

4 Mad science

KEY LEARNING OUTCOMES

CEF

Students will be able to:

- talk about possible, imaginary and impossible situations and their consequences using different types of conditional structures
- understand written and spoken texts on scientific research
- talk about biology and scientific research using a scientific vocabulary, adjectives and compound nouns
- read specialised articles critically
- interpret and talk about statistics, extracting ideas and incorporating personal reactions
- express opinions, contrasts and consequences in for-and-against essays

UNIT OVERVIEW

	Biology and scientific research Causes, reasons and results Compound nouns and adjectives
	Modifying mosquitoes CRITICAL THINKING Thinking about the right to and consequences of eliminating species from the planet
	Conditionals (Zero, first, second, third) <i>Unless, in case, provided that, I wish/if only</i>
	Mixed conditionals Critical thinking: Reading articles critically
	Extinct animals
	Talking about statistics
	A for-and-against essay
	Reading: Missing paragraph activities Use of English: Sentence transformation activities Speaking: Talking about statistics Writing: For-and-against essays

DIGITAL OVERVIEW

Presentation Kit

- ▶ Flipped classroom video Unit 4: Mixed conditionals
- ▶ Life skills video Unit 4: Reading articles critically
- ▶ Interactive versions of Student's Book activities
- ▶ Integrated audio and answer key for all activities
- ▶ Workbook pages with answer key

Teacher's Resource Centre

- ▶ Flipped classroom video Unit 4: Mixed conditionals
- ▶ Life skills video Unit 4: Reading articles critically
- ▶ Grammar communication activity Unit 4: Conditional chains
- ▶ Worksheets for this unit, including:
 - Grammar Practice worksheet Unit 4
 - Flipped classroom video worksheet Unit 4: Mixed conditionals
 - Literature worksheet Units 3 and 4
 - Culture worksheet Unit 4
 - Life skills video worksheet Unit 4

Student's App

Gateway 2nd Edition wordlist for the award-winning Sounds App (available for download)

✓ TESTING AND ASSESSMENT

Resources for exam preparation and measuring student progress

- ▶ Test Generator Units 1–4
- ▶ Printable test Unit 4
- ▶ Gateway to exams Units 3 and 4 (end of Unit 4)

Reading pp44-45



Talking about biology and scientific research; reading for global understanding and for specific information

FAST TRACK

You could ask students to complete exercises 1a and 1b at home before the lesson, allowing them to use dictionaries if necessary. Correct the exercises at the beginning of the lesson and work on the pronunciation of difficult words.

WARMER

Draw students' attention to the title of the unit and ask them to discuss in pairs what they think the unit will be about. Ask students what topics and vocabulary they think they will encounter in the unit. Elicit ideas in open class.

VOCABULARY Biology and scientific research

1a Students match the words in the box with the definitions.

Answers

- 1 transmit (a disease) 2 species 3 parasite
4 resistant 5 prevalent 6 genetic engineering
7 contract (a disease) 8 chromosome 9 enzyme
10 genetically modified

+ EXTRA ACTIVITY

Read out the words in exercise 1a and have students mark the stress. Then conduct an oral drill to consolidate the pronunciation (see Answers in exercise 1a above for stress). Note that the stress in *contract* is on the second syllable in this instance as it is a verb.

VOCABULARY Biology and scientific research

1b Students complete the sentences with the correct form of words from exercise 1a.

Answers

- 1 chromosomes 2 genetically modified 3 transmit
4 resistant 5 contracted 6 Genetic engineering
7 Enzymes 8 Parasites 9 species 10 prevalent

- 2 **SPEAKING** In pairs, students read the article headline and discuss what information they expect to read in the article.
- 3 Students read the article quickly, ignoring the gaps. Ask them to summarise the main points and elicit their ideas in open class.

Suggested answers

Malaria is still prevalent in sub-Saharan Africa with a child dying every minute.

Genetically modified mosquitoes could lead to an end to malaria by eliminating the female mosquitoes which transmit the disease.

EXAM SUCCESS Before doing exercise 4, have students read the information in the Exam Success box. Ask students if they can think of any other ways to approach a completion task. Refer them to Exam Success on page 150 to compare their ideas.

TEACHER DEVELOPMENT: STUDENT TRAINING

Reading methods

There are different ways of approaching this type of task. If students are used to doing jigsaw readings, elicit good suggestions. One approach is to read the introductory paragraph first and to predict what information they expect to read about in the rest of the text. Then read paragraph 1 of the text. Stop reading the text at this point, read paragraphs A-F and choose the one which best fits the first gap. Repeat with the remaining paragraphs in the text.

- 4 Ask students to read the article again and choose the correct paragraphs for each gap. Let them compare and discuss their answers in pairs before you check them.

Answers

- 1 D 2 E 3 B 4 C 5 F 6 A

+ EXTRA ACTIVITY

Divide the class in to two equal groups and tell them they are going to debate on the pros and cons of GM-food. Assign a 'side' to each group and give them time to prepare their arguments. Ask one person in the group to make notes. One person from each side has to give an opening speech outlining their argument. Following this, each side puts questions to the opposing side to which anyone can respond. Help students keep the debate going where necessary. At the end, have students vote on which side they support.

- 5 Students look back at the article to find the words and numbers in the box. Ask them to explain who or what they are and why they are significant.

Answers

I-Ppol: the enzyme used in the DNA cutting process – essential for the process

Dr Nikolai Windbichler: lead researcher from the Department of Life Sciences at Imperial College London – leading the research programme

627,000: deaths from malaria per year – high figure, large proportion of health care spent on malaria cases
GMPE: a previous programme, halted through lack of funding – research could have come earlier

\$12 billion: lost productivity due to malaria – economic implications of this

Pirbright Institute: say mosquitoes not vital to ecosystems – shows there shouldn't be any long-term negative effects

FAST FINISHERS

Have students find three new words or phrases in the text (not the underlined ones) and find definitions for them. Have them teach the rest of the class.

- 6 **CRITICAL THINKING** Give students time to read through the questions and consider their answers individually. Then invite them to share their ideas with the rest of the class.

Example answers

No, I don't think humans have the right to do it, even though it might benefit our species and may make things better for us. Also, if you eliminate a whole species such as mosquitoes, other animals who relied on mosquitoes for food may also become extinct.

- 7 Encourage students to guess the meaning of the underlined words in the text, from the context. Then allow them to use a dictionary to check their answers.

Answers

wipe out = to destroy, get rid of

offspring = the baby or babies of an animal

die out = to become weaker or less common and then disappear completely

paves the way = to create a situation that makes it possible or easier for something to happen

rebound = to return to a better level or position

keystone = something that is very important

setback = a problem that delays or that stops progress

niche = a small hole or space

tackling = to make an organised and determined attempt to deal with a problem

self-sustaining = independently providing the conditions in which something can happen

- 8 **SPEAKING What about you?** Students discuss the questions in pairs or small groups. Have a class feedback session and see which are the most popular and effective ways of dealing with mosquitoes. You could expand question 2 by asking students which areas, if any, of research they would like to work in and why they think it would be most interesting.

HOMEWORK

Assign students pages 30–31 in their Workbook or the relevant sections of the Online Workbook.

Grammar in context p46



Using conditionals and other conditional structures to talk about possible future situations

FAST TRACK

In addition to testing before you teach as part of the lesson, you could ask students to complete exercise 1 at home. You can then correct answers at the beginning of the lesson and assess their level of understanding.

Test before you teach

Write the following situations on the board:

I've lost my house keys again!

I don't often have time to go to the gym.

I forgot to give my friend a present on her birthday.

My students are doing well. They read a lot in English.

Ask students to take a moment to think of things they could say about the situations, possibly a comment, a piece of advice or a regret. Ask them to use conditional forms. After a couple of minutes, invite students to make their comments. Make a note of how well they can manipulate conditional forms. If they seem to be familiar with their use, then move through the Grammar guide exercises quickly in open class.

Conditionals

- 1 Ask students to look at the sentences and answer the questions.

Answers

- 1 zero = *if* + present simple, present simple
 first conditional = *if* + present simple, *will* + infinitive
 second conditional = *if* + past simple, *would* + infinitive
 third conditional = *if* + past perfect, *would have* + past participle
- 2 zero for situations that are generally or always true
 first conditional to talk about possible and probable situations in the future, and their consequences
 second conditional to talk about imaginary or improbable situations and their consequences
 third conditional to talk about imaginary or impossible situations in the past and their consequences
- 3 a first conditional b second conditional c zero conditional d third conditional

TEACHER DEVELOPMENT: LANGUAGE

Conditionals

Zero conditional

If + present simple, present simple

We use this form to describe general truths. (*If you heat ice, it melts.*)

First conditional

If + present simple, *will* + infinitive

We use this form when the condition is possible or likely. (*If you invite Joe, he'll come to the party.*)

Second conditional

If + past simple, *would* + infinitive

We use this form when the condition is impossible or unlikely. (*If you were the president, what would you do about the national debt?*)

Third conditional

If + past perfect, *would have* + past participle

We use this form to talk about a hypothetical situation in the past. (*If you had invited me, I would have come to the party – but you didn't invite me.*)

Mixed conditionals

We use mixed conditionals usually when the condition is in the past, but the result is in the present and vice versa. (*If I hadn't passed my exam, I wouldn't have this job. If I knew where my key was, I wouldn't have called you.*)

- 2 Students complete sentences with the correct form of the verb. They check answers in pairs before discussing as a class.

Answers

- 1 would not have appeared 2 is 3 weren't
4 should/will get 5 hadn't been 6 will help
7 would be 8 hadn't been/weren't

EXTRA ACTIVITY

Students label the type of conditional that appears in the sentences in exercise 2.

- 3 Students rewrite the sentences using conditionals and compare answers in pairs.

Suggested answers

- 1 If my brother gets good marks, he will be able to study medicine next year.
- 2 If I had known you were at home last night, I would have called you for help with my homework.
- 3 If you don't water plants, they die.
- 4 If scientists had more funding, they could/would do more research.
- 5 If I hadn't read this article, I wouldn't have known/wouldn't know about this breakthrough.
- 6 You'll enjoy this film if you like sci-fi.
- 7 If people read stories in the newspapers, they usually believe them.
- 8 If I wanted to do research on animals, I'd be a scientist.

Other conditional structures

- 4 Ask students to discuss the use of the conditional structures in pairs or small groups. Alternatively, you might want to discuss these as a class. Monitor and answer any queries. Encourage students to express the sentences using different words to make sure that they understand their meaning.

TEACHER DEVELOPMENT: LANGUAGE

Other conditional structures

- a In terms of form, *Supposing* or *Suppose* is used in place of *If*. In terms of use, *supposing/suppose* introduces a hypothetical situation. We are then invited to weigh up whether this situation is desirable. With *supposing/suppose*, the situation it introduces is possible but not very likely. It is not a conditional sentence, which works by specifying that for one situation to apply a condition has to be met.
- b In terms of form, *Provided that*, *Providing that* or *As long as* are used in place of *If*. In terms of use, these phrases introduce a possible situation. This situation is more likely than if it had been introduced by *supposing/suppose*, as in structure a. The situation is a condition for the situation in the main clause to apply.
- c *Unless* means *If not*, so *Unless we try* has the same meaning as *If we don't try*.
- d *in case* means *because maybe*
- e We use *If only/I wish* + past form to say that we want a present situation to be different.
- f We use *If only/I wish* + past perfect form to express regret that a past situation was not different.

EXAM SUCCESS Before they do exercise 5, ask students to read the information in the Exam Success box. Refer them to Exam Success on page 150. You could then do the first question as a class to show how the new sentence has to have the same meaning as the first without changing the word.

- 5 Students follow the instructions and complete the sentences. They check answers in pairs before discussing as a class.

Answers

- 1 providing/provided that you
- 2 Unless they succeed, they may lose
- 3 I wish we had seen
- 4 Suppose we can stop the situation
- 5 in case you need me
- 6 as long as you have

FAST FINISHERS

Ask students to rewrite some of the sentences in exercise 5 using other conditional structures. Alternatively, ask students to write sentences that are true for them using *if only*, *unless*, *as long as*, *in case* and *I wish*.

- 6 **SPEAKING** Students complete the sentences with their own ideas and then discuss their ideas in pairs.

EXTRA ACTIVITIES

- 1 Divide the class into groups of 4–6. Give students the following situation:

'It's 1st May and you are all about to set off on an expedition across an unexplored region of the Amazon rainforest. Is everybody ready? Have all the preparations been made? Discuss.' Give less confident students some examples before they start, e.g. *Provided that we have remembered to bring a compass, we won't get lost. Unless we are very unlucky, it won't be too cold.*

The groups discuss the situation using conditional structures for five minutes. Then give them this new situation:

'It's 1st June and you are all lost in the middle of the Amazon rainforest with little food reserves left. What went wrong? What can you do? Discuss.'

After groups have discussed again, elicit any explanations or solutions they came up with. Comment on any correct or incorrect uses of conditional forms.

- 2 Have a mock (or real) election for a class president. Put students in groups of four or five and ask them to choose one person to represent them. Ask them to come up with 8–10 policies of things they would do or change in the class if they were elected, reminding them to use the conditionals they have learnt in the lesson (e.g. *If I were class president, I would organise some social activities for after school, etc.*). At the end, have students vote for someone (not their own candidate), and count up who has the most votes.

Refer students to the Grammar reference on page 54 if necessary.

HOMEWORK

Assign students page 32 in their Workbook or the relevant sections of the Online Workbook.

Developing vocabulary p47

Using compound nouns and adjectives to complete a news story

FAST TRACK

You could ask students to complete exercises 1 and 2 at home. At the beginning of the class, check their answers before they continue to the completion activity in exercise 3.

WARMER

Remind students what compound nouns and adjectives are by giving them some examples, e.g. *last name* (n), *last-minute* (adj). Write the word *life* on the board and ask students to work in pairs or small groups to think of as many compound words as they can beginning with *life*. Set a time limit of two minutes and find out which pair or group comes up with the most words.

Suggested answers

lifebelt, lifeboat, lifebuoy, life cycle, lifeguard, life insurance, lifejacket, lifelike, lifeline, lifelong, life-size, lifespan, lifetime

Compound nouns and adjectives

- Students match the compound nouns with their meanings. If they find it difficult, allow them to use dictionaries to check their guesses. As you review the answers, check their pronunciation to make sure they are stressing the first word.

Answers

1 g 2 f 3 b 4 h 5 a 6 e 7 c 8 d

TEACHER DEVELOPMENT: LANGUAGE

Compound words

Note that compounds can be formed by joining two very different parts of speech, e.g. *mainstream* is an adjective formed by adjective + noun, whereas *breakthrough* is a noun formed by verb + preposition. There are no useful rules to help students know when a compound word should be written as one word, one hyphenated word or two words. They simply have to be learnt.

- Read through the instructions with the class and have them work in pairs, or work individually before checking with a partner.

Answers

- e, 2 words, compound adjective
- f, 1 word, compound noun
- g, hyphenated, compound adjective
- a, 1 word, compound noun
- b, 1 word, compound adjective
- c, 1 word, compound noun
- h, 1 word, compound noun
- d, 1 word, compound adjective

- Students complete the sentences with the compound nouns from exercise 1 and compare answers in pairs.

Answers

- outset 2 outcome 3 crackdown 4 outbreak
- cutback 6 outlook 7 feedback 8 drawbacks

+ EXTRA ACTIVITIES

- Test these compound nouns by writing the following words at random on the board: *break, through, life, span, worth, while, crack, down, out, look, set, break, draw, back, feed, cut*. Divide the class into small teams, A, B, C, etc. Team A choose two words to make a compound. They have to provide a sentence that shows its meaning. If correct, they score a point. The game passes to Team B, who repeat the activity, and so on. Continue until all the combinations are used up. The team with the most points at the end is the winner.
- Play *Pelmanism*. Write the words from exercise 2 on small cards. Divide the class into groups of four and hand each group a set of cards. They spread all the cards out face down on the table. The first student in each group turns over two cards. If they can make a compound with the two words *and* can make a sentence with the compound in it, they can keep the cards. If not, they have to replace the cards face down on the table. Play continues round the group, with the next student picking up two cards, and so on. The student with the most cards at the end is the winner.

- Draw students' attention to the image and title and ask them what they think the news article might be about. Students then complete the compound nouns and adjectives in the news article. Point out the initial letters in each gap.

Answers

- a breakthrough b genetically modified c offspring
d outset e drawback f lifetime g worthwhile
h high-risk i crackdown j outcome

FAST FINISHERS

Ask students to choose three of the words from exercise 4 and write new sentences using them.

HOMEWORK

Assign students page 33 in their Workbook or the relevant sections of the Online Workbook.

Gateway to life skills pp48–49

Reading articles critically

To question how scientific facts are interpreted in news articles, to identify what to look for in science articles to decide how reliable they are and to critique an article

FAST TRACK

You could ask students to read through the Key concepts before the lesson and prepare their answers for exercise 1. You can then start with the speaking activity at the beginning of the class.

BACKGROUND INFORMATION

Analysing the reliability of material is a vital academic skill. Rather than taking research at face value, students need to be able to look at the methods used to come to conclusions, as well as the conclusions themselves, and say whether they are reliable or not. Students are encouraged to find other evidence to corroborate any research and to use a critical approach when reading articles. Such an approach will be valuable to students in further education, where they are expected to be more analytical in their approach to research. Though the lesson focuses on scientific articles, much of the advice could equally apply to more arts and humanities based subjects.

WARMER

Before the lesson, find a simple example of research of two factors together where one hasn't caused the other. (Searching on the Internet for 'bad correlation and causation' will come up with some good examples.) Show students a table and write a simple sentence summarising the research (e.g. *People who smile more live longer. Therefore smiling makes you live longer.*). Ask students to explain using the terms in the Key concepts box, why your summary is not accurate.

- 1 SPEAKING** In pairs, students look at the table and discuss what it shows and what conclusions can be drawn from the information. Elicit ideas in open class.
- 2 READING** Students read the article and answer the questions.

Answers

- 1** Franz Messerli of Columbia University, as part of a study looking at the link between chocolate and intelligence. He tested the theory by comparing Nobel Prize winners and national chocolate consumption.
- 2** He found a clear correlation between intelligence and chocolate consumption, in most cases.
- 3** Sweden donates the prize and has more winners despite low chocolate consumption so he suggests a possible bias.
- 4** Other studies have found that chocolate is beneficial for the mental and physical health both of people and animals.

FAST FINISHERS

Ask students to find three new words in the article and to use their dictionaries to find the meaning. They could then teach the new words to the class when everyone has finished.

- 3 SPEAKING** In small groups, students discuss the questions. Ask students to share their answers in class feedback.

VOCABULARY FOCUS

The video contains some useful words and phrases, and language connected with science reporting. You could pre-teach the following before watching:

outlets (news) [n, count]: a shop or place where a particular product is sold

'churnalism' [n, count]: the process where journalists copy large parts or all of press releases rather than writing original copy

parroting (content/information) [v]: to copy or repeat what someone says without thinking about it or understanding it properly


get facts straight [phr]: to have the correct information about something, especially before criticising someone or arguing with them

press release [n, count]: an official statement or report that an organisation gives to journalists, for example about a new product or an important achievement

repurpose (content) [v]: to reuse something for a different purpose from the one that was originally intended


causal mechanism [phr]: the process or pathways by which an outcome is achieved

reputable [adj]: generally considered to be honest and reliable

- 4 LISTENING**  **12** Tell students they are going to watch a video or listen to a science journalist discussing the article. Ask students to note if any of their points from exercise 3 are mentioned. Play the video or track. See the Teacher's Resource Centre for the videoscript/audioscript for this exercise.

Answers

Students' own answers

- 5 LISTENING**  **12** Play the video or track again and ask students to make notes about what the science journalist said about the things listed.

Answers

- **the news outlet:** The quality and purpose of reporting will vary depending on the outlet.
- **the source and quotes:** Good reporting happens when reporters have time to speak to the source. Sometimes journalists will "parrot" (repeat) information from a press release instead of doing their own research.
- **the references to scientific research:** If research has been done by a reputable scientist and published in a respected journal, there is reason to believe that it is reliable. You can research these things online. Sometimes you can link from a journalist's article to the original published research, to see if the conclusions match up.

- **the context and purpose:** Good reporting is when the author talks to a range of scientists to try to get different perspectives. Sometimes scientific content is repurposed across lots of different channels. Each outlet has its own agenda.
If there is no context then people don't have enough information to understand the research.
- **correlation and causation:** Correlation is not cause. We don't know what other influencing factors are, and so we can't draw a conclusion from a correlation.

TEACHER DEVELOPMENT: CLASSROOM TIPS

Using the audio and video

Use the pause button while playing the video or track and ask students to summarise what has been said or what has happened so far. Dividing the material into more manageable chunks will prevent students from getting lost and allow them to catch up with the content. It will also allow you to monitor what students can and can't understand and to adjust the lesson accordingly.

- 6 Students look at the article again and find further examples to support the points made by the science journalist in exercise 5.

Answers

the news outlet: while information is given about the scientist and university, no information is given about the news outlet to judge the quality and purpose of the reporting.

the source and quotes: there are no direct quotes in the article

the references to scientific research: the research was done by a reputable scientist, but there are no links or references in the article to see where it was published or what source it came from

the context and purpose: the only context given for the research was that the scientist had read studies stating that cocoa was good for health, no other scientists are mentioned

correlation and causation: the article suggests a strong correlation between chocolate consumption and intelligence, and concludes that chocolate is beneficial for health. However, no other influencing factors are considered

21ST CENTURY TASK



Put students in groups of three and tell them they are going to work together to read and critique a science article.

Step 1

Refer students to the articles on pages 162 and 163 and ask them to choose one. Alternatively, bring some scientific articles of your own in or allow students to bring in their own. In all cases, ensure the level and content are suitable for your students. Help students with any vocabulary.

Step 2

Ask students to identify the points listed in exercise 5. You could check answers as a class at this stage before moving onto step 3.

Step 3

Ask groups to consider the conclusions the article makes and whether they are reliable or not, giving reasons why. Refer students back to the lesson's Key concepts and ideas they discussed in exercise 3 if necessary.

Step 4

Pair each group up with another group and ask students to present their conclusions to the other group. Circulate to ensure students are giving reasons to support their opinion.

Listening p50



Listening for opinion, gist and specific information; using mixed conditionals

FAST TRACK

Have students make note to their answers for exercise 1 before the lesson so they can start the task straight away. You could also have students read through the listening questions in exercise 2 and check they understand all the vocabulary.



Test before you teach: Flipped classroom

Set the Flipped classroom video and tasks for homework before the lesson. This will allow you to assess the needs of the students before the class. Students can then move onto the relevant Grammar practice activities.

WARMER

Write the following extinct creatures on the board: woolly mammoth (extinct between 14,000 and 11,500 years ago) large sloth lemur (1500s extinct), Neanderthal man (extinct about 40,000 years ago), cape lion (1860 extinct), dodo (1662 last sighting, extinct shortly after this in 17th century), sabre-toothed tiger (extinct about 12,000 years ago). Ask students to work in pairs and guess the connection between the creatures. If they guess correctly, ask them which they think was the first and the last to become extinct.

Answers

They are all extinct. The first to become extinct was the Neanderthal man, the most recent from this list was the cape lion.

- 1 **SPEAKING** In pairs, students discuss the questions. In feedback, encourage them to share their opinions.
- 2 **LISTENING** 13 Tell students they are going to listen to a podcast about bringing animals back from extinction. Allow them time to read through the questions and options first. Ask them what they predict they will hear from the questions. Play the track. Students listen and choose the correct options. They compare answers in pairs before discussing as a class. See pp148–149 for the audioscript for this exercise.

Answers

1 c 2 a 3 c 4 a 5 c 6 b

++ EXTRA ACTIVITY

Hand out copies of the audioscript and have students practise reading the dialogue in pairs. Have students write two more questions and answers to add to the interview.

A VOCABULARY FOCUS

In the recording there are a number of useful words specific to the context: *fossils, global warming carbon, specimens, ecosystem*. Write them on the board and ask students to say what they refer to and how they relate to the text.

++ EXTRA ACTIVITY

Ask students what they know about the following:
test tube babies (1978)
Dolly the sheep (the first cloned mammal in 1996)
GM crops (began in the 1990s)
Editing DNA to prevent the spread of hereditary diseases (began in 2010s)
Ask them if they know about any other breakthroughs in genetic engineering and encourage them to predict further breakthroughs that might be made in the future.

- 3 **SPEAKING** In pairs, students discuss the questions. Refer students back to the animals mentioned in the warmer if they need some ideas. You could have a class vote on the most popular animal to bring back from extinction.

GRAMMAR Mixed conditionals

- 4 Students look at the sentences and answer the questions.

Answers

1 Mixed 2 a, b 3 c

TEACHER DEVELOPMENT: LANGUAGE

Mixed conditionals

Mixed conditionals usually combine the second and third conditional and are used to describe an imaginary present condition and its imaginary consequence in the past.

If + past simple, ... would/wouldn't have + past participle
If + past perfect, ... would/wouldn't + infinitive

GRAMMAR Mixed conditionals

- 5 Students choose the correct alternative and compare answers in pairs before discussing as a class.

Answers

1 choose 2 be 3 have gone 4 feel 5 hadn't lived
6 speak 7 be 8 hadn't lost

- 6 **SPEAKING** Give students time to read through the questions and consider their answers before they ask and answer the questions in pairs. Nominate students to report their partner's answers to the class.

++ EXTRA ACTIVITY

Ask students to look at exercise 5 again and to rewrite the second half of the sentences, making them true for them where possible.

Refer students to the Grammar reference on page 54 if necessary.

HOMEWORK

Assign students pages 33–34 in their Workbook or the relevant sections of the Online Workbook.

Developing speaking p51

Talking about statistics

>>> FAST TRACK

You could ask students to complete exercise 1 at home before the lesson. To check answers at the beginning of the lesson, read out each type of chart or graph in exercise 1 and ask for a show of hands for A–D to check their understanding.

WARMER

Write the following well-known expression on the board: **There are three kinds of lies: lies, damned lies, and statistics.** Ask students what they think the expression means. In what ways do statistics lie?

Suggested answers

The expression refers to how statistics are used persuasively by people in authority to support weak arguments or policies. (It is commonly attributed to Benjamin Disraeli, a famous 19th-century British prime minister.)

Talking about statistics

- 1 Students match 1–8 with charts and graphs A–D and compare answers in pairs.

Answers

1 A 2 C 3 D 4 B 5 C 6 B 7 D 8 A, B, C

- 2 **SPEAKING** Students work in pairs to carefully read the phrases in the Speaking bank and to check any they are not sure of in their dictionaries. Elicit which words can be used to describe each of the charts and graphs.


- 3 Students work individually or in pairs to produce descriptions. If they work individually, ask them to compare what they have written with a partner. Remind them to think about the tense(s) they need to use. With a less confident class, you may wish to work on the first description in open class as an example. Students need to use present tenses to describe A and C. They need to use present, present perfect and past tenses to describe B, and present and past tenses for D.

Suggested answers

Image A is a bar chart. It shows a diagrammatic comparison of statistics about the state of public attitudes to science in 2014...

The blue line in graph B shows that in 2008 13% strongly agreed that scientists made ...

In the table in D we can see that 34% of 16 -24-year-olds obtained information about science from the TV news ...

- 4 SPEAKING** Students work in pairs to interpret and discuss the information in the charts and graphs. Ask students what they found surprising, shocking or predictable and to give their reasons why.
- 5 LISTENING**  14 Tell students they are going to listen to four students talking about the same charts and graphs. Play the track. Students listen and discuss the question in pairs. In feedback, elicit the different words and phrases the speakers use to interpret the data. See p149 for the audioscript for this exercise.

TEACHER DEVELOPMENT: LANGUAGE**Fact vs opinion**

Note the language used to introduce the information in the charts and graphs in the audio:

- This shows that ...
- You can see from this graph that ...
- In this chart you can see that ...
- The table shows that ...

Note the language used to introduce personal opinions:

- The interesting thing in my opinion is that ...
- Personally, I'm not too surprised that ... because ...
- I think it's positive to see that ...
- Actually, when you look closely, ...
- I suppose that this reflects the fact that ...
- It seems that ...
- I reckon* that this shows that ...
- I'm not really surprised by this difference, given that ...
- What I find interesting is that ...

* *I reckon* (British English) = *I think*. The American English equivalent = *I guess*.

✓ EXAM SUCCESS Ask students to read the information in the Exam Success box on page 51 before they do exercise 6. Encourage them to think carefully about how they can apply this to the task. Refer them to Exam Success on page 150 for more ideas.

PRACTICE MAKES PERFECT

- 6 SPEAKING** Students work in pairs. They study the charts and graphs on page 164 and briefly prepare what they are going to say. They need to use the words and phrases in the Speaking bank to talk about the data and to express their opinion. Students take turns to describe and react to the statistics.

+ EXTRA ACTIVITY

Have students conduct a class survey on a topic of their choice (e.g. attitudes towards science; areas of science they think should be invested in the most; ways of spending free time; time spent on homework each night) and then choose the best type of chart or graph to represent their findings. Put students in

TEACHER DEVELOPMENT: CLASSROOM TIPS**Error correction**

When students are using new language in pairs or groups, monitor closely, noting down errors and examples of good language use as you go round. Use a clipboard so that you can make notes as you monitor. Feedback on their performance at the end by writing on the board eight of the sentences that you have heard, six with errors and two that are correct, and ask students to work in pairs to correct them. Point out the error-free sentences as good examples of language use.

HOMEWORK

Assign students page 35 in their Workbook or the relevant sections of the Online Workbook.

Developing writing pp52-53 

Writing a for-and-against essay; talking about causes, reasons and results

FAST TRACK

Students could read the beginning of the article at home before the lesson, so they are ready to talk about it at the start of the class. In addition, or alternatively, students could do the preparation for the writing task in class and you could set the writing task in exercise 9 for homework.

WARMER

Write on the board *Scientists invent strawberry-flavoured grass*. Divide the class into groups of four. Half the groups have one minute to think of reasons why it's a great breakthrough. The other half have one minute to think of reasons why it may have terrible consequences. Go round the class, monitoring and providing help where necessary. Which group has come up with the most arguments for or against the new type of grass?

A for-and-against essay

- 1 SPEAKING** Students read the beginning of the science article then work in pairs to predict reactions to the news. In feedback, build up a list of reactions on the board.
- 2** Students work in pairs to read the task, discuss the question and prepare the paragraph plan.

Suggested answer

Paragraph 1: introduction saying what the argument is about

Paragraph 2: arguments to support the idea that creating viruses will help save lives in the future

Paragraph 3: counterarguments, supporting the idea there will be devastating consequences if viruses are created

Paragraph 4: students' own opinion with reasons and examples

TEACHER DEVELOPMENT: STUDENT TRAINING

Planning essays

Encourage students to plan their essay on a blank A4 sheet of paper with underlined headings for each paragraph and notes under each paragraph heading. You could put together a simple template and then email it to your students to add to. They need to include reasons and examples in note form in their plan. The plan provides a visual 'map' for their final essay, with clear headings and notes to work from.

- 3 Students read the essay and answer the questions. Elicit and discuss the answers in open class. Then have a show of hands to see how many students agree with the writer's opinion.

Answers

1 Yes 2 Students' own answer 3 Students' own answer

- 4a and 4b Students put the headings in the correct place in the Writing bank and compare answers in pairs. Then they add the underlined words and expressions in the essay to the Writing bank on page 53.

Answers

1 Introducing and sequencing arguments

Last but not least

2 Adding arguments

Moreover

A further criticism of

3 Making contrasts

On the other hand

Despite the fact that

4 Expressing consequences

5 Expressing your and other people's opinions

Some scientists claim

There are people who argue that

My own view is that

6 Concluding

To sum up

TEACHER DEVELOPMENT: LANGUAGE

Contrasting ideas

Many of these expressions go at the start of a sentence and are followed by a comma. Contrasting words such as *However* and *Nevertheless* introduce a sentence that contrasts with what was said before, whereas consequence words such as *Therefore* and *Consequently* introduce a sentence that expresses a consequence of what was said before.

Despite and *In spite of* are followed by a noun or *-ing*.

VOCABULARY Causes, reasons and results

- 5 Students read the sentences and choose the correct alternative. Point out that in some cases, both are possible. They compare answers in pairs. Check answers in open class and elicit the meaning of all the alternatives.

Answers

1 given rise 2 both 3 in turn 4 both 5 side
6 both 7 both 8 both 9 to change 10 both

VOCABULARY FOCUS

Causes: give rise to, bring about, lead to, spark off, prompt (something) to

Reasons: since, as, due to, owing to, stem from

Results: side effects (= unexpected, extra results); disastrous/catastrophic (= very bad) results; full repercussions (= all the negative results that will eventually appear)

- 6 Students read the text then think of the advantages and disadvantages of manipulating the weather.

- 7 **SPEAKING** Elicit ideas from the class. Build up a list in note form of positive and negative views on the board. Do students think that controlling the weather is a good thing or a bad thing?

Example answers

Positive: can avoid droughts; can stop crops dying because of heat or lack of rain; can make sure that key national events or sports events are not ruined by bad weather; can make sure we always have a white Christmas; could have a guaranteed week of sun every August

Negative: could be bad for global warming; could affect weather patterns in a bad way; by changing the weather in one place it could affect the weather in a bad way in another place; firing rockets sounds dangerous and bad for the environment; the weather should be unpredictable

- 8 Students work in pairs to write out a paragraph plan using ideas from exercises 6 and 7.

Suggested answer

Paragraph 1: introducing the argument

Paragraph 2: arguments for changing the weather

Paragraph 3: arguments against changing the weather

Paragraph 4: personal opinion with reasons and examples

- ✓ **EXAM SUCCESS** Students read the information in the Exam Success box before they do exercise 9. Have a brief class discussion about it. Then refer students to Exam Success on page 150.

PRACTICE MAKES PERFECT

- 9 Students write their essay. Encourage them to include appropriate expressions from the Writing bank. Refer students to the Writing bank on page 157 for a model text and additional tips.

HOMEWORK

Assign students page 36 in their Workbook or the relevant sections of the Online Workbook.

Language checkpoint: Unit 4

FAST TRACK

The extra support provided on the Grammar and Vocabulary reference sections makes the Grammar and Vocabulary revision sections ideal for setting as homework. You could get students to complete the whole revision page or just certain exercises for homework.

Grammar revision p55

Conditionals

- 1 Students complete the conditional sentences with the correct form of the verb.

Answers

- 1 would have done 2 was/were 3 don't see
4 catch 5 'll walk 6 had seen 7 wouldn't be able

Other conditional structures

- 2 Students complete the sentences with the words in the box.

Answers

- 1 long 2 case 3 Supposing 4 only 5 Providing
6 Unless

Mixed conditionals

- 3 Students write conditional sentences for the different situations using the words given.

Answers

- 1 If you had helped me, I wouldn't be annoyed today.
2 If we didn't have an exam today, we could have gone out last night.
3 If I wasn't afraid of heights, I'd have gone to the top.
4 If I knew French, I could have translated it.
5 If he had taken his medication, he wouldn't be sick (now).
6 If we were old enough, they'd have let us in.
7 If she had got the job, she'd be happy now.

Vocabulary revision p55

COMPOUND NOUNS AND ADJECTIVES

- 1 Students complete the compound nouns or adjectives.

Answers

- 1 crackdown 2 cutbacks 3 feedback 4 outset
5 worthwhile 6 breakthrough 7 drawbacks
8 lifetime

CAUSES, REASONS AND RESULTS

- 2 Students write definitions or explanations for words 1–6.

Suggested answers

- 1 to make something happen
2 because
3 to cause something to happen
4 because of
5 as a result of something that is related
6 result from

BIOLOGY AND SCIENTIFIC RESEARCH

- 3 Students complete the sentences with the correct form of the words in the box.

Answers

- 1 prevalent 2 species 3 contracted 4 transmitted
5 parasites 6 resistant

HOMEWORK

Assign students page 37 in their Workbook or the relevant sections of the Online Workbook.

Reading p56



TIP FOR READING EXAMS

Ask students what they can remember about how to approach a paragraph completion activity. Nominate students to give their ideas. Then ask them to read the tip and refer them to Exam Success on page 150 for more ideas.

- 1 Draw students' attention to the title and the first picture and ask them to skim read the first paragraph to find out about the book being reviewed. Point out paragraphs A-F below and ask students to do the paragraph completion activity. Let them compare their answers in pairs before you discuss them as a class.

Answers

1 C 2 B 3 A 4 E 5 F 6 D

Speaking p57



TIP FOR SPEAKING EXAMS

Ask students to read the tip then discuss it as a class. Refer them to Exam Success on page 149 for more ideas on giving presentations.

- 2 Ask students to read the extract and discuss the question in small groups. Encourage them to recall any prior knowledge they may have about Leonardo Da Vinci and his inventions. Monitor and help as needed.
- 3 Give students time to look at the topic and prepare some notes of their ideas. You could let students work in pairs at this stage. Remind them to structure their presentation clearly. Refer them back to the guide and the Speaking bank on page 39 to help them.
- 4 Ask students to give their presentation to the class. If necessary, in larger classes students could give their presentation to a group of classmates, but make sure to monitor them carefully.

Writing p57



TIP FOR WRITING EXAMS

Ask students what they can remember about writing reviews. Make a list on the board then refer them to Exam Success on page 150.

- 5 Ask students to read the task and decide which book and character they want to write about. Encourage them to use a variety of different adjectives to give their review more impact. Then students write their review. Remind them to include all the necessary elements. They should write between 140 and 190 words. Refer students to the Writing bank on page 156 for a model text and additional tips.

Use of English p57

TIP FOR USE OF ENGLISH

Ask students to read the tip then discuss it as a class. Elicit any further suggestions and then refer them to Exam Success on page 150.

- 6 Students complete the second sentences so they have the same meaning as the first. Remind them to use between three and six words including the word given, and not to change the word given. Let them compare their answers in pairs before checking with the class.

Answers

- 1 would force us to learn
- 2 provided (that) there are strict regulations
- 3 wish we had studied anatomy
- 4 kept on working
- 5 I did manage to finish it
- 6 Supposing time travel was/were possible
- 7 doing research into
- 8 would be able to find

+ EXTRA ACTIVITY

After marking all the exercises in the Gateway to exams section, give students time to study their marks and decide what they need to do to improve. Go through the reading text as a class and ask students to identify why they chose a wrong answer and correct their mistakes where necessary. Ask them to note any errors in the Use of English. They can learn from them by rewriting the grammatical or lexical item in a sentence of their own which will be easy for them to remember.

HOMEWORK

Assign students pages 38-39 in their Workbook or the relevant sections of the Online Workbook.