy
- he kept journals containing his notes and [3]_____
- he *built* [4]_____ to show how a technique would work (e.g. the use of a [5]_____ to make movement from one area to another possible)

Mechanics
- he *showed* how *heavy* weights can be lifted and how a [6]_____ could be used in deep water

Inventions
- he worked in *a time before* [7]_____ so *we do not know* how many of his inventions *were made and used*
- some of his inventions are still used today: a type of [8]_____, a wire testing machine and [9]_____

War machines
- if made, Leonardo's tank could have *moved in a circle* but would not have *moved* [10]_____

5.2 ▶21 PARAPHRASE Now listen again and note the words and phrases with a similar meaning to the words in italics in the notes. You may need to listen several times and/or read recording script 21 at the back of the book.

6.1 ▶22 PRONUNCIATION Underline the syllable with the main stress in these words. Then listen to check, and practise saying the words.

technology	communication	downloads
technological	information	entertainment
advances	overload	wireless

6.2 ▶23 Now listen to these phrases. Practise saying them, paying attention to the stress.

| communication technology | information overload | entertainment industry |
| technological advances | illegal downloads | wireless connection |

Test practice

Reading

You should spend about 20 minutes on **Questions 1–13**, which are based on the Reading Passage below.

The greatest experiment of all time
The digital traces we leave are transforming our understanding of human behaviour.

A Every move you make, every twitter feed you update, somebody is watching you. You may not think twice about it, but if you use a social networking site, a cellphone or the internet regularly, you are leaving behind a clear digital trail that describes your behaviour, travel patterns, and likes and dislikes, divulges who your friends are, and reveals your mood and your opinions. In short, it tells the world an awful lot about you. Now, as any researcher will tell you, good data is gold dust. Its absence leaves theories in the realm of speculation, and worse, poor data can lead you down a blind alley. Physics was the first science to be transformed by accurate information, initially with telescopes that revealed the heavens and culminating in massive modern-day experiments like the Large Hadron Collider in Switzerland. Biology was next, with genome sequencing throwing up so much data that genetics has turned partly into an information science. Now the study of human behaviour is heading the same way.

B Social scientists have long had to rely on crude questionnaires or interviews to gather data to test their theories, methods marred by reporting bias and small survey sizes. For decades, the field has been looked down upon as some poor cousin to the hard sciences. The digital age is changing all that. Thanks to social networking sites, practically overnight the study of human behaviour and social interactions has switched from having virtually no hard data to drowning in the stuff. As a result, an entirely different approach to social sciences has emerged, and it is becoming possible to tackle fundamental problems previous generations thought largely untouchable. 'Sociologists have been hunting for laws about human interactions and social networks for decades,' says Duncan Watts of Yahoo Research in New York, 'but the far-reaching implications of their theories have been effectively impossible to test. The measurement technology simply didn't exist. That's changing.'

C Watts was among the first to realise the potential of the digital trail we leave behind. In 2006, with his colleague Matthew Salganik, now at Princeton University, he designed a web-based experiment to examine how much social influence determines the popularity of music. To examine what made one song more successful than others, Watts and Salganik created a project called Music Lab. It featured a website where more than 14,000 people listened to any of 48 songs by relatively unknown bands, rated them and downloaded them if they wanted. These options provided a measure of quality (the average rating given) and popularity (the number of downloads). Critically, the duo were also able to control whether listeners could see how many times other people had downloaded any particular song or instead had to rely on their own judgment. In this way, they could effectively compare outcomes with the power of social influence turned on or off. The results strongly support the idea that human influence has a huge effect in making some songs more popular than others.

D These kinds of experiments are making routine the types of experimental studies which were once thought impossible, says Salganik. 'With the vast increase in computing power and the almost limitless pool of participants now available via the internet, we can conduct laboratory-style experiments involving thousands, or even millions, of participants,' he says. Indeed, Jukka-Pekka Onnela and Felix Reed-Tsochas at the University of Oxford's Saïd Business School are now using a leading social networking site and its 400-million-plus users as a living laboratory to examine how ideas and behaviours spread through human groups. Watt and Salganik showed that when it comes to music preference, we behave like sheep. Onnela and Reed-Tsochas realised that analogous changes take place on sites where people share their profiles with online friends.

Site users can choose to install applications – software components that personalise their profile page. If one person adopts an application, their friends are automatically notified. Users also have access to a list of popular applications, akin to a bestsellers list. The data stored on the site makes it possible to analyse the growth in popularity of individual applications in unprecedented detail. Onnela and Reed-Tsochas analysed the popularity of several thousand applications in 2007 and then studied how users adopted them over time. They point out that their results showed that both independent thinking and copying behaviour play a role, reinforcing conclusions reached by conventional survey methods.

E The ocean of digital information about us isn't limited to likes and dislikes or opinions. Though it's still controversial, and difficult to get hold of, some teams are accessing much more in the way of personal details. For example, Barabási and his colleagues at Northeastern University used cellphone data to analyse human movements. Detailed data on such a scale now available never existed before cellphones became commonplace. Now millions of people carry a de facto tracking device with them all day that automatically logs their every move. However, as with some developments in physics and biology, the social data explosion also brings with it new risks, says Barabási. 'Anyone involved in this kind of research increasingly faces a dilemma – how do we avoid contributing to the creation of a surveillance state?'

F Such worries are, perhaps, another sign that social science is finally coming of age. Just as the discovery of nuclear fission raised moral dilemmas for physicists, and genetic modification is now doing for biologists, so the ability to predict human behaviour is presenting new quandaries for social scientists. As ever, with great power comes great responsibility.

Questions 1–6

The Reading Passage has six paragraphs, **A–F**. Which paragraphs contain the following information?

*Write the correct letter, **A–F**, next to questions 1–6 below.*

1 the problems associated with research procedures traditionally used by social scientists

2 a way of making your social networking site look different to everyone else's

3 the unintended application of one common digital device

4 a list of the types of information our use of digital devices can reveal

5 a reference to the first scientific tool to produce valuable data

6 a reference to a problem shared by social scientists and those of other disciplines

Questions 7–10

Look at the following statements and the list of people below.

*Match each statement with the correct person, **A–D**.*

*Write the correct letter, **A–D**, next to questions 7–10.*

7   The Digital Age gives us an opportunity to test out theories on a previously unheard of scale.

8   In the past, researchers were unable to conclusively prove their theories.

9   This new approach may threaten our privacy.

10   Our research allowed us to confirm the findings obtained through a traditional research technique.

List of people
A   Watts
B   Salganik
C   Barabási
D   Onnela and Reed-Tsochas

Question 11

*Choose the correct answer **A, B, C** or **D**.*

11   In the first paragraph, the writer refers to physics and biology in order to

A   compare the advances in digital data with important discoveries in those fields.
B   compare two very different sciences that use digital data.
C   show that other sciences are taken more seriously than social sciences.
D   suggest that social sciences use techniques from other fields.

Questions 12 and 13

Which TWO of the following is true of the music experiment carried out by Watts and Salganik?

*Choose the correct letters **A, B, C, D** or **E**.*

A   Participants purchased music from a particular website.
B   Some participants were not shown information about music downloads.
C   Participants completed a survey at the end of the experiment.
D   Participants were asked to judge the musical standard of the songs they listened to.
E   Some participants were asked to convince other people to join the experiment.