English lesson plans for Grade 8

Lessons in this section

8.1 Speaking: indirect questions 218
8.2 Vocabulary: money and finance 00
8.3 Reading an explanatory text: How hearing works 00
8.4 Listening to and writing an explanatory text 00

Resource sheets for the lessons 237

Using these lesson plans

The speaking and vocabulary lessons for Grade 8 (8.1 and 8.2) are linked, as are the reading and writing lessons (8.3 and 8.4) but they do not necessarily represent a week’s teaching. The intention of this selection of lesson plans is to show how grammar, functions, vocabulary and the four skills can be integrated in different combinations in different types of lesson.

The objectives for the lessons are drawn from the content standards and the relevant standards in each case are indicated on the lesson plan. Main standards are shown in bold and subsidiary standards in normal print beside the objectives at the top of each lesson plan.

Each lesson plan has sufficient material to support 45 minutes of direct teaching. Teachers may need to supplement the activities provided with additional simpler or more complex tasks if they have a mixed ability class. If there is too much material for 45 minutes (this depends on the class), it is up to the teacher to designate which activities will become homework or carry through to the next lesson. However, to maximise the learning cycle, teachers should be selective about which tasks to cut, and not just drop the last task because it comes at the end.

Answer keys are provided to guide teacher correction and feedback but where tasks are subjective, these answers are not intended to be presented to students as the only ‘right’ way of completing the given tasks.

The lesson plans are organised as three-stage lessons with a feedback session at the end to sum up learning for students. In the speaking and vocabulary lesson, the three stages are presentation, practice and production. In the reading and writing lessons, the three stages are pre-, while, and post- (e.g. pre-reading, while reading and post-reading).

The lesson plans do not include revision warmers at the beginning to review language learned in previous lessons, nor do they include homework tasks at the end of the lesson because these lesson plans are taken out of sequence. However, the review and homework stages are necessary parts of the lesson and should be provided by the teacher.
Speaking: indirect questions

- Use indirect questions *Can/Could you please tell me ...*, *Do you know ...* to ask for information politely, and respond with *Certainly; No, I’m sorry ...*
- Use indirect questions accurately by (a) securing word order *Can you please tell me where the check-in counter is?* and (b) using if for yes/no questions *Do you know if the flight’s on time?*

Networks

Set the scene: at the airport. Elicit as much airport vocabulary as possible that students know already with a network on the board.

Ordering

Pre-teach the vocabulary and check understanding by getting students to order the words in a typical chronological sequence of someone who is returning home by plane after a holiday in the UK.

*A few days before leaving* reconfirm your flight.

*Check in.*

*Ask for an aisle* seat.

*Go to the duty free* to buy gifts for your family.

*Go to the gate.*

*Find the right row.*

Dialogue build

Give the students the jumbled skeleton dialogue between a passenger and an airport official on OHT 8.1a. Get them to order it.

**Answer key**

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qatar Airways to Dubai?</td>
<td>Rows 17 to 19 over there.</td>
</tr>
<tr>
<td>Thanks.</td>
<td>Hurry up. The gate’s closing.</td>
</tr>
<tr>
<td>Time for duty free?</td>
<td>No. Final call.</td>
</tr>
<tr>
<td>Flight full?</td>
<td>Don’t know.</td>
</tr>
</tbody>
</table>

Objectives

Grade 8 curriculum standards 5.14, 5.15, 5.19

Presentation

Resources

OHT 8.1a

Vocabulary

(to) check in
a row
an aisle
the gate
the duty free
(to) reconfirm

At the airport

- (to) check in
- a passenger
- the gate
- a flight
- left luggage

At the airport
Get students to use the cues to create a conversation. Get them to practise their conversations in pairs. When they’ve done it a few times, swapping roles, give them the following information.

**Teacher’s script**

As well as being very late, the passenger has 25 kilos more than he is supposed to have, doesn’t want to be charged extra and still wants to go to the duty free to do some shopping. He has to be very polite to the airport staff in order to get these things done.

Build up the following dialogue by eliciting and improving questions and answers from the cues and inputting the indirect question form. Get students to repeat each line of the dialogue chorally and individually from the cues before writing up the whole sentence on the board. When it’s complete, get them to practise it in pairs. Have them copy it into their exercise books.

<table>
<thead>
<tr>
<th>Passenger:</th>
<th>Could you please tell me where the check-in desk for Qatar Airways is?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airport official:</td>
<td>Certainly. Rows 17 to 19 over there.</td>
</tr>
<tr>
<td>Passenger:</td>
<td>Thank you so much.</td>
</tr>
<tr>
<td>Airport official:</td>
<td>You’d better hurry. The gate’s closing.</td>
</tr>
<tr>
<td>Passenger:</td>
<td>Do you know if I’ve got time to go to the duty free?</td>
</tr>
<tr>
<td>Airport official:</td>
<td>Not really. It’s the final call.</td>
</tr>
<tr>
<td>Passenger:</td>
<td>Can you tell me if the flight’s full?</td>
</tr>
<tr>
<td>Airport official:</td>
<td>I’m sorry but I’m afraid I don’t know.</td>
</tr>
</tbody>
</table>

**Concept check**

Ask the following concept-checking questions to check students understand when to use indirect questions and how to construct them.

- Is the passenger being polite or familiar? Polite
- Formal or informal? Formal
- Why? The airport official is a stranger; the passenger wants the him or her to do him or her a favour.
- Which phrases does the passenger use at the beginning of the questions to make them more polite? *Could you please tell me ...? Can you tell me ...? Do you know ...?*
- In a direct question, what would you say for the first question? *Where’s the check-in desk?*
- Verb before subject or subject before verb? Verb before subject: *Where is the check-in desk?*
- Our passenger uses an indirect question to be polite. In this type of question, is it subject before verb or verb before subject? Look at the dialogue. Subject before verb: *... where the check-in desk is.*
- Is it still a question? Yes
- Is the first question a wh-type question or a yes/no question? A wh-type question
- Look at the second two questions. What about them? Yes/no questions
- What extra word is put into the indirect question for yes/no questions? *If*
Transformation drill

Orally, you give the class a sentence. They transform it into an indirect question. Practise the first three cues with Can you tell me ...?; the second three with Could you please tell me ...? and the last three with Do you know ...?

<table>
<thead>
<tr>
<th>Teacher says</th>
<th>Students say</th>
</tr>
</thead>
<tbody>
<tr>
<td>You need to find the transit lounge.</td>
<td>Can you tell me where the transit lounge is?</td>
</tr>
<tr>
<td>You need to buy presents for your family.</td>
<td>Can you tell me where the duty free is?</td>
</tr>
<tr>
<td>You need to take your baggage trolley downstairs.</td>
<td>Can you tell me where the lifts are?</td>
</tr>
<tr>
<td>You need to check in to British Airways</td>
<td>Could you please tell me where the British Airways check-in desk is?</td>
</tr>
<tr>
<td>You need to change money.</td>
<td>Could you please tell me if there’s a bank near here?</td>
</tr>
<tr>
<td>You need to find Gate 22.</td>
<td>Could you please tell me where Gate 22 is?</td>
</tr>
<tr>
<td>You need to send an email.</td>
<td>Do you know if there’s an internet terminal near here?</td>
</tr>
<tr>
<td>You need to know how many kilos you can take.</td>
<td>Do you know what the baggage allowance is?</td>
</tr>
<tr>
<td>You need to reconfirm your flight but you don’t know when.</td>
<td>Do you know when I should reconfirm my flight?</td>
</tr>
</tbody>
</table>

Information gap

Get students to complete the floor plan for Terminal One on worksheet 8.1. Working individually, have them decide where the items listed below the plan should go and get them to fill in one of their floor plans accordingly. Each student should come up with a slightly different layout. Put them in pairs. Student A is an airport official, and has his or her completed floor plan of the airport. Student B is a passenger and uses the second (unfilled-in) floor plan of the airport. Get the passenger (Student B) to ask the airport official (Student A) where all the listed places are, using polite, indirect questions, and fill in the floor plan. Demonstrate what to do with one student in front of the class before getting students to practise in closed pairs.

Teacher: Could you please tell me where the check-in desk for Emirates is?
Student: Certainly, sir. It’s over there on the left: row 4, next to Qatar Airways.

[Teacher writes in Emirates in the box numbered 4 next to Qatar Airways on the floor plan and shows the class]

Monitor and correct for accuracy. When Student B has completed his or her second floor plan, the pair swap roles and Student A asks questions in order to fill in their second floor plan.
### Mapped dialogue

Use the mapped dialogue on OHT 8.1b to get students to role play a polite conversation, asking for information on the telephone, between a passenger and a flight reservations clerk. Elicit some ideas for each of the cues. Remind students to use the indirect question form as well as polite offers and requests, *Would you like ...?* and *I’d like ...*. Get students to practise in pairs and then swap roles.

<table>
<thead>
<tr>
<th>Passenger</th>
<th>Reservations clerk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good morning. I’d like to reconfirm my ticket.</td>
<td>Certainly. Could you please tell me what your name is?</td>
</tr>
<tr>
<td>[gives name]</td>
<td>Thank you. And do you know what the flight number is?</td>
</tr>
<tr>
<td>Yes, of course. It’s QR302 to London.</td>
<td>Right. And can you tell me what the date and departure time on the ticket says?</td>
</tr>
<tr>
<td>Could you please tell me what the reconfirmation number is?</td>
<td>Certainly. It’s XR72359RF.</td>
</tr>
<tr>
<td>Yes, why not?</td>
<td>Would you like to reserve your seat now?</td>
</tr>
<tr>
<td>A window seat please.</td>
<td>And what about meals? Would you prefer vegetarian, Halaal or regular?</td>
</tr>
<tr>
<td>Vegetarian please. Can you tell me what the check-in time is?</td>
<td>It’s two hours before, so that will be 6:25 in the evening.</td>
</tr>
<tr>
<td>And could you please tell me what my baggage allowance is?</td>
<td>20 kilos and you can take up to 7 kilos hand luggage.</td>
</tr>
<tr>
<td>Thanks a lot.</td>
<td>Not at all. Have a good flight.</td>
</tr>
</tbody>
</table>

Monitor for accuracy and some degree of fluency, encouraging students to go beyond the frame and change information or questions as they wish. Make a note of good conversations as well as common errors for the feedback session, but don’t interrupt the flow.

### Feedback

Deal with most common spoken errors orally.
Summary for students

We use indirect questions to be polite or more formal. Being too direct sometimes sounds rude in English. If we put more rising and falling intonation into the indirect question, it becomes even more polite. In English, we tend to be polite or formal with strangers and especially with strangers when we want them to do something for us.

Indirect questions start with Can ... or Could you please tell me ... or with Do you know ... The word order after this phrase is more like for a statement than a question: ... where Gate 22 is?, ... what time the plane takes off? (In direct questions, we put the verb before the subject: Where is gate 22?, and we use auxiliary verbs such as does: What time does the flight take off?). If it’s a yes/no question, we use the word if after the opening question phrase: Can you please tell me if ...?, Do you know if ...? Sometimes, you’ll hear people use whether instead of if: Can you please tell me whether it’s necessary to reconfirm my flight (or not)?

To make the response as polite as the indirect question, we say Certainly, Of course, I’m not sure, I’m afraid not, instead of a plain Yes or No, just as you’ve learned for responding to polite requests.
Vocabulary: banking and finance

- Learn and use banking and finance vocabulary.
- Get further practice in using indirect questions for politeness and formality.

Pyramid

Introduce the topic ‘banking and finance’ with a pyramid brainstorm: working individually, students write down on a piece of paper all the words they know to do with money, banking and finance. After a few minutes, stop them and get them to share their list with a partner, copying down any new words and building up a joint list. Repeat the process putting two pairs together, then two groups of four, then two groups of eight. Collate all the words into one class list on a poster, the OHT or the board, by getting the group with the longest list to write up their words and the other group(s) to add any other words, no repetitions.

Pre-teach vocabulary

Pre teach only the vocabulary remaining on your list which hasn’t already come up in the pyramid. Use a selection of the vocabulary practice techniques that follow to help students memorise and contextualise the new words. Change the target words in the activities to suit the real needs of your students.

What and where

Elicit the nouns below, one at a time, checking students can pronounce them correctly and writing them on the board. Draw a box or ‘file’ around each one:

- Loans
- Insurance
- Property
- Investments
- Savings
- Budget

When all the words are on the board, get students to repeat them as you point to them. Rub out one of the words but do not rub out its box. Get students to repeat the words again, including the rubbed-out word, by pointing at the boxes in random order, including the empty box. Rub out another word but leave the box. Get students repeat the words again, reading aloud what’s on the board or remembering...
what’s just been rubbed out. Continue until all the boxes are empty. Students now have to remember and say aloud all the words. You can elicit the words by asking ‘What did we put in this file?’ (‘The budget’). ‘And in this one?’ (‘Savings’). When the words have been memorised and practised enough, check spelling by getting students to come to the board and fill in the boxes with the correct words in the correct boxes.

**Guessing game**

Elicit five or six banking and finance verbs (some of the target vocabulary plus a few known verbs) and write them up on the board in a list.

<table>
<thead>
<tr>
<th>start</th>
<th>open</th>
<th>transfer</th>
<th>invest in</th>
<th>withdraw</th>
</tr>
</thead>
</table>

Elicit five or six banking and finance nouns and write these in a second list.

<table>
<thead>
<tr>
<th>start a firm</th>
<th>open an account</th>
<th>transfer savings</th>
<th>invest in property</th>
<th>withdraw</th>
</tr>
</thead>
</table>

On a small piece of paper, get students to complete the sentence stub with one verb from the first list and one noun from the second list:

I’ve just ... I’ve just transferred my savings.

In groups, students take it in turns to guess each other’s sentences using yes/no questions.

A: Have you just opened an account?
B: No, I haven’t.
C: Have you just invested in property?
B: No, I haven’t.
D: Have you just transferred your savings?
B: Yes, I have.

The one who guesses correctly is the next one up.

**Noughts and crosses**

Remind students of indirect questions with Do you know ...? and Can you tell me ...? In teams or pairs, get students to play noughts and crosses with the following words. The first to have three noughts or three crosses in a row, wins.
the surplus  the policy  the balance

the investment  the funds  the budget

the rate  the expenses  the incentive scheme

To win a nought or a cross, students have to say which square they want by calling out the word written there and then making an indirect question with it.

*Team X, Student 1* The surplus. Can you tell me how much the surplus was?

*Team 0, Student 1* The funds. Do you know where the funds are invested?

*Team X, Student 2* The balance. Do you know what the balance came to?

Etc.

**Brainstorm**

Tell students they are going to design their own small firm. It can be anything. Suggest some usual and unusual companies.

- a travel agency, a software development company, a vet’s clinic, a gardening store, a hot-air balloon company, a dot com, a catering company, a gym, a garage

In groups of three, get students to design their company:

- in general – its name, the type of business it is; briefly explain what it does
- specifically – how the company’s finances work by filling in the form in worksheet 8.2.

**Roleplay**

When they have filled in the details, tell them they are about to be audited by the tax authorities to see if they have to pay more tax or not. The form they have just filled in will provide the information the auditors need. Put two groups together. Get one group to audit another. The auditors have to ask polite questions about all the categories on the form. Remind students they should use *Can you tell me ...?*, *Do you know ...?* questions to be polite and formal. They can vary these question phrases with others such as

*Could you explain (to me) ...?*
I’d like to find out ...?
Do you / Can you remember ...?
What I need to know is ...

As they ask these questions, they fill in the details of the firm they are auditing on a second, blank copy of worksheet 8.2

- Could you please tell me what the name of the firm is?
- Could you explain what type of business that is?
- Do you remember what the original investment was?
- Can you tell me if you took out a bank loan? etc.

Get students to conclude their roleplay with the auditors deciding if the company should pay more tax or not. Then, if there’s time, get them to swap roles and repeat the process, so that both sides have the chance to ask and answer. Monitor and take notes, recording good ideas and utterances and most common errors, without interrupting the roleplays. Reiterate target language or instructions with any groups where a breakdown occurs.

In plenary, comment on some of the companies you thought were well designed and who the toughest auditors were. Find out which companies have to pay more tax and get the auditors to explain why. Deal with the most common errors, orally.

**Summary for students**

Get students to tell you what new vocabulary they remember from the lesson.

Briefly elicit that indirect questions were used in this context because the situation required formality, distance and politeness by using some of the following questions:

- Is an auditor your friend? No.
- Why is it important to keep a formal distance with official matters of finance and business? For ‘transparency’, lack of corruption, being ‘proper’. (Discuss these things in Arabic).
- What is the grammar and what are the phrases you used to keep this distance? Indirect questions; word order; use of if with yes/no questions; phrases such as Do you know ...?, Could you please tell me ...? Could you explain (to me) ...?, I’d like to find out ...?, Do you / Can you remember ...?, What I need to know is ... and replies such as Certainly, Of course, I’m afraid not.
8.3 Reading an explanatory text: How hearing works

Objectives
Grade 8 curriculum standards 7.4, 6.6, 8.4

Pre-Reading
Resources
Learner dictionaries
Worksheet 8.3a exercise 1

Vocabulary
air particles
the atmosphere
pressure
(to) vibrate; vibration
(to) resonate; resonance
(to) amplify; amplification
pitch
a tuning fork
an eardrum
a tube
a coil
a nerve
a fibre
a fluid

While reading
Resources
Worksheets 8.3b and 8.3a exercise 2

Gap-fill vocabulary
Get students to work in groups of five. Divide up the new vocabulary so that each member of the group has 2–3 words. Get them to look up their assigned words in their dictionaries and find the Arabic translation (in the context of how hearing works). Then, working as a group, get them to take it in turns to explain the meanings of their words.

Ordering
In the same groups, give students worksheet 8.3a and get them to do exercise 1: order the process of hearing in the way they think it occurs. Tell them they’ll come back to this and check the order after reading.

Answer key

| The inner ear structure changes the vibrations into electrical signals. | 7 |
| Sound travels through the air in waves of air pressure. | 1 |
| The sound waves make the eardrum move backwards and forwards. | 4 |
| The brain understands the electrical signals and knows if the sound is loud or soft, high or low, etc. | 9 |
| The sound waves travel down the ear canal. | 3 |
| A nerve carries the electrical signals to the brain. | 8 |
| The outer ear directs the sound waves into the ear. | 2 |
| A group of tiny bones in the middle ear amplify the sound waves. | 5 |
| The increased pressure of the waves move the liquid inside the inner ear. | 6 |

Jigsaw reading
In the same groups, give each group member a number from one to five. Tell them that they will read the section of the text corresponding to their number and then explain it in their own words to the other members of the group. Hand out the text on worksheet 8.3b and give students three minutes to read their section. When they’ve finished reading, get them to explain their section in order, starting with section one and ending with section five. Then get them to go back and check their answers for the pre-reading task.

Reading comprehension
Still working in their groups, get them to complete exercise 2 on worksheet 8.3a or save this for homework.
Answer key

- compression and rarefaction of air particles
- tympanic membrane
- pinna
- ossicles
- malleus
- incus
- stapes
- cochlea
- inertia

sound waves
the eardrum
the outer ear
bones in the middle ear
the hammer
the anvil
the stirrup
the inner ear
ability not to be moved

Text analysis: guided discovery

Tell the whole class that this type of reading text is an explanatory text – it explains how something works, in this case – the ear. An explanatory text has certain features. The exercises on worksheet 8.3c will help them discover what these features are. Get them to work in their groups of five again and get them to divide up the tasks on the worksheet so they’re all doing something different. For example, the first student does exercises 1–3, the second student does exercises 4 and 5, the third student does exercise 6 and so on. Once they have completed their tasks, have them share their answers and their conclusions as a group. Check answers by monitoring.

Answer key

1

<table>
<thead>
<tr>
<th>Section</th>
<th>Lines</th>
</tr>
</thead>
<tbody>
<tr>
<td>the introduction</td>
<td>1–5</td>
</tr>
<tr>
<td>the conclusion</td>
<td>100–104</td>
</tr>
<tr>
<td>a synopsis of the whole process</td>
<td>18–21</td>
</tr>
<tr>
<td>the steps of the process</td>
<td>22–99</td>
</tr>
</tbody>
</table>

2 The simple present tense is the main tense used throughout the text. The process of how hearing works is a description of a state, of facts, of something that consistently occurs every day. Scientific texts are nearly always in the simple present tense.

3

<table>
<thead>
<tr>
<th>Example of passive</th>
<th>Lines</th>
</tr>
</thead>
<tbody>
<tr>
<td>e.g. must be increased</td>
<td>50</td>
</tr>
<tr>
<td>must be amplified</td>
<td>50</td>
</tr>
<tr>
<td>are connected to</td>
<td>64–65</td>
</tr>
<tr>
<td>is connected to</td>
<td>67</td>
</tr>
<tr>
<td>is attached to</td>
<td>68</td>
</tr>
<tr>
<td>is made up of</td>
<td>81</td>
</tr>
<tr>
<td>is suddenly released</td>
<td>89</td>
</tr>
<tr>
<td>is involved in</td>
<td>102–103</td>
</tr>
</tbody>
</table>

In general, the passive is used in scientific texts. It makes the text sound more objective and formal because it is less personal.

4 (a) 3 – the number of bones in the middle ear / the number of tubes in the cochlea
(b) 55 sq mm – the size of the eardrum
(c) 3.2 sq mm – the size of the faceplate
(d) 22 times – the increase in pressure from the eardrum to the faceplate
(e) 20,000–30,000 – the number of fibres in the cochlea
(f) millions – the number of hair cells
(g) Numbers provide facts, statistics, information so the reader will believe it’s true.

Words to do with physics

| mechanical | rarefaction | amplified |
| compression | inertia | resonant frequencies |

Words to do with human biology: Latin-based words

| pinna / pinnae | ossicles | stapes |
| tympanic membrane | malleus | cochlea (fluid) |
| Eustachian tube | incus | organ of corti |

Words to do with human biology: English-based words

| eardrum | middle ear | anvil |
| ear canal | inner ear | stirrup |
| outer ear | hammer | faceplate |
| oval window |

Technical words are used to show knowledge so the reader will believe it’s true and understand that it’s scientific.

<table>
<thead>
<tr>
<th>Line</th>
<th>Example</th>
<th>To explain</th>
<th>Words/phrases used to introduce the example in the text</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>ringing a bell</td>
<td>sound waves</td>
<td>To see how this works let’s look at a simple example.</td>
</tr>
<tr>
<td>24–25</td>
<td>sound coming from behind or above you</td>
<td>how the shape of the pinna works</td>
<td>If … than if …</td>
</tr>
<tr>
<td>32</td>
<td>dogs</td>
<td>why mammals have better hearing than humans</td>
<td>such as</td>
</tr>
<tr>
<td>48–49</td>
<td>how much easier it is to push against air than it is to push against water</td>
<td>inertia</td>
<td>Think of</td>
</tr>
<tr>
<td>81</td>
<td>a shell</td>
<td>the cochlea</td>
<td>in the shape of a</td>
</tr>
<tr>
<td>86</td>
<td>a tuning fork</td>
<td>how the fibres in the cochlea work</td>
<td>in the same way as</td>
</tr>
<tr>
<td>98</td>
<td>a computer</td>
<td>the brain</td>
<td>like a</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Line</th>
<th>Process link words</th>
</tr>
</thead>
<tbody>
<tr>
<td>4–5</td>
<td>you first need to understand</td>
</tr>
<tr>
<td>10</td>
<td>When</td>
</tr>
<tr>
<td>11</td>
<td>then</td>
</tr>
<tr>
<td>12</td>
<td>and so on</td>
</tr>
<tr>
<td>16</td>
<td>and so on</td>
</tr>
<tr>
<td>26</td>
<td>Meanwhile</td>
</tr>
<tr>
<td>35</td>
<td>Once</td>
</tr>
<tr>
<td>70</td>
<td>which in turn</td>
</tr>
<tr>
<td>87</td>
<td>So when</td>
</tr>
</tbody>
</table>
Using what students have discovered from completing worksheet 8.3c, ask the following concept-checking questions.

- **What’s the structure of an explanatory text about how something works?**
  Introduction, overview of process, steps of process, conclusion

- **What grammar is usually used?** Simple present tense, passives, reference words like ‘it’ and ‘this’, words to connect the steps like ‘when’, then’, ‘once’, ‘meanwhile’

- **Why is the passive used?** The passive is less personal and is used in scientific texts to make the text sound more objective and formal.

- **Why are statistics, measurements, technical vocabulary used?** Statistics, measurements and technical words are used to show knowledge so the reader will believe it’s true and understand that it’s scientific

- **Why are ordinary everyday examples used?** Ordinary examples are used to make it simpler to understand
Summary for students

Explanatory texts about how things work are usually written in the present and use passives to make them sound factual and impersonal. They have:

• an opening statement or summary giving an outline of the process before going into detail; the steps of the process and a conclusion;

• logically ordered steps to explain what happens and why, often connected with sequencing words to signal time (e.g. when, then, meanwhile, once …);

• reference words to avoid repeating the same nouns too much (e.g. this, these; it, they; in this way …);

• words to make the text more scientifically precise (e.g. measurements, numbers, technical terms).

Practise reading more texts about how things work on the website www.howstuffworks.com
Listening to and writing an explanatory text: How air conditioners work

Objectives

Grade 8 curriculum standards 9.5, 9.4, 8.1, 8.7, 2.6

Pre-writing

Resources
Tape 8.4
Worksheet 8.4
OHT 8.4a

Vocabulary
(to) compress
compression
a compressor
(to) condense
a condenser coil
(to) expand
an expansion valve
(to) evaporate
evaporation
an evaporation coil
(to) chill, (to) cool
a refrigerant

Word building

Tell students they are going to write an explanatory text about how air conditioners work.

Pre-teach only the verbs listed on the left.

Get students to work in pairs, brainstorm the related vocabulary and fill in the table in exercise 1 on worksheet 8.4. Check answers by monitoring. Explain that a refrigerant is a gas and elicit the most common one: freon.

Answer key

<table>
<thead>
<tr>
<th>Verb</th>
<th>Physical process</th>
<th>Machine</th>
<th>Substance</th>
</tr>
</thead>
<tbody>
<tr>
<td>(to) refrigerate</td>
<td>refrigeration</td>
<td>a refrigerator</td>
<td>a refrigerant</td>
</tr>
<tr>
<td>(to) cool, (to) chill</td>
<td>cooling</td>
<td>a cooler</td>
<td>a coolant</td>
</tr>
<tr>
<td>(to) compress</td>
<td>compression</td>
<td>a compressor</td>
<td></td>
</tr>
<tr>
<td>(to) condense</td>
<td>condensation</td>
<td>a condenser (coil)</td>
<td></td>
</tr>
<tr>
<td>(to) expand</td>
<td>expansion</td>
<td>an expansion valve</td>
<td></td>
</tr>
<tr>
<td>(to) evaporate</td>
<td>evaporation</td>
<td>an evaporation coil</td>
<td></td>
</tr>
</tbody>
</table>

Says or doesn’t say

Tell students they’re going to listen to a recording of someone talking about air conditioners and how they work. There are two parts to the listening. The first part is a general introduction. The second part is about the basic mechanics of how air conditioners work. Before listening to the first part, get students to look at the list of general ideas about air conditioning in exercise 1 on worksheet 8.4. The speaker will only mention some of the ideas in the list. Get students to listen to tape 8.4 part 1 and tick off the ideas which are mentioned. After the first listening, have students compare answers with a partner. If there are disagreements, play part 1 of the tape again.

Answer key

☑ We see air-conditioning units every day but don’t pay much attention to them.
☑ It would be good to know how such useful machines work.
☑ Air conditioners come in lots of different shapes and sizes.
☒ Hundreds of years ago the Mogul kings of India had their own water powered air conditioning to keep their palaces cool in the Rajasthan desert.
From an airplane you can see air-conditioning units on the roofs of buildings.

Air conditioners are now put into every new car, even in cold European countries.

Air conditioners may look different but they all work on the same principle.

Air conditioners cool things down by making freon evaporate.

An air conditioner is a refrigerator which doesn’t keep the cold air inside itself.

**Ranking and selecting**

Tell students to rank the statements in exercise 2 in order of importance/relevance to an explanatory text on how air conditioners work. Then get them to choose their top two or three statements and put them together into an introduction. While they are writing out their introductions, monitor and help them link ideas with words like although, but, basically, even, nowadays etc. Use the examples on OHT 8.4a if necessary, but encourage students to develop their own introductions.

**Predicting**

In pairs, get students to look at the diagram in exercise 3 on worksheet 8.4. From their own knowledge or from science classes, get them to take it in turns to explain to each other how the air conditioner works. If they have no idea, get them to make up and justify a theory, using the diagram. Use the following eliciting questions to get them on track. Don’t correct any wrong answers.

- How many sets of coils are there?
- Are the ones on the left hot or cold, do you think?
- How about the ones on the right?
- What’s running through the coils?
- What does the compressor do to the freon?
- What does the expansion valve do?
- You’ve also learned the words ‘condense’ and ‘evaporate’. Where does the freon condense?
- What does it condense into, a liquid or a gas?
- Where does it evaporate?
- What does it evaporate into, a liquid or a gas?

**Listening and note-taking**

Get students to listen to the second part of the tape 8.4 and make notes on the diagram, as the process is explained. Check answers as a whole class.

- **What happens first (number 1 on the diagram)?** Cool freon runs through the compressor.
- **What happens next? (number 2 on the diagram)?** The compressor compresses the cool freon and makes it hot, high-pressure freon.

If students give a wrong answer, or disagree among themselves, don’t correct them. Use the disagreement as a reason to listen to the tape a second time.

When they’re all satisfied that they understand the process, and have written down enough notes to recall the process accurately, get students to take it in turns to explain how air conditioners work to their partner using the diagram and their notes. Get them to add connectives First ..., Then..., As it does this ..., In this way ... as they speak. They can write these connectives on their diagrams if it helps.
Then, working with the same partner, have students write up their notes into whole sentences using the simple present tense and some simple present passives.

<table>
<thead>
<tr>
<th>Notes</th>
<th>Sentences</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 cool freon → compressor → hot, high-pressure freon</td>
<td>Cool freon runs through the compressor. The cool freon is compressed by the compressor into hot, high-pressure freon.</td>
</tr>
<tr>
<td>2 → condenser coils → let off heat</td>
<td>The hot freon runs through a set of condenser coils. The condenser coils let off the heat.</td>
</tr>
<tr>
<td>3 → freon condenses</td>
<td>The freon condenses into a liquid.</td>
</tr>
<tr>
<td>4 → expansion valve → expands, evaporates → cold, low pressure freon</td>
<td>The freon liquid passes through an expansion valve. The freon liquid expands and evaporates to become cold, low-pressure freon gas.</td>
</tr>
<tr>
<td>5 → evaporator coils</td>
<td>The cold freon gas runs through a set of evaporator coils.</td>
</tr>
<tr>
<td>6 → heat absorbed → room cooled down</td>
<td>The coils allow the cold freon gas to absorb heat. The air in the room is cooled down.</td>
</tr>
</tbody>
</table>

**Shared writing**

Get students to add the sentences they have written up (i.e. the steps of the process) to their introductions. Whenever they can, get them to join two sentences into one, using a subordinate ‘which’ clause or with a conjunction. Remind them to use reference words *this, it, they* instead of always repeating the key vocabulary. Remind them to use the connectives they practised in the spoken explanation too: *First ..., Then ..., As it does this ..., In this way...*

Do the first couple of sentences with them as an example.

*First, cool freon runs through the compressor and is compressed into hot, high-pressure freon. This hot freon then runs through a set of condenser coils which let off the heat.*

Monitor to correct and provide suggestions and vocabulary.

Tell students they need to complete their text with a conclusion. Get students to refer back to the reading *How hearing works* (worksheet 8.3b) and elicit that the conclusion in that text points to the future and to new discoveries. In plenary, get students to brainstorm ideas for a conclusion for *How air conditioners work*. Use some of these questions to direct ideas if they are stuck.

- **What’s the future of air conditioning, especially with global warming?** There’ll be more and more air conditioners in the world.
- **How is freon bad for the environment?** It destroys the ozone layer.
- **Will this make more global warming?**
- **If the air conditioner in your room broke down tomorrow, would you know how to fix it?**
Post-writing

When the air conditioning repair person took off the lid of the air conditioner, would you know what the main parts were?
Would you understand if you were told ‘It needs more gas’ or ‘It needs a new compressor’?

Get students to write up their conclusions in one or two sentences.

Peer correction

Get students to swap scripts and correct each other’s work in terms of grammatical accuracy and order. Show students OHT 8.4b as an example of a completed text and get them to compare it with their own. Let them make any further corrections they think necessary.

Get students to write up a final draft for homework and to include a simple diagram of an air-conditioning unit in it. If they are word processing the final draft, they can source pictures and diagrams from Yahoo Images. If not, get them to copy, annotate and colour the diagram from worksheet 8.4 exercise 3.

When students hand in their final drafts, correct their work with a marking scheme (underline mistakes and code them in the margin: G for grammar; Sp for Spelling; WO for wrong word order etc.) and hand the annotated scripts back to them as soon as possible. Get students to make their own corrections and to keep a log of the type of errors they are making. Get them to use this log to set goals for their next piece of writing (e.g. Check all third-person singular ‘-s’ endings on verbs when using the simple present tense before handing writing in.)

Summary for students

What are the features of an explanatory text that you learned through reading How hearing works? (see 8.3 summary)
Can you find the same features in your text How air conditioners work?
Are any of the features missing? (A synopsis of the process; statistics; examples, etc.)
If it’s a short process, it only needs a short synopsis. Look at the synopsis on OHT 8.4b, ‘Basically … inside it.’ Also, it has an example. It compares air conditioners to refrigerators. Add those two lines to your text if you don’t already have them, between the introduction and the details of the steps.
Are statistics necessary for explaining air conditioners? (No; if Yes: Where could you find some statistical information about air conditioners to add to your text? www.howstuffworks.com)
When temperatures outside begin to go up – that’s when you really want your air conditioner. You don’t want to be outdoors – you want to be in the cool comfort of an air conditioned room. It’s funny because although we depend so much on air conditioners, we don’t seem to notice them as machines or as part of our daily lives. It’s a bit like all the very useful things around us that we never seem to notice. Air conditioners, just like water towers and electricity cables, are one of those things that we see every day but we don’t pay very much attention to. But it would be nice to know how these important machines work their magic. It would be nice to know more about what we’re seeing.

Air conditioners come in lots of different sizes, from small to huge. One type that we see all the time is the window air conditioner, it’s like a square box with one end sticking into the room and the other end sticking outside. Split level air conditioners are becoming more and more popular now. You can recognise these because the cooling unit is inside and the condenser is a separate unit, somewhere outside, connected by a cable. Most businesses and office buildings put the condensing unit on their roofs and as you fly into any airport you can see them from the air. But even though each of these machines has a pretty different look, they all work in the same way. Basically, an air conditioner is a refrigerator – it works on the same principle, only, instead of having that insulated box to keep the cold air inside the fridge, an air conditioner pushes the cold air out into the room. Air conditioners use the evaporation of a refrigerant – a gas like Freon – to provide cooling … and the mechanics of the freon evaporation-cycle are the same in a refrigerator as in an air conditioner.

So this is how the evaporation cycle in an air conditioner works.

First, cool freon gas goes into the compressor. That’s B on your diagram. The compressor compresses the cool freon, which makes it hot and turns it into hot, high-pressure freon gas.

Can you see the condenser coils on the left hand side of your diagram? Well, the hot, high-pressure freon gas runs through that set of coils and the coils let it release heat. So the freon releases heat and as it does so, the freon cools down, and condenses into a liquid.

So then we have freon liquid, not freon gas, and this liquid runs through an expansion valve. That’s A on your diagram. In the process of running through the expansion valve, the liquid expands and evaporates. It evaporates and becomes cold, low-pressure freon gas. This cold gas runs through another set of coils – you can see them on the right-hand side of your diagram – these coils are called evaporator coils and they allow the cold, low-pressure freon gas to absorb heat. So the heat of the room is absorbed by the gas and in that way the air inside the room cools down.

Let’s just go over that again: cool gas goes into the compressor, which makes it become a hot, high-pressure gas. A set of condenser coils cool it down and it turns into a liquid. It goes through the expansion valve, expands, evaporates, turns back into a cold, low-pressure gas. Then it runs through a set of evaporator coils. It absorbs heat and cools the air down in the room.