NEW SOUTH WALES

LiteracyWorks

LITERACY WORKS FOR

Geography

BOOK 2

STAGE 5

Sustainable biomes
Changing places
Environmental change and management
Human wellbeing

Quality literacy resources for subject areas

Trish Weekes PhD

literacyworks.com.au

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Literacy Works
Website: www.literacyworks.com.au
Email: info@literacyworks.com.au
Ph: 0412198270

Literacy Works for Geography: Book 2 NSW (printed) ISBN 978-1-922308-09-2
Literacy Works for Geography: Book 2 NSW (ePack) ISBN 978-1-922308-10-8

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5-6	Identifying genres in Geography	Interpret assignment questions and link them to genres.
7-8	Analyse the question or instruction	Analyse an assignment or examination question or instruction.
9-10	**Unit 1: Sustainable biomes**	
11-12	Rainforests	Identify information about rainforest layers in an image and in text.
13-14	Coniferous forest biomes	Identify features of the biome.
15-16	Features of the tropical rainforest biome	Write a description of the rainforest biome and another biome.
17-18	Energy flows through biomes	Use verbs for explaining energy flows.
19-20	Energy flows in food webs	Write a System Explanation of a food web.
21-22	Biome productivity	Identify images of types of biome; cloze passage.
23-24	Explain biome productivity	Complete impact chains to explain the impact of climate and soil on biome productivity; cause and effect loops activity.
25-26	Biome productivity and climate change	Fill in a graphic organise to show reasons why productive biomes are important and explain impacts of climate change on biome productivity.
27-28	Human effects on biomes	Sort a jumbled Descriptive Report about human alterations of biomes.
29-30	Human alteration of biomes	Write two paragraphs to describe and evaluate human effects on biomes.
31-32	Human alteration of biomes	Use passive voice to write sentences about the impact of farming on biomes.
33-34	Terrace farming	Complete a Descriptive Report by adding the correct word: there, they're or their.
35-36	Factors that impact crop yields	Classify factors as environmental, economic or technological.
37-38	Factors that impact crop yields	Answer comprehension questions and plan a Factorial Explanation.
39-40	Explain factors that impact crop yields	Write a Factorial Explanation about the factors that impact on crop yields.
41-42	Land use discussion	Students take on a role in a spoken discussion about different land uses.
43-44	Sustainable food supply chains	Students read and write a paragraph about strategies to reduce waste in the supply chain of fresh produce.
45-46	Sustainable food supply chains	Students write two paragraphs about strategies to reduce waste in food supply chains.

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47-48	**Unit 2: Changing places**	
49-50	Urbanisation vocabulary	Match definitions with key terms, rewrite a paragraph using nominalisations
51-52	Push and pull factors for urbanisation	Active reading activity with suggested teacher script
53-54	Flooding in Jakarta	Identify causes and effects of flooding in Jakarta
55-56	Chains of causes and effects	Complete chains of cause and effect to explain flooding in Jakarta and write sentences
57-58	Causes and effects of flooding	Explain causes and effects of flooding in Jakarta and write expert sentences
59-60	Explain flooding in Jakarta	Write an explanation of causes and effects of flooding in Jakarta
61-62	USA and Australia urban distribution	Dictogloss activity about urban concentration and distribution; explaining reasons using text connectives
63-64	Internal migration data	Visual literacy: students analyse a table, line graph and bar chart about Australian internal migration
65-66	Interpreting internal migration data	Comprehension of data displays; using showing verbs to write sentences about data
67-68	Analysing interstate migration data	Write a paragraph analysing data
69-70	Consequences of internal migration in China	Fill in graphic organisers to explain economic and environmental consequences
71-72	Explaining negative consequences	Read a paragraph about consequences for workers and write a paragraph about consequences for rural areas
73-74	International migration to Australia	Read a paragraph about the history of migration and complete comprehension questions
75-76	Benefits of international migration	Exposition: identify examples with social and cultural benefits and economic benefits; sort evaluative language
77-78	Benefits of international migration	How to structure an argument paragraph; read a model paragraph and analyse a paragraph
79-80	Economic benefits of migration	Write an argument paragraph
81-82	Dealing with opposing views	Analyse a counter-argument paragraph
83-84	Write a counter-argument	Write a counter-argument
85-86	Exposition: Benefits of migration	Cut up and arrange the exposition in order
87-88	Australia's urban future	Write recommendations for strategies for sustainable urban futures in students' local area
89-90	**Unit 3: Environmental change and management**	
91-92	Evaluative language for environments	Sort evaluative language into nouns and verbs, positive and negative; identify evaluative language.
93-94	Writing about data displays	Follow four steps to write about tables, graphs and bar charts. Analyse a bar chart about climate change.
95-96	Factors that impact coral reefs	Write a paragraph about how climate change causes coral bleaching; analyse a bar chart and write about the impact of pollution.
97-98	Perspectives on Lake Victoria	Reading comprehension about different worldviews on management of Lake Victoria
99-100	Functions of the environment	Analyse an assignment question; match the environment function with its definition
101-102	Hidden cause and effect language	Use explicit and hidden cause and effect language to explain impacts of human-induced change.
103-104	Explain biophysical processes	Read and interpret a Sequential Explanation about transpiration and rising salinity.
105-106	Causes and effects of salinity	Write steps in Sequential Explanations about impacts of irrigation and pollution on salinity.
107-108	Explain impacts of environmental change	The next few pages work on a Consequential Explanation; on this page, write the first two paragraphs.
109-110	Explaining source and sink functions	Read and annotate a model paragraph; write an explanation paragraph about the sink function.
111-112	Explaining service and spiritual functions	Complete an explanation paragraph about the service function and the spiritual function.

Geography Book 2 Contents

Page	Topic	Literacy skill
	Unit 3: Environmental change and management (continued)	
113-114	Explanation: the final paragraph	Complete the final paragraph of the Consequential Explanation (the General Statement).
115-116	Explaining human-induced change: carp	Read about another human-induced change: carp. Fill in three graphic organisers about carp.
117-118	Write a Consequential Explanation	Explain the impact of carp on the sustainability of functions of the environment.
119-120	Carp management strategies	Analyse carp management strategies.
121-122	Evaluating management strategies	Use adverbials and give reasons to evaluate the effectiveness of carp management strategies.
123-124	Evaluate carp management strategies	Analyse an assignment prompt; analyse a model paragraph that evaluates environmental criteria.
125-126	Evaluate carp management strategies	Complete an Evaluation of carp management strategies, focusing on economic and social criteria.
127-128	**Unit 4: Human wellbeing**	
129-130	Human Development Index	Match dimensions of the HDI with examples and indicators; answer comprehension questions.
131-132	Gender and education data	Visual literacy: Interpreting gender and education data displays
133-134	Sustainable development goals	Writing about SDGs using active and passive voice sentences.
135-138	Indicators of human wellbeing (2 pages)	Jigsaw activity for the class. Discuss and writing about types of indicators (positive and negative economic, social, technological, environmental and political indicators).
139-140	Causes of spatial inequality	Writing cause and effect chains to explain indicators and their impact on wellbeing.
141-142	Explain spatial variation in Africa	Students read and annotate a table comparing Botswana and Democratic Republic of the Congo.
143-144	Explain causes of spatial variation in Africa	Students read and highlight a model paragraph about economic causes, then complete a paragraph about political causes of spatial variation.
145-146	Explain spatial variation in Africa	Students write a paragraph about social causes of spatial variation in Africa.
147-148	Explain malnutrition in India	Students read a paragraph about the causes and consequences of malnutrition and fill in a graphic organiser.
149-150	Interpret malnutrition data	Students analyse and interpret data about child nutrition in poor and non-poor urban areas in India.
151-152	Explain spatial inequality in India	Students write an explanation of the causes and consequences of spatial inequality in malnutrition in India.
153-154	Causes of poverty in Australia	Rearrange a jumbled Factorial Explanation of causes of poverty in Australia.
155-156	Spatial inequality in Australia	Read a paragraph about causes of poverty and answer comprehension questions; analyse a map showing spatial inequality.
157-158	Explaining spatial inequality in Australia	Use modal language to interpret data on relative poverty after housing costs.
159-160	Evaluation of Closing the Gap	Students read information about the government wellbeing program, Closing the Gap; students arrange evaluative language.
161-162	Evaluation of the life expectancy gap	Students interpret an assignment prompt and analyse a model paragraph about life expectancy.
163-164	Evaluation of the employment gap	Students write a paragraph evaluating the employment gap.
165-166	Evaluation of early childhood education	Students write a paragraph evaluating early childhood education.
167-168	Evaluation of Closing the Gap	Students write the first and final paragraph of the Evaluation.
169	Fact Sheet 1: Cause and effect language in Geography	
170	Fact Sheet 2: Modal language in Geography	
171	Fact Sheet 3: Advanced evaluative language in Geography	
172	Fact Sheet 4: Conjunctions and text connectives	

How to use this book

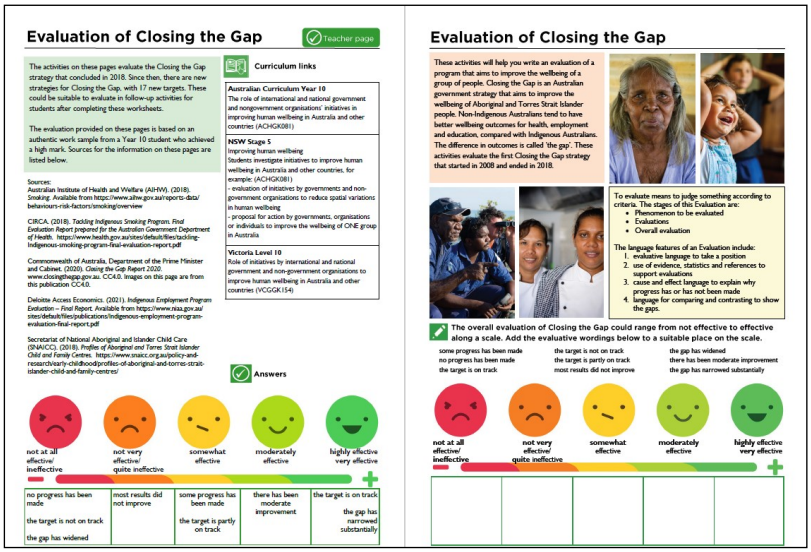
When?	What to do for best results
At the start of the year	Read the introduction to this book so you know the best practice principles for Literacy in Geography.
At the start of the unit of work or the start of term	Look through each unit and plan where and when you can use the worksheets with your teaching. There is usually at least one page for each content indicator. Look at the timing suggestions at the start of the unit. Most activities last 10 minutes but others can be combined for longer teaching sequences.
At the start of the week	Teach the content related to the page first. This is not a text book and we assume that you will teach the content before each literacy activity. These books provide definitions, data and other information that students need for each worksheet page or activity.
Before the lesson	Read the teaching suggestions and choose what might work with your students. Print or copy or download the pages you need.
During the lesson	Implement - just copy/print and teach.
After the lesson	Reflect on what worked and what didn't work with your students. Work out the level of scaffolding required for your class and how to differentiate tasks to suit your students' needs.

Book layout

Teacher pages contain answers, plus teaching suggestions and curriculum links.
For the ebook, view the PDF in two-page view.

Teacher page

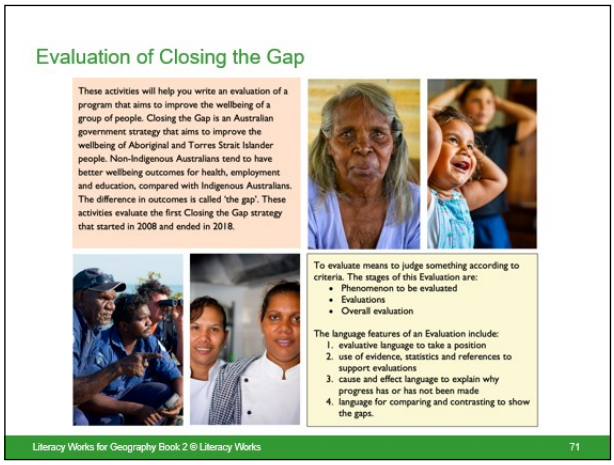
Student page



Student pages are blackline master worksheets - copy or print as much as you like. Most activities work best with paper printouts so that students can annotate, highlight and fill in gaps.

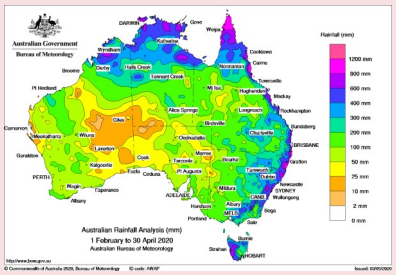
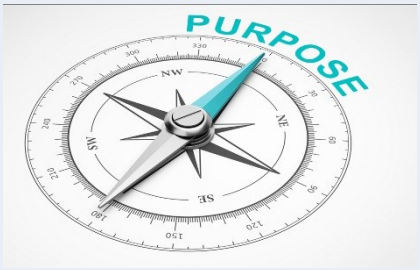
PowerPoints

Optional teacher PowerPoints organise the teaching suggestions, student activities and answers in sequence to save time.



Principles of literacy in Geography

Literacy Works resources follow evidence-based principles for teaching literacy. They are based on a rigorous model of language called Systemic Functional Linguistics and a pedagogy called Sydney School Genre Pedagogy. A reference list at the end of this book offers more reading on these topics. This page outlines the key principles for literacy in Geography, as developed in these Literacy Works resources.

Principle	What it means	How we do it
1 Disciplinary literacy 	Literacy Works teaches the subject and literacy together. Each subject has its own distinctive ways of communicating and unique literacy demands. Literacy Works knows about the literacy demands of Geography and how to write like a Geographer. These resources teach literacy in the context of the subject, Geography, and the different units and topics within it.	Every activity relates to a content indicator in the syllabus. We will never give you a random, decontextualised literacy activity. For example, we will not do a general worksheet on verbs. Instead, we will do an activity on a specific Geography topic and how to use verbs to interpret geographical data.
2 Scaffolding pedagogy 	Scaffolding is widely recognised as the best way to teach. Most teachers know about the 'I do, we do, you do' approach, but it can be hard to implement effectively. Literacy research shows that the most effective scaffolding pedagogy goes beyond 'talking about how to write'. Students benefit from seeing and understand a model of exactly what they have to write and they need to practise writing with the teacher before they attempt to write independently.	Literacy Works resources support scaffolding pedagogy. These books save time for busy teachers with dozens of models of texts and paragraphs that are relevant to Geography. There are also follow-up activities for students to practise writing with support and then independently. Most activities can be differentiated for a variety of student needs in the classroom.
3 Literacy is multimodal 	Literacy in Geography uses many modes: writing, reading, listening, speaking, interpreting visuals and data (photos, graphs, tables, maps, infographics etc).	In each unit, you can find activities related to writing, reading, speaking and interpreting visuals and data.
4 Genre-based literacy 	The genre is the purpose for communicating, sometimes known as the text type. In Geography, the main genres are describing, explaining, evaluating and arguing. Knowing the genre can help students understand the structure of the text and the typical language features. These can help students to read with comprehension, answer the question and write like an expert Geographer.	Literacy Works for Geography teaches the main genres of Geography related to syllabus content and typical assignments for students in Years 7-10. For each genre, we teach the structure and a few key language features. See the genre map on the next page for an overview of the genres in each unit of this book.

Literacy Works for Geography genre map

The table below shows the genres or text types that relate to Geography Years 7-10 and where they can be found in Literacy Works for Geography Books 1 and 2.

Genre family	Genre	Purpose	Unit	Task
Reporting	**Particular Description**	To describe the features of a particular thing	Landscapes and Landforms	Describe a landform
			Sustainable Biomes	Describe layers of the rainforest
			Environmental Change and Management	Describe environmental management of Lake Victoria
			Human Wellbeing	Describe indicators of human wellbeing
	Descriptive Report	To describe general features and characteristics	Place and Liveability	Describe perceptions of place and liveability
			Water in the World	Describe strategies to overcome water scarcity
			Sustainable Biomes	Coniferous forest biomes Terrace farming Strategies for sustainable food supply chains
			Changing places	Describing push and pull factors for migration
	Classifying Report	To describe a class or group of things	Landscapes and Landforms	Types of landscapes
			Water in the World	Types of water resources
			Interconnections	Types of connections
	Compare and Contrast Report	To compare and contrast features of two or more things	Place and Liveability	Compare and contrast liveability ratings for three cities
			Water in the World	Compare and contrast water resources
	Multimodal: describing and analysing data displays (tables, graphs, charts, infographics)		Place and Liveability	Interpret liveability ratings and rankings
			Water in the World	Interpreting infographics about the water footprint
			Interconnections	Interpret a trade map between China and Australia
			Changing places	Interpret internal migration data
			Environmental Change and Management	Analyse data about the Great Barrier Reef and climate change
			Human Wellbeing	Interpret HDI data about gender and education Interpret health data about malnutrition in India Interpret a heat map of relative poverty in Australia
Explaining	**Sequential explanation**	To explain in a sequence the phases of a process to show how a process occurs	Landscapes and Landforms	Explain geomorphic and geomorphological processes Explain volcanic hazards
			Interconnections	Explain a supply chain
			Environmental Change and Management	Explain biophysical processes Explain processes involved in rising salinity
	System Explanation	To explain how a system works	Sustainable Biomes	Explain energy flows in a food web

Genre family	Genre	Purpose	Unit	Task
Explaining (continued)	**Factorial Explanation**	To explain the multiple causes of one outcome	Landscapes and Landforms	Causes of land degradation
			Water in the World	Causes of water scarcity
			Sustainable Biomes	Explain factors that impact crop yields
			Changing Places	Causes of flooding in Jakarta
			Environmental Change and Management	Factors that impact on coral reefs
			Human Wellbeing	Explain causes of spatial inequality Explain causes of spatial variation in human wellbeing in Africa Causes of malnutrition Explain spatial inequality of health outcomes in India Causes of poverty in Australia
	Consequential Explanation	To explain the multiple outcomes or effects of one phenomenon	Landscapes and Landforms	Effects of land degradation Impacts of volcanic hazards
			Place and Liveability	Impacts of environmental quality
			Water in the World	Impacts of drought
			Interconnections	Impacts of call centres Environmental impacts of coffee production Environmental impacts of palm oil Effects of tourism
			Sustainable Biomes	Impacts of climate change on biome productivity Human effects on biomes
			Changing places	Effects of flooding in Jakarta Consequences of internal migration in China
			Environmental Change and Management	Explain the impact of human induced environmental change on the sustainability of functions of the environment Explain impacts of environmental change on the Murray-Darling Basin
			Human Wellbeing	Effects of malnutrition
	Cyclical Explanation	To explain a cycle	Water in the World	Explain the water cycle
Persuading	**Exposition**	To argue for a particular point of view	Landscapes and Landforms	The value of landscapes and landforms The contribution of Indigenous rangers to protect landscapes and landforms Volcanic hazard mitigation
			Place and Liveability	Recommending Neighbour Day Recommending strategies for youthful cities
			Water in the World	The value of water for Indigenous peoples
			Interconnections	Recommending solutions
			Changing places	Benefits of international migration to Australia Recommendations for Australia's urban future
			Environmental Change and Management	The remarkable Great Barrier Reef
	Evaluation	To make an evaluation based on criteria	Place and Liveability	Evaluate liveability in a place
			Interconnections	Evaluate modes of transport
			Environmental Change and Management	Evaluate carp management strategies
			Human Wellbeing	Evaluate Closing the Gap

Geographical Inquiry Skills

The units in this book relate to the following Geographical Inquiry Skills for Stage 5.

Geographical Inquiry Skills Stage 5	
Processing geographical information	Evaluate information sources for their reliability, bias and usefulness (ACHGS065, ACHGS073) Evaluate multi-variable data and other geographical information using qualitative and quantitative methods and digital and spatial technologies as appropriate to make generalisations and inferences, propose explanations for patterns, trends, relationships and anomalies, and predict outcomes (ACHGS067, ACHGS076) Apply geographical concepts to synthesise information from various sources and draw conclusions based on the analysis of data and information, taking into account alternative perspectives (ACHGS068, ACHGS077)
Communicating geographical information	Present findings, arguments and explanations in a range of appropriate communication forms selected for their effectiveness and to suit audience and purpose, using relevant geographical terminology and digital technologies as appropriate (ACHGS070, ACHGS079) Reflect on and evaluate the findings of an inquiry to propose individual and collective action in response to a contemporary geographical challenge, taking account of environmental, economic and social considerations; and explain the predicted outcomes and consequences of their proposal (ACHGS071, ACHGS080)

NESA key words and links to genres

NESA provides a glossary of key words that appear frequently in NSW Education Standards Authority syllabuses, performance descriptions and examinations.

The table below shows how the key words may relate to a genre.

As a general rule, it is important to consider the entire instruction, not just the verb on its own. For example, the word 'analyse' on its own does not tell us about the genre:

- 'analyse reasons' could be a Factorial Explanation
- 'analyse spatial distribution' could be a Descriptive Report
- 'analyse liveability' could be an Evaluation.

Genre family

Reporting	Explaining	Persuading
Account for (e.g. spatial distribution)	Account for (e.g. rising salinity)	Analyse (e.g. liveability)
Analyse (e.g. spatial distribution)	State reasons for	Appreciate
Clarify	Analyse (reasons or consequences etc.)	Assess
Compare	Deduce (reasons or impacts etc.)	Critically evaluate
Contrast	Examine (reasons or consequences etc.)	Discuss
Critically analyse	Explain	Examine (arguments)
Define	Outline (reasons or impacts etc.)	Justify
Distinguish	Recall (reasons or causes etc.)	Predict
Examine (e.g. spatial distribution)	Summarise (reasons or causes etc.)	Propose
Extract		Recommend
Extrapolate		Summarise (an argument)
identify		Synthesise (an evaluation)
Outline (a phenomenon)		
Recall (facts)		
Summarise (facts)		
Synthesise		

Cognitive verbs and links to genres

Many schools refer to cognitive verbs. While Literacy Works does not use this approach, the verbs are highly relevant to the genre or text type for each task or instruction. Here is a list of the common cognitive verbs for Geography and how they relate to genres.

Kendall, J & Marzano, R. (2007). *The New Taxonomy Of Educational Objectives,* Corwin Press, Thousand Oaks, CA.

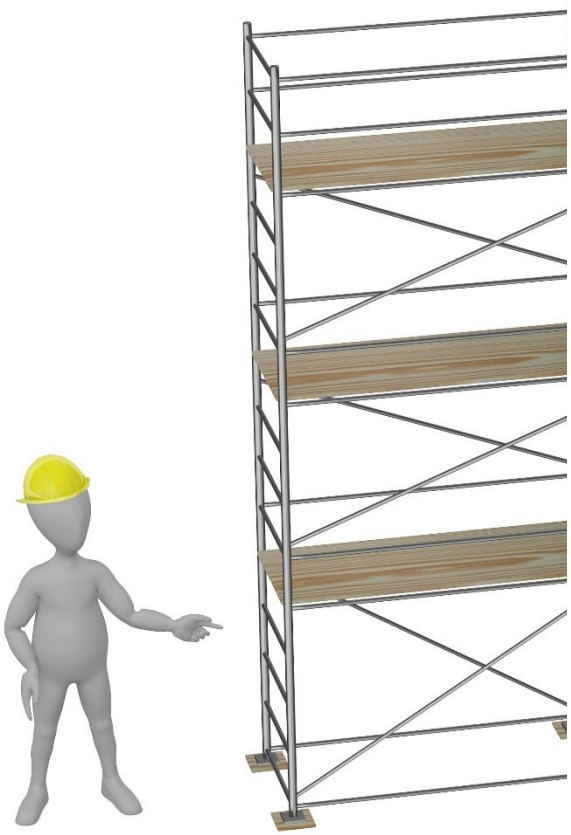
As a general rule, it is important to consider the entire instruction, not just the verb on its own. For example, the word 'analyse' on its own does not tell us about the genre:

- 'analyse reasons' is an Factorial Explanation
- 'analyse spatial distribution' is a Descriptive Report
- 'analyse liveability in a place' is an Evaluation.

Cognitive process	Cognitive verbs	Genre family		
		Reporting	**Explaining**	**Persuading**
Knowledge utilisation	Develop			develop strategies, develop an argument or point of view based on evidence
	Evaluate			evaluate according to criteria
	Predict		explain what might happen and why	
	Propose		propose reasons	propose or recommend strategies
	Synthesise	synthesise descriptions, classify information	synthesise reasons	synthesise information according to support a particular viewpoint or recommendation
Analysis	Analyse	analyse data or facts or descriptions	analyse reasons, causes or effects	
	Compare	compare data or facts or descriptions; compare and contrast report		
	Generalise	generalise about data and facts; sort information into categories or types	generalise about reasons, causes or effects	generalise about evaluations or arguments in support of a position
	Infer		work out the reasons, causes or effects	
	Interpret	interpret data and facts	interpret reasons, causes or effects	interpret evaluations or arguments in support of a position
	Reflect on	reflect on data and facts	reflect on reasons, causes and effects	reflect on evaluations or arguments
Comprehension	Explain		explain causes or effects or how things happen	
	Organise	organise data and facts; sort information into categories or types	organise reasons, causes and effects	organise arguments in support of an evaluation or position or point of view
Retrieval	Identify	identify data or information	identify reasons, causes or effects	identify arguments or evaluations
	Select	select examples or case studies; select the most important or relevant data to use	select reasons, causes or effects	select arguments or criteria for evaluation

The most effective way of teaching literacy involves scaffolding

Scaffolding means supporting students to read and understand texts, then to work with the teacher to write texts, then gradually withdrawing this support so students can write independently. Research shows that teachers need to do more than just talking to students about how to write. Instead, teachers can follow the **Teaching and Learning Cycle**. Students are given a model text showing what they need to write, then they practise writing with the teacher before writing on their own. The pedagogy starts with 'I do' (the teacher shows), then moves to 'We do' (teachers and students working together), then to 'You do' (the student does the work independently) as shown in the table below. This pedagogy is based on a body of research into effective literacy teaching (e.g. Rothery 1994; Gibbons 2009; more in reference list on the last page). Literacy Works for Geography provides support for teachers in designing and teaching effective scaffolded literacy lessons for Geography.



I do (teacher)	We do (I lead)	You do together	You do
Modelling and deconstruction	**Joint construction**	**Joint construction**	**Independent construction**
The teacher shows students a model text (an example of what students have to write) and the teacher shows students the features of the text. This can include activities – highlighting, sorting, annotating, grammar activities etc.	The teacher leads the class in collaborative writing of a text that is similar to the model text but on a different topic.	Students collaborate to write part of the text together (in pairs or small groups).	Students write a new text on their own. This stage can involve planning, drafting, feedback and editing of their final text.

What's in this introduction?

Pages	Literacy focus	Estimated teaching time
3-4	Common genres in Geography	5 minutes
5-6	How to interpret an assignment question or instruction	10 minutes
7-8	Matching an assignment with a genre	10 minutes

Genres in Geography

Genres in Geography

Teacher page

Genres are purposes for communicating. A purpose means the intention or aim of a text such as an essay, a letter or a presentation. The most common genres in Geography are covered in this book:

- Reporting - describing things, comparing and contrasting
- Explaining - explaining steps in a process, causes and effects
- Persuading - arguing for a particular point of view and evaluating phenomena … and more.

See the contents section for a Genre Map for this book.

Each genre has similar language patterns, and these are also covered in Literacy Works for Geography. The language patterns help us answer these questions about each text:

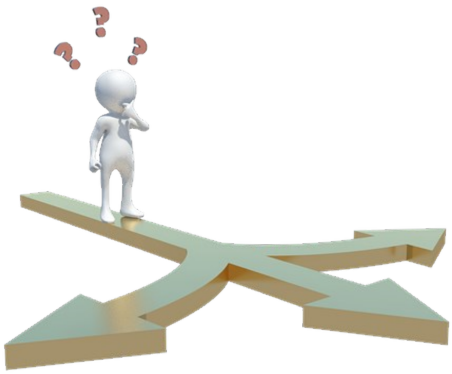
- What is it trying to achieve?
- What is the exact content that needs to be covered (the people, things, happenings and context)?
- Who is the author? Who is the audience? What is their relationship and how are they interacting?
- How is the text organised to achieve its goals?

Formats

An assignment or task in Geography can have varying formats. For example, students could be asked to use the **format** of:

- a speech
- a PowerPoint presentation
- a report
- a brochure
- an essay … and more.

These kinds of formats do not necessarily relate to the genre or purpose. Any of the genres can have these formats.



Empty words

The following words tell students about the format for their work but they do NOT help them understand the purpose.

report	letter	PowerPoint presentation	response
essay	worksheet	speech	extended response

This book helps students understand the genres of Geography so that they can apply them using any of these formats.

Genres in Geography

Genres are purposes for writing, such as to report, explain or persuade. This table shows some of the main genres in Geography that are covered in this book. On the next page, you will practise matching questions and instructions with purposes.

Genre family	Genre	Purpose and example	
Reporting	Particular description	To describe the features of one particular thing e.g. Describe a desert biome	
	Descriptive Report	To describe and provide general features and characteristics e.g. Describe terrace farming	
	Classifying report	To describe a class or group of things e.g. Describe types of biomes	
	Compare and contrast report	To compare and contrast features of two or more things e.g. Compare and contrast spatial variation in wellbeing in two places	
Explaining	Sequential explanation	To explain in a sequence the phases of a process and show how the process occurs e.g. Explain how salinity increases	
	Factorial Explanation	To explain the multiple causes of a phenomenon e.g. Explain the causes of poverty	
	Consequential Explanation	To explain the multiple outcomes or effects of a phenomenon e.g. Explain the impacts of technology on crop yields	
Persuading	Exposition	To argue for a particular point of view substantiated with evidence e.g. Recommend a solution to an environmental problem	
	Evaluation	To make an evaluation based on criteria e.g. Evaluate a government program to reduce poverty	

Identifying genres

Teacher page

Teaching suggestions

This page helps students match an assignment question with the genre. Knowing the genre will help students understand how to answer the question, what stages to use (sections and paragraphs) and what language features to use. When giving students assignments, teachers should analyse the parts of the question first and then identify the genre of each task, so students know exactly what they are required to do.

Answers

answers are colour coded for clarity

Assignment question or instruction	genre and purpose
Recommend solutions to an environmental problem	describing features or characteristics (Descriptive Report)
What are the effects of land degradation?	
Evaluate environmental management strategies	explaining the phases of a process in a sequence (Sequential Explanation)
Describe push and pull factors for migration	
Explain a supply chain	
Explain factors that impact crop yields	explaining causes or factors (Factorial Explanation)
What are the benefits of international migration?	
What are the impacts of spatial inequality of health outcomes?	explaining effects or impacts (Consequential Explanation)
Describe the coniferous forest biome	
What are the causes of malnutrition?	
Explain how salinity increases	argue for a point of view (Persuading - Exposition)
What are the most suitable modes of freight transport for different products?	
What are the effects of human-induced environmental change?	make an evaluation based on criteria (Persuading - Evaluation)

Identifying genres

When you know the genre that is required by an assignment question or instruction, you will find it easier to complete the task and achieve success in your written assignments.

Draw a line to match the assignment question or instruction with the genre.

Assignment question or instruction	Genre
Recommend solutions to an environmental problem	describing features or characteristics (Descriptive Report)
What are the effects of land degradation?	
Evaluate environmental management strategies	explaining the phases of a process in a sequence (Sequential Explanation)
Describe push and pull factors for migration	
Explain a supply chain	
Explain factors that impact crop yields	explaining causes or factors (Factorial Explanation)
What are the benefits of international migration?	
What are the impacts of spatial inequality of health outcomes?	explaining effects or impacts (Consequential Explanation)
Describe the coniferous forest biome	
What are the causes of malnutrition?	
Explain how salinity increases	arguing for a point of view (Persuading - Exposition)
What are the most suitable modes of freight transport for different products?	
What are the effects of human-induced environmental change?	evaluating based on criteria (Persuading - Evaluation)

Analyse the question or instruction

Teacher page

When you give students an assignment, the first step should be to analyse the assignment question, its parts and to relate it to the genre that is required. See the next page for more assignment analysis activities.

Answers

1. Describe environmental management of a chosen environment. Genre: Descriptive Report

task word: describe

scope: what? environmental management
where? a chosen environment

2. Compare and contrast human development in two regions. Genre: Compare and Contrast Report

task words: compare, contrast

scope: what? human development
where? in two regions

3. Analyse the human impacts of environmental change in a place and recommend strategies that address

task word analyse - does not indicate the genre
other word impacts
scope: what? human impacts of environmental change
where? in a place

task word: recommend
scope: what? strategies to address the problem

Two genres: Consequential Explanation and Exposition (recommendation)

4. Explain the causes of spatial variation in wellbeing. Genre: Factorial Explanation

task word explain
other word causes

scope: what? environmental management
where? a chosen environment

5. Evaluate a government program to improve wellbeing in rural communities.
Genre: Evaluation

task word: evaluate

scope: what? government program to improve wellbeing
where? in rural communities

6. Recommend strategies to improve environmental management.
Genre: Exposition

task word: recommend

scope: what? strategies to improve environmental management

Teaching suggestions

When you give students an assignment, the first step should be to analyse the assignment question and to relate it to the genre that is required. Teachers can also make sure that the task word and question have been designed to have an obvious link to the genre so that students are not confused.

Analyse the question or instruction

Assignment and examination questions in Geography can have many parts. They also might relate to two or more different genres in the same assignment.

If you practise identifying the parts of the question or instruction, you will be able to know what to do and to plan your response more quickly and easily.

task word

A task word is a **verb** or **question** that tells you what to do

e.g. analyse, explain, why …?

There may be more than one word that tells you the genre.

scope

The scope is the specific **list of content** to cover and any examples

e.g. one biome, three countries, one environmental problem

Here is an example of an analysis of parts of the instruction.

Explain the impacts of *climate change*. Give examples from *two environments in Australia*.

task word: explain
other words that relate to the genre: impacts

scope: what: climate change
where? two environments in Australia

Look at all the parts of the question to work out the genre.

Explain and **impacts** mean that the genre is a **Consequential Explanation**

Analyse the parts of these questions or instructions. Identify the task word and scope. Then identify the genre for each.

1. Describe environmental management of a chosen environment. Genre _____

2. Compare and contrast human development in two regions. Genre: _____

3. Analyse the human impacts of environmental change in a place and recommend strategies that address the problem.
   Two genres: _____ and _____

4. Explain the causes of spatial variation in wellbeing. Genre _____

5. Evaluate a government program to improve wellbeing in rural communities.
   Genre _____

6. Recommend strategies to improve environmental management. Genre _____

How to use these resources

Each teacher page has teaching suggestions as well as answers. There are also some suggestions for extra follow-up activities.

Most worksheets take around 10 minutes, depending on the students. Some worksheets are stand-alone, but others are linked, as indicated on the teacher pages. The table below shows possible timing for each set of activities.

Teachers can refer to the introduction section for more information on literacy pedagogy, genres of writing and literacy in Geography.

Curriculum links

Curriculum links for student activities are shown on the teacher pages.

The table below is different from the contents list at the front of the book. This page provides an overview of worksheets that are grouped together on similar topics, as well as estimated teaching time. Some worksheets continue over several pages, as you can see at a glance below. This table may help teachers to plan and sequence the activities in this unit.

Pages	Content focus	Literacy skills	Estimated teaching time
11-12	Rainforests	Reading comprehension and interpreting visuals	10 minutes
13-14	Coniferous forest biomes	Describe this biome	10 minutes
15-16	Features of two biomes	Write Descriptive Report paragraphs about features	10 minutes
17-20	Energy flows in biomes and food webs	Interpret an infographic and learn vocabulary for explaining energy flows	20 minutes
21-26	Biome productivity	Learn vocabulary; explain impact chains of factors that impact biome productivity; explain the impact of climate change on biome productivity	3 x 10 minutes
27-32	Human effects on biomes	Arrange a descriptive report in order; explain and evaluate human impacts on biomes; write passive voice sentences	3 x 10 minutes
33-34	Terrace farming	Correctly use there, their and they're	10 minutes
35-40	Factors that impact crop yields	Classify factors as economic, environmental and technological; complete a graphic organiser; write a Factorial Explanation	30 minutes
41-42	Land use discussion	Class discussion in groups about competing land uses	15 minutes
43-46	Sustainable food supply chains	Scaffolded paragraph writing to identify strategies to minimise food waste and create more sustainable food supply chains.	2 x 10 minutes

Sustainable biomes

Rainforests

Teacher page

This page is an introductory activity that builds student reading and comprehension skills. While this is a simple activity, it is worthwhile to ask students to pay attention to information shown in visuals as well as the specific information that is shared in a written text.

This activity requires students to compare and contrast the meanings in an image and a text, and to work out what is common to both, thus building students' critical thinking skills and promoting visual literacy.

Curriculum links

NSW Stage 5

Biomes

Students investigate the distribution and physical characteristics of biomes, for example: (ACHGK060)

- examination of the spatial distribution of biomes
- identification of biomes used to produce food, industrial materials and fibres
- explanation of the impact of the climate, soils and vegetation of a biome on its productivity

Answers

emergent

canopy

understory

forest floor

Image only	Both text and image	Text only
What meanings are shown in the image?	*What meanings are common or similar in both the text and image?*	*What meanings are in the text only?*
e.g. shows the green colour	e.g. about rainforests	e.g. names the layers of the rainforest
dense foliage different kinds of plants, different shapes of leaves light and shadow are shown the overcrowded feeling of a rainforest	relate to the canopy and understory of a rainforest tall trees foliage sunlight dark areas	high rainfall warm temperatures four layers are defined and named (emergent, canopy, understory, forest floor) moist

Rainforests

This page will focus your attention on exactly what information is shown in an image and in a written text. Analysing and comparing information presented in an image and in written language will help you to be a more critical reader.

Right: Tarsier monkey (Tarsius Syrichta) from a rainforest in the Philippines

Look at the image below. How would you describe it? Read the text in the box below right. Notice what information is shown in the text compared with the information in the image.

Rainforests are forests that experience high rainfall and warm temperatures all year round. The top layer of a rainforest is the emergent layer, with very tall trees. Next, the canopy layer contains the majority of large trees, branches and foliage (leaves). The understory layer lies between the canopy and the forest floor. It is a dark and moist layer. The forest floor is the bottom layer of the rainforest. It receives little sunlight so it is usually clear of vegetation.

Based on the text, draw a diagram of the four layers of the rainforest. Label the layers.

Fill in the table below to describe exactly what information can be found in the image only, the text only, and in both the text and image.

Image only	Both text and image	Text only
What meanings are shown in the image? e.g. shows the green colour	*What meanings are common or similar in both the text and image?* e.g. about rainforests	*What meanings are in the text only?* e.g. names the layers of the rainforest

Coniferous forest biomes

Teacher page

The next three pages are related. They describe types of forest biomes. A Descriptive Report provides features or characteristics of something. The stages of the Descriptive Report on coniferous forest biomes are:

- General statement (identify the thing being described, definition)
- Description (features: spatial distribution, climate, soil, vegetation, productivity)

Curriculum links

NSW Stage 5

Biomes

Students investigate the distribution and physical characteristics of biomes, for example: (ACHGK060)

- examination of the spatial distribution of biomes
- identification of biomes used to produce food, industrial materials and fibres
- explanation of the impact of the climate, soils and vegetation of a biome on its productivity

Answers

soil

definition (cone)

vegetation (lichen)

vegetation (layers, humus, ground layer)

climate (snowy winters)

Identify the thing being described	The coniferous forest biome is one of the Earth's major biomes. It covers 14% of the Earth's total land area.
Definition	Coniferous means that it grows cones such as pine cones. Coniferous forests are also known as taiga or boreal forests.
Spatial distribution	Coniferous forests are found in cold and temperate regions of the northern hemisphere, in northern regions of Asia and Europe and in the northern United States, Canada and Alaska.
Climate	These areas are characterised by long, snowy winters and short, cool summers with moderate to high rainfall.
Soil	Soils in coniferous forests are called podzols. They are light-coloured, acidic soils, covered by a layer of humus (fallen and decomposing leaves).
Vegetation	This type of forest has two layers. There is an overstory of tall trees such as cedar, spruce, fir or pine, and a ground layer of herbs, mosses, fungi and lichens.
Productivity	Productivity of coniferous forests is low due to the cold temperature of the soil, as organic material takes a long time to break down and share nutrients. Coniferous forests contain about 18% of the Earth's total biomass (the dry weight of organic matter). These forests are carbon sinks, which means that they store carbon in the form of dead trees.

Coniferous forest biomes

A Descriptive Report provides information about features or characteristics of something. This Descriptive Report is about coniferous forest biomes. The names of features are shown below left. The content of the report is jumbled on the right.

Draw lines to link features on the left with images and content it relates to.

Identify the thing being described

Definition

Spatial distribution

Climate

Soil

Vegetation

Productivity

This type of forest has two layers. There is an overstory of tall trees such as cedar, spruce, fir or pine, and a ground layer of herbs, mosses, fungi and

These areas are characterised by long, snowy winters and short, cool summers with moderate to high rainfall.

Coniferous forests are found in cold and temperate regions of the northern hemisphere, in northern regions of Asia and Europe and in the northern United States, Canada and Alaska.

Productivity of coniferous forests is low due to the cold temperature of the soil, as organic material takes a long time to break down and share nutrients. Coniferous forests contain about 18% of the Earth's total biomass (the dry weight of organic matter). These forests are carbon sinks, which means that they store carbon in the form of dead trees.

The coniferous forest biome is one of the Earth's major biomes. It covers 14% of the Earth's total land area.

Soils in coniferous forests are called podzols. They are light-coloured, acidic soils, covered by a layer of humus (fallen and decomposing leaves).

Coniferous means that it grows cones such as pine cones. Coniferous forests are also known as taiga or boreal forests.

Features of the tropical rainforest biome

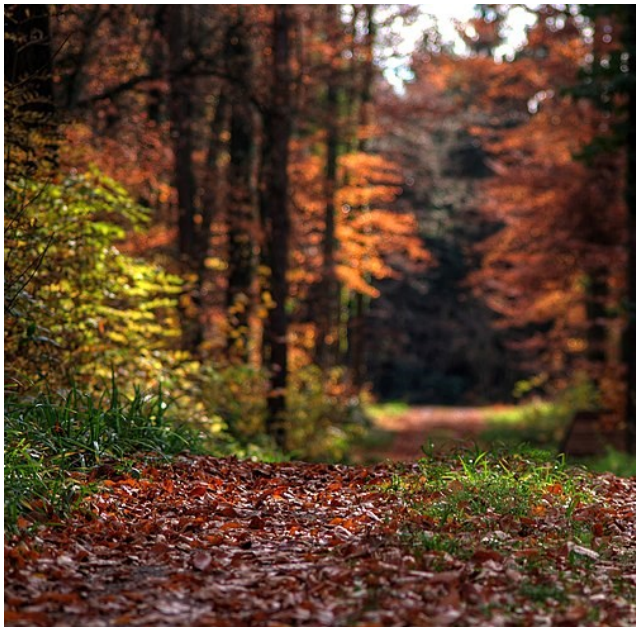
Teacher page

Answers

	Describe the tropical rainforest biome
General statement Identify the thing being described Definition	A tropical rainforest is a forest in a hot, moist area in the tropics. Tropical rainforests are located near the Equator and they cover 2% of the Earth's land area.
Description Spatial distribution	Tropical rainforests are located on the Equator, in Central and South America, Africa, Southeast Asia, India, New Guinea and Australia.
Climate	The climate in a tropical rainforest is warm to hot all year round. There is high rainfall and no dry season.
Soil	Soils in tropical rainforests are oxisols and ultisols. These are poor in nutrients because rain washes nutrients away or nutrients are absorbed by plants not the soil.
Vegetation	There are four layers of a rainforest. The top layer of a rainforest is the emergent layer, with very tall trees. Next, the canopy layer contains the majority of large trees, branches and foliage. The understory layer lies between the canopy and the forest floor. It is a dark and moist layer. The forest floor is the bottom layer of the rainforest. It receives little sunlight so it is usually clear of vegetation.
Productivity	Rainforests have very high productivity. There is a high rate of photosynthesis because of the sunshine all year round and the plants and trees with broad leaves.

Teaching suggestions

The second writing task can be differentiated. More experienced students can research a biome or use their knowledge learned in class to write a description. Students who need more support and use the table below for their description. Teachers could plan and write the paragraph with students. Students can make suggestions about features to write about and link facts to particular features.



Type	Temperate deciduous forest
Define	Forest of deciduous trees that lose their leaves in the dry season or winter; broad leaves. Cover around 1.5% of the Earth's land mass.
Spatial distribution	Located in North America, Europe and Asia and the east coast of Australia
Climate	Four seasons including cold winters and hot dry summers; high annual rainfall
Soils	Spodosols - acidic due to leaf litter; poor in mineral nutrients; must be fertilised if used for crops
Vegetation	Forests have 4 layers: overstory of high trees, understory trees; shrub layer; ground layer of small plants
Productivity	Moderate productivity; high rate of photosynthesis during summer

Features of the tropical rainforest biome

Read the information below about the tropical rainforest biome. Write a short Descriptive Report about it below. Some features may only have one sentence.

a forest in a hot, moist area	tropics means near the Equator; 2% of the Earth's land area	oxisols and ultisols, nutrient poor soils, rain washes nutrients away, nutrients are absorbed by plants not the soil	4 layers: emergent, canopy, understory, forest floor	located on or near the Equator, in Central and South America, Africa, Southeast Asia, India, New Guinea and Australia	very high productivity, high rate of photosynthesis due to light on broad leaves	climate is warm to hot with high rainfall, constant warm temperatures all year round, no dry season

Describe the tropical rainforest biome

General statement
Identify the thing being described
Definition

Description
Spatial distribution

Climate

Soil

Vegetation

Productivity

Use your knowledge of other biomes to write a description paragraph about a biome. Follow the structure above.

Energy flows through biomes

Teacher page

Understanding of energy flows in biomes is foundational for knowledge about biomass and productivity. Writing about energy flows can be quite abstract so many students find it challenging to write in a sophisticated way. This page provides simple sentence structures and useful verbs for writing about the transfer of energy. Verbs are processes or happenings.

The activity continues on the next page, when students will practise writing about food webs.

Teaching suggestions

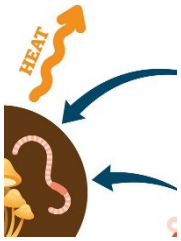
Before starting this activity, teachers could show students the diagram of the Energy Pyramid. Ask students, in pairs, to explain what is happening in different parts of the diagram (e.g. the first level, second level etc). Then each group explains their section to the class.

There are four kinds of arrows used in the infographic, each with a different meaning. Ask students to explain the meaning of each (below).

Meanings of four different arrows in the infographic

Large yellow arrows represent sunlight, the source of energy in a food chain.

Wavy orange arrows indicate that energy is lost as heat



Blue arrows show that energy from all trophic levels is consumed by decomposers. (Note: The diagram does not show how the energy from decomposers adds nutrients to the soil.)

Arrows between levels show that energy is transferred from one level to another.

Answers

A **verb group** is a group of words that have the function of a verb (a process or happening) e.g. is shared, will be shared, might be shared, has been shared etc.

	Question	Sentence structure	Verbs that make sense
1	What does energy do?	Energy _____ through a food chain.	e.g. moves, passes, flows
2	What do organisms do to energy?	Organisms _____ energy.	e.g. use, gain, take in, consume, transform, pass on, share, need, transfer
3	What is done to energy by organisms?	Energy _____ by organisms. *(Note: this is a passive voice sentence)*	e.g. is used, is taken in, is consumed, is transformed, is gained, is passed on, is shared, is needed, is transferred, is lost

Possible answers

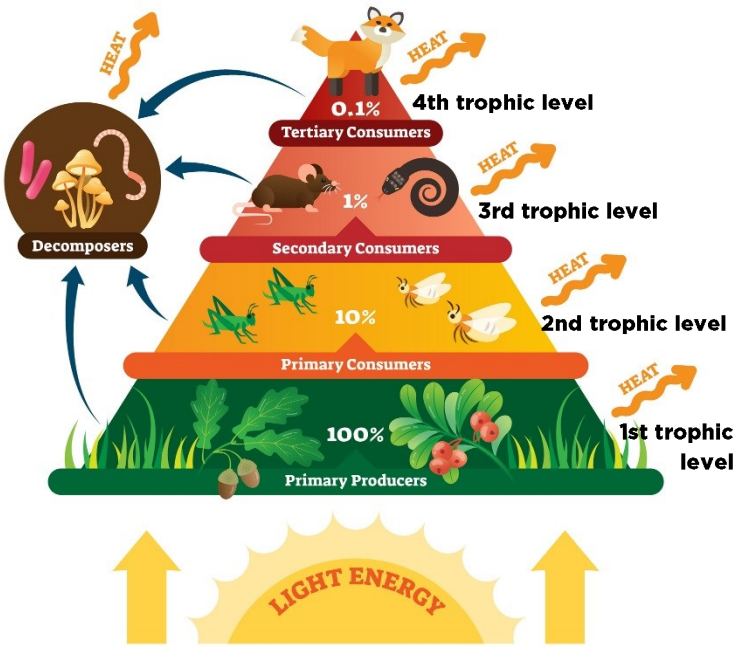
Energy **passes/moves/flows** through biomes in many ways. The energy pyramid shows how energy **moves/passes/flows** from organism to organism while some energy is lost as heat. Plants are primary producers because they **take in** sunlight and **transform** the sunlight into energy. All organisms **need/use** energy to survive. In a food chain, when one organism is eaten by another organism, the energy **moves/passes/is transferred** higher up the food chain. Most energy **is used/is consumed** by an organism to live and survive. When primary consumers like grasshoppers eat plants, only around 10% of the energy **is transferred/moves** to the grasshopper. When secondary consumers like mice eat primary consumers, only 1% of energy **is transferred/is gained/is shared**. When tertiary consumers like foxes eat secondary consumers, only 0.1% of the original plant energy **is transferred/is taken in/is shared**.

Literacy Works for Geography Book 2 © Literacy Works

Energy flows through biomes

Geographers understand the importance of energy in biomes. Energy is an abstract concept. It means the ability to survive, grow and reproduce. It also means the ability to do work and to make some kind of change. All living organisms need energy and use energy in different ways. The energy pyramid on the right shows that the energy in a biome comes from sunlight. Through photosynthesis, plants convert sunlight to energy in the form of glucose and carbohydrates. As other organisms eat the plants, and then eat other organisms, energy moves through the food chain.

The boxes below show three sentence structures for describing energy flows in a food chain.



Here are three different sentence structures that describe energy flows. Useful verbs are found in the box. Choose verb groups that make sense in each sentence and write them on the lines provided. Verb groups can have one or more words.

Verb group box

gain	is gained	take in	is taken in	consume	is consumed
transform	is transformed	gained	is gained	pass on	is passed on
share	is shared	transfer	is transferred	use	is used

	Question	Sentence structure	Verbs that make sense
1	What does energy do?	Energy _____ through a food chain. *e.g. Energy moves through a food chain.*	e.g. moves _____
2	What do organisms do to energy?	Organisms _____ energy. *e.g. Organisms use energy.*	e.g. use _____ _____
3	What is done to energy by organisms?	Energy _____ by organisms. *e.g. Energy is used by organisms.* *(Note: 'this is a passive voice sentence)*	e.g. is used _____ _____

Use verbs from the verb box above to complete this paragraph about energy flows.

Energy _____ through biomes in many ways. The energy pyramid shows how energy _____ from organism to organism while some energy is lost as heat. Plants are primary producers because they _____ sunlight and _____ the sunlight into energy. All organisms _____ energy to survive. In a food chain, when one organism is eaten by another organism, the energy _____ higher up the food chain. Most energy _____ by an organism to live and survive. When primary consumers like grasshoppers eat plants, only around 10% of the energy _____ to the grasshopper. When secondary consumers like mice eat primary consumers, only 1% of energy _____ . When tertiary consumers like foxes eat secondary consumers, only 0.1% of the original plant energy _____.

Energy flows in food webs

Teacher page

Teaching suggestions

The genre of this text is a System Explanation, which has the purpose of explaining the parts of a system and how they work together. The previous page covered verbs for explaining energy flows through a biome. Students can use the examples from the diagram on the previous page, or examples of food webs that they have studied in class.

Answers

Phenomenon to be explained *Definitions* *Preview parts*	A food web shows the complex interactions between food chains. Food chains show the path of energy between organisms, from plants to herbivores to carnivores, as one consumes the other. Organisms in food webs are grouped in trophic levels: from producers to primary, secondary and tertiary consumers, and decomposers.	*Define food chains* *State the trophic levels that will be explained*
Explanation *First trophic level*	The first trophic level consists of producers. Producers, also known as autotrophs, make their own food through photosynthesis. Examples of autotrophs are plants, algae, phytoplankton and some bacteria. In this process, sunlight, carbon dioxide and water are converted into a nutrient called glucose, which is a source of energy for plants. This energy is passed on to other organisms that consume plants.	*Part: define the first trophic level* *Function: What do they do? Give examples* *Interaction: How does transfer of energy happen? (Use verbs from the previous page)*
Second trophic level	The second trophic level is primary consumers. Primary consumers are herbivores which eat the primary producers (plants). For example, in a forest ecosystem, mice, birds and frogs are primary consumers that eat plants. When primary consumers eat a plant, a small amount of energy from the plant is transferred to the consumer. They, in turn, share a small amount of their energy with organisms which consume them.	*Part: define the second trophic level* *Function: What do they do? Give examples* *Interaction: How does transfer of energy happen? (Use verbs from the previous page)*
Third and fourth trophic level	The third and fourth trophic levels involve carnivorous consumers. Secondary consumers are lower-order carnivores which eat the primary consumers. Examples include an eagle which eats frogs. Tertiary consumers are the top, higher level carnivores that are at the top of the food chain. Tertiary consumers eat lower-order consumers, such as a hawk that eats a rabbit. The energy from the sun has worked its way through the producers and lower-order consumers until it reaches the top carnivores.	*Follow the same paragraph structure to write a paragraph about the third and fourth trophic levels*
Decomposers	Decomposers break down energy from all trophic levels. Decomposers eat non-living remains of animals and plants. Examples are bacteria and fungi. They give more energy to the food web by turning organic wastes into inorganic materials, such as nutrient-rich soil. This provides nutrients for the producers to continue to generate energy for the food web.	*Write a paragraph about decomposers*

Energy flows in food webs

A food web is a complex series of food chains that operate within and between biomes. We can explain a food web in a System Explanation (see box on the right).

System Explanation
Purpose: To explain how a system works
Stages: Phenomenon to be explained
Explanation (*parts, function, interaction)*

Write a System Explanation about food webs and the flow of energy within and between biomes. Refer to the diagram on the previous page.

Phenomenon to be explained *Definitions*	A food web shows the complex interactions of energy in multiple food chains. Food chains _____	*Define food chains*
Preview parts of a food web	Organisms in food webs are grouped in trophic levels: _____	*State the trophic levels that will be explained*
Explanation *First trophic level*		*Part: define the first trophic level* *Function: What do they do? Give examples* *Interaction: How does transfer of energy happen? (Use verbs from the previous page)*
Second trophic level		*Part: define the second trophic level* *Function: What do they do? Give examples* *Interaction: How does transfer of energy happen? (Use verbs from the previous page)*
Third and fourth trophic levels		*Follow the same paragraph structure to write a paragraph about the third and fourth trophic levels*
Decomposers		*Write a paragraph about decomposers*

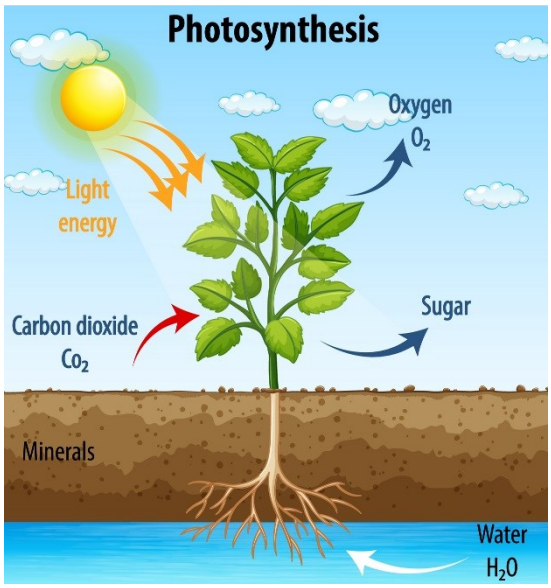
Biome productivity

Teacher page

Teaching suggestions

The first activity on this page is revision of the concept of productivity in biomes. It is expected that students will have learned about it in class before they do this literacy activity.

To start, teachers could revise photosynthesis using the diagram on the right. Photosynthesis, which is integral to understanding of productivity. Students should have encountered photosynthesis many times in Science and Geography, but some students may need reminding.



Answers

Productivity of biomes means the amount of biomass or living plant material that is produced in the biome. The main source of energy in a biome is the sun. The sun's energy has to be converted to chemical energy before it can be used by living organisms. Plants convert the sun's energy into chemical energy through photosynthesis. Plants store light energy in chlorophylls within plant tissues. They use the sun's energy, as well as carbon dioxide, water and nutrients, to produce glucose and oxygen. Plants use some of this chemical energy to survive, grow and reproduce. There is still some chemical energy left over for use by other living organisms in the ecosystem.

Biome	Define biome
Tropical rainforest	biome located near the Equator with high rainfall and warm temperatures
Temperate deciduous forest	forest area where trees lose their leaves in dry or cold weather
Savanna	biome with flat grassland and scattered trees and shrubs
Coniferous forest	biome with evergreen forests and trees with cones
Temperate grassland	biome with grasses
Tundra	biome located in polar regions with few trees or plants
Desert and semidesert	biome with few plants, little rainfall and very hot or very cold weather

Label the pictures of the biomes listed in the table

1. temperate grassland

2. temperate deciduous forest

3. desert and semi-desert

4. coniferous forest

5. tundra

6. tropical rainforest

7. savanna

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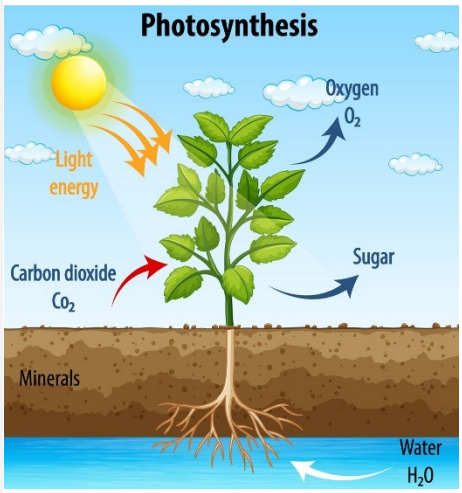
Biome productivity

Choose words from the box to complete this paragraph about productivity of biomes.

plants	photosynthesis	biomass	reproduce	oxygen	the sun	living organisms
carbon dioxide, water	chemical energy	grow	convert	chlorophylls	glucose	

Productivity of biomes means the amount of _____ or living plant material that is produced in the biome. The main source of energy in a biome is _____. The sun's energy has to be converted to chemical energy before it can be used by _____. Plants _____ the sun's energy into chemical energy through _____. _____ store light energy in _____ within plant tissues. They use the sun's energy, as well as _____, _____ and nutrients, to produce _____ and _____. Plants use some of this chemical energy to survive, _____and _____. There is still some _____ left over for use by other living organisms in the ecosystem.



Look at the list of biomes below. The biomes are ranked from highest productivity to lowest productivity. Define each biome using the word origins in the box to help you.

Highest productivity ↕ Lowest productivity

Biome	Define biome
Tropical rainforest	_____
Temperate deciduous forest	_____
Savanna	_____
Coniferous forest	_____
Temperate grassland	_____
Tundra	_____
Desert and semidesert	_____

Word origins

deciduous *decidere* is Latin and means 'to fall down'; it means trees that lose their leaves

savanna is a word from the Arawak culture of South America; *zavana* means flat plain with no trees

temperate from Latin *temperare* meaning moderate or kept in control

tundra is a word from the Sami culture of far-northern Europe (*tundar* means treeless area)

Label the pictures of the biomes listed in the table above.

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

Explain biome productivity

Teacher page

Geography has many topics that involve chains of causes and effects. This page shows impact chains, where one event or condition leads to another one, which, in turn, leads to more events.

Teaching suggestions

Cause and effect loops are a fun and engaging activity to help students understand and practise thinking about impact chains. Teacher preparation is needed, as students need strips of paper and sticky tape or staplers. Students make strips of paper and write the events or conditions on them, and then join them to the word SO, then add another loop with the impact of that event. The activities on this page can be completed using loops instead of writing them on the page.

Answers

Temperature is freezing → SO → plants grow slowly and some die → SO → less biomass is produced → SO → biome has lower productivity

When temperatures are low or freezing, plants grow slowly and some may die. Consequently, less biomass is produced and the biome has lower productivity.

Rainfall is high	SO	plants can access water for growth	SO	more biomass is produced	SO	biome has higher productivity
Rainfall is low	SO	plants may not have enough water for growth	SO	they may become stressed or die	SO	biome has lower productivity
Many hours of daylight	SO	plants have access to more sunlight and light energy	SO	they can grow stronger	SO	biome has higher productivity
High quality soil	SO	plants have more nutrients	SO	plants grow stronger	SO	biome has higher productivity

How does rainfall impact biome productivity?

Plants need water to grow and reproduce so high rainfall gives plants access to more water. As a result, they grow stronger and bigger, and more biomass is produced. Consequently, the biome has higher productivity.

How does soil quality impact biome productivity?

Plants get nutrients and water from soil. If the soil is high quality, they get plenty of nitrogen to help them grow and reproduce. This has a positive impact on biomass growth and biome productivity.

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Explain biome productivity

When plants grow effectively, biomass is produced and biomes are productive. Plants grow if they have sunlight, warmth, water and nutrients (especially nitrogen). Each of these conditions can increase biome productivity. We can draw an impact chain for the effect of warm temperature. An impact chain shows how one thing causes something to happen, which in turn causes something else to happen, and so on.

Temperature is warm	so	diverse plants grow quickly	so	more biomass is produced	so	biome has higher productivity

Complete this impact chain to show how low temperature impacts biome productivity.

Temperature is freezing	so		so		so	

These impact chains repeat the conjunction 'so'. This is too repetitive. Sophisticated written language uses a variety of cause and effect language. The sentences on the right show a range of cause and effect language.

Temperature impacts biome productivity. Plants need warmth for growth so diverse plants grow quickly in warm climates such as in a tropical rainforest. As a result, more biomass is produced and biome productivity is high.

On the lines provided, explain how low temperature impacts the productivity of a biome. Use a range of cause and effect language.

Fill in this impact chain to show how climate and soil impact the productivity of a biome. Then answer the questions using cause and effect language and examples.

Rainfall is high	so		so		so	
Rainfall is low	so		so		so	
Many hours of daylight	so		so		so	
High quality soil	so		so		so	

How does rainfall impact biome productivity?

How does soil quality impact biome productivity?

Biome productivity and climate change

Teacher page

This page continues to explore impacts. Each of the impacts of climate change has further impacts on biomes and biome productivity.

Exploring the impacts of climate change on biomes is an ideal activity for cause and effect loops (see previous page) if you have not already done this in your class.

Curriculum links

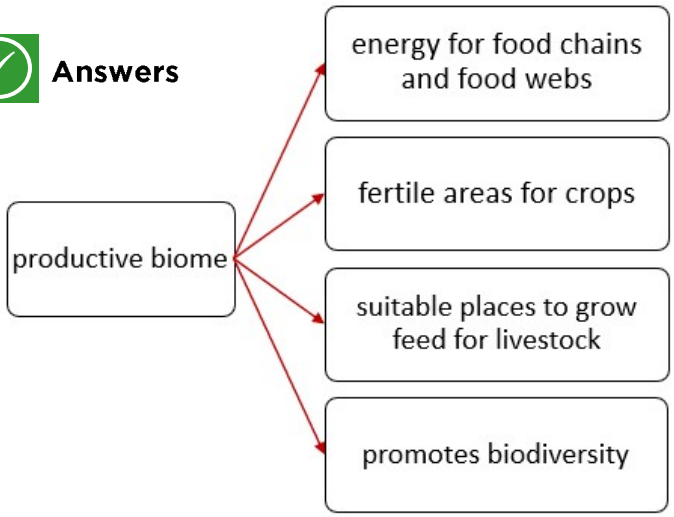
NSW Stage 5

Biomes

Students investigate the distribution and physical characteristics of biomes, for example: (ACHGK060)

- examination of the spatial distribution of biomes
- identification of biomes used to produce food, industrial materials and fibres
- explanation of the impact of the climate, soils and vegetation of a biome on its productivity

Answers



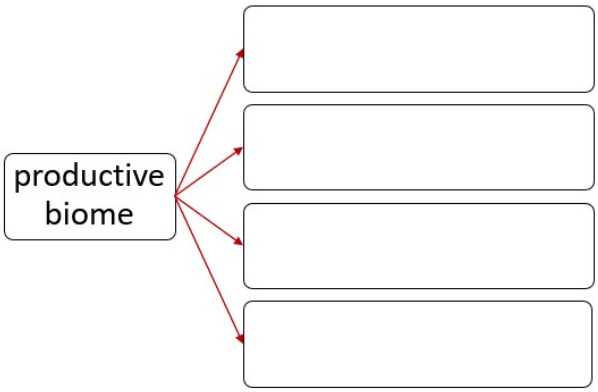
Possible answers

Impact of climate change		Impacts on biome productivity. Cause and effect language in bold.
1	decreased rainfall in some areas	Decreased rainfall may **result in** inadequate water for plants to grow and reproduce. **As a consequence,** crops may die out and topsoil may blow away leading to loss of biome productivity.
2	higher temperatures	Higher temperatures can improve warmth and encourage some plants and crops to grow more quickly. This may **lead to** a longer growing season, **resulting in** higher biome productivity in some areas. In contrast, some crops such as wheat can become stressed by heat **so** they may die. Flowering plants such as fruit trees may bloom earlier and they may not survive a long growing season. **Therefore**, higher temperatures may have an overall negative impact on biome productivity.
3	increasing rainfall in some areas	Increasing rainfall may increase biome productivity **because** there is more water for plants to use for growth and reproduction. For example, plants in temperate ecosystems may flourish with more rain. However, too much rain can **cause** flooding and leaching of nutrients from the soil, with a negative **impact** on biome productivity. For example, fertile grasslands may be flooded and lose their nutrients.
4	more extreme weather events (storms, droughts, floods)	Extreme weather events can negatively **impact** ecosystems and **cause** damage to biomes. **Consequently**, some biomes such as forests may be destroyed and biodiversity can be lost. Floods can cause contamination of waterways, leading to lower biome productivity.
5	rising sea levels	Rising sea levels can submerge coastal areas and **result in** flooding with sea water. The increase in salty sea water **leads to** more salinity which has a negative **impact** on soil quality. **As a result**, biome productivity is low and crop yields may be negatively affected.

Biome productivity and climate change

Read this paragraph and fill in the chart to show the effects of a productive biome.

Productivity describes the amount of energy that is created in a biome and moves through food chains and food webs. Productive biomes are fertile places to plant crops for human consumption and also to produce feed for livestock. In addition, productive biomes promote biodiversity, with a range of living organisms (plants and animals).



Climate change has many impacts on biome productivity, shown in the table below. Use your knowledge of biomes to explain each impact on biome productivity. Use cause and effect language from the box below. Include examples of biomes.

Cause and effect language	
Conjunctions	because, as, since, so
Prepositions	as a result of, due to
Verbs	lead to, result in, cause
Nouns	reason, cause, result, impact
Text connectives	Therefore, As a consequence As a result, Consequently

Impact of climate change	Impacts on biome productivity
1 decreased rainfall in some areas	Decreased rainfall may result in _____ _____ As a consequence, crops may die out and topsoil may blow away leading to _____
2 higher temperatures	(Positive impacts) _____ _____ (Negative impacts) _____ _____
3 increasing rainfall in some areas	(Positive impacts) _____ _____ _____ (Negative impacts) _____ _____
4 extreme weather events (floods, droughts, storms)	(Negative impacts) _____ _____ _____ _____
5 rising sea levels	(Negative impacts) _____ _____ _____ _____

Human effects on biomes

Teacher page

Students need a paper copy of the page opposite so they can cut or tear and rearrange the sections. Students can justify their arrangement of sections. The answers below arrange biomes from most to least impacted.

Answers

Savanna or grassland biomes cover around 24% of the Earth's land mass.

Three main types of human alterations have impacted on savanna biomes. The first involves livestock, as people have altered the biome by herding and ranching horses, cattle and sheep. Overgrazing has caused erosion, loss of native grasses and severe land degradation. The second impact involves agriculture and using grasslands for farming, leading to loss of soil fertility and salinity. The third impact involves clearing of land for industry and housing, which destroys the savanna biome altogether.

The savanna biome is one of the biomes that has been most impacted by humans, as the changes made by humans have left very few areas of savanna in their natural state.

Tropical rainforests cover around 8% of the Earth's landmass, and this percentage is decreasing.

In the past, Indigenous people had minimal impact on the tropical rainforest biome due to their sustainable hunting and gathering. In recent years, rainforests have been cleared for agriculture and construction of towns and cities, leading to deforestation, land degradation, soil erosion and loss of biodiversity.

Recent damage to the rainforest biome has been severe. Around 8 million hectares of rainforest are lost every year due to human activities and the pace is increasing.

The coniferous forest biome covers around 14% of the Earth's landmass.

Land clearing and deforestation has impacted coniferous forests in some areas, such as in the USA, Norway and eastern Russia. Land is then used for livestock grazing and for crop growing. However, some areas of coniferous forest are still unaffected by humans, such as in parts of Canada.

The impact of humans on coniferous forests is severe in some places but minor in other areas.

Hot desert biomes cover around one fifth of the Earth's land area.

Historically, deserts have been used for nomadic herding (moving livestock from place to place). In recent years, some semi-desert areas have been used to graze livestock, which damages the fragile ecosystems in the biome. The grasses in semi-desert areas have become overgrazed leading to soil erosion and decreased productivity.

As hot desert biomes have low productivity, the extent of human impact has been limited.

Human effects on biomes

The text below is jumbled. Group the information on each biome together and sequence the phases in the order shown on the right.

The Descriptive Report on this page is about human alterations of biomes. Each stage of the report has three phases:

1. Identify the biome
2. Explain human effects on the biome
3. Evaluate the impact of human effects on the biome

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Tropical rainforests cover around 8% of the Earth's landmass, and this percentage is decreasing.

The savanna biome is one of the biomes that has been most impacted by humans, as the changes made by humans have left very few areas of savanna in their natural state.

The coniferous forest biome covers around 14% of the Earth's landmass.

Recent damage to the rainforest biome has been severe. Around 8 million hectares of rainforest are lost every year due to human activities and the pace is increasing.

Human alteration of biomes

Teacher page

Teaching suggestions

This activity involves evaluating human effects or impacts on biomes. Following up from the previous page, teachers can ask students to discuss why humans have a major impact on some biomes and less impact on other biomes.

Evaluating impact

There are many evaluation activities in this book where students can identify positive and negative evaluation language for different topics. In this activity, students will evaluate the scale or extent of human impact on biomes.

- Teachers could ask students to find the evaluative language in the evaluation phase of the paragraphs on the previous page.
- Teachers can do the scale activity at the top of the worksheet, then ask students for their choice of evaluation word for human impacts on different biomes on the previous page. See Fact Sheet 3 at the back of this book for more evaluative language in Geography.

Curriculum links

NSW Stage 5

Changing biomes

Students investigate the human alteration of biomes to produce food, industrial materials and fibres and the environmental effects of these alterations, for example: (ACHGK061)

- examination of human alterations to the physical characteristics of biomes eg vegetation removal, agriculture, land terracing, irrigation, mining
- assessment of environmental impacts of human alterations to biomes eg habitat and biodiversity loss, water pollution, salinity

Answers

least impact			**most impact**
no	little		severe
minimal	minor	some	major
	limited		serious

Vocabulary

Students may need to be reminded of the meanings of key words for this topic:

temperate	a word that describes a mild climate e.g. warm summers and cool winters
deciduous	a word that describes a tree or shrub that sheds its leaves annually

Identify biome	Polar biomes are frozen regions that comprise 11% of the Earth's land area.	Temperate deciduous forest biomes cover 7% of the Earth's landmass.
Human impacts	Polar biomes have little human habitation or land use but there is still human impact. Fishing and pollution disrupt marine ecosystems. Global warming from human activities elsewhere is causing polar ice to melt.	These biomes have experienced many human impacts. Land clearing and deforestation has devastated many forest areas. Land is used for farming, livestock grazing and it is cleared for urban areas.
Evaluate impacts	Humans have had little direct impact on polar biomes but global warming will have a major impact.	Humans have had a severe impact on temperate deciduous forests.

Human alteration of biomes

Most human effects on biomes cause damage or disruption to the natural environments within the biome. We can evaluate the impact of human activities on biomes on a scale from least impact to most impact.

Arrange the evaluation words below on the scale.

serious	little	major
no impact	severe	some
minimal	limited	minor

least impact ⟷ **most impact**

_____ impact	_____ impact	_____ impact	_____ impact
_____ impact	_____ impact		_____ impact
	_____ impact		_____ impact

Use the information below to write two paragraphs about human impacts on biomes. Include an evaluation of the human effects on the biome.

Polar biomes

- 11% of the Earth's land area
- little human habitation or land use
- fishing and pollution disrupt marine ecosystems
- global warming from human activities in other areas is causing polar ice to melt

Temperate deciduous forest

- 7% of the Earth's landmass
- land clearing and deforestation has devastated many forests
- land used for farming, livestock grazing
- land cleared for urban areas

Identify biome		
Human impacts		
Evaluate impacts		

Human alteration of biomes

Teacher page

Teaching suggestions

When students edit their writing, they can use the passive voice to move ideas around and change the focus and the emphasis of ideas in their writing. The sentences on this page are deliberately simple in order to teach students the basic concepts. If students need more assistance, the teaching suggestions below may help.

Steps in how to create passive voice sentences	Example
1. Highlight the verb (ie. what is happening?)	Farmers **cleared** vegetation in the rainforest biome.
2. Who or what did the clearing? They are the 'doer'. 3. Highlight the person or thing that is 'done to'	Farmers **cleared** vegetation in the rainforest biome.
4. Write the 'done to' person or thing first.	Vegetation
5. Add an auxiliary or helping verb: **is** for singular, **are** for plural; for past tense, use **was** or **were** or **has been.**	was
6. Add the main verb as a past tense participle.	**cleared**
7. Write BY + the 'doer' or leave it out altogether.	by farmers

Passive voice sentence: **Vegetation was cleared by farmers in the rainforest biome.**

Other parts of the sentence that give more information (e.g. 'in the rainforest biome') can stay at the end of the sentence.

Answers

brackets show that the wordings are optional

1	Farmers cleared land.	Land was cleared (by farmers).
2	Agriculture damaged biomes.	Biomes were damaged (by agriculture).
3	Farmers modified most temperate grasslands on Earth.	Most temperate grasslands on Earth were modified (by farmers).
4	Humans built urban settlements in fertile areas.	Urban settlements in fertile areas were built/have been built (by humans).
5	People cleared forests.	Forests were cleared (by people).
6	Farmers planted commercial crops.	Commercial crops were planted (by farmers).
7	Developers destroyed forest biomes.	Forest biomes were destroyed (by developers).
8	Human activity impacted many biomes.	Many biomes were impacted (by human activity).

Over the course of human history, biomes have been/were altered in many ways (by humans). Vegetation has been removed/was removed for construction of homes and buildings. Paths and roads have been built/were built through biomes. Fences and enclosures were built/have been built for animals. Plants and crops were/ have been cultivated. Crops were/have been harvested for food. Unwanted organisms such as pests and weeds have been poisoned and killed. Fertiliser was used/has been used to increase crop yields. Water was used/has been used for irrigation. Species have also been introduced/were introduced to biomes. In these ways, biomes have been altered/were altered by humans.

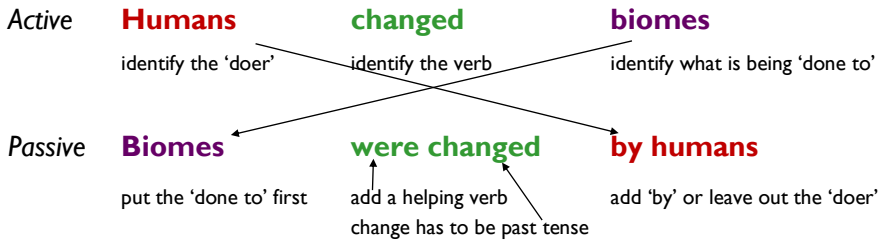
Human alteration of biomes

Expert writers can change the way they structure their sentences depending on what they are trying to achieve. One way of doing this is to use **active voice** or **passive voice.** Writers can use passive voice to make their writing more impersonal and academic, or to change the focus of their paragraph structures. Most writers use a combination of active and passive.

Active voice
Active voice means that the 'doer' of a verb comes first.
e.g. Humans **changed** biomes
Humans are the 'doers' of the verb 'changed'.

Passive voice
Passive voice means that the 'doer' of a verb is left out or left until the end.
e.g. **Biomes** were changed.
e.g. **Biomes** were changed by humans.

Here's how to change from active to passive.



Change each sentence from active voice to passive voice.

	Active voice sentence	Passive voice sentence
1	Farmers cleared land.	Land was _____ by _____
2	Agriculture damaged biomes.	_____
3	Farmers modified most temperate grasslands on Earth.	_____
4	Humans built urban settlements in fertile areas.	_____
5	People cleared forests.	_____
6	Farmers planted commercial crops.	_____
7	Developers destroyed forest biomes.	_____
8	Human activity impacted many biomes.	_____

Rewrite the paragraph below so that there is less repetition of 'humans' or 'they' at the start of each sentence. Use some passive voice sentences. You can combine sentences.

Over the course of human history, humans altered biomes in many ways. They removed vegetation for construction of homes and buildings. They built paths and roads through biomes. Farmers built fences and enclosures for animals. They cultivated plants and crops. They harvested crops for food. They poisoned or killed unwanted organisms such as pests and weeds. They used fertiliser to increase crop yields. They used water for irrigation. Humans also introduced species to biomes. In these ways, humans altered biomes.

Over the course of human history, biomes _____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Terrace farming

Teacher page

Many students may be unclear on the difference between **there**, **their** and **they're**. They may need reminding about how to use these words. The contraction **they're** is rarely used in academic writing, but this activity includes it in order to expose students to all three words.

Answers

Terrace farming involves building platforms or wide steps on the side of a hill or a mountain and planting crops **there** on the terraces. **They're** also known as paddy fields.

There are many examples of terrace farming in the ancient world. Ancient Romans built terraces for views of **their** cities. In South America, the Wari people and the Incas built **their** homes and communities in the high Andes mountains. Terraces were used to grow **their** potatoes, maize and other crops for food. Without terraced farming, **there** would have been no way for communities to meet **their** food requirements in the steep mountains.

Stone terraces in Pisac Peru. Photo: www.janto.com.ar

The Rice Terraces of the Cordilleras in the Philippines are famous. **They're** listed by UNESCO as a World Heritage Site because **they're** built on steep slopes at high altitudes, with complex irrigation systems. **They're** also at least 400 years old. **There** are still some people farming **there** on the terraces today. However, many young people prefer to make **their** careers in tourism for visitors to the terraces.

Left: Ifugao rice retraces in the Philippine Cordilleras. Photo: Wikipedia jsinglador

Terrace farming is still used by farmers in many parts of Asia including the Philippines, Vietnam, Indonesia and Cambodia. **They're** mostly using terraces to grow rice.

There are many benefits of terrace farming. Terraces enable people in hilly communities to meet **their** food needs. **They're** also a way of optimising water use in irrigation, as the water flows from higher to lower terraces. Land can become more productive in places where **there** are terraces. However, **there** are also negative impacts on soil quality as the water washes away nutrients.

Rice terraces in Vietnam, Photo: Vu Hung. Wikipedia.

Terrace farming

Common spelling errors involve three words that sound the same: **there**, **they're** and **their**. The table on the right shows their different meanings and uses.

	Meaning	Example
they're	they are	***They're*** *building terraces.*
their	possessive, it belongs to them	*Rice farmers use terraces to irrigate* ***their*** *crops.*
there	adverb - a place or sentence starter	*Look at the terrace* ***there****.* ***There*** *are many terraces in Asia.*

Read the information about terrace farming and write there, they're or their on each line.

Terrace farming involves building platforms or wide steps on the side of a hill or a mountain and planting crops _____ on the terraces. _____ also known as paddy fields.

_____ are many examples of terrace farming in the ancient world. Ancient Romans built terraces for views of _____ cities. In South America, the Wari people and the Incas built _____ homes and communities in the high Andes mountains. Terraces were used to grow _____ potatoes, maize and other crops for food. Without terraced farming, _____ would have been no way for communities to meet _____ food requirements in the steep mountains.

Terraced farmland in Peru, Andes Mountains

Batad rice retraces in the Philippine Cordilleras. Photo: Mon Federe.

The Rice Terraces of the Cordilleras in the Philippines are famous. _____ listed by UNESCO as a World Heritage Site because _____ built on steep slopes at high altitudes, with complex irrigation systems. _____ also at least 400 years old. _____ are still some people farming _____ on the terraces today. However, many young people prefer to make _____ careers in tourism for visitors to the terraces.

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Farmers planting rice in Cambodia. Photo: Brad Collis

Factors that impact crop yields

Teacher page

The next three pages relate to the same topic: explaining factors that impact crop yields. This page asks students to categorise factors according to whether they relate to environmental, economic or technological aspects. The next page asks students to do more work on organising these examples, and the third page requires students to convert this information into an extended response (Factorial Explanation).

Answers

These answers have not been ordered or organised yet. This will happen on the next page.

environmental	rice crops need rainfall of over 100cm per year wheat crops need loam (well-drained soil) rice grows in hot climates rainfall: plants need water temperature: plants need warmth rice crops need clay soil that holds moisture different crops need different types of soil wheat grows in warm climates topography (landforms and features) wheat crops need rainfall of 3-100cm per year rocky, hilly areas are hard to farm most plants grow best in fertile soil in valleys or plains
economic	global markets for crops: if prices are high, profits are high commercial agriculture is capital-intensive (needs expensive machinery) farmers have to buy expensive machinery economies of scale: it is most efficient to plant large areas of one crop (monoculture) economies of scale: it is most efficient to plant large areas of one crop (monoculture)
technological	automated harvesters can be controlled by drones new agrochemicals (fertilisers and pest controllers) plant breeding technology has increased crop yields soil moisture monitors make irrigation more precise

Curriculum links

NSW Stage 5

Biomes produce food

Students investigate environmental, economic and technological factors that influence agricultural yields in Australia and across the world, for example: (ACHGK062)

- examination of how environmental factors influence agricultural yields eg temperature, water availability, soil, topography
- discussion of economic factors affecting agricultural yields eg global trade, commercialisation of agriculture
- explanation of how technology is used to increase agricultural yields eg innovations and advancements in farming practices

Tip for spelling yield

Yield is a hard word to spell and many students reverse the e and i. This mnemonic might help students spell it:

When crops have a high yield,

Yes
I
Eat
Lots (of)
Dinner.

Literacy Works for Geography Book 2 © Literacy Works

Factors that impact crop yields

Crop yields refer to the amount of seed or grain that is produced by plants in a certain area. This page shows three types of factors that can impact crop yields: environmental, economic and technological factors.

Draw lines to link the type of factor with related information and images

capital: commercial agriculture is capital-intensive (needs expensive machinery)

rice grows in hot climates

most plants grow best in valleys or plains

plant breeding technology has increased crop yields

economies of scale: it is more efficient to plant large areas of one crop (monoculture)

rainfall: plants need water

environmental

global markets for crops: if prices are high, profits are high

different crops need different types of soil

rocky, hilly areas are hard to farm

new agrochemicals (fertilisers and pest controllers)

economic

wheat crops need loam (well-drained soil)

wheat grows in warm climates

wheat crops need rainfall of 3-100cm per year

technological

automated machinery can be controlled by drones

temperature: plants need warmth

soil moisture monitors make irrigation more precise

rice crops need rainfall of over 100cm per year

topography (landforms and features)

farmers have to buy expensive machinery

rice crops need clay soil that holds moisture

Factors that impact crop yields

Teacher page

Teaching suggestions

This page can be completed as a worksheet, or teachers can use these questions for a class discussion in groups. The teacher can scaffold this activity, depending on the needs of students in the class:

1. Teachers can lead the analysis of Environmental factors as a class activity by asking students for suggestions and writing class answers on the board. Alternatively, a student scribe could write the answers and the rest of the class can guide students to give suggestions.
2. Teachers can give less support for the Economic factors, with students working in groups, with teacher support where needed.
3. Students can work in pairs or independently for the Technological factors.

Environmental factors

1 In the information about environmental factors, there are four main sub-types of factors mentioned. One is temperature. What are the other three? **rainfall, soil, topography**

2 Write a topic sentence for a paragraph about environmental factors that lists these four sub-types. **Environmental factors influence crop yields, including temperature, rainfall, soil and topography**

3 See answers on the right.

Economic factors

4 There are three sub-types of economic factors. One sub-type is capital. What are the other two? **markets for crops, economies of scale**

5 Write a topic sentence for a paragraph about economic factors that lists these three factors. **Economic factors also impact crop yields, including capital, markets for crops and economies of scale**

Technological factors

7 This section does not have sub-types of factors. Instead it lists four main technologies that can help crop yields. The first one is automated machinery. What are the other three main technologies? **agrochemicals, plant breeding, soil moisture monitors**

8 Write a topic sentence for a paragraph about environmental factors that lists these three factors. **New technologies can improve crop yields such as automated harvesters, agrochemicals, plant breeding and soil monitors**

Environmental Q3

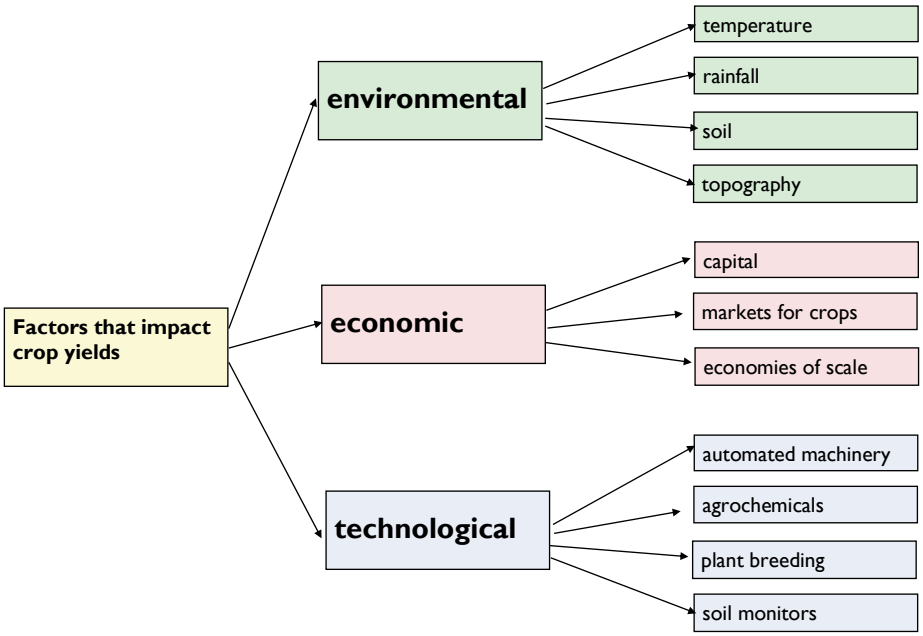
1. temperature: plants need warmth
rice grows in hot climates
wheat grows in warm climates

2. rainfall: plants need water
rice crops need rainfall of over 100cm per year
wheat crops need rainfall of 3-100cm per year

3. different crops need different types of soil
rice crops need clay soil that holds moisture
wheat crops need loam (well-drained soil)

4. topography (landforms and features)
rocky, hilly areas are hard to farm
most plants grow best in valleys or plains

Answers



Literacy Works for Geography Book 2 © Literacy Works

Factors that impact crop yields

Answer the questions below about the information on the previous page.

Environmental factors

1 In the information about environmental factors, there are four main sub-types of factors mentioned. One is temperature. What are the other three? _____

2 Write a topic sentence for a paragraph about environmental factors that lists these four sub-types.

_____

3 On the previous page, number the environmental factor sub-types e.g. temperature is 1. Add them to the diagram below. Find examples that support each of the four sub-types and number them too so they are easy to find when you write. An example for temperature is: 'wheat grows in warm climates.'

Economic factors

4 There are three sub-types of economic factors. One sub-type is that commercial agriculture is capital intensive. What are the other two? _____

5 Write a topic sentence for a paragraph about environmental factors that lists these three sub-types.

_____

6 Fill in the information about economic factors in the diagram below.

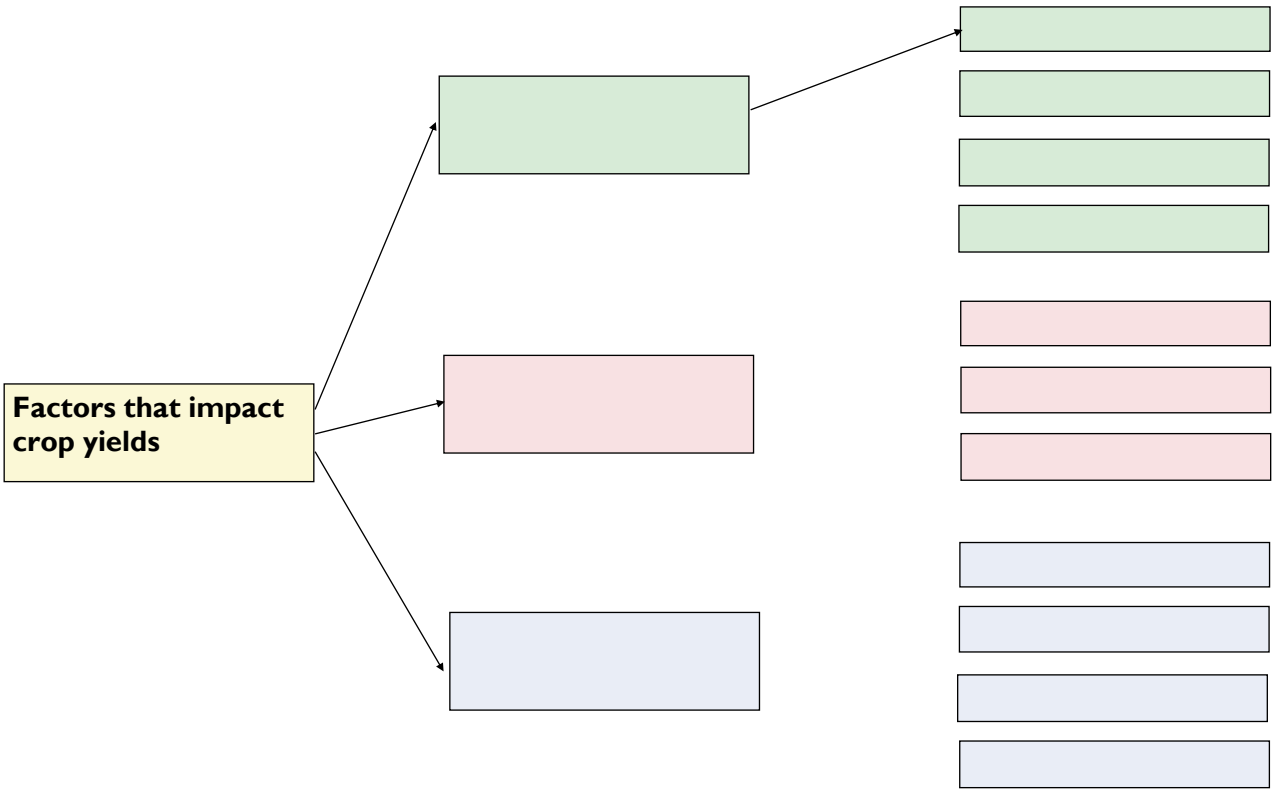
Technological factors

7 This section does not have sub-types of factors. Instead it lists four main technologies that can help crop yields. The first one is automated harvesters. What are the others? _____

8 Write a topic sentence for a paragraph about technologies. _____

_____

9 Add the technologies to the diagram below. Add arrows to complete the diagram.



Explain factors that impact crop yields

Teacher page

Possible answer

Phenomenon to be explained *Definitions of crop yields* *Preview factors*	Crop yields refer to the amount of seeds or grain that is grown in an area. There are many factors which impact crop yields, including environmental, economic and technological factors.	*Define crop yields* *Preview the three types of impacts in order*
Factors *Environmental*	Environmental factors influence crop yields, including temperature, rainfall, soil and topography. Plants need warmth and moisture to grow, so temperature and rainfall have a major impact on crop yields. The climate of an area also determines the most suitable crops that can grow in certain areas. For example, wheat is best grown in warm temperatures with rainfall of 30-100cm per year, whereas rice is best grown in a hot humid area with rainfall over 100cm per year. Soils are also important factors that impact crop yields. Wheat needs loam (well-drained soil) whereas rice needs clay soil that holds moisture. Topography also makes a difference to crop yields, as it impacts on how easy or difficult it is to undertake farming. For example, if farm areas are hard to access or in mountainous areas, the land can be hard to farm effectively. The most fertile land is mostly found in the bottoms of flat valleys or on plains where soils are deep and fertile and where water is available.	*Include your topic sentence about environmental factors* *Explain the sub-types of factors in order* *Add information using text connectives (e.g. in addition, also)*
Economic	Economic factors also impact crop yields, including capital, markets for crops and economies of scale. Many crops, such as wheat, are capital-intensive, which means that they require expensive equipment such as harvesters and irrigation systems. Therefore, a lot of money is needed to make wheat farming effective. If prices for crops are high, farmers can afford expensive machinery, but if prices of crops are low, they may not be able to afford expensive equipment, leading to lower crop yields. For most commercial crops, economies of scale are most effective, which means that it is most efficient to grow large areas of monoculture (one crop).	*Start with topic sentence about economic factors* *Explain the factors and what they mean*
Technological	New technologies can improve crop yields such as automated machinery, agrochemicals, plant breeding and soil monitors. Machinery and internet technology work together to make farming more effective. For example, machinery for sowing seeds and harvesting can be controlled by drones to ensure accurate positioning. In addition, new agrochemicals (fertilisers and pest controllers) ensure that plants are protected and that they grow more effectively. Plant breeding technologies result in plants that have higher yields and that resist diseases. Irrigation can also be made more effective for plant needs with the use of soil probes to measure soil moisture precisely.	*Include your topic sentence about technological factors* *Include the examples of technologies that improve crop yields*
General statement	Environmental, economic and technological factors impact crop yields. It is important to improve crop yields so that land is farmed in a sustainable and effective way to protect food security for the future.	*Restate the three factors. Why is it important to improve crop yields?*

Explain factors that impact crop yields

Follow the prompts and instructions to write a Factorial Explanation about factors that impact crop yields.

Phenomenon to be explained *Definitions of crop yields* *Preview factors*	Crop yields refer to _____ _____ There are many factors which impact crop yields, including _____ _____	*Define crop yields* *Preview the main types of impacts in order*
Factors *Environmental*	_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	*Include your topic sentence about environmental factors* *Explain the sub-types of factors in order* *Add information using text connectives (e.g. in addition, also)*
Economic	_____ _____ _____ _____ _____ _____ _____ _____ _____ _____	*Start with topic sentence about economic factors* *Explain the factors and what they mean*
Technological	_____ _____ _____ _____ _____ _____ _____ _____ _____ _____	*Include your topic sentence about technological factors* *Include the examples of technologies that improve crop yields*
General statement	_____ _____ _____	*Restate the three factors. Why is it important to improve crop yields?*

Land use discussion

Teacher page

Teaching suggestions

This is a speaking activity to help students explore and express different viewpoints about effective land use. Teachers can organise group sizes according to class dynamics. Each student has a role, such as an urban developer or a farmer. Each student will present the views of their role to the rest of the group. Students can use the worksheet on this page to plan their position and to ask questions of other stakeholders.

1. Before the discussion, teachers should tell the students that there are no 'evil' characters. Each stakeholder has valid commercial reasons for wanting to use the land.

2. Teachers allocate roles to students or students in each group can choose a role.

3. Teachers can give students a few minutes to fill in the table and think of reasons to support their land use. They also have to consider objections (other views) and how they might respond to these respectfully.

Role	Land used for	Reasons
urban developer	an affordable housing estate	real estate is too expensive; affordable housing is important for migrants and people on middle incomes
industrial developer	factories and warehouses	factories bring jobs to the area and enable economic growth
mining	build a quarry for basalt (for building roads)	brings jobs to the area; provides stone for roads; important for infrastructure
biofuel facility	a biofuel plant (processing agricultural waste into fuel)	creates a more sustainable form of fuel; fuel is needed for modern life (cars, trucks etc.)
fish farm	incubating fish eggs and growing young fish	seafood is an important food source; farmed fish can be sold as a profitable business
golf course	building a championship golf course and housing development	trees and green area will be maintained in the area; provides housing with nice views; attracts wealthy people to the area

Curriculum links

NSW Stage 5

Challenges to food production

Students investigate environmental challenges to food production for Australia and other areas of the world, for example: (ACHGK063)

- discussion of the impact of land degradation and competing land uses on food production eg urban expansion, biofuel production

4. Each student presents their view to the group. This should only take a minute or so each.

5. Ask each group member to ask another group member a question about their role and use.

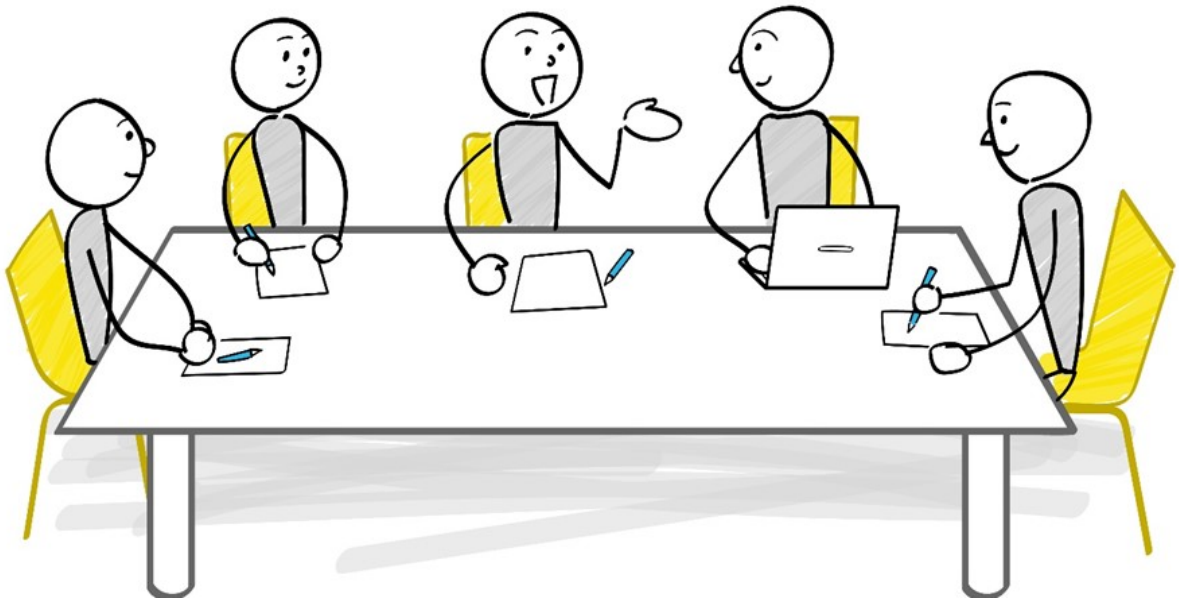
6. After the discussion, students compare ideas between groups in a class discussion of land use.

7. Putting the roles aside, students fill in the box on the bottom right and compare these uses with food production.

Land use discussion

Imagine that there is a large area of vacant land on the edge of your city or town. It is zoned by the council for many uses. The council has organised a meeting of people who want to use the land for different purposes. They have to argue their case. You will be given one of the roles on the right.

Role	You want to use the land for:
urban developer	an affordable housing estate
industrial developer	new factories and warehouses
mining	a quarry for mining basalt (for building roads)
biofuel facility	a biofuel plant (processing agricultural waste into fuel)
fish farm	incubating fish eggs and growing young fish
golf course	building a championship golf course and a housing development



Use the table below to plan what you will say in the group meeting.

My role

What I want to use the land for

Reasons - who will this benefit? Why?

Possible objections that other people may have

Ideas for how I can respond to these objections

After the meeting, answer the questions below.

In your personal opinion, should land be used for these purposes or for food production? Why? What do you need to know more about in order to make a judgement?

Sustainable food supply chains

Teacher page

Teaching suggestions

Before the activity, teachers could remind students about supply chains for fresh domestic produce such as fruit and vegetables in Australia. A simplified supply chain is:

- farmer to
- transport company/warehouses to
- supermarkets or restaurants
- consumers.

The activities on the next two pages have a scaffolding structure.

1. The first paragraph provides a model or example of the paragraphs. The paragraph has the same phases and the same language features as the next paragraphs that students will write. Teachers could read the paragraph to students and ask them to highlight or circle the language features that have been identified (ie. phases, cause and effect language, medium modality, linking topic sentence and final sentence).
2. The second paragraph on this page provides some sections for students to complete. The teacher could read the sections with students and write answers together on the board.
3. On the next page, students could write the first paragraph in groups or pairs and then discuss with the teacher.
4. The final paragraph can be completed by students individually or with differentiated support, depending on the students' capacity and experience.

There is more detail on supply chains in the unit on Interconnections.

Curriculum links

NSW Stage 5

Food security

Students investigate the capacity of the world's biomes to achieve sustainable food security for Australia and the world, for example: (ACHGK064)

- analysis of population projections to predict future demand for food
- examination of sustainable practices used to achieve food security

Answers

Identify the strategy for reducing waste	Another strategy for reducing waste is for supermarkets to change their acceptance criteria for the appearance of fresh produce.
Explain why food waste occurs	Many supermarkets reject fruit and vegetables if they the wrong shape or unattractive. For example, oranges that are not perfectly round may be rejected because consumers will think they are not tasty. Cucumbers or zucchini could be rejected if they have bumps on them because consumers may think there is something wrong with them. Up to one third of Queensland bananas may be rejected due to size (too small or too big) and the presence of blemishes and
Identify strategies to make food chains sustainable	To make fresh food more sustainable, supermarkets could change their requirements to allow for more variety in the appearance of fruit and vegetables. They could also sell special ranges of 'ugly' fruit and vegetables for a cheaper price so that more produce is used and consumed. Consumers could be educated that the taste of the fruit and vegetables is more important than the appearance, so they would be more likely to buy irregular-shaped produce.
Final sentence	In summary, another strategy for reducing waste in the supply chain is to change the acceptance criteria by supermarkets and consumers so that more produce is sold and less is wasted.

Sustainable food supply chains

One of the challenges of growing population is food security, which means having access to affordable, nutritious food. One strategy to feed a larger population sustainably is to reduce food loss and waste. Around one third of the world's food is wasted (FAO, 2021). In Australia, 7.6 million tonnes of food are wasted across the supply chain every year, from the grower, to transport, to the supermarket to the consumer (AWE, 2021).

This paragraph has four phases as shown in the left column below. Read the paragraph and notice the structure and language features.

Identify the strategy for reducing waste	Fresh produce can be saved from waste on farms and during transport. Food is wasted **if** there is uneven ripening of crops and **if** fruit and vegetables are the wrong shape for supermarkets (e.g. too large). Poor storage and care of food *can* **result in** crushing or bruising during transport. Also, food *may* ripen too soon before it reaches the supermarket. Strategies to solve these problems include agricultural technology that *can* monitor ripeness and timing for harvests. Farmers *could* be educated about the requirements that supermarkets have for fresh produce **so that** more of their produce *can* be sold. Smart packaging and refrigeration *can* maintain freshness and protection during transit between the farm and supermarket. These strategies *can* help to prevent waste on farms and transport and **therefore** make food chains more sustainable.
Explain why food waste occurs	
Identify strategies to make food chains sustainable	
Summarise how these strategies solve the problem	

Use cause and effect language (in bold) e.g. **if**

Use low and medium modality (in italics) to show that these are possibilities or options
e.g. *may, can*

Complete a second paragraph about sustainable food chains using the hints provided.

Identify the strategy for reducing waste	Another strategy for reducing waste is for supermarkets to change their acceptance criteria for how fresh produce should look.	
Explain why food waste occurs	Many supermarkets reject fruit and vegetables if they are the wrong shape or if they are not perfect. For example, oranges that are not round may be rejected because consumers will think they are not tasty. _____	*Add another example* *Use cause and effect language*
	_____	
	Up to one third of Queensland bananas may be rejected due to _____	*Why could bananas be rejected?*
	_____	
Identify strategies to make food chains sustainable	To make fresh food more sustainable, _____	*What could supermarkets and consumers do?*
	_____	
	_____	*Use low or medium modal language*
	_____	
Final sentence summarise how these strategies solve the problem	In summary, another strategy for reducing waste in the supply chain is to	*Link the final sentence back to the topic sentence.*
	_____	
	_____	

Sources:
AWE Department of Agriculture, Water and the Environment (2021). *Tackling Australia's food waste.* https://www.awe.gov.au/environment/protection/waste/food-waste
FAO, IFAD, UNICEF, WFP & WHO. (2021). *In Brief to The State of Food Security and Nutrition in the World 2021. Transforming food systems for food security, improved nutrition and affordable healthy diets for all.* Rome, FAO.

Sustainable food supply chains

Teacher page

Teaching suggestions

The activities on this page continue the paragraph-writing activities from the previous page. Before these activities, the teacher could ask students about their understanding of 'use by' dates vs 'best before' dates for food. Have a class discussion about how you might know if food is 'off'. Students may also reconsider their own food waste practices and educate their family members about it for homework.

Possible answers

Identify strategy for reducing waste	Correct understanding of food expiry dates can prevent food waste in the food supply chain.	
Explain why food waste occurs	Restaurants and consumers can throw food away when it reaches its best before date. This is unnecessary waste because it does not mean that the food is unsafe. For example, meat that is vacuum sealed has a 'best before' date instead of a 'use by' date, as it can be consumed safely if it has been refrigerated.	*Why would misunderstanding of expiry dates cause food to be thrown away? Give some examples about supermarkets and consumers. Use cause and effect language.*
Identify strategies to make food chains sustainable	Strategies can be implemented to solve this problem. Supermarkets could educate customers about the difference between 'use by' and 'best before' dates, so that consumers can still eat safe food without as much waste. New technologies could be introduced to detect when food is 'off' or expired, rather than picking a date which may or may not be accurate.	*What could supermarkets and consumers do? Think of some strategies* *Use modal language.*
Summarise how these strategies solve the problem	Education about the meaning of expiry dates can reduce waste and make the food supply chain more sustainable.	*Link the final sentence back to the topic sentence.*

Redistributing excess food to people in need can help reduce food waste. Fresh produce is thrown away from supermarkets, restaurants, caterers and bakeries which causes a huge amount of waste. Other food is wasted when it has reached its 'best before' date or when too much food has been ordered by a supermarket or catering company. Charities such as OzHarvest can take the unused or unwanted food and deliver it to people who need food, or sell it in markets to fund other charity projects. Consumers and businesses can volunteer to help OzHarvest and other similar charities and they can build awareness of the need to redistribute food instead of throwing it away. In order to make the most of donated food, legislation has been changed so that donors are not liable for any problems with the food. In these ways, the reuse and reprocessing of fresh food can keep more food in the supply chain and reduce waste, thus making the food chain more sustainable.

Reuse and distribution of fresh produce
www.ozharvest.org

Sustainable food supply chains

Look at the infographic on the right. Then write a paragraph about how understanding of food expiry dates can minimise food waste in the supply chain.

Identify the strategy for reducing waste	Correct understanding of food expiry dates can prevent food waste in the food supply chain.	
Explain why food waste occurs	_____ _____ _____ _____ _____	*Why would misunderstanding of expiry dates cause food to be thrown away? Give some examples about supermarkets and consumers.* *Use cause and effect language.*
Identify strategies to make food chains sustainable	_____ _____ _____ _____	*What could supermarkets and consumers do?* *Use modal language.*
Summarise how these strategies solve the problem	_____ _____	*Link the final sentence back to the topic sentence.*

Write a paragraph about redistributing excess food. Use the structures and language features on this page, and the example below.

OzHarvest is an Australian Charity that collects unused or unwanted food from supermarkets, bakeries, restaurants and caterers and redistributes it to people in need.

OZHARVEST
Nourishing Our Country

The government changed legislation to allow food donors to give their surplus food to charities without fear of being sued.

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

How to use these resources

Each teacher page has teaching suggestions as well as answers. There are also some suggestions for extra follow-up activities.

Most worksheets take around 10 minutes, depending on the class. Some worksheets are stand-alone, but others are linked, as indicated on the teacher pages and in the table below. The table below shows possible timing for each set of activities.

Teachers can refer to the introduction section for more information on literacy pedagogy, genres of writing and literacy in Geography.

Curriculum links

Curriculum links for student activities are shown on the teacher pages.

Left: Jakarta Indonesia

Opposite: Shenzhen, China

The table below is different from the contents list at the front of the book. This page provides an overview of worksheets that are grouped together on similar topics, as well as estimated teaching time. Some worksheets continue over several pages, as you can see at a glance below. This table may help teachers to plan and sequence the activities in this unit.

Pages	Content focus	Literacy skills	Estimated teaching time
49-50	Causes and consequences of urbanisation	Match definitions with key terms; rewrite a paragraph using nominalisations	10 minutes
51-52	Push and pull factors for urbanisation	Active reading activity with suggested teacher script	10 minutes
53-60	Consequences of urbanisation - flooding in Jakarta	Students identify causes and effects of flooding, then create chains of cause and effect and write expert sentences; writing an explanation	4 x 10 minutes
61-62	USA and Australia urban distribution	Dictogloss led by the teacher; write reasons for distribution using cause and effect language	10 minutes
63-68	Internal migration data in Australia	Visual literacy: interpret tables, line graphs and bar charts and writing about data	3 x 10 minutes
69-72	Consequences of internal migration in China	Write paragraphs about impacts of internal migration (economic, environmental and social)	20 minutes
73-74	International migration to Australia	Comprehension of a recount of migration in Australia	10 minutes
75-86	Benefits of international migration	Six related pages that help students understand benefits of migration and write paragraphs for an Exposition; write argument paragraphs; counter arguments.	6 x 10 minutes over several lessons or in one lesson
87-88	Australia's urban future	Recommend strategies to improve Australia's urban future; sentence-writing. Optional Explain Ball activity.	15 minutes

Changing places

Urbanisation vocabulary

Teacher page

Nominalisations are an important aspect of the technical vocabulary of Geography. Nominalisations are nouns (things) and they often encapsulate meanings of complex processes. Nominalisations in writing help students to represent abstract knowledge and build up layers of technical meanings like a real Geographer does.

Answers

many people or things are gathered together in one place	transformation
the appearance or nature of something changes completely	centralisation
people move somewhere else to live	expansion
one main place in the centre manages or governs a number of regions or outlying areas	migration
the land is negatively impacted by human activities	modernisation
gradually, more people live in suburbs outside the city centre	degradation
something becomes more updated and contemporary	decentralisation
the space or area becomes bigger or wider	suburbanisation
control, government or management moves from the centre to different regions which can control themselves	concentration

Curriculum links

NSW Stage 5

Causes and consequences of urbanisation

Students: investigate the causes and consequences of urbanisation with reference to ONE Asian country, for example: (ACHGK054)

- description of the causes of urbanisation

Information for teachers

Many nominalisations end in -isation or -tion. Not all of them do. For example, 'compliance' and 'accountability' and 'management' are also nominalisations. Teachers and students could identify nominalisations that occur in the glossary for each topic.

Common word endings for nominalisations include:

- -ion, -tion, -ation, -isation
- -ment
- -ance / -ence
- -ent
- -ity
- -ness

Answers

In recent years, most nations in the world have experienced lots of major changes caused by cities becoming more populated. This is due to people moving to cities leading to urban areas becoming a lot bigger. Many cities experience suburbs becoming more popular and bigger outside the city centre. In urban areas, some people experience the benefits of more contemporary and updated life and employment opportunities. However, disadvantages include the land becoming negatively impacted and lower quality of life.

In recent years, most nations in the world have experienced **transformation** caused by **urbanisation**. This is due to **migration** to cities leading to **urban expansion / expansion of urban areas.** Many cities experience **suburbanisation** outside the city centre. In urban areas, some people experience the benefits of **modernisation** and employment opportunities. However, disadvantages include **degradation** of the environment and lower quality of life.

Urbanisation vocabulary

Geographers often explain things that happen in the world by using nominalisations. Nominalisations are nouns (things) that condense meaning about complex events and processes (verbs).

For example, **urbanisation** is a nominalisation. Urban means city. Urbanisation is the process of a place becoming more urban as more people move to the city and the area of the city expands.

Draw a line to match a definition with a nominalisation on the right.

many people or things are gathered together in one place	transformation
the appearance or nature of something changes completely	centralisation
people move somewhere else to live	expansion
one main place manages or governs a number of regions or outlying areas	migration
the land is negatively impacted by human activities	modernisation
gradually, more people live in suburbs outside the city centre	degradation
something becomes more updated and contemporary	decentralisation
the space or area becomes bigger or wider	suburbanisation
control, government or management moves from the centre to different regions which can control themselves	concentration

Rewrite this paragraph by changing the underlined wordings into nominalisations from the list above.

In recent years, most nations in the world have experienced <u>lots of major changes</u> caused by <u>cities becoming more populated</u>. This is due to <u>people moving</u> to cities leading to urban <u>areas becoming a lot bigger</u>. Many cities experience <u>suburbs becoming more popular and bigger</u> outside the city centre. In urban areas, some people experience the benefits of <u>more contemporary and updated life</u> and employment opportunities. However, disadvantages include <u>the land becoming negatively impacted</u> and lower quality of life.

In recent years, most nations in the world have experienced _____ caused by

_____

_____

_____

_____

_____

_____

_____

_____

Push and pull factors for urbanisation

Teacher page

Teaching suggestions

The first activity on this page involves detailed reading for students, where students highlight and annotate a short text. A suggested script is provided for teachers below. It is important that teachers do not say the exact words that students are supposed to highlight but instead use paraphrases, as suggested below.

1	At the start of the lesson, the teacher could remind students about what they have learned about urbanisation and migration to cities. Students need a pen or pencil to annotate the paragraph.
2	The teacher reads the entire paragraph to students.
3	Tell students that the first sentence states the topic. Read the sentence again: 'Urbanisation is caused by push and pull factors.' Ask students to underline the sentence. Tell students that 'factors' are causes or reasons why someone would move to a city.
4	The teacher tells students that the next three sentences are about push factors. Demonstrate a push. Read sentence 2. 'Push factors are events or forces that push someone away from where they are living.' Ask students to find the two things that might push someone to leave (events, forces). Teachers could elaborate with the discussion about forces that are more abstract, and they might not be one event (e.g. a volcano exploding) but a gradual process (e.g. drought).
5	The teacher tells students that Sentence 3 gives examples of four push factors. Ask students to number the push factors from 1 to 4. Read sentence 3 and students number (1 war, 2 violence, 3 famine, 4 poverty). Randomly choose students to answer these questions about the factors: • Factors 1 and 2 (war and violence). Why would someone leave because of war or violence? What areas of the world have experienced war or violence and where is it happening now? • Factor 3 (famine). What factor means lack of food and malnutrition? (famine) What causes this? • Factor 4 (poverty). What areas of the world have the most poverty? Where can we see evidence of poverty in Australia?/in our local area?
6	The teacher tells students that the next sentence has three more push factors. Read the sentence. 'Other push factors include losing employment, land dispossession or loss of subsistence agriculture.' • Ask students to highlight the wordings that mean losing a job (losing employment). Choose a student to ask: what would happen if someone lost their job? Why would that make them move to a city? • Ask students to highlight wordings that mean having land taken away from you (land dispossession). Choose a student to ask: what would happen if someone lost their land? Why would that make them move to a city? Note that 'dispossession' is a nominalisation. It means that people lose land they possessed. • Ask students to highlight wordings that mean that people eat food they grow themselves (subsistence agriculture). Subsist means to survive. The word 'subsistence' is a nominalisation. Choose a student to ask: what is the difference between subsistence agriculture and commercial agriculture? What countries rely on subsistence agriculture? Why?
7	Tell students that now we move on to pull factors. Tell students that 'pull' means to grab something and bring something towards you. Read Sentence 5 'Pull factors are reasons that attract or motivate someone to migrate.'
8	Tell students that the next sentence describes two pull factors. Read the sentence. 'The main pull factors for urbanisation are employment opportunities and the potential for higher standards of living.' Ask students to highlight the words that mean more jobs (employment opportunities) and highlight the words that mean better quality of life (higher standard of living). Choose a student to ask what a 'higher standard of living' means with examples. Ask someone else why cities often offer a higher standard of living.
9	Tell students that the final sentence has three more pull factors. Read it: 'Other pull factors include family and relationships, educational opportunities and medical care.' • Ask students to highlight the factor that is about people (family and relationships). Choose a student to ask why people might move for social reasons. • Ask students to highlight the factor that is about learning (educational opportunities). Choose a student to ask why people might move for education. Why would this benefit people? • Ask students to highlight the factor that is about hospitals and doctors (medical care). Choose a student to ask why people might move for medical reasons.

Push and pull factors for urbanisation

Follow your teacher's instructions to read and annotate this paragraph.

Urbanisation is caused by push and pull factors. Push factors are events or forces that push someone away from where they are living. Examples of push factors are war, violence, famine and poverty. Other push factors include losing employment, land dispossession or loss of subsistence agriculture. Pull factors are reasons that attract or motivate someone to migrate. The main pull factors for urbanisation are employment opportunities and the potential for higher standards of living. Other pull factors include family and relationships, educational opportunities and medical care.

Add push factors and pull factors for migration to the diagram on the left and right of the picture. Add your own ideas as well as the factors from the paragraph above.

PUSH FACTORS

PULL FACTORS

Answer the questions below about push and pull factors.

In the future, what push factors might cause you or your family to leave where you live?	
If you were going to live somewhere else, where might that be? Why?	
What pull factors might attract you live somewhere different in the future?	

Flooding in Jakarta

Teacher page

Teaching suggestions

Before starting these activities, teachers and students could locate Jakarta on a world map and discuss some key facts about it, such as its enormous population, proximity to Australia and importance to Australia as a trading partner and close neighbour.

The next few pages focus on one of the problems that Jakarta faces: flooding. Students can also apply the literacy activities on these pages to other problems such as land subsidence and traffic congestion. As follow-up activities, based on their understanding, students can then discuss and evaluate government solutions to these problems, such as the building of a sea wall and moving the capital of Indonesia to Borneo.

Curriculum links

NSW Stage 5
Causes and consequences of urbanisation
Students: investigate the causes and consequences of urbanisation with reference to ONE Asian country, for example: (ACHGK054)
- examination of economic, social or environmental consequences of urbanisation

Answers

		Cause of flooding	Effect of flooding
1	Jakarta is located in a low-lying area near the sea.	✓	
2	Thirteen rivers flow through Jakarta to the sea.	✓	
3	Sewage and pollution spread in floodwaters.		✓
4	New construction developments have been built on wetlands and marshes.	✓	
5	Dozens of people may be killed in each flood.		✓
6	There are inadequate sewage pipes and drains.	✓	
7	Diseases spread such as dengue and cholera.		✓
8	Torrential rains are happening more frequently due to climate change.	✓	
9	New buildings do not have water storage so rainwater pours off them.	✓	
10	Drinking water becomes polluted.		✓
11	Deforestation has occurred upstream.	✓	
12	People lose their homes, incomes and businesses.		✓
13	Most of Jakarta is paved in concrete so the ground has little capacity to absorb water.	✓	
14	Damage to property costs millions of dollars.		✓
15	Only 40% of Jakarta's sewers and drainage pipes are functioning properly.	✓	
16	Living standards for people in Jakarta are reduced.		✓

Teaching suggestions

The second activity involves analytical thinking. Students are asked to sort the 16 items in the list (causes or effects) into groups. Some items, such as construction on wetlands and marshes, might be relevant to more than one category (environmental and economic). Teachers can support students by sorting the first couple of items with the class, then supporting students who might need more help. More experienced students can think of other causes and effects for each category.

Answers

	Cause or effect number
Social	5, 6, 7, 10, 12, 16
Environmental	1, 2, 3, 4, 8, 11
Economic	4, 9, 12, 13, 14, 15

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Flooding in Jakarta

Jakarta, the capital city of Indonesia, is a megacity with a population of 10.9 million people. This enormous city faces many challenges including severe flooding. Floods are becoming more common and more serious. The activities on the next pages will help you understand and write about the causes of flooding as well as the consequences and impacts of flooding in Jakarta.

The list below shows causes and effects of flooding in Jakarta. Tick the box to show if the event or situation is a cause of flooding or an effect of flooding.

		Cause of flooding	Effect of flooding
1	Jakarta is located in a low-lying area near the sea.	✓	
2	Thirteen rivers flow through Jakarta to the sea.		
3	Sewage and pollution spread in floodwaters.		
4	New construction developments have been built on wetlands and marshes.		
5	Dozens of people may be killed in each flood.		
6	There are inadequate sewage pipes and drains.		
7	Diseases spread such as dengue and cholera.		
8	Torrential rains are happening more frequently due to climate change.		
9	New buildings do not have water storage so rainwater pours off them.		
10	Drinking water becomes polluted.		
11	Deforestation has occurred upstream.		
12	People lose their homes, incomes and businesses.		
13	Most of Jakarta is paved in concrete so the ground has little capacity to absorb water.		
14	Damage to property costs millions of dollars.		
15	Only 40% of Jakarta's sewers and drainage pipes are functioning properly.		
16	Living standards for people in Jakarta are reduced.		

We can analyse the causes and effects by grouping them into categories. Write the number of each cause or effect next to one or more categories.

	What it means, what it impacts:	Cause or effect number
Social	people, relationships, quality of life, living standards, health and illness	
Environmental	natural ecosystems, natural conditions, impacts on the environment	1, 2
Economic	business, jobs, employment, economy, construction, infrastructure	

Chains of causes and effects

Teacher page

Explanations in Geography they often have a **chain of cause and effect**, with one leading to another. The diagram on this page is one way of showing this. Each arrow is an effect or impact. It is more than a sequence of events.

The activities on the next two pages help students to understand complex chains of cause and effect before they write about them.

Language for explaining

This page focuses on verbs that help us to explain. This is only one of the resources for explaining which students of Geography need to know. Fact Sheet 1 has a master list of cause and effect language in Geography.

Teaching suggestions

The activities are scaffolded, providing more support for the initial examples and gradually releasing support.

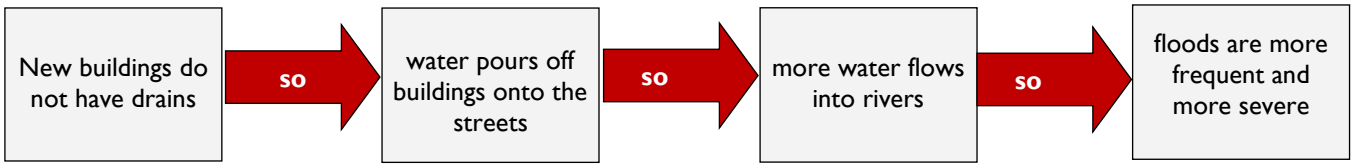
1. Teachers could explain the top part of the page to the class, working through Step 1 and Step 2 together. Teachers can identify nominalisations with students (e.g. destroy becomes destruction.)
2. Then teachers can do activity 1 with the class.
3. For steps 2 and 3, teachers can differentiate support.

Answers

1

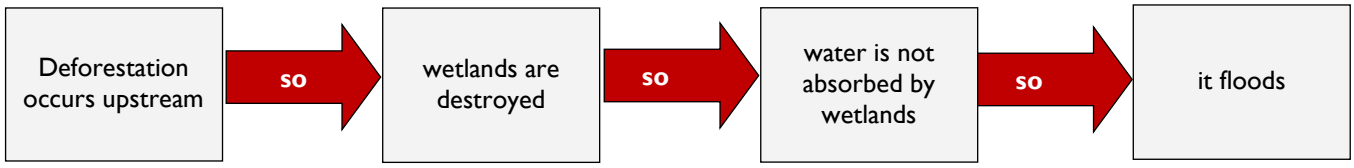
Change the **process** 'are blocked into a **thing** 'blockage'	Use a cause and effect verb	Combine the next causes and effects into a sentence ending. the process 'cannot drain' becomes a thing 'inadequate drainage' 'contaminates' becomes 'contamination' 'catch diseases' becomes 'diseases'.
Blockage of sewers and drainage pipes	**leads to / causes / results in**	**inadequate drainage, contamination of** populated areas and **diseases like dengue and cholera**.

2



Inadequate drainage in new buildings leads to / causes/ results in water pouring onto the streets and into rivers and more frequent and severe flooding.

3

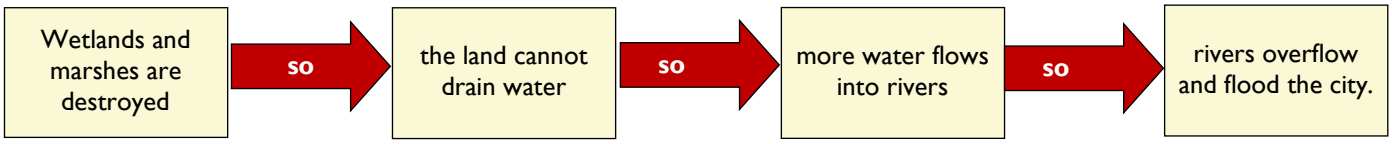


Deforestation upstream leads to / results in / causes lack of water absorption by wetlands and more flooding.

Chains of causes and effects

Causes and effects of flooding can be expanded into a chain of effects. Expert writers tend to condense several causes and effects into one sentence. To do this, they convert sentences and processes (verbs) into things (nouns), as shown below.

Step 1: Understand the chain of cause and effect



Step 2: convert the chain into an expert written sentence

Change the **process** 'are destroyed' into a **thing** 'destruction'

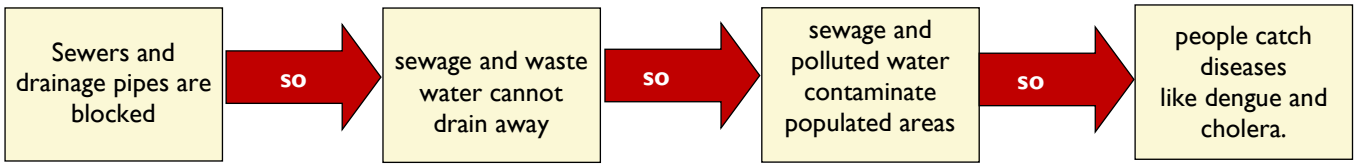
Use a cause and effect verb: e.g. leads to, results in, causes

Combine the next causes and effects into a sentence ending:
The process: 'cannot drain' becomes a thing: 'inadequate drainage'
'more water flows into rivers' becomes 'overflowing rivers'
'overflow and flood the city' becomes 'floodwater'.

Destruction of wetlands and marshes **results in** **inadequate drainage, overflowing rivers and floodwater.**

Convert these chains of cause and effect into expert written sentences

1



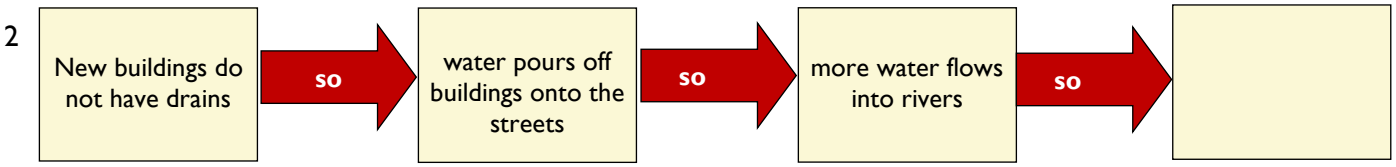
Change the **process** 'are blocked' into a **thing** 'blockage'

Use a cause and effect verb

Combine the next causes and effects into a sentence ending:
the process 'cannot drain' becomes a thing 'inadequate drainage'
'contaminates' becomes 'contamination'
'catch diseases' becomes 'diseases'.

_____ of sewers and drainage pipes _____ _____, _____ of populated areas and _____

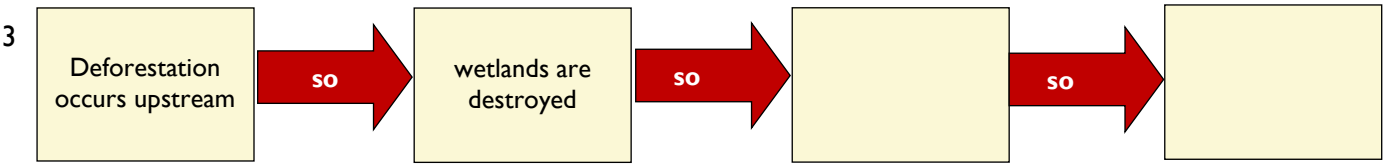
2



_____ _____ _____

in new buildings _____

3



_____ _____ _____

_____

Causes and effects of flooding

Teacher page

Teaching suggestions

This activity continues from the previous page. Students practise condensing a chain of cause and effect into one sentence. This activity will help students realise the choices they can make to organise their written language. Teachers can also use the word list on the right to help students describe Jakarta's problems. These are all instances of negative evaluative language, as Jakarta's flooding problem is so serious.

Synonyms for 'not enough' or 'bad'

inadequate	deficient
insufficient	faulty
limited	unsatisfactory
no / none	problematic
lack of	unsuitable
absence of	inefficient
poor	defective

Answers

1

Most of Jakarta is paved with concrete → so → there is no green space to absorb water → so → water remains on the surface and floods are worse

Concrete paving of Jakarta results in inadequate absorption of water and more flooding.

2

Jakarta is located in a low-lying basin with 13 rivers running through it → so → more water flows into the city and cannot drain → so → flooding is widespread

Jakarta's location in a low-lying basin with 13 rivers running through it leads to extensive water flows, inadequate drainage and flooding.

Explain the economic impacts of floods in Jakarta

3

Severe flooding occurs regularly → so → floods damage houses, buildings and businesses → so → damage repair costs millions of dollars per year

Regular severe flooding causes millions of dollars per year in repair costs for houses, buildings and businesses.

Explain the social impacts of floods in Jakarta.

4

More than ten million people live in Jakarta and experience floods → so → people may lose their homes and businesses and get sick → so → they experience poverty and disease

For the 10 million people in Jakarta, flooding results in loss of homes and businesses, poverty and disease.

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Causes and effects of flooding

Convert these chains of three causes and effects into expert written sentences

1

Most of Jakarta is paved with concrete	so		so	

Concrete paving of Jakarta _____ _____

2

Jakarta is located in a low-lying basin with 13 rivers running through it	so		so	

_____ _____ _____

_____ _____

Left: A flooded mosque and neighbourhood in Jakarta

Right: Skyscrapers in the centre of Jakarta

Explain the economic impacts of floods in Jakarta.

3

Severe flooding occurs regularly	so		so	

_____ _____ _____

_____

Explain the social impacts of floods in Jakarta.

4

More than ten million people live in Jakarta and experience floods	so		so	

_____ _____ _____

_____

Explain flooding in Jakarta

Teacher page

Teaching suggestions

Teachers can scaffold this writing activity for students. Students should have completed all the activities on the previous pages before they complete this writing activity.

I do (teacher)	We do (I lead)	You do together	You do
Modelling and deconstruction	Joint construction	Joint construction	Independent construction
Teacher reviews the previous literacy pages and reminds students about the causes and effects of flooding in Jakarta.	The teacher leads the class in completing the first paragraph. (Hint: the answers are in the topic sentences below.) Then the teacher and students can plan the causes paragraph. Students give suggestions about what to write and the teacher writes on the board.	Students collaborate to write the rest of the causes paragraph together (in pairs or small groups).	Students write the effects paragraph on their own.

Possible answers

Phenomenon to be explained

Jakarta, the largest city in Indonesia, faces many serious problems including flooding. Every year, Jakarta experiences severe flooding that impacts the entire city. The main causes of flooding in Jakarta are its physical location, urbanisation and lack of drainage infrastructure. The flooding of Jakarta has social, environmental and economic impacts.

Causes

Flooding is caused by Jakarta's physical location, urbanisation and its lack of drainage infrastructure. Jakarta's location in a low-lying area with 13 rivers running through it leads to more water with little drainage. Urbanisation has led to the destruction of forests, marshes and green space, so water cannot drain adequately and rivers are overflowing. A lack of drainage infrastructure and blocked drains due to pollution cause water to remain on the surface and not drain away, making flooding worse.

Effects

The flooding of Jakarta has social, environmental and economic impacts. Flooding leads to loss of life, destruction of houses and businesses and the spread of disease in polluted water. This lowers the standard of living for all people in Jakarta. Flooding leads to environmental devastation as pollution and contaminated water spread. Regular floods also result in repair bills of millions of dollars and the loss of businesses and incomes.

General Statement

Flooding in Jakarta is a serious problem for this megacity. Flooding has been made worse by urbanisation and the failure to plan for adequate drainage. The consequences of flooding are severe for people, the environment and the economy of Indonesia. The government needs to install adequate drainage and create more green space to absorb excess water and in order to address the devastation caused by flooding.

Explain flooding in Jakarta

Write an explanation of the causes and effects of flooding in Jakarta below.

Phenomenon to be explained	Jakarta, the largest city in Indonesia, faces many serious problems including flooding. Every year, Jakarta experiences severe flooding that impacts the entire city. The main causes of flooding in Jakarta are _____ _____ Flooding also has serious _____ impacts.	*Define the phenomenon.* *Preview the causes and the effects that will be explained.*
Causes	Flooding is caused by Jakarta's physical location, urbanisation and its lack of drainage infrastructure. _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	*Explain why Jakarta's location causes flooding.* *Explain why urbanisation causes flooding.* *Explain why lack of drainage infrastructure causes flooding.* *Use cause and effect language including cause and effect verbs*
Effects	The flooding of Jakarta has social, environmental and economic impacts. _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	*Explain the social impacts of flooding in Jakarta.* *Explain the environmental impacts.* *Explain the economic impacts of flooding.*
General statement	_____ _____ _____ _____ _____	*Summarise the main causes and effects of flooding.* *What needs to happen?*

USA and Australia urban distribution

Teacher page

This is a dictogloss activity. The teacher reads the paragraph aloud three times at normal speed, and students listen, then write what they remember. This is best done by pairs of students or small groups of three. The teacher can differentiate the activity by making the text simpler or more complex and longer. More experienced students can write the optional sentences at the end.

	Teaching steps for dictogloss
1	Students need a printed copy of this worksheet, or blank piece of paper. This is a hand-written activity for editing and collaboration.
2	Teachers can write key words on the board that students will need. Ask students to spell in syllables and explain meanings: **population** pop-u-la-tion **urban concentration** con-cen-tra-tion **distribution** dis-tri-bu-tion
3	Teachers give students the instructions. Teachers will read a short passage three times and pairs of students have to write as much as they can remember. It does not matter if the final text is slightly different from what you read.
4	See the box below for the paragraph. Teacher reads the text once, at normal speed, and students listen (no note taking).
5	Teachers read the paragraph a second time, at normal speed, and students can write notes.
6	Give students one to two minutes to collaborate with a peer to write the text from what they remember.
7	Read the text **one more time**.
8	Students collaborate to finish the written text. It is fine if the wordings are slightly different from the original.

The population of the USA is 329.5 million, which is nearly 13 times larger than Australia's population of 25.7 million. Both countries have a high urban concentration, with more than 80% of both populations living in urban areas. However, the USA and Australia have different concentrations of urban distribution. In the USA, many large cities are fairly evenly spread across the country, while in Australia there are a few, very large cities in coastal areas. Even with its huge population, the USA only has 10 cities with over a million people, while Australia has 5 cities with over a million people.

Optional sentences Australia is known for the outback and open spaces. The reality is that Australia has a higher population density than the USA with 86.9 per cent of the Australian population living in huge cities.

Curriculum links

NSW Stage 5

Urban settlement patterns

Students: investigate differences in urban settlement patterns between Australia and another country, for example: (ACHGK055)

- examination of urban settlements to determine patterns of concentration
- explanation of factors influencing urban concentration

Answers

1	Consequently, people could travel and trade easily no matter where they lived.
2	As a result, international trade and transport could connect with places and people inside the USA and cities could be located anywhere near a river.
3	Therefore, large urban centres developed in each state so they were spread across the nation.
4	Consequently, large urban centres developed near agriculture and industry on the coast.
5	As a result, large urban centres on the coast developed in each colony.
6	For that reason, coastal areas were more suitable for trade and industry so that is where cities were located.

USA and Australia urban distribution

Complete the dictogloss led by your teacher.

Notes

The table below shows some reasons for the population distribution of the USA and Australia. On the lines, explain why each reason led to the distribution of urban concentration. Use a text connective from the box to start your sentence.

As a result,	Consequently,	Therefore,	For that reason,

e.g. The USA has fertile land available across the nation. **For that reason, people could settle anywhere and find suitable land for agriculture and industry.**

1 Extensive railway networks were built across the USA during the time when cities were expanding. _____

2 The USA has many long rivers that allowed ships to transport people and goods. _____

3 The USA has 50 states, each with a state capital. _____

4 In Australia, the best climate and most fertile land are found near the coast, whereas the centre is arid. _____

5 European settlement in Australia was in six separate colonies connected to coastal ports. _____

6 In the early days of European settlement of Australia, coastal shipping was the main form of transport and there were limited inland rail and road networks. _____

Internal migration data

Teacher page

Teaching suggestions

The subject of Geography is multimodal. Many different modes of communication are used to convey geographical meaning, such as tables, line graphs and bar charts. The next two pages help students to critically analyse and interpret three different data displays that show the same raw data. These three types of data display have different strengths:

- a table shows specific detail and numbers
- a line graph shows trends over time; the eye naturally follows the line to observe the pattern of ascending or descending movement
- a bar chart also shows trends over time; it also enables comparison between periods e.g. Mar 2017 to Mar 2019. Some bar charts can be split into smaller sections (e.g. for each capital city) to enable comparison, but the bar chart on this page has only one value per line. For examples of other bar charts, see the units on Human Wellbeing and Environmental Change and Management in Book 2.

Curriculum links

NSW Stage 5

Internal migration

Students: investigate reasons for and effects of internal migration in Australia and another country, for example: (ACHGK056, ACHGK057)

- analysis of trends in temporary and permanent internal migration
- discussion of economic, social or environmental consequences of internal migration on places of origin and destination

Teaching suggestions

Writing about data using showing verbs

Showing verbs link data to its meaning:

e.g. The data **shows** that net migration to capital cities is slowing.

Common showing verbs are in the box on the right. The choice of showing verbs can help Geography students to support a viewpoint or finding. Showing verbs are not neutral. They can be weaker (e.g. The data **suggests** that net migration is slowing) or stronger (e.g. The data **proves** that net migration is slowing). Weaker showing verbs can be used when the source is not reputable or when there is only preliminary evidence to support a finding. Stronger showing verbs are used when there is strong or reputable evidence to support a claim. As a class activity, students could arrange showing verbs along this scale or cline shown below.

Useful showing verbs

- shows
- suggests
- indicates
- may indicate
- demonstrates
- reveals
- highlights
- illustrates
- proves

Weaker
Less certain

Stronger
More certain

suggests — may indicate — indicates — shows, reveals, highlights, illustrates — proves

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Internal migration data

A 'sea change' is when people migrate to coastal areas.

Internal migration is when Australians migrate within Australia. They may migrate for work or for education, to be close to family, for cheaper housing or a 'sea-change' or 'tree change'.

A 'tree change' is when people migrate to rural areas.

The Australian Bureau of Statistics reports on **net migration** to and from capital cities. For example:

If 100 people arrive and 90 people leave, net migration is 10.

If 100 people arrive and 108 people leave, net migration is -8.

If net migration is a negative number it means more people are leaving capital cities than moving to capital cities or states.

The three data displays below show the same data about net migration to and from all the capital cities in Australia combined. The time periods are quarters so Mar 2011 means the total of January, February and March 2011. Answer the questions on the next page.

Table 1

Quarterly net migration, greater capital cities combined

Quarter	Net migration
Mar 2011	-5,392
Sep 2011	-4,416
Mar 2012	-4,826
Sep 2012	-3,491
Mar 2013	-3,754
Sep 2013	-3,445
Mar 2014	-3,164
Sep 2014	-3,827
Mar 2015	-2,989
Sep 2015	-3,713
Mar 2016	-3,896
Sep 2016	-4,340
Mar 2017	-5,303
Sep 2017	-7,723
Mar 2018	-7,980
Sep 2018	-7,115
Mar 2019	-5,171
Sep 2019	-5,631
Mar 2020	-10,142
Sep 2020	-11,247
Mar 2021	-11,845

Source: Australian Bureau of Statistics. Regional internal migration estimates. March 2021.

Figure 1: Line graph

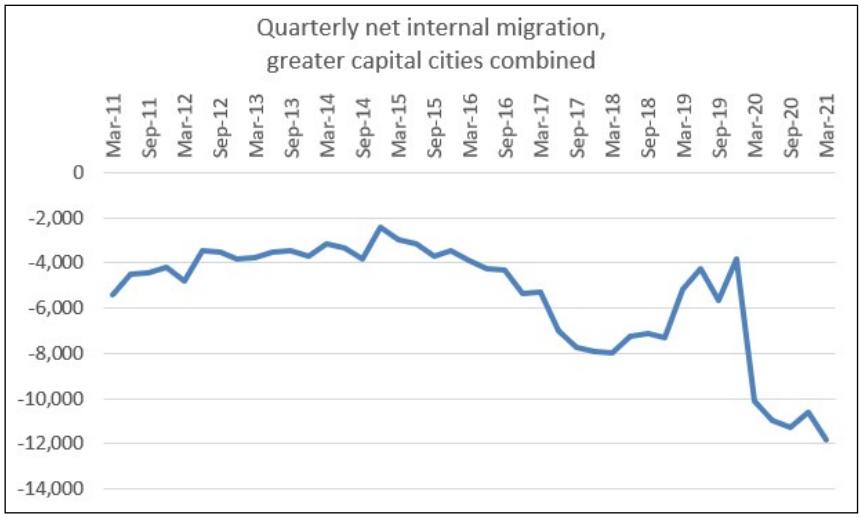
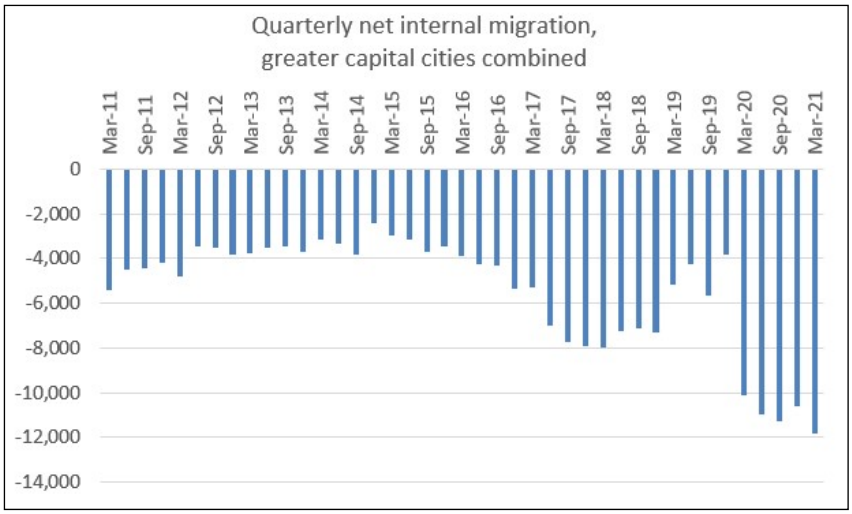


Figure 2: Bar chart



Interpreting internal migration data

Teacher page

Answers

1	How many years of data are shown?	10
2	Which data display shows the net migration figures in detail?	Table 1
3	Which data display has one line over time, showing a general trend?	Figure 1: line graph
4	Which data display shows individual lines or bars for each quarter?	Figure 2: bar chart
5	Look at the table. Which quarter had the smallest net loss from capital cities?	March 2015
6	Which quarter had the largest quarterly net loss in migration?	March 2021
7	What was happening in the world and in Australia around the time of March 2021? Why would this impact on internal migration?	The pandemic and lockdowns were encouraging people to move away from crowded cities.
8	Look at the line graph. When the line dips down, are there more or fewer people leaving capital cities?	More people are leaving capital cities.
9	Look at the bar graph. Draw a line along the tips of each bar. What do you notice about the shape of the line you have drawn?	The line has the same shape as the line graph.
10	In Geography, which data display is most suitable for showing a trend over time?	line graph
11	Which data display is best for showing detailed numerical values?	table
12	Which data display is best for comparing different time periods without exact details?	bar graph

Teaching suggestions

Before this activity, teachers could remind students about **subject-verb agreement**. In English, the verb changes depending on whether the subject is plural (more than one) or singular (one). The word 'data' is actually plural but it is commonly used as singular (even on the news) e.g. The data shows net migration. Academic publications typically use data as a plural e.g. The data show net migration. The answers below identify whether the subject is plural or singular, to help students choose the correct form of the showing verb. The teacher could go through this first with the students (ie. identify whether the subject is singular or plural).

Answers

a	Net migration estimates	**indicate**	that capital cities are becoming less appealing for many Australians.
b	The data from the ABS (singular)	**reveals**	that more Australians are moving to the regions, rather than from regions to the capitals.
c	The line graph (singular)	**demonstrates**	a trend away from urban areas over the past ten years.
d	Quarterly net migration numbers (plural)	**highlight**	that March 2021 had the greatest loss of people from capital cities to the regions.
e	Internal migration numbers (plural)	**show**	that regions are becoming more popular that cities for migration within Australia.
f	The most recent net migration numbers (plural)	**indicate**	that migration to the regions is more popular than ever.

Interpreting internal migration data

Answer these questions about the data displays on the previous page. *Short answers are fine.*

1	How many years of data are shown?	
2	Which data display shows the net migration figures in detail?	
3	Which data display has one line over time, showing a general trend?	
4	Which data display shows individual lines or bars for each quarter?	
5	Look at the table. Which quarter had the smallest net loss from capital cities?	
6	Which quarter had the largest quarterly net loss in migration?	
7	What was happening in the world and in Australia around the time of March 2021? Why would this impact on internal migration?	
8	Look at the line graph. When the line dips down, are there more or fewer people leaving capital cities?	
9	Look at the bar graph. Draw a line along the tips of each bar. What do you notice about the shape of the line you have drawn?	
10	In Geography, which data display is most suitable for showing a trend over time?	
11	Which data display is best for showing detailed numerical values?	
12	Which data display is best for comparing different time periods without exact details?	

When we write about data, we use **showing verbs** e.g. shows, reveals, demonstrates, indicates, highlights

e.g.	Net migration figures	**show**	that more Australians are leaving capital cities.
	the data (plural: figures)	*showing verb*	*What does the data show?*
e.g.	The March 2021 number	**shows**	that more Australians are moving to the regions.
	the data (singular: number)	*showing verb*	*What does the data show?*

Use a showing verb to complete each sentence below.

a	Net migration estimates	that capital cities are becoming less appealing for many Australians.
b	The data from the ABS	that more Australians are moving to the regions, rather than from regions to the capitals.
c	The line graph	a trend away from urban areas over the past ten years.
d	Quarterly net migration numbers	that March 2021 had the greatest loss of people from capital cities to the regions.
e	Internal migration numbers	that regions are becoming more popular than cities for migration within Australia.
f	The most recent net migration numbers	

Analysing interstate migration data

Teacher page

Teaching suggestions

Teachers can provide differentiated support for students to analyse the interstate migration data below. More experienced students may be able to analyse the data and follow the model without assistance. However, for the average class, the following steps may provide scaffolding support:

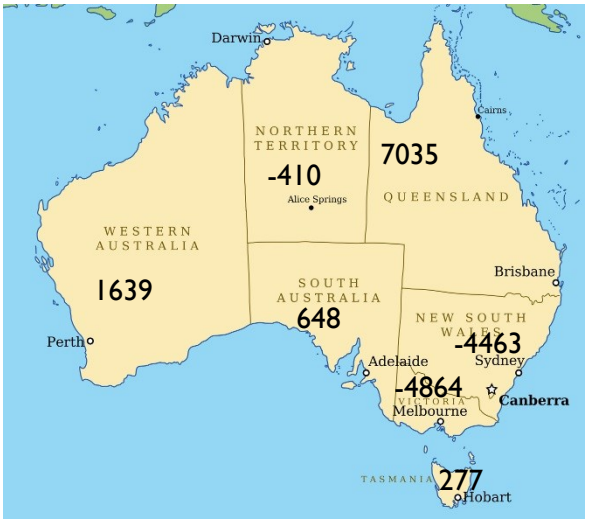
1 Before starting this page, remind students about the previous pages and the information they have learned about net migration from capital cities to regional areas.

2 Read the model text and identify the stages and language features (as shown on the student page).

3 Tell students that they will see new data about a different topic: interstate migration e.g. from Victoria to WA, or from South Australia to the Northern Territory. The data in the table shows the number of people who permanently left each state in three months (to March 2021) and the number of people who arrived in each state to live.

4 Ask students to look at the numbers. Ask key questions:
- how many people moved in the quarter?
- which states lost the most residents?
- which states gained the most residents?
- what was happening in March 2021 quarter? (pandemic, lockdowns, working from home)
- what are the attractions of different states in Australia?
- why might someone move states?

5 Invite students to look at the bar chart and compare states.



6 Give students a map of Australia (or ask students to draw a map of Australia including the states) and write the net migration gains and losses on each state, as shown above.

7 Ask students to work out the most important points (for the general statement). Tell them they don't have to refer to every state, just the most significant changes.

8 Revise the stages and language features of the model paragraph and spend more time assisting students who need more support

Possible answers

General trend

Facts and evidence

Reasons

The March 2021 interstate migration data indicates that more people from New South Wales and Victoria migrated interstate and the biggest gain in migration was in Queensland. More than 4,800 people from Victoria moved interstate and 4,463 people from New South Wales migrated in March quarter 2021. Queensland had a boost of 7,035 new residents and Western Australia gained more than 1600 new residents. Possible reasons for these migration numbers were due to the pandemic and more lockdowns in big cities in New South Wales and Victoria. This may have made Queensland a more desirable location. In addition, since employees can work from home, they may have been attracted by the warmer climate and the more relaxed lifestyle of Queensland.

Describe the most important overall point about the data. Use a showing verb.

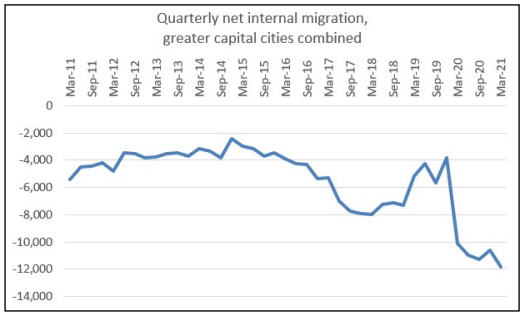
Give at least two facts to support the overall point.

Explain reasons for the data using low modality and cause and effect language.

Analysing interstate migration data

After we have analysed data, we can write an analysis paragraph.
The stages of an analysis paragraph are:

1. **General trend** - make an overall statement about the most important feature of the data
2. **Specific facts** - add facts that support the overall statement.
3. **Reasons** - provide possible reasons for the data.



Read the model paragraph below.

showing verb

most important point about the data

General trend

Facts and evidence

Reasons

Net migration data **shows** that more Australians moved from capital cities to regional areas. In March 2021 quarter, there was a net loss of 11,200 people from capital cities to the regions. This is the largest net loss for the past ten years. This trend **may** be due to the pandemic and lockdowns because crowded capital cities were less desirable places to live than rural areas. Another **possible** reason for migration to the regions was that working from home became more popular so employees did not have to travel to city offices.

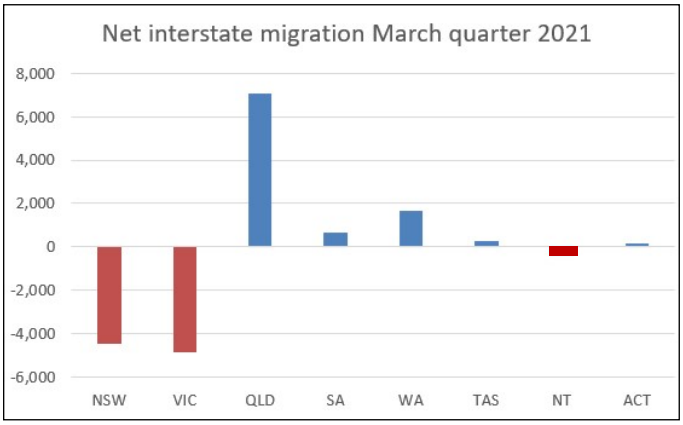
low modality
e.g. may, possible

cause and effect language
e.g. due to

Analyse the data below about interstate migration in Australia. Work out what the data means and write a paragraph using the model above.

March 2021 quarter net interstate migration

	Arrivals	Departures	Net
NSW	26,221	30,684	-4,463
VIC	18,907	23,771	-4,864
QLD	28,500	21,465	7,035
SA	7,460	6,812	648
WA	9,161	7,522	1,639
TAS	3,808	3,531	277
NT	4,009	4,419	-410
ACT	6,076	5,938	138
	104,142	104,142	



Source: Australian Bureau of Statistics. Regional internal migration estimates. March 2021.

General trend

Facts and evidence

Reasons

Describe the most important overall point about the data. Use a showing verb.

Give at least two facts to support the overall point.

Explain reasons for the data using low modality and cause and effect language.

Consequences of internal migration in China

Teacher page

Teaching suggestions

The next two pages explore positive and negative consequences of internal migration in China from rural areas to cities. The consequences are grouped according to type of consequence (economic, environmental) and focusing on different groups and different areas that are impacted.

A useful source of information about internal migration in China can be found below.

Source:
Kemp, J. & Spearritt, M. (2021, September). *China's Labour Market: Covid-19 and beyond*. Reserve Bank of Australia Bulletin. Available at https://www.rba.gov.au/publications/bulletin/2021/sep/chinas-labour-market-covid-19-and-beyond.html

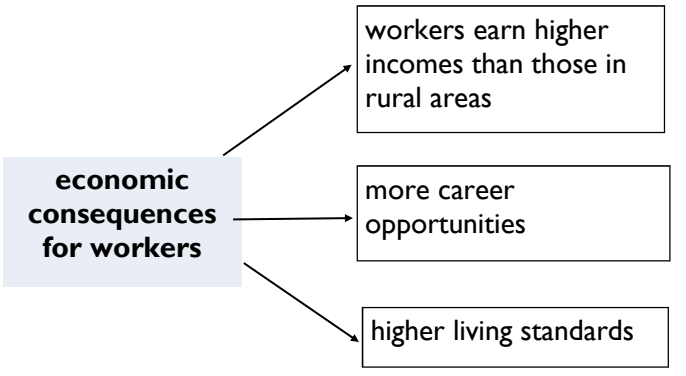
Curriculum links

NSW Stage 5
Internal migration
Students: investigate reasons for and effects of internal migration in Australia and another country, for example: (ACHGK056, ACHGK057)

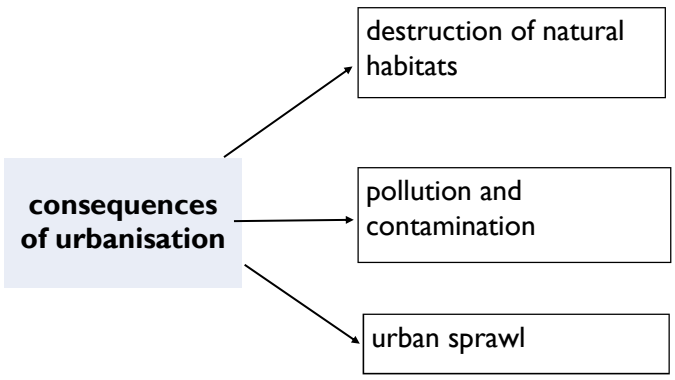
- analysis of trends in temporary and permanent internal migration
- discussion of economic, social or environmental consequences of internal migration on places of origin and destination

The new Chinese mega-city, Shenzhen

Possible answers



Internal migration has economic consequences for workers. Workers earn higher wages than in rural areas so they have more disposable income. In the city, workers have better career opportunities and more job prospects. This leads to higher living standards for migrant workers.



Internal migration has contributed to urbanisation which has serious negative environmental consequences. Natural habitats have been destroyed for construction of factories and houses. This results in deforestation, loss of habitats and species of plants and animals. Since millions of people are living in megacities, pollution and contamination are serious problems. Urban sprawl has meant that cities are becoming bigger, leading to more deforestation and environmental damage.

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Consequences of internal migration in China

Geographers often explain the consequences or impacts of a phenomenon, such as internal migration in China. Since the late 1980s, millions of workers have moved from rural areas to urban areas such as Shenzhen, Shanghai and Beijing. There are approximately 286 million internal migrant workers in China. One third of China's total workforce are migrant workers. Some consequences of internal migration in China are shown below.

economic consequences for China

- **economic growth**
- **export industries**
- **rise of middle class**

Internal migration has economic consequences for China. Internal migration has provided a source of workers that has fuelled economic growth for China. The labour of migrant workers enabled Chinese companies to produce and export goods to the rest of the world. The buying power of migrant workers created a large middle class in China which can afford to buy products and services, leading to more growth.

Map of China showing regions where most internal migrants live and work.

Look at the diagram below showing economic consequences for workers and write a short paragraph about it. Use the paragraph above as a model.

economic consequences for workers

- workers earn higher incomes than those in rural areas
- more career opportunities
- higher living standards

Internal migration has had _____ consequences for _____

_____

_____

_____

_____

_____

_____

Internal migration to cities is leading to the urbanisation of large areas of China. Fill in the diagram and write a paragraph about the environmental consequences.

environmental consequences of urbanisation

- destruction of natural habitats
- _____
- _____

_____

_____

_____

_____

_____

_____

_____

_____

Explaining negative consequences

Teacher page

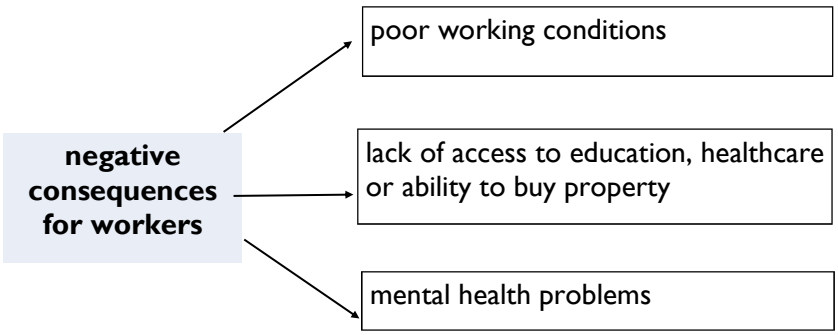
Teaching suggestions

This page continues the consequential explanation of impacts of internal migration in China. These activities can be differentiated for various student needs using scaffolding. The teacher can help the class by doing the planning on the board and by writing the first sentence together with the class before letting students work in groups or individually.

See Fact Sheet 1 for the master list of cause and effect language in Geography.

Answers

Internal migrant workers in China experience many negative **consequences**. One major **impact** involves poor working conditions. Many migrant workers are exploited **because** they work more than 60 hours per week in hot and crowded factories. They may have to live in large shared dormitories and have little leisure time. The Chinese registration system called 'hukou' also **causes** major problems for internal migrants. Migrant workers from rural areas cannot access education or healthcare or buy a property **if** they do not have an urban 'hukou'. **Consequently**, many migrant workers are disadvantaged in the cities. Migrant workers also experience many negative **effects** on their mental health. The stress of long work days, sleep deprivation and separation from friends and family **result in** serious mental health problems for many migrant workers.



Possible answers

cause and effect language is in bold

Internal migration in China has led to many negative **consequences** for rural areas. There are not enough workers for farms **since** most of the able-bodied people have moved to factory jobs in the city. **Consequently**, crops cannot be harvested and farms decline in productivity. **As a result of** migration, only old people and young children are left behind. This places enormous burdens on elderly people to work on farms and to care for young children. Children experience loneliness and anxiety **as** they are separated from their parents who are working far away in the cities. Another **outcome** is that local communities are destroyed **because** there are not enough people left behind to maintain community activities. Farms are less productive **so** there may not be enough food to nourish the people. **As a result**, there may be widespread poverty in rural areas and food insecurity **because** not enough food is grown to support the population.

Explaining negative consequences

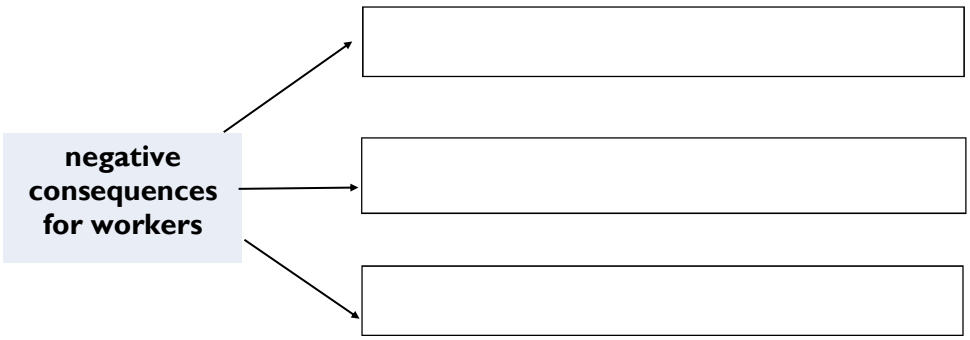
Read the paragraph below about negative consequences for internal migrant workers in China. Underline the cause and effect language.

Exhausted factory workers sleeping at work

Dormitory accommodation for workers
Source: chinalaborwatch.org

Internal migrant workers in China experience many negative consequences. One major impact involves poor working conditions. Many migrant workers are exploited because they work more than 60 hours per week in hot and crowded factories. They may have to live in large shared dormitories and have little leisure time. The Chinese registration system called 'hukou' also causes major problems for internal migrants. Migrant workers from rural areas cannot access education or healthcare or buy a property if they do not have an urban 'hukou'. Consequently, many migrant workers are disadvantaged in the cities. Migrant workers also experience many negative effects on their mental health. The stress of long work days, sleep deprivation and separation from friends and family result in mental health problems for many migrant workers.

Based on the paragraph above, draw a consequences diagram



Look at the diagram below about negative consequences of internal migration for rural areas. Write a paragraph about these consequences and explain why they are a problem. Use cause and effect language.

Internal migration in China has led to many negative consequences for _____

_____

_____

_____

_____

_____

_____

_____

International migration to Australia

Teacher page

Teaching suggestions

This task helps students with literal and inferential comprehension. The three sets of questions are 'here, hidden, head'. Sometimes this is called a 'three level reading guide'.

1. Remind students what they have learned about international migration.
2. Read the text to the students.
3. Let the students do the HERE questions first, then discuss the HIDDEN and HEAD questions before students attempt to write the answers.

Students who finish quickly could create some more 'head' questions to ask the rest of the class to discuss.

Curriculum links

NSW Stage 5

International migration

Students investigate the reasons for and effects of international migration to Australia, for example: (ACHGK058)

- analysis of international migration patterns
- examination of characteristics and spatial patterns of Australia's cultural diversity

Suggested answers

1. Here

The answers to these questions are HERE on the page.

1. *Look at the photo on the page and describe it.* There is a map of Australia containing many tiny photos of people's faces from different cultures, gender and ages.
2. *When did the first people come to Australia?* 65,000 years ago
3. *Who were they?* ancestors of Indigenous Australians
4. *After that, how many stages of migration were there? When? Who were the main cultural groups who arrived in Australia?* Four stages:
   - European/British in 1700s
   - Gold rushes- different cultures including Chinese
   - People from the United Kingdom after WWII
   - People from Asia and the Middle East in 1970s

2. Hidden

The answers to these questions are HIDDEN which means that interpretation is needed.

1. *The information above is in two sections. What is each section about?* The first paragraph is a recount of the history of international migration. The second paragraph has facts from the latest census.
2. *What is a prospector* (line 7)? Someone who is looking for gold
3. *What is the meaning of first generation or second generation Australian*? First generation means they were born overseas. Second generation means a parent was born overseas.
4. *Calculate how many people speak a language other than English at home* (5.5 million) *and how many were born overseas* (8.6 million).

3. Head

The answers to these questions are in your HEAD which means that you have to use your own ideas.

1. Why do you think Australia changed its policy to attract more migrants after the World War II? Australia had nearly been invaded by the Japanese so the government wanted Australia to be stronger.
2. What are some of the benefits of international migration?
   - migrants bring skills, talents and experience that make Australia more creative and stronger
   - cultural diversity creates tolerance, understanding and respect
   - culturally diverse Australia has knowledge and experience to interact with and trade with other countries in the world and deal with the challenges of the world e.g. global warming
3. What might be some of the challenges of international migration for Australia in the future?
   - how to deal with large numbers of refugees
   - encouraging social cohesion with so many different groups
   - urbanisation (as migrant populations mostly live in big cities)

Sources:
Parliament of Australia (2017). *Migration to Australia since federation: a guide to the statistics.*
Australian Bureau of Statistics (2016). *Cultural diversity in Australia.*

International migration to Australia

Read this information about international migration to Australia. Answer the questions in the boxes below.

International migration has shaped the development of Australia. The first arrivals were the ancestors of Indigenous Australians over 65,000 years ago. The first European colony was established in 1788 as a British convict settlement. Free settlers followed in the 1790s. The gold rushes of the mid-1800s attracted prospectors from many cultures including China. In the 1900s, international migration from non-white backgrounds was banned by the White Australia policy. By 1945, the population of Australia was seven million people. After World War II, the government began a program to attract migrants from the United Kingdom. The White Australia Policy ended in 1966. In the 1970s, thousands of migrants and refugees arrived in Australia from Asia and the Middle East. Since 1945, more than 7.5 million international migrants have settled in Australia.

In 2022, the Australian population was 26 million. Aboriginal and Torres Strait Islanders make up 2.8% of the population. Around a third of the Australian population was born overseas. Nearly half of the population is first or second generation Australian, meaning that they were born overseas or one or both parents were born overseas. More than one fifth (21%) of Australians speak a language other than English at home.

1. Here

The answers to these questions are HERE on the page.

1. Look at the photo on the page and describe it.
2. When did the first people come to Australia? _____
3. Who were they? _____
4. After that, how many stages of migration were there? When? Who were the main cultural groups who arrived in Australia?

2. Hidden

The answers to these questions are HIDDEN which means that interpretation is needed.

1. The information above is in two sections. What is each section about? _____
2. What is a prospector (line 7)?
3. What is the meaning of first generation or second generation Australian?
4. Calculate how many people speak a language other than English at home and how many were born overseas. _____

3. Head

The answers to these questions are in your HEAD which means that you have to use your own ideas.

1. Why do you think Australia changed its policy to attract more migrants after World War II? _____
2. What are some of the benefits of international migration?
3. What might be some of the challenges of international migration for Australia in the future? _____

Benefits of international migration

Teacher page

In Geography, it is very important for students to learn how to present different arguments and points of view, how to advocate for particular viewpoints and positions, and how to support arguments with evidence. The next few pages in this unit are related. They teach students literacy skills related to persuasive texts. The focus will be an **Exposition**, a one sided argument.

The following literacy focus areas will be covered:

- grouping arguments into abstract categories (social/ cultural and economic)
- evaluative language
- supporting arguments with reputable and relevant evidence and facts
- phases of an argument paragraph
- stages of an Exposition genre
- text connectives
- counter-arguments and using concession to strengthen the argument
- write an Exposition.

Curriculum links

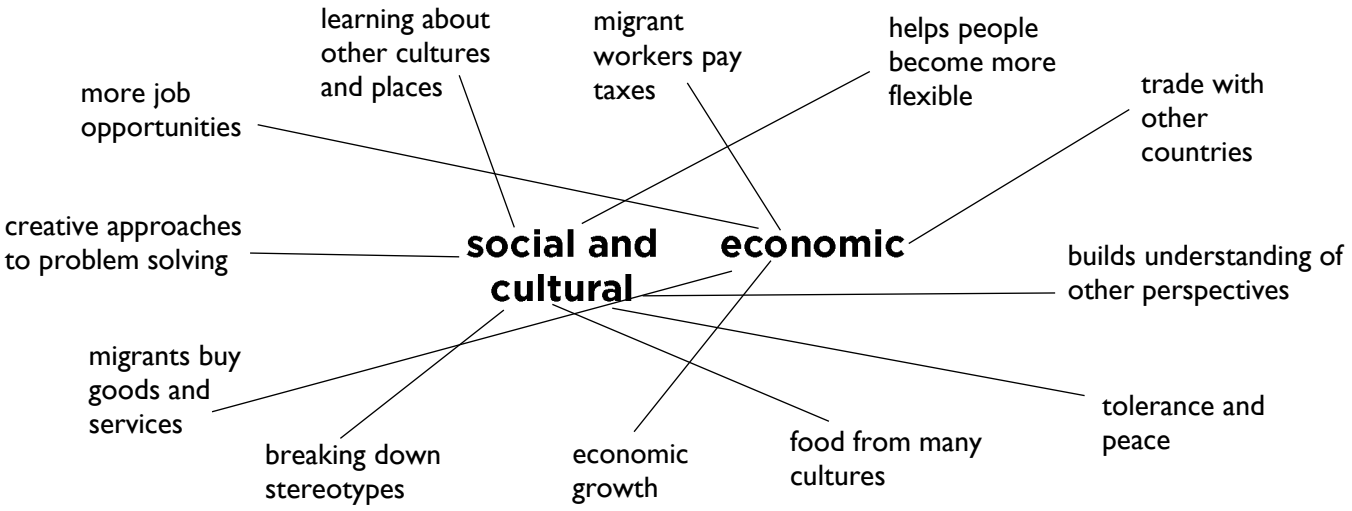
NSW Stage 5

International migration

Students investigate the reasons for and effects of international migration to Australia, for example: (ACHGK058)

- examination of characteristics and spatial patterns of Australia's cultural diversity

Answers



Answers

positive	negative
tolerant	discrimination
flexible	prejudice
growth	criticism
understanding	burden
interesting	concern
expand	inadequate
opportunities	unfair
benefits	claim
success	overcrowding

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Benefits of international migration

International migration to Australia has resulted in many social and cultural benefits for Australians. It has also led to economic advantages.

Draw lines to match the type of benefit (social/cultural or economic) with examples.

more job opportunities

learning about other cultures and places

migrant workers pay taxes

helps people become more flexible

trade with other countries

creative approaches to problem solving

social and cultural

economic

builds understanding of other perspectives

migrants buy goods and services

breaking down stereotypes

economic growth

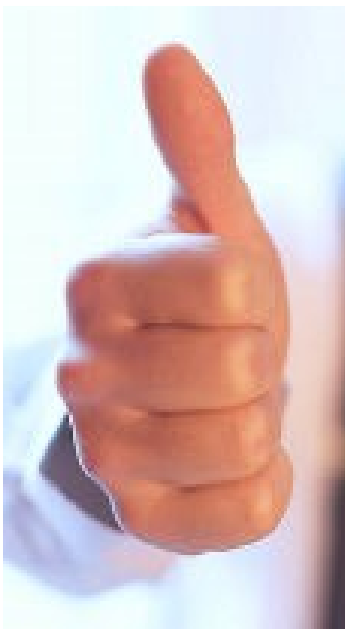
food from many cultures

tolerance and peace

Sort the evaluative language below into two categories: positive or negative. Some of the words depend on the context, but you can decide if the word would usually relate to a positive judgement or a negative judgement related to migration.

Evaluative language

discrimination understanding criticism growth burden concern
inadequate unfair benefits overcrowding tolerant flexible
claim prejudice interesting expand opportunities success



positive	negative

Benefits of international migration

Teacher page

Paragraph structures

This page provides a paragraph structure for the Argument stage of an Exposition. Many schools use PEEL or TEEL as paragraph structures, and that would work well for these activities too. PEEL or TEEL paragraphs work with certain genres and certain topics, not all of them. PEEL/TEEL paragraphs work with Descriptive Reports and Expositions, but they are not as common in Compare and Contrast Reports, Explanations or Evaluations. If you would prefer to use PEEL/TEEL, the analysis is shown on the right. You can adapt any of the paragraph activities on this and the next page to PEEL/ TEEL.

P Cultural diversity creates a more **flexible**, **adaptive** and **peaceful** society.

E When people from many different cultures interact, they can share a wide range of ideas and a variety of ways of problem solving (FECCA, 2016). This flexible mindset encourages **innovation** and **creativity**,

E which is **helpful** for individuals, workers, students and for society as a whole. **Diverse** societies like Australia are built on **respectful** relationships between groups of people, the government and law enforcement (United Nations, 2016).

L Consequently, cultural diversity leads to **greater tolerance, cohesion and harmony** within the society.

Teaching suggestions

1. Teachers could explain the term social (people and relationships). Students could discuss their ideas about social benefits of migration.
2. Teachers read the model paragraph and ask students to highlight and underline the features.
3. The class could discuss what makes evidence reliable and reputable (e.g. from the government, university, independent sources, lack of bias, large studies, scientific methods etc.)
4. Teachers can differentiate support for students to analyse the second paragraph.

P Another social benefit is that multiculturalism makes Australian life more **colourful** and **interesting**

E Migrants to Australia have brought with them new and **unique** products, cuisines, arts and cultural festivals which all Australians can **enjoy** (FECCA, 2016). A recent survey shows that 85% of Australians believe that

E 'multiculturalism has been **good** for the country', which is a **higher rating** than for other government policies (Scanlon Foundation, 2021).

L Therefore, this evidence shows that migration has made Australian life more **interesting** and **diverse**.

Answers

State the argument in the topic sentence

Evidence

Restate the argument in different words

Another social benefit is that international migration makes Australian life more **colourful** and **interesting**. Migrants to Australia have brought with them new and **unique** products, cuisines, arts and cultural festivals which all Australians can **enjoy** (FECCA, 2016). A recent survey shows that 85% of Australians believe that 'multiculturalism has been **good** for the country', which is a **higher rating** than for other government policies (Scanlon Foundation, 2021). Therefore, this evidence shows that migration has made Australian life more **interesting** and **diverse**.

positive evaluative language (bold)

use reputable sources e.g. government

a text connective links ideas Therefore

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Benefits of international migration

This page explores how to respond to this instruction: **Identify the benefits of international migration for Australia.** The genre (purpose) is an Exposition, which persuades the reader. The overall position or viewpoint is called the **thesis.** In this case, the thesis is that **international migration has many benefits for Australia.**

Exposition
An Exposition has these stages:
- **thesis**: state the position
- **arguments**: support the thesis
- **counter-argument**: show that you have considered opposing views
- **restate thesis**: reinforce the position

Read this information about international migration to Australia. Answer the questions in the boxes below.

Argument + Evidence

State an argument that supports the thesis. Use evaluative language.

Support the argument with facts and evidence from reliable sources.

State the argument in the topic sentence

Evidence

Restate the argument in different words

Cultural diversity creates a more **flexible**, **adaptive** and **peaceful** society. When people from many different cultures interact, they can share a wide range of ideas and a variety of ways of problem solving (FECCA, 2016). This flexible mindset encourages innovation and creativity, which is helpful for individuals, workers, students and for society as a whole. Diverse societies like Australia are built on respectful relationships between groups of people, the government and law enforcement (United Nations, 2016). Consequently, cultural diversity leads to **greater tolerance, cohesion and harmony** within the society.

use positive evaluative language

refer to reputable sources e.g. government

text connective links ideas

Federation of Ethnic Communities' Councils in Australia [FECCA]. 2016. *Fact Sheet 8: Maximising the value of cultural diversity.*
United Nations. (2016). Leaving *no one behind: the imperative of inclusive development. Report on the World Social Situation 2016.* New York: UN.

Read the next argument paragraph about another social benefit of international migration. Identify the stages. Highlight the positive evaluation language. Underline the evidence and sources. Circle the text connective.

Another social benefit is that international migration makes Australian life more colourful and interesting. Migrants to Australia have brought with them new and unique products, cuisines, arts and cultural festivals which all Australians can enjoy (FECCA, 2016). A recent survey shows that 85% of Australians believe that 'multiculturalism has been good for the country', which is a higher rating than for other government policies (Scanlon Foundation, 2021). Therefore, this evidence shows that migration has made Australian life more interesting and diverse.

Federation of Ethnic Communities' Councils in Australia [FECCA]. 2016. *Fact Sheet 8: Maximising the value of cultural diversity.*
Scanlon Foundation. (2021). *Mapping social cohesion survey 2020*. Monash University.

Economic benefits of migration

Teacher page

Teaching suggestions

Teachers can differentiate this activity by providing more support to students who need it. To start with, the teacher could help students to read and understand the information in the fact box. Important concepts to understand are economic growth, GDP, pensions and Australia's ageing population. Then teachers could write the first sentence with students on the board. Students could then work in pairs or groups, or independently.

The economy is concerned with:

- producing goods
- delivering services
- consuming goods and services
- wages and income for workers
- profits for employers
- government spending
- imports and exports.

Answers

State the argument in a topic sentence	The economic benefits of international migration include a stronger and bigger economy/economic growth.	*What are the main benefits? Use positive evaluation words.*
Evidence	Migration leads to more consumers and more workers, which grows the economy. The Productivity Commission reports that GDP (Gross Domestic Product i.e. the amount of production in the economy) is around 7% higher with international migration than it would be without migration (Breunig, Deutscher & To, 2014).	*Use evidence from the fact box. Start with GDP. Add a reference*
	This is because migrants consume goods and services that boost the economy. In addition, most migrants are young so their taxes can help to fund pensions for the ageing Australian population in the future (Australian Chamber of Commerce and Industry, 2018).	*Add more facts and a reference.*
Restate the argument in different words	As a result, migration leads to a flourishing economy and higher living standards for all Australians, now and in the future.	*Start with a text connective. Summarise how migration impacts on the economy and what the result it.*

Answers

Thesis: International migration has many benefits for Australia.

Arguments: Cultural diversity creates a more flexible, adaptive and peaceful society.
Another social benefit is that international migration makes Australian life more colourful and interesting.
The economic benefits of migration include a stronger economy and economic growth.

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Economic benefits of migration

The next argument paragraph is about economic benefits of migration. Use the fact box and writing hints to write an argument paragraph.

Economy fact box

- Migration leads to more workers and more consumers in an economy
- Gross Domestic Product (GDP) is a measure of production in the economy
- The Productivity Commission found that GDP is around 7% higher with international migration than it would be without migration (Breunig et al., 2014)
- Migrants consume goods and services
- Most migrants are young; the rest of the Australian population is ageing
- Taxes of young migrant workers can help to fund future pensions for the ageing Australian population (Australian Chamber of Commerce and Industry, 2018).

State the argument in a topic sentence

The economic benefits of international migration include _____

What are the main benefits? Use positive evaluation words. Keep it general.

Evidence

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Use evidence from the fact box. Start with GDP. Add a reference. Use the author names not Productivity Commission.

Add more facts and a reference.

Restate the argument in different words

_____
_____
_____
_____

Start with a text connective from the box below. Summarise how migration impacts the economy and what the result is.

References

Australian Chamber of Commerce and Industry. (2018). *Migration works for all of us. Policy position paper*. Canberra.

Breunig, R., Deutscher, N. & To, H.T. (2014). 'The relationship between immigration to Australia and the labour market outcomes of Australian-born workers', *Productivity Commission Report Migrant Intake into Australia.* Australian Government, Canberra.

Text connectives
Therefore
As a result
Consequently
Thus

List the three arguments that support the thesis statement.

Thesis: International migration has many benefits for Australia.

Arguments: _____
_____
_____

Dealing with opposing views

Teacher page

The study of Geography involves big issues which include a variety of viewpoints. For example, there are people who support international migration while others oppose it. For some issues, including international migration, data is available to support different positions. In addition, even when a writer takes a position, there are many exceptions and conditions involved.

This page explores counter-arguments which address opposing views while still supporting a main viewpoint or position. Counter-arguments show that the writer has read widely and has evaluated many different viewpoints. On the next two pages, students will practise the skill of acknowledging other views while still maintaining the thesis position.

Answers

Present the opposing view and evidence

Criticise the opposing view

Reinforce the thesis

Some critics claim that migration has a negative impact on traffic congestion and drives up house prices in large cities. Migrants often settle in cities where they can find employment and be near extended family. Despite this, migration is not totally responsible for congestion and house prices. Traffic congestion is caused by adequate infrastructure, such as transport networks, which the government is responsible for (Australian Chamber of Commerce and Industry, 2018). According to the Reserve Bank of Australia, high house prices are due to low interest rates and Australian investors buying properties, not due to migration. In fact, most migrants are students who rent properties rather than purchasing them (RBA, 2021). Consequently, evidence shows that migration is not responsible for urbanisation problems and, instead, migration drives economic growth.

Australian Chamber of Commerce and Industry. (2018). *Migration works for all of us. Policy position paper*. Canberra.
Reserve Bank of Australia [RBA]. (2021). *Submission to the Inquiry into Housing Affordability and Supply in Australia. House of Representatives Standing Committee on Tax and Revenue*. Canberra.

1	What is the opposing view against the thesis that migration has many benefits for Australia?	Migration has a negative impact on traffic congestion and drives up house prices in large cities
2	Who believes this view?	Some critics
3	What is the effect of the word 'claim' in line 1?	The word 'claim' makes it sound incorrect, or not based on evidence
4	In line 3, the words 'despite this' (a conjunction of concession) flip the argument back to the main thesis again. What follows the words 'despite this'?	After 'despite this', an argument in favour of migration is made, that is, that migration is not totally responsible for the problem. The word 'totally' shows that the writer is admitting that migration has some impact on urbanisation.
5	What are reasons provided that show why the opposing view is not true?	There are three reasons: 1. the government has not provided enough infrastructure 2. high house prices are caused by low interest rates and investors 3. migrants are mostly students who rent houses
6	What are the two sources provided? Are they reputable? Why/why not?	Australian Chamber of Commerce and Industry is quite reputable, but on the side of big business, so it might be biased. The Reserve Bank of Australia is reputable. They advise the government and set interest rates.

Dealing with opposing views

To be persuasive in an Exposition, we can include a **counter-argument** to show that we have considered other points of view and opposition to our thesis. If we can deal with opposing views, then our thesis will seem stronger and more sophisticated. Follow these three steps for a strong counter-argument:

1 Present the opposing view

State the opposite view to our thesis. Include evidence used by the opposing view.

2 Criticise the opposing view

Use facts and data and strong reasons to show why the opposite view is not actually true, or it is not relevant or not effective.

3 Reinforce the thesis

Restate our main thesis again.

Read the counter-argument below: that migration causes problems associated with urbanisation. Label the three stages and answer the questions below.

Some critics claim that migration has a negative impact on traffic congestion and drives up house prices in large cities. Migrants often settle in cities where they can find employment and be near extended family. Despite this, migration is not totally responsible for congestion and house prices. Traffic congestion is caused by adequate infrastructure, such as transport networks, which the government is responsible for (Australian Chamber of Commerce and Industry, 2018). According to the Reserve Bank of Australia, high house prices are due to low interest rates and Australian investors buying properties, not due to migration. In fact, most migrants are students who rent properties rather than purchasing them (RBA, 2021). Consequently, evidence shows that migration is not responsible for urbanisation problems and, instead, migration drives economic growth.

Australian Chamber of Commerce and Industry. (2018). *Migration works for all of us. Policy position paper*. Canberra.

Reserve Bank of Australia [RBA]. (2021). *Submission to the Inquiry into Housing Affordability and Supply in Australia. House of Representatives Standing Committee on Tax and Revenue*. Canberra.

1 What is the opposing view against the thesis that migration has many benefits for Australia?

_____

2 Who believes this view? _____

3 What is the effect of the word 'claim' in line 1? _____

4 In line 3, the words 'despite this' (a conjunction of concession) flip the argument back to the main thesis again. What follows the words 'despite this'?

_____

_____

5 What are reasons provided that show why the opposing view is not true?

_____

_____

6 What are the two sources provided? Are they reputable? Why/why not?

_____

_____

Write a counter-argument

Teacher page

Teaching suggestions

Before commencing this activity, the teacher could practise writing concession statements with students. Examples are given below. Teachers could write the example on the board and practise with students writing more concession statements using conjunctions of concession. The class could discuss how powerful concession is in showing the other point of view and then 'destroying' it with reasons, facts and evidence.

About the references

The Productivity Commission is the Australian Government's independent research and advisory body on a range of economic, social and environmental issues affecting the welfare of Australians.

The Australian Chamber of Commerce and Industry is Australia's largest business association, comprising state and territory chambers of commerce and national industry associations.

Sentences using conjunctions of concession

	Despite **Although** **Even though** **Whereas** **While**	_____,	_____
		opposing viewpoint	argument that supports the main thesis
e.g.	**Despite**	media reports that migrants are dole bludgers,	over 95% of skilled migrants are employed soon after arrival.
e.g.	**Even though**	some people think that migrants take the jobs of Australian-born workers,	research shows that there is no impact of migration on Australian jobs.
e.g.	**While**	some critics claim that migrants take the jobs of Australian-born workers,	migration creates more jobs, especially when migrants start their own businesses.

Possible answers

1. Present the opposing view

Some critics **claim** that international migrants live on social security or take the jobs of Australian-born workers.

2. Criticise the opposing view

Despite this, the facts are that over 95% of skilled migrants are employed soon after their arrival and there is no impact of migration on the jobs of Australians (Breunig, Deutscher & To, 2014). Migration actually creates more jobs, especially when migrants start their own businesses (Australian Chamber of Commerce and Industry, 2018).

3. Reinforce the thesis

Consequently, there is strong evidence that migration expands work opportunities for all Australians.

Write a counter-argument

Critics of migration have said that migrants live on social security or take jobs from Australians. Write a counter-argument paragraph using the fact box.

Opposing view

Migrants live on social security or take the jobs of Australian-born workers.

Conjunctions of concession

despite despite this
although whereas while

Fact box

Source: Breunig, Deutscher & To. (2014).

- Over 95% of skilled migrants are employed soon after their arrival in Australia.
- Migration has no impact on the jobs of Australians.

Source: Australian Chamber of Commerce and Industry (2018)

- Migration creates more jobs, especially when migrants start their own businesses.

Australian Chamber of Commerce and Industry. (2018). Migration works for all of us. Policy position paper. Canberra.

Breunig, R., Deutscher, N. & To, H.T. (2014). 'The relationship between immigration to Australia and the labour market outcomes of Australian-born workers', *Productivity Commission Report Migrant Intake into Australia*. Australian Government, Canberra.

1 Present the opposing view

State the opposite view to our thesis.

Some critics _____ that _____

_____

_____

2 Criticise the opposing view

Use facts and data and strong reasons to show why the opposite view is not actually true, or it is not relevant or not effective.

_____

_____

_____

_____

_____

_____

_____

_____

_____

3 Reinforce the thesis

Restate our main thesis again.

_____

_____

_____

Australian Chamber of Commerce and Industry. (2018). *Migration works for all of us. Policy position paper*. Canberra.

Breunig, R., Deutscher, N. & To, H.T. (2014). 'The relationship between immigration to Australia and the labour market outcomes of Australian-born workers', *Productivity Commission Report Migrant Intake into Australia*. Australian Government, Canberra.

Exposition: Benefits of migration

Teacher page

Teachers should give all students a paper copy of this page so they can cut each section or tear (with a ruler) and rearrange it in order.

Answers

Thesis

Australia is a successful global example of international migration, with more than 300 multicultural groups living and working together (Parliament of Australia, 2017). International migration offers many benefits to Australia, including cultural diversity, a more interesting lifestyle as well as economic growth.

Arguments

Cultural diversity creates a more flexible, adaptive and peaceful society. When people from many different cultures interact, they can share a wide range of ideas and a variety of ways of problem solving (FECCA, 2016). This flexible mindset encourages innovation and creativity, which is helpful for individuals, workers, students and for society as a whole. Diverse societies like Australia are built on respectful relationships between groups of people, the government and law enforcement (United Nations, 2016). Consequently, cultural diversity leads to greater tolerance, cohesion and harmony within society.

Another social benefit is that international migration makes Australian life more colourful and interesting. Migrants to Australia have brought with them new and unique products, cuisines, arts and cultural festivals which all Australians can enjoy (FECCA, 2016). A recent survey shows that 85% of Australians believe that 'multiculturalism has been good for the country', which is a higher rating than for other government policies (Scanlon Foundation, 2021). This evidence shows that migration makes Australian life more interesting and diverse.

The economic benefits of international migration include a stronger and bigger economy. Migration means more consumers and more workers, which grows the economy. The Productivity Commission reports that GDP (Gross Domestic Product i.e. the amount of production in the economy) is around 7% higher with international migration than it would be without migration (Breunig, Deutscher & To, 2014). This is because migrants consume goods and services that boost the economy. In addition, most migrants are young so their taxes help to fund pensions for the ageing Australian population (Australian Chamber of Commerce and Industry, 2018). As a result, migration leads to a flourishing economy and higher living standards for all Australians.

Counter-argument

Some critics claim that migration has a negative impact on traffic congestion and drives up house prices in large cities. Migrants often settle in cities where they can find employment and be near extended family. Despite this, migration is not totally responsible for congestion and house prices. Traffic congestion is caused by inadequate infrastructure, such as transport networks, which the government is responsible for (Australian Chamber of Commerce and Industry, 2018). According to the Reserve Bank of Australia, high house prices are due to low interest rates and Australian investors buying properties, not due to migration. In fact most migrants are students who rent properties rather than purchasing them (RBA, 2021). Consequently, evidence shows that migration is not responsible for urbanisation problems and, instead, migration drives economic growth.

Reinforce thesis

In summary, Australia has benefited in many ways from international migration. International migrants bring with them unique perspectives and skills that encourage diversity and creative thinking, enhance the workplace, grow the economy and help to build social cohesion. Despite unfair criticism of migrants' job prospects, international migration offers Australia the best opportunity for continued growth and prosperity.

Australian Chamber of Commerce and Industry. (2018). *Migration works for all of us. Policy position paper*. Canberra.
Breunig, R., Deutscher, N. and To, H.T. (2014). 'The relationship between immigration to Australia and the labour market outcomes of Australian-born workers', Productivity *Commission Report Migrant Intake into Australia.* Australian Government, Canberra.
Federation of Ethnic Communities' Councils in Australia [FECCA]. 2016. *Fact Sheet 8: Maximising the value of cultural diversity.*
Parliament of Australia (2017). *Migration to Australia since federation: a guide to the statistics.*
Reserve Bank of Australia [RBA]. (2021). *Submission to the Inquiry into Housing Affordability and Supply in Australia. House of Representatives Standing Committee on Tax and Revenue*. Canberra.
Scanlon Foundation. (2021). *Mapping social cohesion surveys 2020*. Monash University.
United Nations. (2016). *Leaving no one behind: the imperative of inclusive development. Report on the World Social Situation 2016*. New York: UN.

Exposition: Benefits of migration

1. Cut up these sections of the exposition and arrange them in order.
2. Label the stages: thesis
arguments
counter-argument
reinforce thesis

Another social benefit is that international migration makes Australian life more colourful and interesting. Migrants to Australia have brought with them new and unique products, cuisines, arts and cultural festivals which all Australians can enjoy (FECCA, 2016). A recent survey shows that 85% of Australians believe that 'multiculturalism has been good for the country', which is a higher rating than for other government policies (Scanlon Foundation, 2021). This evidence shows that migration makes Australian life more interesting and diverse.

Some critics claim that migration has a negative impact on traffic congestion and drives up house prices in large cities. Migrants often settle in cities where they can find employment and be near extended family. Despite this, migration is not totally responsible for congestion and house prices. Traffic congestion is caused by inadequate infrastructure, such as transport networks, which the government is responsible for (Australian Chamber of Commerce and Industry, 2018). According to the Reserve Bank of Australia, high house prices are due to low interest rates and Australian investors buying properties, not due to migration. In fact most migrants are students who rent properties rather than purchasing them (RBA, 2021). Consequently, evidence shows that migration is not responsible for urbanisation problems and, instead, migration drives economic growth.

In summary, Australia has benefited in many ways from international migration. International migrants bring with them unique perspectives and skills that encourage diversity and creative thinking, enhance the workplace, grow the economy and help to build social cohesion. Despite unfair criticism of migrants' job prospects, international migration offers Australia the best opportunity for continued growth and prosperity.

Cultural diversity creates a more flexible, adaptive and peaceful society. When people from many different cultures interact, they can share a wide range of ideas and a variety of ways of problem solving (FECCA, 2016). This flexible mindset encourages innovation and creativity, which is helpful for individuals, workers, students and for society as a whole. Diverse societies like Australia are built on respectful relationships between groups of people, the government and law enforcement (United Nations, 2016). Consequently, cultural diversity leads to greater tolerance, cohesion and harmony within society.

Australian Chamber of Commerce and Industry. (2018). *Migration works for all of us. Policy position paper*. Canberra.
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Federation of Ethnic Communities' Councils in Australia [FECCA]. 2016. *Fact Sheet 8: Maximising the value of cultural diversity.*
Parliament of Australia (2017). *Migration to Australia since federation: a guide to the statistics.*
Reserve Bank of Australia [RBA]. (2021). *Submission to the Inquiry into Housing Affordability and Supply in Australia. House of Representatives Standing Committee on Tax and Revenue*. Canberra.
Scanlon Foundation. (2021). *Mapping social cohesion surveys 2020*. Monash University.
United Nations. (2016). Leaving no one behind: the imperative of inclusive development. Report on the World Social Situation 2016. New York: UN.

Australia is a successful global example of international migration, with more than 300 multicultural groups living and working together (Parliament of Australia, 2017). International migration offers many benefits to Australia, including cultural diversity, a more interesting lifestyle as well as economic growth.

The economic benefits of international migration include a stronger and bigger economy. Migration means more consumers and more workers, which grows the economy. The Productivity Commission reports that GDP (Gross Domestic Product i.e. the amount of production in the economy) is around 7% higher with international migration than it would be without migration (Breunig, Deutscher & To, 2014). This is because migrants consume goods and services that boost the economy. In addition, most migrants are young so their taxes help to fund pensions for the ageing Australian population (Australian Chamber of Commerce and Industry, 2018). As a result, migration leads to a flourishing economy and higher living standards for all Australians.

Australia's urban future

Teacher page

Teaching suggestions

In this activity, students learn how to make a recommendation in two stages:

1. recommendation
2. reason

To start the topic, teachers could discuss the concept of 'urban future'. They could organise a class discussion to get some ideas flowing. Groups could be organised to generate ideas for actions from:

- government
- business
- communities
- individuals.

Alternatively, different groups could discuss the questions in the yellow box.

For more cause and effect language, see Fact Sheet 1.
For more on modal language, see Fact Sheet 2.

Curriculum links

NSW Stage 5
Australia's urban future
Students investigate the management and planning of Australia's urban future, for example: (ACHGK059)

- explanation of strategies used to create economically, socially and environmentally sustainable urban places
- proposal of ways for individuals and communities to contribute to a sustainable urban future

Explain Ball activity

The explain ball is a plastic beach ball with cause and effect language on it e.g. as, because, so, so that, since.

After each group has discussed some ideas, the teacher could ask a student to offer one of their recommendations, then the teacher throws the explain ball to that student. The student picks a conjunction (e.g. because) to explain their reason, why it is important or why it will improve Australia's urban future.

Then the student can throw the explain ball to another student, who provides a recommendation, uses a conjunction then explains the reason.

Literacy Works for Geography Book 2 © Literacy Works

Australia's urban future

Australia's urban future means what cities and towns might look like in the future and what it might be like to live and work there.

Think about these questions:

- How can regional areas encourage migrants to move there? What can they offer?
- How can large cities minimise environmental problems? What would you recommend?
- How can individuals become more socially connected in their town or city?
- What urban planning rules could help urban development be more sustainable? What rules would you recommend? Why?
- What kind of infrastructure should governments develop? Why?
- How can we make housing more affordable?
- What issues do you think are more important for Australia's urban future? Why?

Write five recommendations for improving Australia's urban future. Include what governments, businesses, communities and individuals could do.

Recommend + Reason

Use low or medium modality
e.g. could, may, might, possible, should, can

Support with a reason, facts and evidence.
Use cause and effect language
e.g. because, so, so that

Recommend	Reason
e.g. Local councils in regional areas could target migrants for jobs with the council	so that migrants and their families might be attracted to settle in regional areas.

How to use these resources

Each teacher page has teaching suggestions as well as answers. There are also some suggestions for extra follow-up activities.

Case studies in this unit are from marine and riverine environments: mainly the Great Barrier Reef and the Murray-Darling basin. Even if your school has chosen other depth studies for this topic, the models and examples in this unit can still be used.

Teachers can refer to the introduction section for more information on literacy pedagogy, genres of writing and literacy in Geography.

Curriculum links

Curriculum links for student activities are shown on the teacher pages.

Above: Bleached coral

Right: A blue starfish (*Linckia laevigata*) resting on hard *Acropora* and *Porites* corals. Great Barrier Reef. 2004. Photo: Richard Ling, CC BY-SA 3.0, https://commons.wikimedia.org

The table below is different from the contents list at the front of the book. This page provides an overview of worksheets that are grouped together on similar topics, as well as estimated teaching time. Some worksheets continue over several pages, as you can see at a glance below. This table may help teachers to plan and sequence the activities in this unit.

Pages	Content focus	Literacy skills	Estimated teaching time
91-92	Evaluative language for environments	Identify positive and negative evaluative language for this topic on environmental change and management strategies	10 minutes
93-96	Impacts of human-induced change on coral reefs	Analyse and write about climate change data and the impact on coral reefs; showing verbs; how to write an analytical paragraph about a graph	2 x 10 minutes
97-98	Perspectives on Lake Victoria	Write an expanded noun group; comprehension questions about perspectives on the environment	10 minutes
99-102	Impacts of climate change on sustainability of environment functions	Understand an assignment prompt; use cause and effect language to explain impacts of climate change on environment functions	20 minutes
103-106	Explain salinity	Students explain and write sequential explanations about the causes and effects of salinity	20 minutes
107-118	Explain the human-induced impacts on the sustainability of the functions of an environment (salinity in the Murray-Darling Basin)	Six linked pages: understand an assignment prompt; stages of a Consequential Explanation; writing explanation paragraphs; write the final paragraph (General Statement)	6 x 10 minutes
119-126	Evaluating carp management strategies in the Murray-Darling Basin	Four linked pages: Language features of an evaluation; Write an Evaluation of carp management strategies according to environmental, economic and social criteria.	60 minutes

Environmental change and management

Evaluative language for environments

Teacher page

Evaluative language is used for Evaluations and other persuasive texts such as Expositions and Recommendations. In previous units, we have covered describers (adjectives) e.g. sustainable, renewable. In this activity, we expand students' writing resources by identifying that evaluative language can also be found in:

- nouns (things) e.g. sustainability, wellbeing
- verbs (processes) e.g. sustain, renew.

See Fact Sheet 3 for advanced evaluative language in Geography.

Curriculum links

NSW Stage 5

Environments

Students:

investigate the role and importance of natural environments, for example:

- identification of the function of natural environments in supporting life eg maintaining biodiversity

Environmental management

Students:

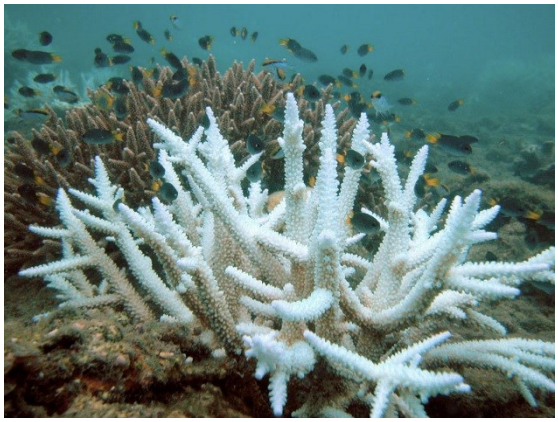
investigate environmental management, including various worldviews and the management approaches of Aboriginal and Torres Strait Islander Peoples, for example: (ACHGK071, ACHGK072)

- discussion of varying environmental management approaches and perspectives

Answers

positive nouns	negative nouns
importance	exploitation
significance	pollution
value	problem
sustainability	crisis
safety	monoculture
wellbeing	danger
biodiversity	loss
restoration	disease

positive verbs	negative verbs
value	restrict
sustain	pollute
restore	devalue
develop	disrupt
enable	interfere
renew	degrade
recycle	destroy
reuse	diminish



Answers

The Great Barrier Reef is a **remarkable** World Heritage Listed environment. The 2,300 kilometre reef forms the world's **largest** coral reef ecosystem and comprises around 3,000 separate coral reefs and 900 islands over an area of 344,000 square kilometres. The Great Barrier Reef is a globally **significant** area for its **diversity** of reef formations, **unique** and **spectacular** corals and mangroves. The area has extensive **biodiversity** for over 1,500 species of fish and breeding colonies of seabirds and turtles. Due to its **appeal** to tourists, the Great Barrier Reef **supports** 64,000 jobs and **contributes** around $5 billion per year to the Australian economy. The area is **popular** for swimming, diving, fishing and vacations and it is highly **valued** for its natural **beauty**. It is also culturally **significant** for 70 clan groups of Aboriginal and Torres Strait Islander Peoples.

environmental value	It is the world's largest coral reef ecosystem. It has diversity of reef formations and corals and mangroves. It has extensive biodiversity of over 1,500 species of fish and breeding colonies of seabirds and turtles
cultural value	Tourists enjoy holidays and vacations. It has cultural value for 70 clan groups of Aboriginal and Torres Strait Islander people
economic value	It supports 64,000 jobs and contributes around $5 billion per year to the economy.

Evaluative language for environments

Geographers use evaluative language to take a position about the environment and environmental change. Evaluative words have positive or negative meanings built into them. For example, 'valuable' is positive and 'pollution' is negative.

Sort the evaluation words in the box below into nouns or verbs. Then sort them again into positive or negative nouns, and positive or negative verbs.

Nouns are things or concepts
e.g. Geographers study the _____ in/of the environment.
Geographers study the **importance** of the environment.

Verbs are processes or happenings
e.g. Human beings can _____ the environment.
Human beings can **value** the environment.

safety	restrict	danger	sustain	biodiversity	pollute
sustainability	develop	disrupt	monoculture	interfere	pollution
renew	problem	degrade	wellbeing	crisis	restoration
disease	recycle	destroy	reuse	devalue	restore
exploitation	loss	enable	diminish	significance	

positive nouns	negative nouns
importance	

positive verbs	negative verbs
value	

Underline the positive and negative evaluative language in this paragraph. You might find evaluative language in nouns, verbs or adjectives (describers).

The Great Barrier Reef is a remarkable World Heritage Listed environment. The 2,300 kilometre reef forms the world's largest coral reef ecosystem and comprises around 3,000 separate coral reefs and 900 islands over an area of 344,000 square kilometres. The Great Barrier Reef is a globally significant area for its diversity of reef formations, unique and spectacular corals and mangroves. The area has extensive biodiversity for over 1,500 species of fish and breeding colonies of seabirds and turtles. Due to its appeal to tourists, the Great Barrier Reef supports 64,000 jobs and contributes around $5 billion per year to the Australian economy. The area is popular for swimming, diving, fishing and vacations and it is highly valued for its natural beauty. It is also culturally significant for 70 clan groups of Aboriginal and Torres Strait Islander Peoples.

What is the evidence of these types of value of the Great Barrier Reef environment?

environmental value	
cultural value	
economic value	

Writing about data displays

Teacher page

The next two pages show students how to include data displays in their written assignments and how to write about the data they have included. Many students include a graph or table but do not refer to it in their text. They expect the data to be self-evident, but this is not true. The next two pages will help students learn how to weave the data display into their texts effectively.

Referencing

In Geography, referencing of sources provides authoritative support for statements. Reputable sources include government, research institutes, universities and the United Nations etc.

Referencing can be done in many different styles (e.g. APA or Harvard style). The example below shows APA referencing for websites, which may help students. Schools often have their own guidelines for referencing and the school librarian can help to teach students how to reference.

Author or organisation	**Year it was created**	***Name of the website or web page (in italics).***	**URL**
Great Barrier Reef Marine Park Authority.	(2021).	*Coral Bleaching 101.*	https://www.gbrmpa.gov.au/the-reef/reef-health/coral-bleaching-101

Great Barrier Reef Marine Park Authority. (2021). *Coral Bleaching 101*. https://www.gbrmpa.gov.au/the-reef/reef-health/coral-bleaching-101

Above: Healthy coral

Above: The same coral after bleaching

Possible answers

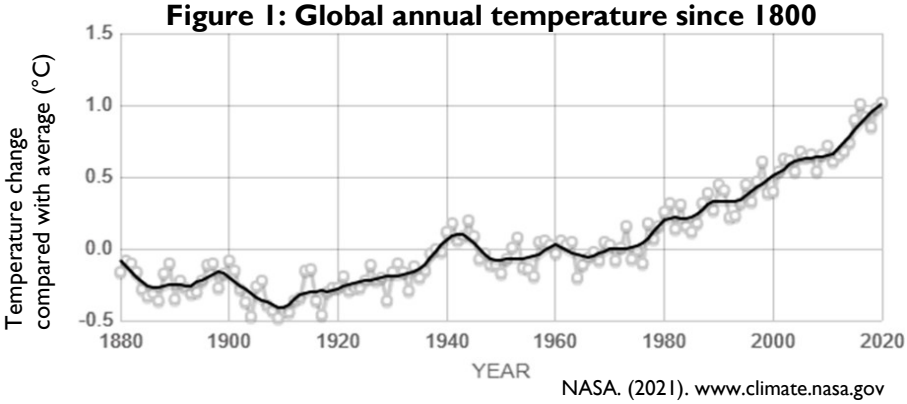
Step 2	Name the figure/table, use a showing verb (see box above), then state the main trend or overall meaning of the data.	Figure 2 reveals that sea temperatures on the Great Barrier Reef have been above average regularly since the 1960s.
Step 3	Elaborate (tell us more) about what the source means. Do not make the reader work out the meaning of the data on their own.	Over the past 20 years, sea temperatures have been more than 1°C above average for most years.
Step 4	Identify the most important part of the figure or table.	In 2020, the sea temperature was 1.2°C above average.

Writing about data displays

Geographers use data displays (tables, graphs, charts and infographics) and showing verbs (in the box below) to provide evidence for statements and to support viewpoints. The data displays on this page relate to climate change.

showing verbs		
shows	indicates	demonstrates
reveals	highlights	proves

Figure 1: Global annual temperature since 1800

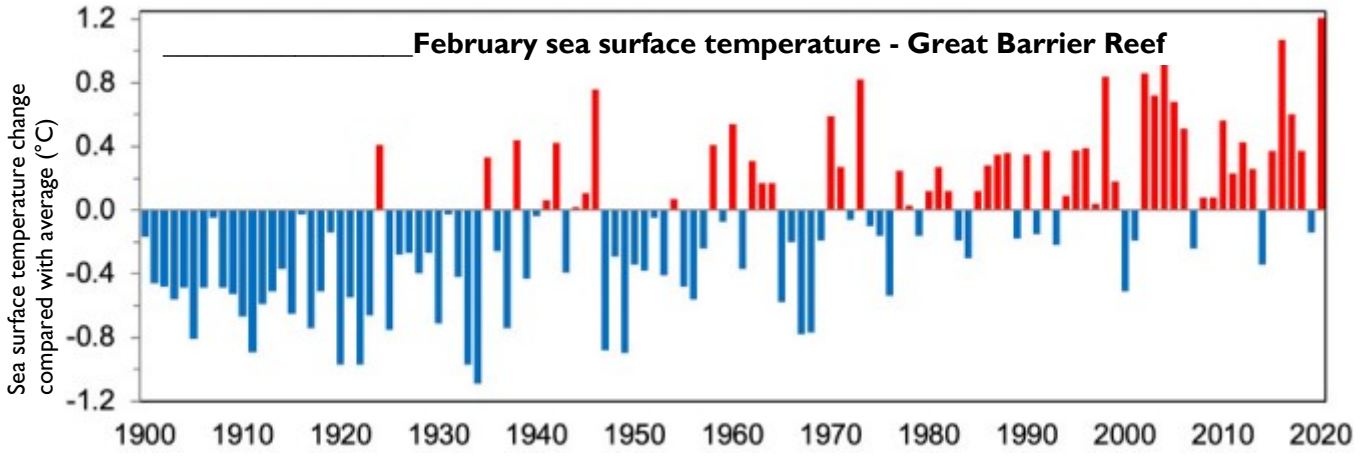


NASA. (2021). www.climate.nasa.gov

Read the four steps below about how to write about data displays.

Step 1	Choose a relevant and reputable source and a data display that is easy to understand. Create a **title** for the display that is relevant to your topic or assignment. For a chart or graph, call it a **figure** and number it. A table is usually called a table, not a figure. Add the source below.	Figure 1: Global annual temperature since 1800 *Underneath the figure:* NASA www.climate.nasa.gov
Step 2	Name the figure/table, use a showing verb (see box above), then state the main trend or overall meaning of the data.	Figure 1 **shows** how the Earth has warmed over the past 100 years.
Step 3	Elaborate (tell us more) about what the source means. Do not make the reader work out the meaning of the data on their own.	Compared with average temperatures, the global temperature has risen by more than 1°C since 1800.
Step 4	Identify the most important part of the figure or table.	In the past 20 years, the rise in global temperature has been steep, around 0.5°C.

Follow the 4 steps above to write about the data display below.



Bureau of Meteorology. (2020). www.bom.gov.au/2020-GBR-marine-heatwave

Step 2	Name the figure/table, use a showing verb (see box above), then state the main trend or overall meaning of the data.	_____ _____
Step 3	Elaborate (tell us more) about what the source means. Do not make the reader work out the meaning of the data on their own.	_____ _____ _____
Step 4	Identify the most important part of the figure or table.	_____ _____

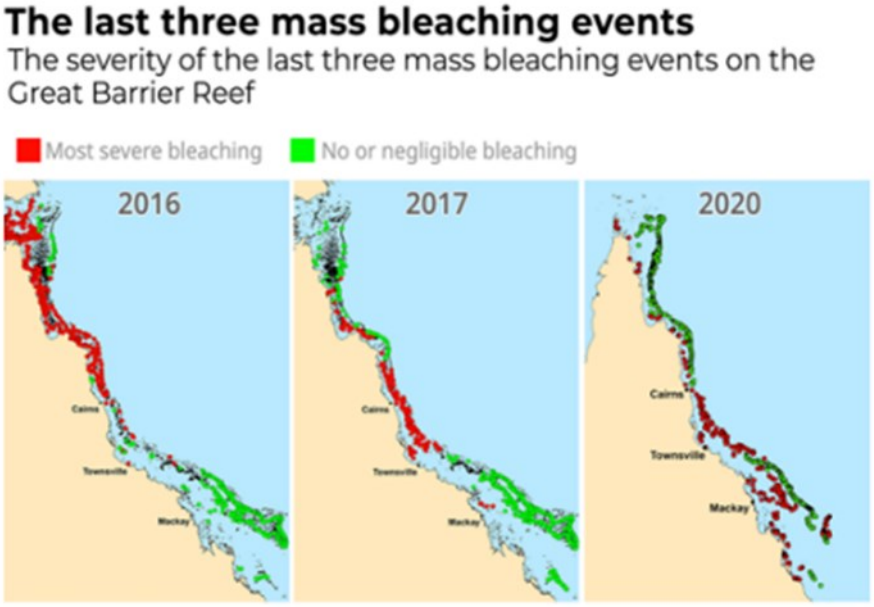
Factors that impact coral reefs

Teacher page

Teaching suggestions

Before starting these activities, teachers could explain coral bleaching. There are several websites by institutions that explain coral bleaching including the Australian Academy of Science and Great Barrier Reef Marine Park Authority and the ARC Centre of Excellence for Coral Reef Studies (see references on the student page) .

Teachers could show students maps like the ones on the right. Students can follow the four steps on the previous page to write a paragraph analysing the maps.



ARC Centre for Excellence for Coral Reef Studies. (2020). *2020 Annual Report*. https://www.coralcoe.org.au/wp-content/uploads/2021/05/Annual-Report-2020-Web.pdf

Follow up activity

Teachers could identify a third factor that impacts coral reefs (such as mining, coastal development or tourism). Students could find a data display and write another paragraph using these models.

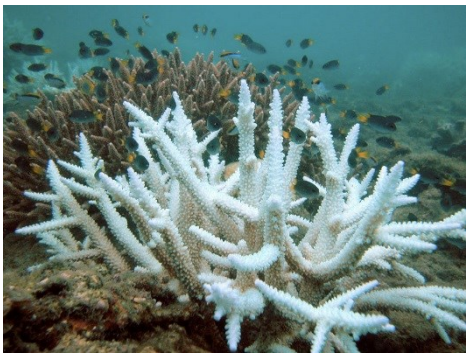
Answers

Climate change is a significant factor that damages coral reefs and causes coral bleaching. If sea temperatures are above average (only by around 1°C), coral bleaching can occur. If bleaching continues for a long time, coral can starve and die (Great Barrier Reef Marine Park Authority, 2021). Scientific evidence demonstrates that the Earth's atmosphere and oceans have increased in temperature as a consequence of global warming. **Figure 1 shows how the Earth has warmed over the past 100 years. Compared with average temperatures, the global temperature has risen by more than 1°C since 1800. In the past 20 years, the rise in global temperature has been steep, around 0.5°C. Figure 2 reveals that sea temperatures on the Great Barrier Reef have been regularly above average since the 1960s. Over the past 20 years, sea temperatures have been more than 1°C above average for most years. In 2020, the sea temperature was 1.2°C above average.** This data highlights that coral reefs are in danger of mass bleaching and permanent damage due to increased temperatures.

Pollution is also another major factor that impacts coral bleaching. River runoff from farming and grazing lands near the Great Barrier Reef pumps excess nutrients and herbicides into the sea. These damage the algae in coral reefs and reduce water quality (Great Barrier Reef Marine Park Authority, 2021). **Figure 3 indicates that large quantities of pollution flow into the Great Barrier Reef. Around 16,000 tonnes of herbicides per year and 6,500 tonnes of phosphorous are dumped into the sea around the Great Barrier Reef. The large quantities of herbicides are particularly damaging to algae on coral reefs.** This data shows that **coral reefs are in serious danger from huge quantities of pollution from agriculture.**

Factors that impact coral reefs

Coral bleaching occurs when corals become stressed and expel the zooxanthellae algae that live inside their tissues. Without the algae to provide colour, corals appear transparent and reveal their white skeletons. Prolonged coral bleaching can lead to the death of corals.



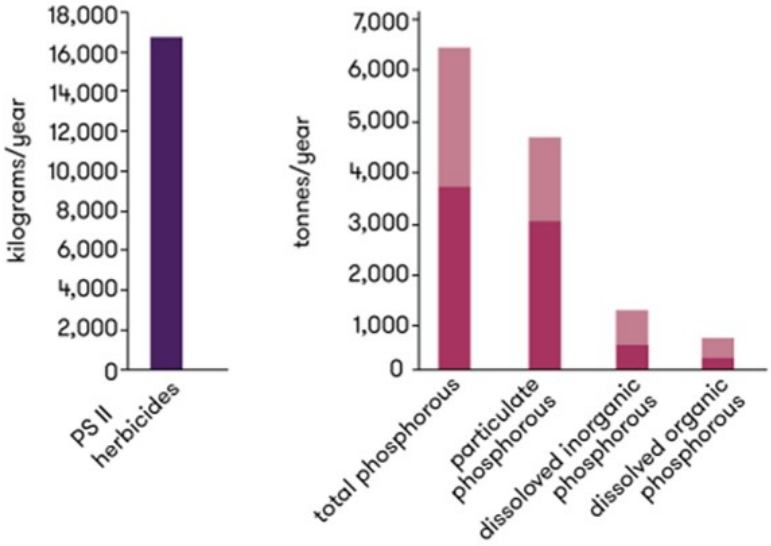
Refer to the data displays on the previous page to add evidence to this paragraph about the factors that cause coral bleaching.

Climate change is a significant factor that damages coral reefs and causes coral bleaching. If sea temperatures are above average (only by around 1°C), coral bleaching can occur. If bleaching continues for a long time, coral can starve and die (Great Barrier Reef Marine Park Authority, 2021). Scientific evidence demonstrates that the Earth's atmosphere and oceans have increased in temperature as a consequence of global warming.

This data highlights that coral reefs are in danger of permanent damage due to increased temperatures.

Analyse the data display below and follow the four steps on the previous page to complete a paragraph about another factor that impacts on coral reefs: pollution.

River runoff to the Great Barrier Reef



Australian Academy of Science. (2021). https://www.science.org.au/earth-environment/great-barrier-reef-threats

River runoff from grazing lands near the Great Barrier Reef pumps excess nutrients and herbicides into the sea. These damage the algae in coral reefs and reduce water quality (Great Barrier Reef Marine Park Authority, 2021).

This data shows that

Write a final sentence that links back to the topic of factors that impact coral reefs.

Australian Academy of Science. (2021). *Keeping our Great Barrier Reef great.* https://www.science.org.au/curious/earth-environment/great-barrier-reef-threats
Great Barrier Reef Marine Park Authority. (2021). *Coral Bleaching 101.* Available: https://www.gbrmpa.gov.au/the-reef/reef-health/coral-bleaching-101

Perspectives on Lake Victoria

Teacher page

Before starting these activities, teachers could revise the concept of worldviews e.g. human-centred and Earth-centred worldviews. Sources for more information about Lake Victoria:

- Murray-Darling Basin Authority mdba.gov.au/education/resources/caring for river country
- Wirraminna Cultural Heritage of Lake Victoria www.wirraminna.org.au

There is more practice with expanded noun groups in the unit on Landscapes and Landforms.

Curriculum links

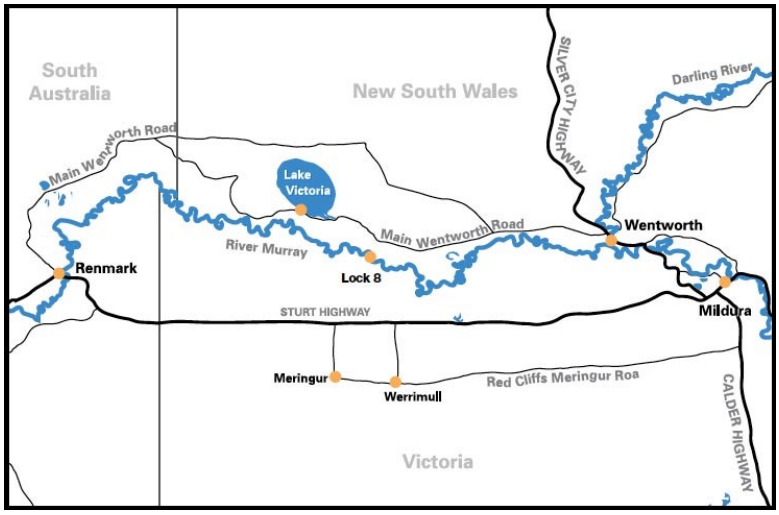
NSW Stage 5

Environmental management

Students:

investigate environmental management, including various worldviews and the management approaches of Aboriginal and Torres Strait Islander Peoples, for example: (ACHGK071, ACHGK072)

discussion of varying environmental management approaches and perspectives



Above: Aerial view of Lake Victoria Photo: Murray-Darling Basin Authority
Left: Map of Lake Victoria www.vicistwentworth.com.au

Answers

1 How did non-Indigenous Australians manage the site in the past? They built dams and embankments and used the area for storage. They grazed stock around the area.

2 What was their environmental worldview? Their worldview was human-centred and based on agricultural and economic needs.

3 What was the impact on sustainability? The strategies were not sustainable and caused problems such as loss of vegetation and soil erosion. They also ignored cultural values of Indigenous people.

4 What knowledge do the Barkindji people have about the Lake Victoria area?
They know how to manage the land and water levels, and they have cultural knowledge about burial sites.

5 How could you describe their environmental worldview? Their worldview is Earth-centred and cultural.

6 What is the impact of their knowledge on sustainability? Indigenous knowledge has positive impacts on sustainability as the area is becoming green with revegetation. Soil erosion and salinity are being controlled too. Cultural sites are being maintained for the future. In addition, the lake is also useful for water flows upstream and downstream.

Lake Victoria	is	a	large	shallow	freshwater	lake	in a remote, arid region	in NSW near the Vic and SA borders	with an area of 122 km²
Name of the lake	*relating verb*	*article*	*what size?*	*what is it like?*	*what type of water?*	*what type of landform?*	*where?*	*where?*	*what size?*
		expanded noun group							

Perspectives on Lake Victoria

Above left: Lake Victoria.

Right: Embankments built to contain lake water.
Photos: Murray-Darling Basin Authority

Lake Victoria Facts
shallow
remote
with an area of 122 km²
in NSW
freshwater
in an arid region
near Vic and SA borders
large

Expert writers in Geography pack information into a sentence using an expanded noun group.

Write an expanded noun group in the table below by adding all of the information in the box on the left.

	is	a							
Name of the lake	*relating verb*	*article*	*what size?*	*what is it like?*	*what type of water?*	*what type of landform?*	*where?*	*where?*	*what size?*
		expanded noun group							

Read the information below and answer the questions.

In the 1800s, non-Indigenous Australians built dams and embankments to raise the water level by 70m. They used Lake Victoria for water storage. The area around the lake was used for stock grazing leading to loss of vegetation and soil erosion.

Lake Victoria is a significant area for the Barkindji people who have been living in the area for 45,000 years. There are many burial sites around the lake. In 1994, the water level was lowered for maintenance and many ancient tools and burial sites were discovered. Since then, Indigenous Australians have been managing the area in partnership with the Murray-Darling Basin Authority.

Indigenous Australians monitor the area and provide daily advice to engineers and managers. They assist with revegetation of the area which has halted soil erosion. The area was barren but it is becoming green again. Traditional burial sites are maintained. Barkindji elders advise on varying water levels to flow into rivers downstream or hold floodwater from upstream. This also promotes vegetation growth and controls salinity.

1 How did non-Indigenous Australians manage the site in the past?

_____

_____

2 What was their environmental worldview?

_____

_____

3 What was the impact on sustainability?

_____

_____

4 What knowledge do the Barkindji people have about the Lake Victoria area?

_____

_____

5 How could you describe their environmental worldview?

_____

_____

6 What is the impact of their knowledge on sustainability?

_____

_____

_____

Functions of the environment

Teacher page

The activities on the next few pages are connected. They give students the skills to interpret and respond to an assignment about explaining the impact of a human-induced environmental change on the sustainability of functions of the environment. This is a complex task, so we have broken it down, step-by-step.

The first step is to analyse the assignment question or instruction, which we call a 'prompt'. This includes revising the meaning of sustainability (see box below).

Curriculum links

NSW Stage 5

Environments

Students:

investigate the role and importance of natural environments, for example:

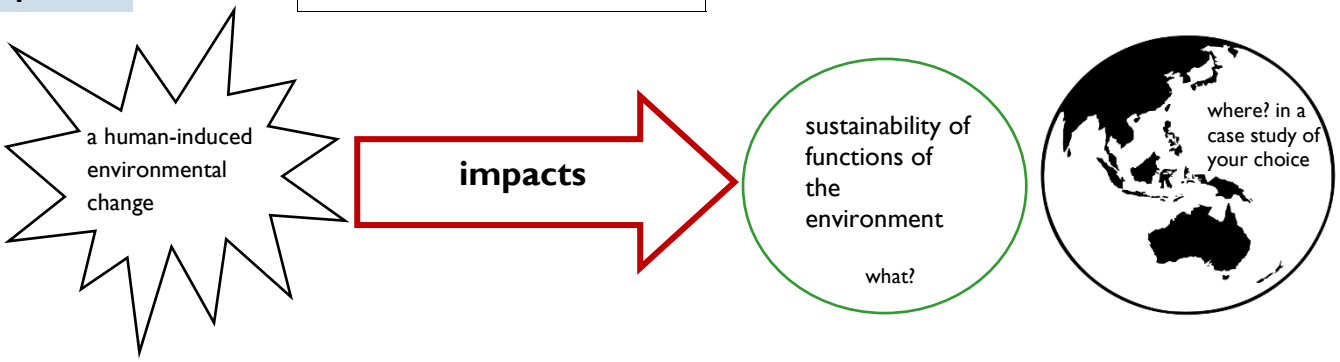
- identification of the function of natural environments in supporting life eg maintaining biodiversity

Above: Murray River, South Australia

Answers

source	gives living things resources for surviving, growing, developing, working
sink	recreational, spiritual and aesthetic value
service	absorbs waste and pollution
spiritual	supports all life on Earth

Sustainability: An ongoing capacity of an environment to maintain all life, where the needs of the present are met without compromising the ability of future generations to meet their needs.



Example: Rivers and wetlands of the Murray-Darling Basin.

The Murray-Darling Basin fulfils the source function **because** it provides ecosystems for the survival of plants and animals. The Wetland ecosystems of the Murray-Darling Basin also store, absorb, break down and process waste. **Therefore**, the environment also fulfils the sink function. The Murray-Darling Basin's natural environments provide resources to sustain life **so** it also fulfils the service function. Water from the rivers and wetlands of the Murray-Darling Basin provides irrigation for 9,200 agriculture businesses. The environment provides drinking water for 2.2 million people and provides habitats for countless plants and animals. The Murray-Darling Basin fulfils the spiritual function **due to** its natural beauty and its popularity for leisure, fishing and boating.

Functions of the environment

Imagine that you have been given the assignment prompt below. Let's explore how to deal with it.

We need to write is a Consequential Explanation (*explain, impact*)

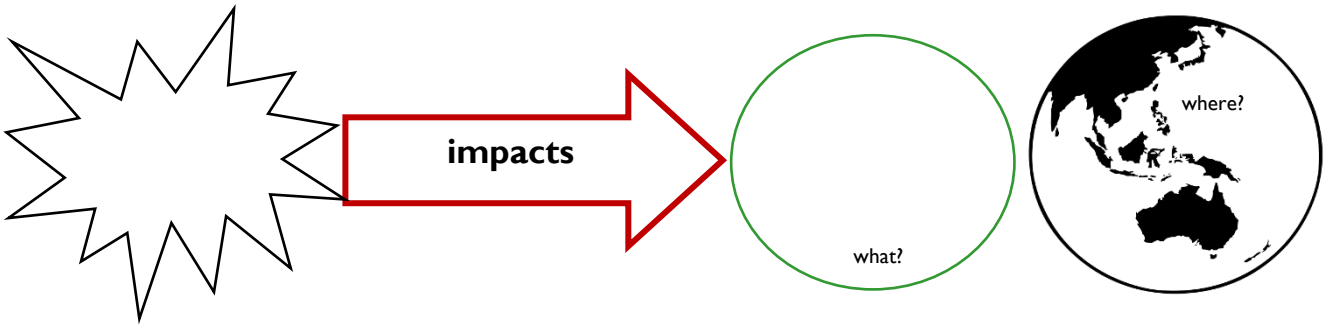
We need to choose one environmental change caused by humans

Explain the **impact** of a human-induced environmental change on the sustainability of functions of the environment. Use a case study.

We need to choose one case study environment.

The phenomenon that is being impacted is the sustainability of functions of the environment

Fill in this diagram showing what this assignment question is asking you to explain.



The next pages will take you through the process of understanding the elements of the assignment and then weaving them together in a Consequential Explanation. We will start with the functions of the environment.

Draw a line below to match the environment function with its definition

source	gives living things resources for surviving, growing, developing, working
sink	recreational, spiritual and aesthetic value
service	absorbs waste and pollution
spiritual	supports all life on Earth

Functions of the environment

Think of an example of an environment. Write a short paragraph explaining how your chosen environment performs each function. Use cause and effect language (see box on the right).

Cause and effect language	
Conjunctions	because, as, since, so, if
Prepositions	due to, as a result of
Verbs	lead to, result in, cause
Text connectives	Therefore, As a consequence As a result, Consequently

Hidden cause and effect language

Teacher page

Geographers use a range of cause and effect language to explain phenomena in a sophisticated way. By Year 10, students should be comfortable with the obvious ways of expressing cause and effect. However, there are more implicit ways of explaining, such as nouns like 'outcome' or 'repercussion' which may not seem like cause and effect language at first glance. This page aims to help students become alert to cause and effect language that is hidden or less obvious, so they can improve reading comprehension and writing. For a list of cause and effect language in Geography, see Fact Sheet 1.

Teaching suggestions

Teachers could do the first example for each activity on the board with students to show the many choices available for sentence writing. In these activities, it is fine to reorganise the sentence content.

Answers

These sentences can be rewritten in many ways. Suggestions are given for each answer.

1	Human-**induced** climate change is one of the most urgent problems facing the world.	Change **caused by** humans has **led to** climate change which is one of the most urgent problem facing the world. Human actions **resulted in** climate change which is one of the most urgent problems in the world.
2	A rise in global temperature has **brought about** a range of **interconnected** environmental problems.	Global temperatures have risen and this has **caused** a range of environmental problems that **result in** related problems. (Note: in Geography, the words 'connections' and 'interconnections' may imply a cause and effect relationship)
3	The main **source** of higher global temperatures is rising greenhouse gas emissions.	(note: The word 'source' does not always imply cause and effect, but in this case it means the cause) The main **cause** of higher global temperatures is greenhouse gas emissions. Rising greenhouse gas emissions **led to** higher global temperatures.
4	Burning of fossil fuels is a major **agent** in global warming.	Burning of fossil fuels **caused/led to/resulted in** of global warming.
5	Another **anthropogenic influence** on global warming is deforestation.	Another event **caused by** humans that **leads to /results in** global warming is deforestation. Deforestation is **caused by** humans and it **results in** global warming.
6	The loss of trees that absorb carbon dioxide is a **factor** in global warming.	Trees have been cut down **so** carbon dioxide is not absorbed and this has **resulted in** global warming.

Examples 7-10 require students to use hidden cause and effect language in a new sentence. The original and new sentences are both correct. This activity helps students to become more aware of their options for explaining.

7	Human actions **lead to** pollution of water which negatively **impacts** aquatic environments and ecosystems.	Human-induced pollution **generates** negative **outcomes** for aquatic environments and ecosystems.
8	Human activities damage the environment and this can **cause** loss of biodiversity.	Human-induced environmental damage is the **origin** of loss of biodiversity. Loss of biodiversity is **instigated by** environmental damage.
9	Deforestation **results in** land and water degradation.	A **repercussion** of deforestation is land and water degradation. An **outcome** of deforestation is land and water degradation.
10	Introduced species can interfere with food webs and, **therefore**, biodiversity is lost.	Introduced species **contribute to** loss of biodiversity. The interference of Introduced species in food webs **generates** loss of biodiversity.

Hidden cause and effect language

Explanations use cause and effect language. In Geography, sometimes cause and effect relationships are **explicit:**

e.g. **since, so, because**.

Sometimes cause and effect might be **hidden** or implicit:

e.g. human-**induced** change.

Human-induced means humans caused it.

Explicit cause and effect language
Conjunctions: as, since, so Verbs: leads to, results in, causes, caused by, impacts Text connectives: Therefore, As a consequence, As a result

Each of the examples below contains cause and effect language. Underline the word or words that show cause and effect. Change, reorganise and rewrite each sentence using explicit cause and effect language from the box above.

1 Human-induced climate change is one of the most urgent problems facing the world. _____

_____

2 A rise in global temperature has brought about a range of interconnected environmental problems. _____

_____

3 The main source of higher global temperatures is rising greenhouse gas emissions. _____

_____

4 Burning of fossil fuels is a major agent in global warming. _____

_____

5 Another anthropogenic influence on global warming is deforestation. _____

_____

6 The loss of trees that absorb carbon dioxide is a factor in global warming. _____

_____

Each of the examples below contains explicit cause and effect language. Rewrite the sentence using cause and effect language from the box.

cause and effect language
Verbs: contribute to, is shaped by, instigates, is instigated by, originated, generates Nouns: origin, outcome, repercussion

7 Human actions lead to pollution of water which negatively impacts aquatic environments and ecosystems.

_____

8 Human activities damage the environment and this can cause loss of biodiversity. _____

_____

9 Deforestation results in land and water degradation. _____

_____

10 Introduced species can interfere with food webs and, therefore, biodiversity is lost. _____

_____

Explain biophysical processes

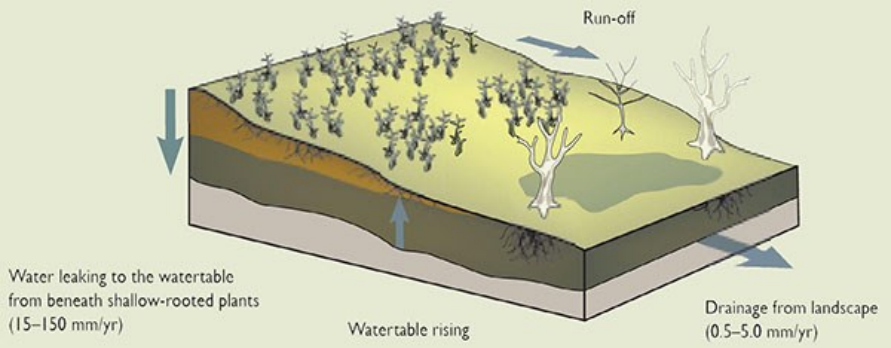
Teacher page

Teaching suggestions

This page introduces salinity as a human-induced environmental change that will be explained in a Consequential Explanation. To prepare for this activity, teachers could consider the following:

1. Teachers could put students in pairs and show the diagram of transpiration to students and ask them to explain what is happening.
2. Then teachers can explain the implication sequence diagram about transpiration at the top of the page.
3. Next, teachers could explain salinity and why it is a problem. It may be useful to define words for salinity, as shown in the box below.
4. Teachers could remind students what the 'water table' is and show a diagram such as the one below. (The water table is the underground boundary between soil and groundwater.) The activity at the bottom of the student page explains why the water table rises.

saline	means salty (containing dissolved salts, mainly sodium chloride)
salinity	a situation where salt has accumulated (built up) to a level that damages the environment
salinification	the process of soil or water becoming more saline



The water table rising. Source: https://www.waterquality.gov.au/issues/salinity

Answers

When _____ happens,	_____ happens
When trees with deep roots absorb water,	the roots pump water up into their branches and leaves.
When trees transpire,	**water evaporates.**

Trees with deep roots are cleared.

then

More water leaks down through soil into the groundwater.

then

There is more underground water and the water table rises.

then

Natural salts are brought to the surface dissolved in saline water.

then

Water evaporates.

then

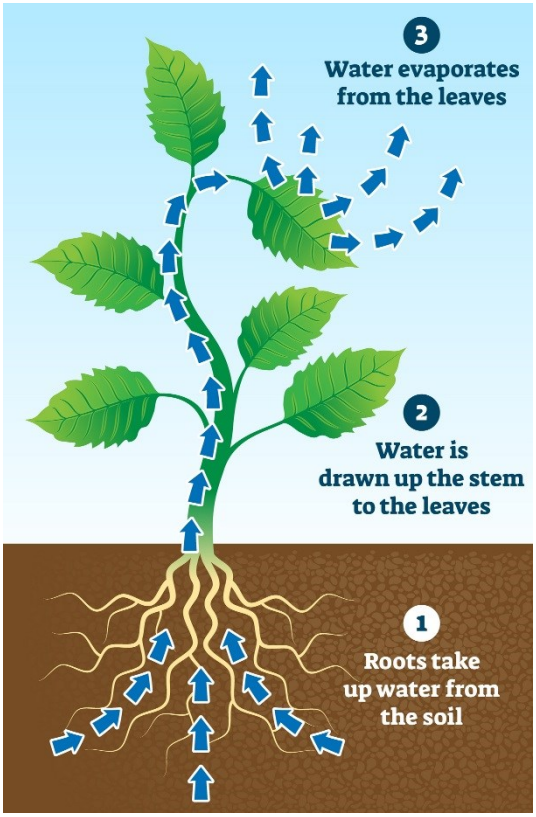
Salt is left behind and salinity increases.

When trees with deep roots are cleared, more water leaks down through soil into the groundwater. When there is more underground water and the water table rises, natural salts are brought to the surface dissolved in saline water. When water evaporates, salt is left behind and salinity increases.

Source: ANZG. (2018). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments.* Canberra, ACT. www.waterquality.gov.au/issues/salinity

Explain biophysical processes

Biophysical processes in Geography involving living and non-living things. They can be explained in a Sequential Explanation that shows cause and effect relationships. One event causes the next event. Look at the diagram below and the steps in the transpiration process.



Roots take water from the soil.

then

Water is drawn up the stem to the leaves.

then

Water evaporates from the leaves through stomata (openings in the leaves).

The process of transpiration is important for understanding salinity. Natural salts occur in many landscapes and they are dissolved in groundwater. Read the implication sequence below about how some plants process water.

Trees with deep roots absorb water.

then

Their roots pump water up into their branches and leaves.

then

Trees transpire (convert water from liquid to gas).

then

Water evaporates.

We can combine the sequences using a sentence structure like the one below. Read the example. Finish the sentence.

When _____ **happens,**	_____ **happens**
When trees with deep roots absorb water,	the roots pump water up into their branches and leaves.
When trees transpire,	

Land clearing is a major cause of salinity because it causes the water table to rise. The water table is boundary between the soil and groundwater. Read these steps in the process and convert the steps to sentences using 'when _____' structures.

Trees with deep roots are cleared.

then

More water leaks down through soil into the groundwater.

then

There is more underground water and the water table rises.

then

Natural salts are brought to the surface dissolved in saline water.

then

Water evaporates.

then

Salt is left behind and salinity increases.

Causes and effects of salinity

Teacher page

Teaching suggestions

The activities on this page continue from the previous page. On this page, students will convert multiple short sentences into more densely packed sentences.

1. Teachers could read the paragraph to students and explain each individual step together as a class. After a few, students could work in pairs or independently.
2. Students could draw a line to link each event in the sequence back to the written text. They could compare the language in the sequence and in the written text:
   e.g. 'Irrigators water crops' in the sequence appears in the text as 'excess crop irrigation'
3. For the second activity, teachers could work with the class on the board to show them how to change the sequence to a more 'written' version.
   e.g. 'Industries pump out wastewater containing salt' becomes 'Industrial wastewater containing salt'.

Similar teaching ideas can be found in the unit on Landscapes and Landforms.

References:
Australian Bureau of Statistics (ABS). (2003). *Measures of Australia's Progress. Salinity*. https://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/1370.0~2010~Chapter~Salinity%20%286.2.4.4%29
ANZG. (2018). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT. www.waterquality.gov.au/issues/salinity
Podmore, S. (2009). *Primefacts. Irrigation salinity – causes and impacts*. Industry & Investment NSW. https://

Answers

Industrial wastewater containing salt can flow into waterways. Consequently, rivers become more saline which leads to a decline in water quality.
or
Saline wastewater from industries flows into waterways. This causes river salinity and a decline in water quality.

Irrigators water crops.
then
Excess water leaks down through the root zone into the groundwater.
then
There is more water underground.
then
The water table rises.
then
Saline water is brought to the surface.
then
The sun evaporates water, leaving salt behind.
then
Surface salt can be washed into rivers and waterways.
then
River salinity increases

effects of salinity

- damage to land and water ecosystems
- loss of biodiversity
- lower quality of water for drinking

Salinity causes damage to land and water ecosystems. This is because complex natural processes in environments are severely disrupted by salinity. Organisms that cannot tolerate high levels of salt may die, and introduced species which can tolerate salinity may flourish. This leads to a loss of biodiversity. Due to salinity, drinking water may be of lower quality. This can impact on all organisms that need water for survival.

Literacy Works for Geography Book 2 © Literacy Works

Causes and effects of salinity

Read the paragraph below about another cause of salinity: irrigation. Use the information to fill in the sequence on the right.

Irrigation is another cause of salinity. Excess crop irrigation water leaks down through the root zone of shallow plants into the groundwater. This results in more water underground and a rising water table. When the water table rises, saline water is brought to the surface. When saline water evaporates, salt is left behind. This increases soil salinity. Surface salt can also be washed from the surface into rivers and waterways, increasing river salinity.

Irrigators water crops.

then

then

then

then

then

then

then

River salinity increases.

Fill in the sequence below to show how pollution increases salinity in rivers. Use the information to write two sentences using cause and effect language

Industries pump out wastewater containing salt.

then

Polluted and salty water flows into waterways.

then

Rivers become more saline.

then

The quality of water declines.

Salinity has many negative effects. Fill in the diagram below and write a short paragraph explaining the impacts of salinity on the environment and living organisms. Give additional reasons why the effects occur.

effects of salinity

- damage to land and water ecosystems
- loss of biodiversity
- lower quality of water for drinking

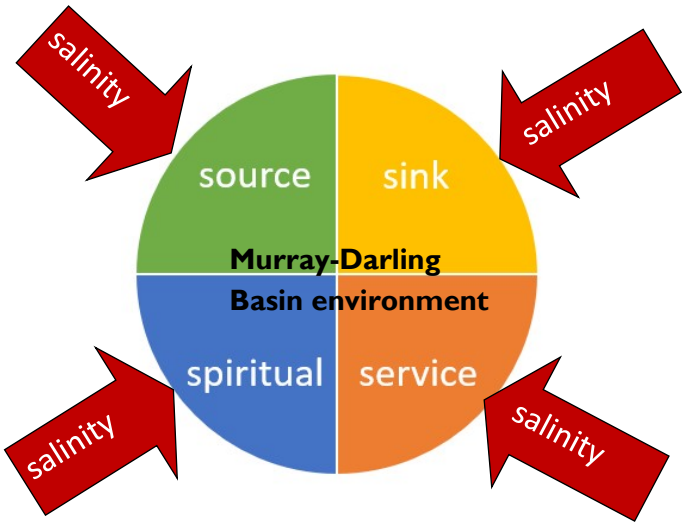
Explain impacts of environmental change

Teacher page

On this page, students finally start writing the Consequential Explanation.

Before starting this lesson, teachers could revisit the assignment prompt. Students have already devised a diagram to understand the assignment, but teachers could also use the diagram on the right. This gives more detail about the exact task. The four arrows show that the students will be explaining the impact of salinity on each of the four environmental functions in the Murray-Darling Basin.

The tasks on this page scaffold the writing of the first two paragraphs of the Consequential Explanation. Teachers can differentiate student support (more or less) depending on the needs of the class.



Answers

Phenomenon to be explained

Human-induced environmental changes such as rising salinity have **serious/significant/ major/ negative i**mpacts on the sustainability of the functions of environments. Environments have four different functions: **source, sink, service and spiritual functions**. These functions must be sustainable which means **they have an ongoing capacity to continue without compromising the future.** These functions can be analysed in the inland river environments of the Murray -Darling Basin in eastern Australia. **The Murray-Darling Basin is a huge area of connected rivers, lakes and wetlands that cover four states in the south-east of Australia and more than a million square kilometres. Salinity** has a **negative** impact on the sustainability of the functions of the Murray-Darling Basin environment.

Evaluate the impact on the sustainability of functions of the environment.

Name the functions of the environment.
Define sustainability.

Write a sentence or two describing the Murray-Darling Basin.

Identify the human-induced change and evaluate the impact.

Answers

Salinity means that salt has built up to the point where it damages the environment. Salinity can be caused by land clearing, irrigation and pollution. When native vegetation is cleared, water builds up in the soil and groundwater. The water table rises so salt comes to the surface and this increases salinity. Inefficient irrigation in farms can also lead to increased salinity. Excess water builds up in the groundwater and makes the soil soggy. Salt rises to the surface and can wash into waterways. In addition, pollution can make waterways more saline. Wastewater containing saline can make environments more saline.

Soil salinity. Photo: California Water Reuse Association by the Southern California Salinity Coalition, Fountain Valley, California, USA.

Literacy Works for Geography Book 2 © Literacy Works

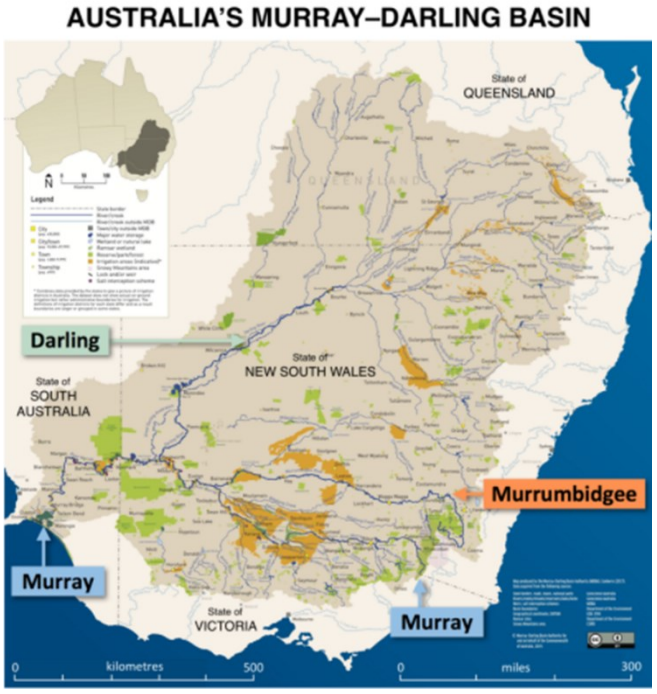
Explain impacts of environmental change

In this unit, the assignment prompt is:
Explain the impact of a human-induced environmental change on the sustainability of functions of the environment. Use a case study.

Our case study will be the **Murray-Darling Basin**. The Murray-Darling Basin is a huge area of south-eastern Australia. It is a network of connected rivers, lakes and wetlands that cover four states and more than a million square kilometres. See the map on the right.

In order to explain the impacts, we will write a Consequential Explanation. The stages are:

- Phenomenon to be explained
- Explanation
- General statement.



Government of South Australia. CC 4.0 Available from www.mdba.gov.au

Before starting this lesson, teachers could revisit the assignment prompt. Students have already devised a

Phenomenon to be explained

Human-induced environmental changes such as rising salinity have _____ impacts on the sustainability of the functions of environments. Environments have four different functions: _____ These functions must be sustainable which means _____

_____

These functions can be analysed in the inland river environments of the Murray-Darling Basin in eastern Australia. _____

_____

_____

_____ has a _____ impact on the sustainability of the functions of the Murray-Darling Basin environment.

Evaluate the impact on the sustainability of functions of the environment.

Name the functions of the environment.
Define sustainability.

Write a sentence or two describing the Murray-Darling Basin.

Identify the human-induced change and evaluate the impact.

The first explanation paragraph is about salinity. Using the information on the previous pages, define salinity and briefly explain the main causes.

Salt build up at Buronga NSW. Photo Arthur Mostead. www.mdba.gov.au

Explaining source and sink functions

Teacher page

Teaching suggestions

This page shows students how to write the Explanation paragraphs in the Consequential Explanation. The next two pages are scaffolded activities.

- This page shows a model for students to follow.
- This page also gives students practice identifying the phases of an argument paragraph.
- On the next page, students can fill in the gaps to write a third explanation paragraph.
- Finally, students write an explanation paragraph on their own (or in pairs).

Possible teaching steps are listed below.

1. Teachers could explain that there will be one argument paragraph for each environmental function. This could be added to the diagram on the board as shown above right.
2. Teachers could identify the phases of the paragraph and read each phase to students.
3. Students could highlight or underline the language features (listed in the right hand column of the table).
4. Students can do the matching activity at the bottom of the page in pairs or independently.

What about PEEL paragraphs?

PEEL and TEEL paragraphs are popular paragraph structures in schools. However, PEEL and TEEL are not directly related to this complex assignment prompt. In this example, each phase of the paragraph directly responds to the assignment prompt and the Consequential Explanation genre, which keeps the ideas on track. However, if you are a PEEL/TEEL school, then you can change these headings to suit PEEL and TEEL.

Answers

Identify the change and the function	Environments perform the significant role of absorbing wastes, known as the sink function. Wastes and pollution are stored, absorbed, broken down and processed by the environment.
Define function	Increased salinity damages wetland ecosystems by hindering the growth of plants that process and absorb toxins and waste. Therefore, more wastes and pollution enter the waterways. Salinity near the river can kill trees which leads to increased greenhouse gas emissions.
Example	The sink function of environments is also compromised by salinity.
Explain the impact of change	Consequently, salinity reduces the capacity of the Murray-Darling Basin environment to perform its vital sink function.
Evaluate the impact on sustainability	Wetland ecosystems in the Murray-Darling Basin absorb carbon dioxide as well as adding oxygen to the water. They also absorb toxic chemicals like nitrogen and phosphorous, preventing these chemicals from poisoning fish stocks. The trees near the river are carbon sinks that absorb and store greenhouse gases like carbon dioxide.

Literacy Works for Geography Book 2 © Literacy Works

Explaining source and sink functions

Explanation paragraphs have different sections called phases. In this particular Consequential Explanation, explanation paragraphs have five phases:

1. Identify the human-induced change and the environment function.
2. Define the environment function.
3. Give an example from the case study.
4. Explain the impact of change on the environment.
5. Evaluate the impact on sustainability.

Salinity around the Murray River, South Australia. South Australia Department for Environment and Water. CC3.0. www.https://www.environment.sa.gov.au

Read the paragraph below and notice the five phases and the language hints for each phase.

Identify the change and the function	Human-induced environmental changes such as rising salinity can have **serious** impacts on the source function of environments.	***Evaluative language*** *for the extent or type of impact. The function is identified.*
Define function	The source function of environments refers to natural resources that come directly from the environment. Environments are the source of life itself, and they provide oxygen, nutrients and food for organisms.	*The function is defined.*
Example	For example, clean drinking water for humans is essential, which the Murray-Darling provides for 3.6 million people.	*The example of the function in the case study is provided.*
Explain the impact of change	If salinity rises in the river, water becomes unsuitable for human and animal consumption. Salinity damages aquatic ecosystems and kills the organisms that inhabit the rivers and their surrounding environments. In the 1960s, salinity rose high enough make the water dangerous for human consumption. As a result, the water supply to Adelaide became degraded and toxic.	*The impact of the change on the function is explained.* *Cause and effect language* *Examples and evidence*
Evaluate the impact on sustainability	In this way, salinity can have a **serious negative** impact on the sustainability of the source function in an environment like the Murray-Darling Basin.	*The overall impact of change on sustainability of the function is evaluated using* ***evaluative language***

Draw a line to match the phase name with the sentences that match. Highlight and underline the language features shown above.

Identify the change and the function	Environments perform the significant role of absorbing wastes, known as the sink function. Wastes and pollution are stored, absorbed, broken down and processed by the environment.
Define function	Increased salinity damages wetland ecosystems by hindering the growth of plants that process and absorb toxins and waste. Therefore, more wastes and pollution enter the waterways. Salinity near the river can kill trees which leads to increased greenhouse gas emissions.
Example	The sink function of environments is also compromised by salinity.
Explain the impact of change	Consequently, salinity reduces the capacity of the Murray-Darling Basin environment to perform its vital sink function.
Evaluate the impact on sustainability	Wetland ecosystems in the Murray-Darling Basin absorb carbon dioxide as well as adding oxygen to the water. They also absorb toxic chemicals like nitrogen and phosphorous, preventing these chemicals from poisoning fish stocks. The trees near the river are carbon sinks that absorb and store greenhouse gases like carbon dioxide.

Explaining service and spiritual functions

Teacher page

Teaching suggestions

Before starting this page, teachers could revise the meanings of the service and spiritual functions. Students will have to write about these from their own knowledge.

Possible answers

Identify the change and the function	Another **vital** environment function is the **service** function which is also degraded by human-induced **salinity.**	*Use evaluative language. Identify the function and human-induced change.*
Environment function	Natural processes in environments sustain life on the planet. The resources in the environment provide food and energy to live. Transpiration of wetland vegetation provides the oxygen we need to survive.	*Define the service function.*
Example	Water from the Murray-Darling Basin provides irrigation for 9,200 agricultural businesses which contribute $24 billion to Australia's economy. The Basin provides drinking water for 3.6 million Australians. Countless plants and animals rely on its waterways and wetland ecosystems for survival.	*How else does the environment provide service?*
Explain the impact of change	Salinity has prevented the environment from fulfilling its service function. In the early 1980s, high salinity meant that farmers in NSW and Victoria could no longer safely use water for irrigation as the land became waterlogged and degraded. This had severe consequences for the economy and it was a risk to Australia's food security.	*Explain the impact of the change on the function. Use cause and effect language. What would be the consequence of this event?*
Evaluate the impact	As the service function of environments is essential for the survival and wellbeing of people, plants and the economy, human-induced impacts such as salinity are a serious risk.	*Evaluate the impact of change on sustainability of the function. Use **evaluative language.***

Identify the change and the function	The final function is the vital spiritual role of environments and this role can be damaged by human-induced change like salinity. Environment functions have significance to humans for where we are born and grow up, for where we live, work, worship and play. Natural environments have aesthetic value for their beauty and appeal for leisure and recreation. In the Murray-Darling Basin, swimming, fishing and boating are popular in the rivers. The environment contains many sacred and spiritually important sites for over 40 First Nations peoples. If salinity increases in rivers, their spiritual function is compromised. The environment loses its aesthetic appeal because it is too salty and degraded, and also because people cannot safely enjoy leisure and recreation in the rivers. They are unable to enjoy fishing because the fish stocks are reduced or fish die. The water can become toxic, so it is unsafe to swim in the rivers. For these reasons, salinity can have a damaging impact on the capacity of the environment to sustain its spiritual function for people.
Environment function	
Example	
Explain the impact of change	
Evaluate the impact	

Literacy Works for Geography Book 2 © Literacy Works

Explaining service and spiritual functions

The third explanation paragraph is about the service function. Fill in the gaps to complete it. Use the hints to help you.

Identify the change and the function	Another _____ environment function is the _____ function which is also degraded by human-induced _____.	*Use evaluative language. Identify the function and human-induced change.*
Environment function	_____ _____ _____	*Define the service function*
Example	Water from the Murray-Darling Basin provides irrigation for 9,200 agricultural businesses which contribute $24 billion to Australia's economy. _____ _____ _____ _____	*How else does the environment provide service?*
Explain the impact of change	_____ In the early 1980s, high salinity meant that farmers in NSW and Victoria could no longer safely use water for irrigation as the land became waterlogged and degraded. _____ _____	*Explain the impact of the change on the function. Use cause and effect language. What would be the consequence of this event?*
Evaluate the impact	_____ _____ _____	*Evaluate the impact of change on sustainability of the function. Use* ***evaluative language.***

The fourth explanation paragraph is about the spiritual function. Write a continuous paragraph below. Use the fact box to help.

Facts: Murray-Darling Basin
More than 40 First Nations groups live in the area. The rivers are popular for boating, swimming and recreational fishing.

Identify the change and the function	_____ _____
Environment function	_____ _____ _____
Example	_____ _____
Explain the impact of change	_____ _____ _____ _____
Evaluate the impact	_____ _____ _____ _____ _____

Explanation: the final paragraph

Teacher page

Students often wonder what to write in the final paragraph and how it is different from the first paragraph. This page shows students exactly what to write in the final paragraph (General Statement) of a Consequential Explanation. It is called a General Statement because it generalises important information from the explanation.

The student page shows excerpts from the Consequential Explanation - it is too long to include in full on this page.

The Darling River near Menindee, NSW

How can change impact sustainability?

Teachers may like to show students ways of writing about the impact of change on sustainability. The word box on the right shows some verbs that help student explain changes that impact sustainability negatively. Teachers can provide this as a useful word list, or give words to students and they have to make sentences about the impact of salinity on sustainability of the functions of the environment.

Change can _____ sustainability

compromise
diminish
destroy
degrade
reduce
undermine
harm
weaken
threaten

Possible answers

1 What is your overall evaluation of salinity and its impact on environments? Use evaluative language.

In a General Statement, slightly more emotional evaluative language may be used once but not too often, e.g. devastating, worrying. See Fact Sheet 3 for advanced evaluative language in Geography.

2 What are some recommendations you could make to address the problems of salinity in the Murray-Darling Basin?

Student recommendations could include actions by governments, industry and individuals. There will be more detail on making recommendations for the Murray-Darling Basin later in this unit.

Possible answers

General statement	Human-induced change can have a **devastating** impact on environments. Change can compromise the ability of environments to sustain their important source, sink, service and spiritual functions. The Murray-Darling Basin environment has been seriously affected by salinity in the past and it is an ongoing challenge for the environment. Salinity should be carefully monitored and controlled by governments. Irrigators and industry should be penalised heavily if they pollute waterways, so that the Murray-Darling Basin can continue to fulfil its environment functions in the future.	*State your overall evaluation of the human-induced change of salinity. How does this impact on the functions of environments? What should be done to deal with salinity in the Murray-Darling Basin?*

Explanation: the final paragraph

The final paragraph of a Consequential Explanation is called a General Statement which:

- summarises the main explanations and makes an overall evaluation of the human-induced change and its impact on the environment
- makes any recommendations for solving problems that have been identified.

Review the excerpts below of the Consequential Explanation we have written. Answer the questions then follow the hints to write the General Statement.

1 What is your overall evaluation of salinity and its impact on environments? Use evaluative language. _____

_____

2 What are some recommendations you could make to address the problems of salinity in the Murray-Darling Basin? _____

_____

Phenomenon to be explained	Environmental changes such as rising salinity have serious impacts on the sustainability of the functions of environments. Environments have four different functions: source, sink, service and spiritual functions. These functions must be sustainable which means they have an ongoing capacity to continue without compromising the future. Each function operates in the inland river environment of the Murray-Darling Basin in eastern Australia… Salinity has a serous impact on the sustainability of the functions of the Murray-Darling Basin environment.
Explanation *Explanation of salinity*	Salinity means that salt has built up to the point where it damages the environment. Inefficient irrigation in farms can lead to increased salinity. As a result, the water table rises and saline water is brought to the surface. In addition, pollution by saline wastewater can make waterways more saline.
Consequences for source function	Human-induced environmental changes such as rising salinity can have serious impacts on the source function of environments. The source function of environments refers to natural resources that come directly from the environment … In this way, salinity can have a major negative impact on the sustainability of the source function in an environment like the Murray-Darling Basin.
sink function	The sink function of environments is also compromised by salinity. Environments perform the significant role of absorbing wastes, known as the sink function. In environments, wastes and pollution are stored, absorbed, broken down and processed by the environment so that it is not toxic to organisms … Increased salinity damages wetland ecosystems by hindering the growth of plants that process and absorb toxins and waste … Consequently, salinity reduces the capacity of the Murray-Darling Basin environment to perform its vital sink function.
service function	Another vital environment function is service which is also degraded by human-induced salinity. Natural processes in environments sustain life on the planet. The resources in the environment provide food and energy to live .... As the service function of environments is essential for the survival and wellbeing of people, plants and the economy, human-induced impacts such as salinity are a serious risk.
spiritual function	The final function is the vital spiritual role of environments and this role can be damaged by human-induced change like salinity... If salinity increases in rivers, the environment loses its aesthetic appeal because it is too salty and degraded, and also because people cannot safely enjoy leisure and recreation in the rivers … For these reasons, salinity can have a damaging impact on the capacity of the environment to sustain its spiritual function.
General statement	_____ _____ _____ _____ _____ _____

State your overall evaluation of the human-induced change of salinity. How does this impact on the functions of environments? What should be done to deal with salinity in the Murray-Darling Basin?

Explaining human-induced change: carp

Teacher page

The next two pages provide students with the opportunity to practise the literacy skills they have learned in the Consequential Explanation about salinity. On this page, students read the fact boxes about a different human-induced change: carp. They fill in the graphic organisers. The graphic organisers are three different kinds of diagrams for explaining:

- sequential explanation (how syphoning works)
- cause and effect chain (carp eat zooplankton
- impacts of carp.

Students will use this information to plan and write a Consequential Explanation about carp on the next page. They can use the scaffolds for salinity to help them. Teachers can differentiate this activity to provide more or less support depending on the needs of students.

Sources:
Commonwealth Environmental Water Office. (2016). *Carp in the Murray-Darling Basin and Commonwealth environmental water.* https://www.awe.gov.au/water/cewo/carp-murray-darling-basin

The State of Victoria Department of Environment, Land, Water and Planning. (2017). *Impacts of Carp in Wetlands. Fact Sheet.* www.water.vic.gov.au

Fisheries Research and Development Corporation. (n.d.). *The carp problem*. https://carp.gov.au/the-carp-problem

Teaching suggestions

Scaffolding suggestions for the next 2 pages

1	Teachers guide students through the activities on this page, so they know about carp as a human-induced change. Teachers may need to read the fact boxes with students and explain terms (zooplankton, algae, sediment, syphoning).
2	Teachers could remind students of the structure of a Consequential Explanation and tell students that they will write a new one about carp. Students will also use the same case study (the Murray-Darling Basin).
3	After completing the activities on this page, we move to the next page, where students will write a Consequential Explanation. Teachers can help students to plan the first paragraph (Phenomenon to be explained) on the board. Use the salinity text as an example. It is fine if students use this text as a close model. More experienced students may be able to innovate.
4	Teachers can help students to write the topic sentences for the explanation paragraphs with students on the board.
5	Students can write the first and second explanation paragraphs in groups on posters (or in pairs). The teacher can assist where needed. Teachers could allocate different paragraphs to each group and create a class text.
6	Students write at least one explanation paragraph independently.

Answers

Explain the syphoning process

carp suck in mud and sediment

then

they filter out food

then

they eject sediment

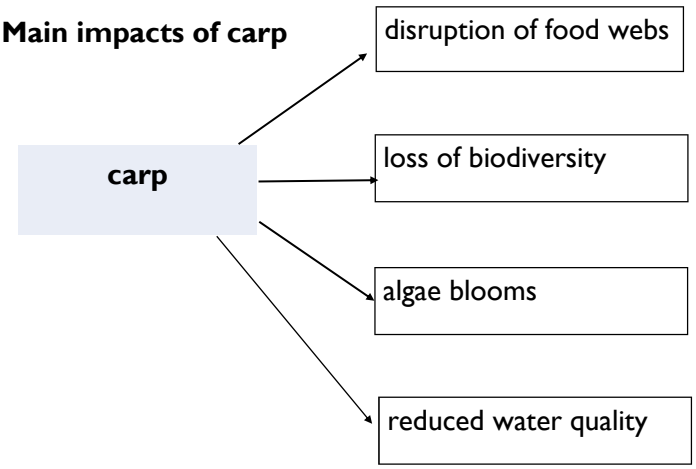
then

silt is stirred up

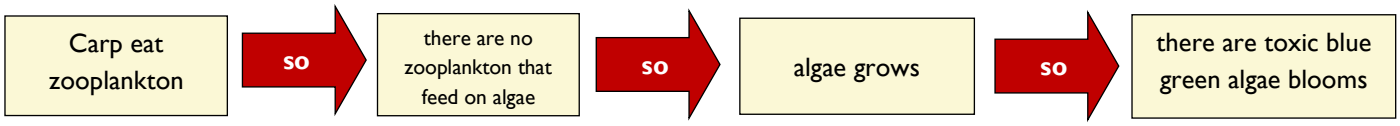
then

the water becomes muddy and dark

Main impacts of carp



Consequences of carp eating zooplankton

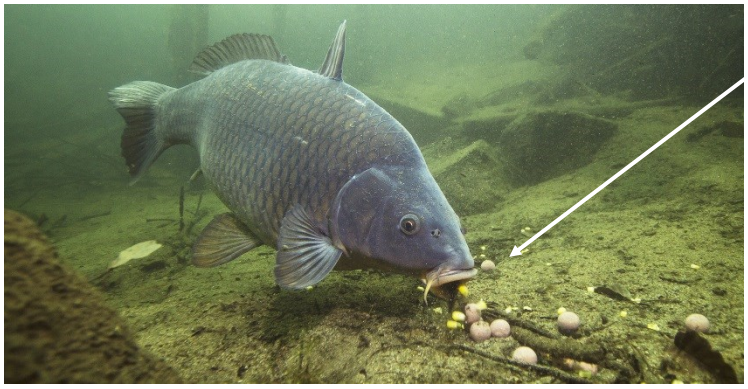


Explaining human-induced change: carp

Freshwater carp (cyprinium carpio) is a freshwater fish that was introduced to Australia from Europe and Asia in the 1800s. Here are two fact boxes about carp.

Carp Fact Box

- carp dominate the Murray-Darling Basin wetlands
- currently up to 90% of the aquatic biomass
- highly adaptable so they take over ecosystems
- they breed quickly
- eat eggs of other fish species and food of other fish
- juvenile carp eat zooplankton
- zooplankton usually feed on algae
- without zooplankton, algae grows causing toxic blue green algae blooms



- the carp feeding method of **syphoning** is destructive
- they suck up mud and sediment, filter out food items and eject sediment
- stirs up silt (fine particles)
- makes the water muddy and dark
- blocks sunlight to aquatic vegetation
- native birds cannot see their food sources in the water

Fill in these different graphic organisers to help explain the impact of carp on aquatic environments like the Murray-Darling Basin.

Explain the syphoning process

carp suck in mud and sediment

then

then

then

then

Main impacts of carp

carp

Consequences of carp eating zooplankton

Carp eat zooplankton → so → so → so

Write a Consequential Explanation

Teacher page

Possible answers

Please refer to the teaching sequences on the previous page. It is fine if the wordings in this text are closely modelled on the salinity example.

Explain the impact of a human-induced environmental change on the sustainability of functions of the environment. Use a case study.

Phenomenon to be explained	Environmental changes such as introduced species have serious impacts on the sustainability of the functions of environments. Environments have four different functions: source, sink, service and spiritual functions. These functions must be sustainable which means they have an ongoing capacity to continue without compromising the future. Each function operates in the inland river environment of the Murray-Darling Basin in eastern Australia. Carp have a major impact on the sustainability of the functions of the Murray-Darling Basin environment.
Explanation *Explanation of carp*	Freshwater carp (cyprinium carpio) is an introduced species that dominates environments and damages waterways. Carp are highly adaptable so they take over ecosystems, breeding quickly and eating the eggs of other fish species. Their feeding technique of syphoning is destructive. They suck up mud and sediment, filter out food items and eject sediment. This process stirs up silt (fine particles), makes the water muddy and dark, blocks sunlight to aquatic vegetation and damages fragile ecosystems. In the Murray-Darling Basin, carp are a huge problem and they are around 90% of the aquatic biomass. Juvenile carp eat zooplankton which feed on algae, so the algae grows and causes toxic algae blooms. For these reasons, carp are a serious problem for the Murray-Darling Basin environment.
Consequences for source function	Human-induced environmental changes such as introduced carp can have serious impacts on the source function of environments. The source function of environments refers to natural resources that come directly from the environment. The Murray-Darling Basin environment provides drinking water for 3.6 million people. Carp are so destructive that they damage the quality of the water for all living organisms, including humans. In this way, carp can compromise the sustainability of the source function in an environment like the Murray-Darling Basin.
Consequences for sink function	The sink function of environments is also compromised by introduced species like carp. Environments perform the significant role of absorbing wastes, known as the sink function. In environments, wastes and pollution are stored, absorbed, broken down and processed by the environment so that it is not toxic to organisms. The wetlands of the Murray-Darling Basin absorb carbon dioxide as well as adding oxygen to the water. They also absorb toxic chemicals like nitrogen and phosphorous, preventing these chemicals from poisoning fish stocks. The syphoning feeding method of carp makes the water muddy and dark, and as a result, aquatic plants cannot grow. Since carp eat zooplankton that feeds on algae, algal blooms create more toxicity in the waterways. Consequently, carp reduce the capacity of the Murray-Darling Basin environment to perform its vital sink function.
Consequences for service function	Another vital environment function is service which is also degraded by carp. Natural processes in environments sustain life on the planet. The resources in the environment provide food and energy to live. Transpiration of trees provides the oxygen we need to survive. Water from the Murray-Darling Basin provides irrigation for 9,200 agricultural businesses which contribute $24 billion to Australia's economy. The Basin provides drinking water for 3.6 million Australians. Countless plants and animals rely on its waterways and wetland ecosystems for survival. Carp degrade the quality of the water and they damage food webs in the environment. They are currently 90% of the biomass, which destroys biodiversity. Therefore, they prevent the environment from fulfilling its service function. As the service function of environments is essential for the survival and wellbeing of people, plants and the economy, human impacts such as carp are a serious risk.
Consequences for spiritual function	The final function is the vital spiritual role of environments which can also be undermined by human-induced change like carp. Environment functions have significance to humans for where we are born and grow up, for where we live, work, worship and play. Natural environments have aesthetic value for their beauty and appeal for leisure and recreation. In the Murray-Darling Basin, swimming, fishing and boating are popular in the rivers. The environment contains many sacred and spiritually important sites for over 40 First Nations peoples. If carp dominate the rivers, their spiritual function is compromised. Due to algal blooms, the water can become toxic, so it is unsafe to fish or swim in the rivers. For these reasons, salinity can have a damaging impact on the capacity of the environment to sustain its spiritual function.
General statement	Human-induced changes can have devastating impacts on environments. They can seriously threaten the sustainability of source, sink, service and spiritual functions of an environment. The Murray-Darling Basin environment has been seriously affected by carp and it is an ongoing challenge for the environment. Carp should be culled and their numbers need to be urgently reduced. The carp problem should be high on the agenda for governments who manage the waterways so that the Murray-Darling Basin can continue to fulfil its vital environment functions in the future.

Write a Consequential Explanation

Refer to the information about carp on the previous page. Use the explanation of salinity as a model text. Write a Consequential Explanation below and use extra pages if you need more room.

Explain the impact of a human-induced environmental change on the sustainability of functions of the environment. Use a case study.

Phenomenon to be explained		*Evaluate the impact on the sustainability of functions of the environment* *Name the functions of the environment* *Define sustainability* *Write a sentence or two describing the Murray-Darling Basin.* *Identify the human-induced change and evaluate the impact*
Explanation *Explanation of carp* *Consequences for source function* *sink function* *service function* *spiritual function*		*Explain what carp are and how they cause problems for the environment.* Each explanation paragraph has these phases: *Identify the change and the function* *Environment function* *Example* *Explain the impact of change* *Evaluate the impact* *Refer to all the language features of a Consequential Explanation on the previous pages*
General statement		*State your overall evaluation of the human-induced change of carp. How does this impact the functions of environments? What should be done to deal with carp in the Murray-Darling Basin?*

Carp management strategies

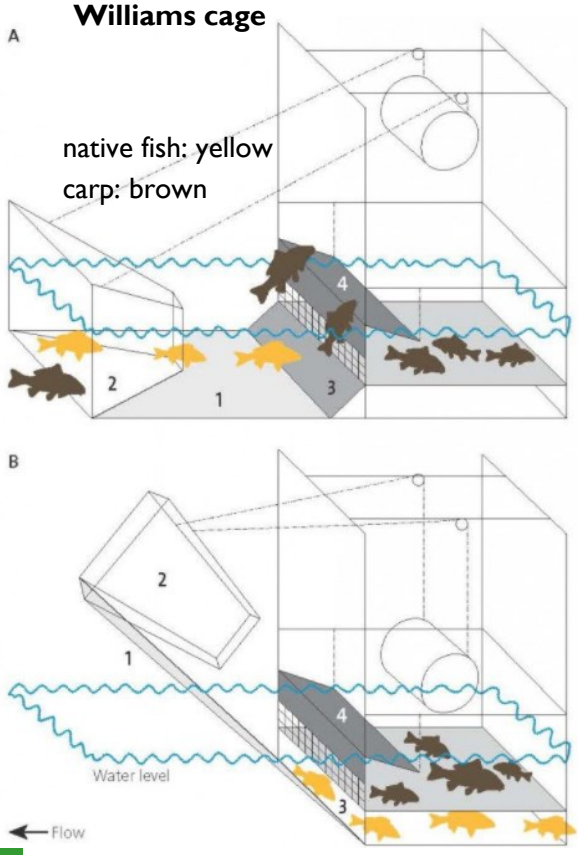
Teacher page

Teaching suggestions

Teachers could explain each of the carp management strategies as shown in the table.

- Fishing competitions are self-explanatory.
- Commercial harvesting uses nets as well as electrofishing. An electrical current is passed through the water to stun fish, which are then netted.
- Poison is also quite easy for students to understand.
- Carp separation cages are shown on this page below. Carp jump whereas native fish do not. Cages are placed in the areas where fish swim (fishways) and the carp jump over the obstacle into the cage whereas native fish swim under or around the cage unharmed.
- The carp virus is still being researched.

Williams cage



Curriculum links

NSW Stage 5

Investigative study

Students investigate the management of the environmental change, for example: (ACHGK074, ACHGK075)

- comparison and evaluation of the effectiveness of the management responses in achieving environmental sustainability

Using cages to catch carp

Students could research the Australian invention, the Williams cage. It is a carp separation cage developed by the Arthur Rylah Institute for Environmental Research, Department of Sustainability and Environment, Victoria.

Source: Finterest https://finterest.com.au/innovation-in-controlling-common-carp-a-globally-invasive-pest-species/

Images: Williams cage, Anthony Connallin. Finterest.

Answers

	Environmental	Economic	Social	Effectiveness
highest rated	best for the environment (except for carp) carp virus or separation cages	cheapest; uses the least resources fishing competitions	most widely accepted; best for people fishing competitions	kills the most carp carp virus
lowest rated	worst for the environment poison	most expensive carp virus	worst for people commercial fishing (risk of electrocution)	kills the fewest carp fishing competition

Carp management strategies

Many strategies have been proposed to deal with the problem of carp in Australian waterways. There are many pros and cons of each strategy, depending on the criteria for evaluating success.

Right: electrofishing from a boat; an electric current stuns fish then they are caught in a net

Read the information in the table below.

	How it works	Environmental	Economic	Social	Effectiveness	Evidence
Carp fishing competitions	fishing competition where people fish for carp	targets larger fish not juveniles	minimal cost	popular with community fishing groups	ineffective	reduces carp population by 1-2%; no lasting reduction
Commercial harvesting	electrofishing: carp are stunned by electricity then netted	other fish species may also be caught; nets are not effective in waterways where there are snags; electro-fishing is not effective in deep water	not viable; low market price for carp ($1.50 per kilo); carp used for fish oil, pet food, fertiliser; electrofishing is expensive	Australians do not like to eat carp so there is little incentive for commercial fishing; risk of electrocution for fishers	effective where there is a high density of carp	commercial fishing is only effective in some areas and it is expensive
Poison	rotenone is a fish poison; carp are baited with the poison	kills all fish not only carp; carp do not like rotenone baits	moderate financial cost; high labour cost	human labour needed	effective but high labour costs	carp do not like floating baits; poisons are highly regulated as they kill other fish
Separation cages	cages catch carp when they jump	carp are jumping fish; cages capture larger fish only; native fish do not jump so are not caught; difficult to dispose of captured carp in remote areas	moderate cost $45,000 per fishway; ongoing monitoring and disposal of fish needed	human resource intensive; needs monitoring and disposal of carp	effective in some areas	cages catch 90% of carp; approx. 289,000 fish per day; cannot be installed in remote areas; need large flows of water
Carp virus	Cyprinid herpesvirus-3 is a naturally occurring virus that kills carp	carp virus is contagious to carp via skin and gills; does not kill other native fish or transfer to humans; huge quantities of dead carp damage the environment	very expensive; highest cost due to large quantities of dead carp to be removed	public fear of a virus spreading	could eliminate carp altogether	currently being researched

Rate the highest (best) and lowest (worst) strategy for each of these criteria.

	Environmental	Economic	Social	Effectiveness
highest rated	best for the environment (except for carp)	cheapest; uses minimal resources	most widely accepted; best for people	kills the most carp
lowest rated	worst for the environment	most expensive	negative impact on people	kills the least carp

Evaluating management strategies

Teacher page

Teaching suggestions

This page revises three language tools that are important resources for writing an evaluation:

1. evaluative language
2. adverbials
3. modal language.

For more on evaluative language, see Fact Sheet 3. There is an evaluative language activity at the start of this unit. For more on modal language, see Fact Sheet 2.

Answers

Positive	Negative
sustainable	expensive
effective	unsustainable
renewable	ineffective
biodiversity etc.	damaging etc.

Teaching suggestions

Before writing, teachers could do a kinaesthetic and talking activity with the class using the faces. Copy and print the faces, cut each face individually, and stick them up on the wall in the classroom or spread along a hallway. Read out a carp management strategy (e.g. fishing competitions). Ask students to stand and move to a place near the face that shows their evaluation of the strategy e.g. red (that it is not at all effective), orange (that it is not very effective). When the students are in place, ask individuals to give reasons why they chose that evaluation. This speaking activity will help prepare students for the sentence-writing activities on this page.

Possible answers

_____	**is/are**	_____	**effective**	**because**	_____
name of strategy		evaluate effectiveness			give reasons
e.g. Fishing competitions	are	ineffective		because they only reduce carp by 1-2%.	

1 Commercial harvesting is moderately effective because it catches large quantities of carp and makes use of

2 Poisons are moderately ineffective because they poison native species as well as carp, and carp do not like to eat poison baits.

3 Separation cages are very effective because they capture large quantities of carp (up to 90%) while letting native fish go.

Possible answers

1. The carp virus is definitely the best strategy for managing carp.

   The carp virus **may be/could be/might be** the best strategy for managing carp.

2. Poison must be used to control carp. Poison **could/can/may** be used to control carp.

3. Separation cages are completely effective in all areas. Separation cages **can be** effective **in some areas.**

Evaluating management strategies

Evaluating is judging something according to criteria. When we evaluate environmental management strategies, we need to use language to convey a **nuanced** evaluation, which means a thoughtful and informed evaluation. We have to take a position but also to show that we understand positive and negative aspects of the strategies. Geographers use three language features to evaluate: evaluative language, adverbials and modal language.

Evaluative language helps a writer to show an opinion or judgement. Each topic has different evaluative language. Fill in the box on the right to show positive and negative evaluative language for environmental management strategies.

Positive	Negative
sustainable	expensive

Adverbials help us take a position on the effectiveness scale below. Adverbials are words like 'very' or 'somewhat'. For example, a strategy may be somewhat effective if it has some positive and negative aspects.

effectiveness scale

not at all effective/ **ineffective**	not very effective/ **quite** ineffective	somewhat effective	moderately effective	**highly** effective **very** effective

Choose three of the carp management strategies from the previous page. Write sentences that evaluate their overall effectiveness below.

_____ **is/are** _____ **effective because** _____

name of strategy | evaluate effectiveness | give reasons

e.g. Fishing competitions are ineffective because they only reduce carp by 1- 2%.

1 _____ is/are _____ effective because _____

2 _____ is/are _____ effective because _____

3 _____ is/are _____ effective because _____

Modal language helps us take a weaker or stronger position on an issue. Geographers use low modality (e.g. may, could, perhaps). Low modality shows that we are open to new research or more information.

Change these sentences to lower modality.

1. The carp virus is definitely the best strategy for managing carp.

_____

2. Poison must be used to control carp. _____

3. Separation cages are completely effective in all areas. _____

_____

Evaluate carp management strategies

Teacher page

Teaching suggestions

Teachers could talk through the language features of the assignment prompt and how to answer a question or instruction.

The suggested teaching ideas below help students analyse the model paragraph in the middle of the student page.

1. In the first phase, ask students to underline the criteria that will be evaluated in this paragraph ('environmental criteria').
2. Read the 'elaborate' phase and ask student to highlight the evaluative language (positive: sustainable, biodiversity, minimising negative: damage).
3. Read the 'explain pros and cons' phase. Highlight evaluative language (shown on right: positive in blue, negative in red).
4. Highlight the conjunctions for contrasting ideas (in bold).
5. Underline cause and effect language for reasons (so, as, since, unless).
6. The final phase makes a final evaluation of which environmental strategy is the best. Teachers could ask students to highlight the evaluative language (most effective).
7. Ask them to circle the cause and effect language (due to) that shows the reason for the evaluation.
8. Ask students to highlight the reason for the final evaluation.

Evaluation

The genre of this assignment is an Evaluation which is a member of the persuasive family of genres. The purpose of an Evaluation is to judge (evaluate) something according to criteria. It is persuasive because the student has to take a position and present a viewpoint, backed by reasons and evidence.

Stages of the Evaluation are:

- Issue to be evaluated
- Criteria
- Final Evaluation/ Recommendation

Phases are the sub-sections of a paragraph. There are opportunities for variation in the phases of a paragraph, depending on the assignment prompt.

Negative evaluative language in red
Positive evaluative language in blue
Cause and effect language underlined
Conjunctions for contrasting ideas in bold

Carp fishing has the least environmental impact **but** it is also ineffective. Commercial harvesting and poison have the potential to harm or kill native fish so they are not sustainable for the environment. **In contrast**, separation cages are the most environmentally friendly as they capture 90% of carp while releasing native species. The carp virus is also positive for the environment since it can potentially eliminate carp which damage the environment. **However**, large quantities of dead carp from the virus could pose another environmental threat unless they can be safely removed.

Answers

1 What does economic mean in relation to environment management strategies? It means strategies that do not need too many resources (money, equipment, labour, technology, minerals etc.) and that the costs are affordable.

2 What makes a strategy sustainable from an economic perspective? Sustainable means that the resources needed for the strategy can be afforded for the long term, not just as a one-off cost.

3 What are the top three carp management strategies from an economic criterion? Fishing competitions, poison and separation cages.

4 What are the problems with the most economically viable strategies? Fishing competitions are the cheapest but not effective; poison kills native fish too; separation cages have high labour costs.

5 Which is the best economic strategy? Why? Students could argue for separation cages as they are effective and have a moderate cost.

Evaluate carp management strategies

Imagine that you have an assignment prompt below.

We need to write an evaluation (a persuasive text)

We need to discuss different management strategies

We need to focus on one environmental change (carp in river environments)

Evaluate management responses to an environmental change using environmental, economic and social **criteria**.

We need to use these three criteria for evaluating the strategies

An evaluation makes a judgement about something according to criteria. It is a persuasive text because it takes a position and has a point of view.

The stages of an evaluation are:
- Issue to be evaluated
- Criteria (environmental, economic and social)
- Evaluation and Recommendation

Let's work on the criteria paragraphs. Read the model below for one of the criteria (environmental). The paragraph has four phases or sub-sections (shown on the left).

Identify criteria	Environmental criteria for carp management strategies involve the impact on other native fish and the environment.	*State the criteria being evaluated*
Elaborate	Sustainable environmental strategies can kill carp or remove them from the environment while also promoting biodiversity and minimising damage to organisms and environments.	*Define the criteria and use evaluative language for why these are important*
Explain pros and cons of different strategies	Carp fishing has the least environmental impact but it is also ineffective. Commercial harvesting and poison have the potential to harm or kill native fish so they are not sustainable for the environment. In contrast, separation cages are the most environmentally friendly as they capture 90% of carp while releasing native species. The carp virus is also positive for the environment since it can potentially eliminate carp which damage the environment. However, large quantities of dead carp from the virus could pose another environmental threat unless they can be safely removed.	*Use conjunctions to compare and contrast each strategy (e.g. but, however)* *Use evidence*
Evaluate strategies	The most effective strategy from an environmental perspective is the use of separation cages due to the large numbers of carp that can be eliminated from the environment without damage to other species or huge quantities of dead fish to clean up.	*Evaluate the best strategy* *Use evaluative language* *Give a reason for the evaluation*

Plan a paragraph about the economic criterion. Write your paragraph on the next page as part of the full evaluation text.

1 What does economic mean in relation to environment management strategies? _____

_____

2 What makes a strategy sustainable from an economic perspective? _____

_____

3 What are the top three carp management strategies from an economic criterion? _____

_____

4 What are the problems with the most economically viable strategies? _____

5 Which is the best economic strategy? Why? _____

_____

_____

Evaluate carp management strategies

Teacher page

The writing of this evaluation can be scaffolded, with teachers providing more or less support for students, as needed. A suggested answer is provided below.

Issue to be evaluated *Carp problem* *Management strategies* *Criteria for evaluation*	Freshwater carp (cyprinium carpio) is an introduced species that dominates environments and damages waterways. They are highly adaptable so they take over ecosystems, breeding quickly and eating the eggs of other fish species as well as zooplankton which help to control algae. Their feeding technique of syphoning is destructive as it stirs up silt, makes the water muddy and dark, blocks sunlight to aquatic vegetation and damages fragile ecosystems. Management strategies that have been implemented or proposed to control carp in Australian marine environments include fishing competitions, commercial fishing, poisoning, separation cages and a carp virus. Three criteria will be used to evaluate these strategies: environmental, economic and social.
Evaluation positions *Environmental (excerpt)*	Environmental criteria for carp management strategies involve the impact on other native fish and the environment… The most effective strategy from an environmental perspective is separation cages due to the large numbers of carp that can be eliminated from the environment without damage to other species or huge quantities of dead fish to clean up.
Economic	Economic perspectives on carp management strategies involve the use of resources such as money, equipment, labour, technology and minerals. A sustainable economic strategy means that the resources needed for the strategy can be afforded for the long term, not just as a one-off cost. Fishing competitions have minimal cost but they are not effective in managing carp populations. Poison has a low financial cost but it has high labour costs. However, poison is damaging to the environment as native fish also die. Commercial fishing is the least economic strategy because of the low market value of carp and the high costs of electrofishing. Separation cages are moderately expensive and they also have high labour costs to manage the cages and dispose of captured carp. They are not suitable for remote areas where labour is unavailable. The most effective economic strategy is to use separation cages as they are effective in capturing carp and only have a moderate cost.
Social	Social criteria for carp management strategies involve humans and their perspectives of the environment. The community needs to support management strategies and also human labour must be available where needed. The most socially viable strategy is fishing competitions because it is the most popular and the community enjoys being involved. However, this is not effective in removing carp from an environment. Public fear of viruses is a major limitation of the carp virus strategy. Some of the strategies require intensive human involvement. Separation cages, poisoning and commercial fishing all rely on people to implement the strategies and dispose of dead fish. This means that these strategies are only possible in areas where people are available to run the programs. From a social perspective, the most effective strategy is commercial fishing due to its popularity.
Overall evaluation and recommendation	The most effective environmental strategy overall is the use of separation cages. This is because the cages are highly effective in catching large quantities of carp, they have moderate cost and do not have negative social consequences. Therefore, the use of separation cages should be expanded to as many areas as possible in Australian waterways where carp is a problem. The government should provide support for labour to manage the cages, especially in remote areas.

Evaluate carp management strategies

Write an evaluation of carp management strategies using the hints in the right-hand column. Use more paper if you need it.

Issue to be evaluated *Carp problem* *Management strategies* *Criteria for evaluation*		*Write one or two sentences that explain why carp is a problem for environments.* *Identify the five management strategies to be evaluated.* *Identify the three criteria for evaluation.*
Evaluation positions *Environmental (excerpt)*	Environmental criteria for carp management strategies involve the impact on other native fish and the environment… The most effective strategy from an environmental perspective is the use of separation cages due to the large numbers of carp that can be eliminated from the environment without damage to other species or huge quantities of dead fish to clean up.	
Economic	Economic perspectives on carp management strategies involve	*Follow the phases of each paragraph:* *Identify criteria* *Elaborate* *Explain pros and cons of different strategies* *Evaluate strategies* *Use the language features covered in this unit.*
Social		*Plan and write a paragraph about social criteria using the same phases and language features.*
Overall evaluation and recommendation		*State your overall evaluation of the most effective management strategy overall. Give reasons.* *Give recommendations for what should happen.*

How to use these resources

Each teacher page has teaching suggestions as well as answers. There are also some suggestions for extra follow-up activities.

Most worksheets take around 10 minutes, depending on the students. Some worksheets are stand-alone, but others are linked, as indicated on the teacher pages. The table below shows possible timing for each set of activities.

Teachers can refer to the introduction section for more information on literacy pedagogy, genres of writing and literacy in Geography.

Curriculum links

Curriculum links for student activities are shown on the teacher pages.

The table below is different from the contents list at the front of the book. This page provides an overview of worksheets that are grouped together on similar topics, as well as estimated teaching time. Some worksheets continue over several pages, as you can see at a glance below. This table may help teachers to plan and sequence the activities in this unit.

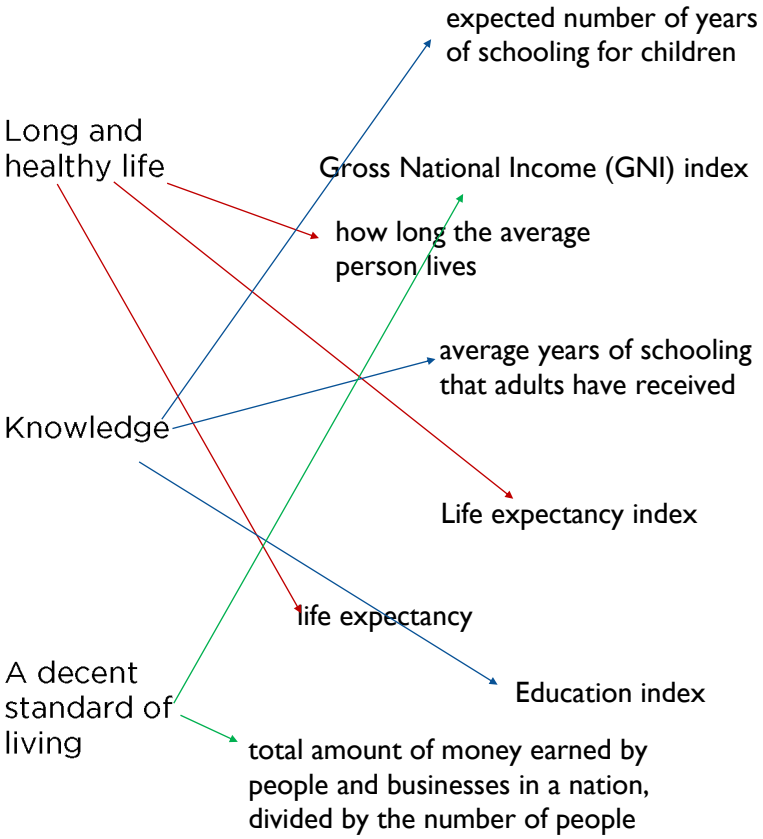
Pages	Content focus	Literacy skills	Estimated teaching time
129-130	The Human Development Index	Learn vocabulary related to the topic	10 minutes
131-132	Gender and education data	Visual literacy. Interpret bar charts and line graphs	10 minutes
133-134	Sustainable development goals	Active and passive voice sentences	10 minutes
135-138	Indicators of human wellbeing	Jigsaw group activity to fill in tables about positive and negative aspects of economic, social, technological, environmental and political causes of wellbeing	25 minutes
139-140	Causes of spatial inequality	Fill in cause and effect sequence diagrams	10 minutes
141-146	Explain spatial variation in Africa	Compare HDI data and causes of spatial inequality between Botswana and the Democratic Republic of Congo	3 x 10-15 minutes
147-152	Explain malnutrition in India	Reading and comprehension; visual literacy (interpreting malnutrition data and comparing poor and non-poor urban areas); write an explanation of the causes and effects of spatial variation in malnutrition	1 lesson
153-158	Causes of poverty in Australia	Rearrange a jumbled Factorial Explanation; reading comprehension of a paragraph and interpreting a heat map of poverty after housing costs in Australia; using low modality to explain data	3 x 10 minutes
159-168	Evaluation of Closing the Gap	Identify adverbials to evaluate program effectiveness; interpret an assignment question; read a model paragraph and identify language features; write two paragraphs based on the model paragraph; write the first and final paragraphs	1 lesson

Human wellbeing

Human Development Index

Teacher page

Answers



Curriculum links

NSW Stage 5

Human wellbeing and development

Students investigate ways of measuring and mapping human wellbeing and development, for example: (ACHGK076)

- examination of global indicators and benchmarks for human wellbeing
- description of ways of measuring and mapping human wellbeing and development for the purpose of identifying and analysing spatial variations
- analysis of contemporary trends in human wellbeing and development

Dimensions	Long and healthy life	Knowledge	A decent standard of living
Indicators	Life expectancy at birth; the average age at death for people	Expected years of schooling; Average years of schooling that adults have received	The total amount of money earned by people and businesses in a nation, divided by the number of people
Index	Life expectancy index	Education index	Gross National Income (GNI) index

1 *Why is a long and healthy life an indicator of wellbeing?* It shows that people have access to healthcare and high living standards. If people live for a long time, they are probably healthy and well cared for, with nutritious food to eat and a good standard of living.

2 *Why are knowledge and education indicators of wellbeing?* Education relates to people's skills, training and opportunities in life. Skills and knowledge make people better workers and more productive members of society, so they can earn more money for their families. Knowledge also improves personal satisfaction and enables an individual to make choices for their life.

3 *A decent standard of living is an economic measure. Why is this an indicator of wellbeing?* Economic measures relate to how much money people have to spend on food, housing, leisure and other costs. If people have a good income, they have better healthcare, education and a better standard of living.

Human Development Index

The Human Development Index (HDI) is one way of measuring human wellbeing. It was developed by the United Nations to compare the development of different countries and to assist nations to develop better policies. The three dimensions of the HDI are: a long and healthy life; knowledge (education); and a decent standard of living. Each dimension has its own indicators and indexes for measuring them, as shown below.

Draw connecting lines to match the dimension of the HDI with indicators and the index for measuring the dimension.

Long and healthy life

Knowledge

A decent standard of living

expected number of years of schooling for children

Gross National Income (GNI) index

how long the average person lives

average years of schooling that adults have received

Life expectancy index

Education index

life expectancy

total amount of money earned by people and businesses in a nation, divided by the number of people

Use the information above to fill in this table about the Human Development Index.

Dimensions	Long and healthy life	Knowledge	A decent standard of living
Indicators			
Index			

Answer these questions using cause and effect language e.g. because, since, if, when

1 Why is a long and healthy life an indicator of wellbeing? _____

_____

_____

2 Why are knowledge and education indicators of wellbeing? _____

_____

_____

3 A decent standard of living is an economic measure. Why is this an indicator of wellbeing? _____

_____

_____

Gender and education data

Teacher page

Teaching suggestions

Teachers could use the following prompts and questions to help students understand Figure 1 before they answer the questions. Teachers can provide more or less support for Figure 1, based on the suggestions below.

1. Look at the title. We can assume that all children in the world should have the chance to go to school. 'Out of school population' means the number of children who should be in school but are not at school for various reasons. What kind of reasons could those be? (*schooling not permitted for girls, war, conflict, not enough schools or teachers, poverty, children needing to find work to support the family etc.)*

2. What age of children is this data measuring?	*primary school age (e.g. 5-11 years)*
3. What do the blue and orange bars mean?	*blue is boys, orange is girls*
4. What is the x axis measuring (horizontal)?	*years from 2000 to 2018*
5. What is the y axis measuring (vertical, 'y goes to the sky')?	*the number of children in millions*
6. How many children altogether were out of school in the year 2000?	*nearly 100 million*
7. Of these, how many were males?	*42 million*
8. How many were females?	*58 million (100 - 42)*
9. What proportion of out of school children was larger, boys or girls?	*girls (around 15 million more girls were out of school)*
10. What about in 2018?	*nearly 60 million total, 32 million girls, 27 million boys*
11. What is the overall trend? increasing, decreasing or the same?	*decreasing numbers of children out of school since 2000 but the numbers have been the same since 2007*

Answers

For more on writing about data displays see the unit on Environmental Change and Management.

1 What is the data about?	The data is about the number of primary school aged children who should be getting an education but who are not at school.
2 What is the overall trend or	Compared with the year 2000, there are fewer children missing out on school worldwide. More girls are still missing out on school than boys are.
3 What is positive or promising regarding education of females?	There are fewer girls missing out on an education than in previous years (32 million girls in 2018 compared with 58 million girls in 2000).
4 What is negative or worrying regarding education of females?	There are still 32 million girls worldwide who do not receive a primary school education, and there are still more girls than boys who miss out on education. The number of girls out of school has remained constant since 2007 which suggests that girls' education will not improve unless there is some kind of major change in policy and governments.

Figure 2 shows the youth literacy rate for females and males aged 15 to 24 years. The overall trend is that literacy rates are improving for both females and males, but fewer females are literate than males. More males are literate than females. A positive indication is that female literacy rates are continuing to improve and if the improvement continues, female literacy rates may catch up to males. The gap between female and male literacy is narrowing. However, it is worrying that, in 2018, there are still fewer females who are literate than males.

Gender and education data

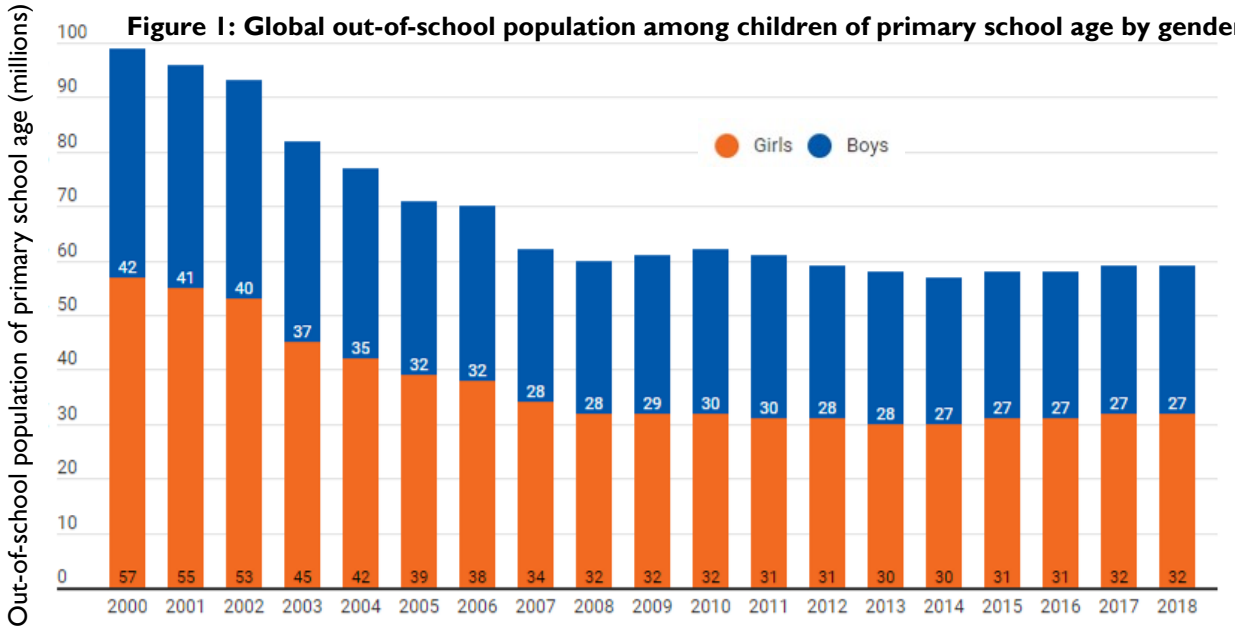
Education of females is also an indicator of wellbeing and human development. All children, females and males, have a right to education. However, in many places, girls are disadvantaged and receive little or no education. In addition to gender equality, other benefits of education of females are shown in the box.

Better educated females:

- are more informed about nutrition and healthcare
- are more likely to be in paid employment and earn higher incomes
- give birth to fewer children at a later age
- can lift households and communities out of poverty.

Analyse the data displays below from UNESCO and answer the questions.

Figure 1: Global out-of-school population among children of primary school age by gender



1 What is the data about? _____

2 What is the overall trend or pattern? _____

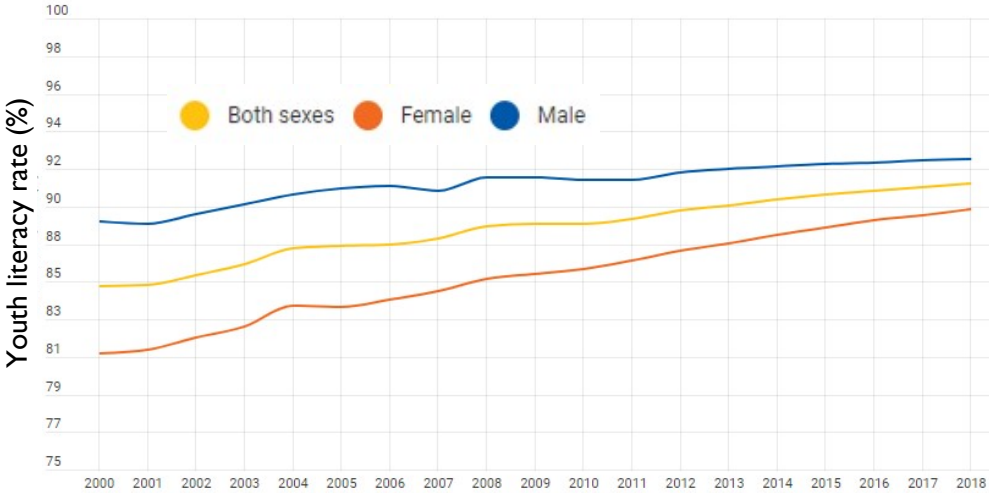
3 What is positive or promising regarding education of females? _____

_____

4 What is negative or worrying regarding education of females? _____

_____

Figure 2: Global youth literacy rate (ages 15 to 24 years) by gender



Answer the four questions above about Figure 2:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Source: UNESCO (2020). CC3.0. Gender and education. https://data.unicef.org/topic/gender/gender-disparities-in-education/

Sustainable development goals

Teacher page

Teaching suggestions

Active voice and passive voice are useful tools for writers in Geography. In active voice, the 'doer' of an action is placed before the verb. In passive voice, the 'doer' of an action is at the end of the sentence or can be left out altogether. Knowing about active and passive voice helps a writer to choose how to structure their ideas, to avoid repetition and to help to make a paragraph flow for the reader. The example on the student page uses present tense (war **causes** poverty). The example below has an active sentence that is in the past tense. Teachers could show this to students on the board as an additional example to help with activities 4-6.

ACTIVE voice	**The United Nations**	**established**	**Sustainable Development Goals**		in 2015.
	Doer (who did it?)	*Verb (what they did)*	*Done to*		*When?*
PASSIVE voice	**Sustainable Development Goals**	**were**	**established**	**by The United Nations**	in 2015.
	Done to	*Auxiliary (helping verb: is, are, was, were)*	*Verb (what they did)*	*Add 'by' or leave out the Doer*	*Extra information can stay where it is.*

Answers

	Verbs	Passive voice sentences
1	**define**	Sustainable development **is defined/was defined** as development that meets the needs of the present and also allows future generations to meet their needs.
2	**manage**	The 17 Sustainable Development Goals **are managed** by the United Nations.
3	**invite**	Governments, global organisations and businesses **are invited** by the United Nations to work in partnership to achieve the goals.

	Active voice sentence (with verbs in bold)	**Passive voice sentence**
6	The UN **identified** poverty and climate change as urgent problems.	Poverty and climate change were identified / have been identified by the UN as urgent problems.
7	The pandemic **caused** increased poverty.	Increased poverty was caused by the pandemic.
8	The UN **grouped** the Sustainable Development Goals into five categories: People, Planet, Prosperity, Peace and Partnerships.	The Sustainable Development Goals were grouped / have been grouped into five categories: People, Planet, Prosperity, Peace and Partnerships.

Possible answers

Not all of the sentences need to use passive voice, but if they did, this is the answer.

Sentence starters have been underlined, to show that passive voice has enabled the focus of the sentences to change from 'United Nations' and 'people' to the problems and solutions.

Zero Hunger was set as the second Sustainable Development Goal. Increased global hunger and malnourishment are predicted by the United Nations. Hunger is experienced by nearly 690 million people. Malnutrition is faced by around 2 billion people every day. Urgent food and aid for suffering regions are recommended (by the United Nations). Changes to global food and agriculture systems are proposed (by the United Nations). Access to safe, nutritious, affordable food is needed.

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Sustainable development goals

In Geography, we can write using active voice sentences or passive voice sentences. Both are correct. Expert writers use a combination of active and passive voice to arrange their ideas.

ACTIVE voice
We know who or what is doing it.

War	causes	poverty	in many countries.
Doer (who/what did it?)	*Verb (what it did)*	*Done to (what did war cause?)*	*Where?*

PASSIVE voice
The 'doer' is at the end or left out.

Poverty	is	caused	by war	in many countries.
Done to	*Auxiliary (helping verb: is, are, was, were)*	*Verb (past participle)*	*Add 'by' before the Doer, or you can leave it out altogether*	*Where? Leave extra information in the same place.*

Finish the sentences below by adding an auxiliary then a verb.

	Verbs	Passive voice sentences
1	**define**	Sustainable development _____ as development that meets the needs of the present and also allows future generations to meet their needs.
2	**manage**	The 17 Sustainable Development Goals _____ by the United Nations.
3	**invite**	Governments, global organisations and businesses _____ by the United Nations to work in partnership to achieve the goals.

Rewrite the active sentences below as passive sentences in the past tense.

	Active voice sentence (with verbs in bold)	Passive voice sentence
4	The UN **identified** poverty and climate change as urgent problems.	Poverty and climate change _____
5	The pandemic **caused** increased poverty.	_____
6	The UN **grouped** the Sustainable Development Goals into five categories: People, Planet, Prosperity, Peace and Partnerships.	_____

In the paragraph below, the sentence starters 'The United Nations' or 'people' are repetitive. Rewrite this paragraph to add some passive voice sentences so that the problems and solutions are the focus of the sentence starters.

The United Nations set Zero Hunger as the second Sustainable Development Goal. The United Nations predicts increased global hunger and malnourishment. Nearly 690 million people experience hunger. Around 2 billion people face malnutrition every day. The United Nations recommends urgent food and aid for suffering regions. The United Nations proposes changes to global food and agriculture systems. People need access to safe, nutritious, affordable food.

Indicators of human wellbeing

Teacher page

Teaching suggestions

This is a jigsaw activity about indicators of human wellbeing and causes of spatial inequality. This task involves group work. Teachers can divide students into groups of 4-6 students (depending on class size) so there are 5 groups. If the student cohort does not suit this activity, teachers can adjust the activity to involve pair work for less movement in the classroom.

Teacher preparation: Photocopy or print all the blank tables for students. The expert groups will work on one table each, then share information in mixed groups.

Step 1. Expert groups: 5 groups of 4-6 students on the same topic (10 minutes)

Each expert group has one of the topics (shown below). The group members collaborate to fill in one table (e.g. economic or social or technological or environmental or political). Each student writes the shared ideas on their own half-page. They will later share this information in the mixed groups. Teachers can provide differentiated support by helping some groups to complete the task.

Expert Group 1 economic	Expert Group 2 social	Expert Group 3 *technological*	Expert Group 4 *environmental*	Expert Group 5 *political*

Step 2. Mixed groups, with one person from each expert group (10 minutes)

New groups are formed with one person from each expert group. Each expert tells the students about the information from their expert group and their top three indicators. All students write the information on their worksheets. Experts should not show their half-page to the other members of the group. After each expert has shared their information, students should have completed five tables: economic, social, technological, environmental and political.

Mixed groups
Expert 1
Expert 2
Expert 3
Expert 4
Expert 5

Curriculum links

NSW Stage 5

Spatial variations in human wellbeing

Students investigate causes, issues and consequences of spatial variations in human wellbeing, for example: (ACHGK077, ACHGK078, ACHGK079)

- description of spatial variations in human wellbeing and development between and within countries using selected indicators
- examination of reasons for and consequences of spatial variations in human wellbeing and development
- discussion of issues affecting the development of places and their impact on human wellbeing in one country or region

Indicators of human wellbeing

This activity explores aspects of human wellbeing and how these can become causes of spatial inequality.

Follow your teacher's instructions to fill in one table in an expert group, then share your information with other students in mixed groups.

Economic	Income, employment, production and consumption of goods and services
Positive economic indicators *How can you tell if an economy is strong?*	low unemployment high household income and high wages

Negative economic indicators *How can you tell if an economy is weak?*	unemployment

Social	Related to the quality of life and wellbeing of people: education, health, social
Positive social indicators *How can you tell if people in a society experience educational, health and social wellbeing?*	no poverty or hunger

Negative social indicators *How can you tell if people in a society do not experience educational, health and social wellbeing?*	poverty and hunger

Indicators of human wellbeing

Teacher page

Possible answers

Economic	Income, employment, production and consumption of goods and services
Positive economic indicators *How can you tell if an economy is strong?*	Low unemployment High household income and high wages Sustainable consumption Exports to other countries Economic growth Skilled labour market Low financial stress and no poverty Infrastructure for society's needs
Negative economic indicators *How can you tell if an economy is weak?*	Unemployment Unskilled workers Low wages and low household income High costs and inflation Widespread debt Poverty and homelessness Financial stress Inadequate infrastructure

Social	Related to the quality of life and wellbeing of people: education, health, social
Positive social indicators *How can you tell if people in a society experience educational, health and social wellbeing?*	no poverty or hunger high quality, free education for all high quality, free healthcare for all clean water, safe food affordable housing access to jobs long life expectancy low infant mortality equality and inclusion in society gender equality freedom mental health leisure, enjoyment and wellbeing
Negative social indicators *How can you tell if people in a society do not experience educational, health and social wellbeing?*	poverty and hunger homelessness poor education or limited education for some groups poor or expensive healthcare no access to water, food, housing unemployment and homelessness short life expectancy high infant mortality inequality and discrimination in society poor mental health and suicide lack of freedom persecution of some groups

Technological	Technology, internet access and innovation
Positive economic indicators *How can you tell if a nation has effective technology?*	affordable access to reliable internet and computers by all residents research and development in new technologies and innovation highly educated workforce and specialist IT workers infrastructure for technology (e.g. servers) reliable power supplies
Negative technological indicators *How can you tell if a nation has ineffective technology?*	limited access to technology discrimination in access to technology expensive or unaffordable technology no research or development inadequate infrastructure uneducated workforce expensive or unaffordable internet and not enough access to computers unreliable power supplies

Environmental	Quality and sustainability of the physical environment
Positive environmental indicators *How can you determine a high quality environment?*	environmental quality - air, land, water plenty of green spaces and wilderness availability of clean, safe drinking water and high quality, affordable food sources sustainable development responsible consumption few natural disasters sustainable urbanisation
Negative environmental indicators *How can you determine poor environmental quality?*	poor environmental quality pollution poor air quality unsustainable development and urbanisation land degradation climate change many natural disasters (flood, drought, storm, volcanic eruptions, earthquakes)

Political	Government, rights and freedoms, peace and war
Positive political indicators *How can you tell if a nation has good government?*	stable government policies for the greater good free press and open debate no corruption open and fair elections (democracy) civil liberties (freedom) fair and transparent justice system laws and rights that protect all people and workers
Negative political indicators *How can you tell if a nation has ineffective government?*	unstable governments military coups and dictatorships war and violence some groups restricted from voting unfair or corrupt elections corruption unfair legal system or no legal system persecution of some groups

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Indicators of human wellbeing

Technological	Technology, internet access and innovation
Positive economic indicators *How can you tell if a nation has effective technology?*	affordable access to reliable internet and computers by all residents
Negative technological indicators *How can you tell if a nation has ineffective technology?*	limited access to technology

Environmental	Quality and sustainability of the physical environment
Positive environmental indicators *How can you determine high quality environment?*	good air quality
Negative environmental indicators *How can you determine poor environmental quality?*	poor air quality, polluted air

Political	Government, rights and freedoms, peace and war
Positive political indicators *How can you tell if a nation has good government?*	stable government
Negative political indicators *How can you tell if a nation has ineffective government?*	war

Causes of spatial inequality

Teacher page

Teaching suggestions

The aim of this activity is to help students understand the causes of spatial equality and how to write about them. This activity helps students convert more 'spoken-like' language in the cause and effect chains, to 'written' language in sentences. Spoken language uses more verbs (happenings) whereas written language in Geography is more likely to refer to nouns (things) and it is more technical and abstract, as shown on the right. Teaching and learning for these activities can be scaffolded:

1. The teacher can work with students as a class to complete the first example on the board.
2. Students can do the second example in pairs, with teacher support.
3. Students can do the rest independently.

'spoken' language	'written' language
many people do not have jobs	high unemployment
income is low	low income
people cannot afford food	unaffordability of food
they do not eat enough nutritious food	malnutrition
there are not enough hospitals and doctors	inadequate health infrastructure
business owners do not have access to the internet	lack of internet access
the environment is polluted	environmental pollution
the government is unstable and corrupt	political instability and corruption

Possible answers

Economic Many people are unemployed → so → household income is low → so → people cannot afford to buy food or other necessities → so → they have inadequate nutrition → so → they experience poverty and poor health

High unemployment leads to low household income which means that people cannot afford to buy food. This can result in malnutrition, poverty and poor health.

Social There are not enough hospitals or doctors → so → people cannot get medical treatment → so → they have no medications or treatments for illnesses → so → they may die or suffer chronic illness → so → life expectancy is low

Inadequate health infrastructure leads to lack of access to medical treatment and medication. As a consequence, there is increased illness, disease and death, leading to low life expectancy.

Technological Business owners do not have access to the internet → so → they cannot have a website or attract online customers → so → they miss out on business opportunities → so → businesses fail → so → they are unemployed

Lack of internet access for business owners may lead to missed business opportunities and the inability to attract customers since they do not have a website. Consequently, businesses may fail, leading to unemployment.

Environmental The environment is polluted → so → people inhale polluted air and drink contaminated water → so → they become sick → so → they cannot work or study → so → they experience poverty

Environmental pollution results in increased illness and disease from polluted air and contaminated water. This can cause inability to work or study, leading to poverty.

Political Government is unstable and corrupt → so → money is stolen by officials → so → there is no money for health, education or infrastructure → so → people do not have the resources they need to live → so → poverty increases

Political instability and corruption lead to inadequate spending on health, education and infrastructure. As a result, the population has inadequate resources for living and so poverty increases.

Causes of spatial inequality

Some of the negative indicators that you have identified in the previous pages are actually causes of spatial inequality in wellbeing. They can help explain why some regions have better wellbeing than other places.

Fill in these cause and effect chains to show some of the factors that impact the wellbeing of people in a region or nation. Then combine the information in the chain into 1-2 sentences using a range of cause and effect language from the box below.

results in, resulting in	causes, causing	This can lead to	leading to
impacts on, impacting on	As a result	As a consequence	Consequently

Economic
Many people do not have jobs

so → ____ so → ____ so → ____ so → ____

High unemployment leads to _____ This can result in

_____

Social
There are not enough hospitals or doctors

so → ____ so → ____ so → ____ so → ____

_____

_____

Technological
Business owners do not have access to the internet

so → ____ so → ____ so → ____ so → ____

_____

_____

Environmental
The environment is polluted

so → ____ so → ____ so → ____ so → ____

_____

_____

Political
The government is unstable and corrupt

so → ____ so → ____ so → ____ so → ____

_____

_____

Explain spatial variation in Africa

Teacher page

Teaching suggestions

The activities on the next few pages continue on from the previous pages. They explain spatial variation and inequality of wellbeing outcomes in two African countries. The table on this page summarises key information about two countries: Botswana and Democratic Republic of the Congo (DR Congo) which have vastly different levels of wellbeing. The table has been included so that students do not have to do more research before they tackle the literacy activities. The suggested teaching steps below help teachers work with the table to build student comprehension.

A note about Africa's colonial past

One of the main factors that has shaped modern African nations is their colonial past. Due to the geographical, rather than historical focus, of these pages, colonisation issues have not been addressed in the table. However, teachers may choose to inform students about the varied colonial past of Botswana and DR Congo which created terrible problems. Both countries were exploited by their colonisers. Botswana was a British protectorate from 1885 until 1966. At the time of independence, Botswana was very poor and underdeveloped.

DR Congo was a colony of Belgium from 1908 until 1960. King Leopold of Belgium was a brutal colonial master of the Congo from 1885 until 1908. He pillaged the country for his personal gain and forced the population to work for him without payment. Around half the population at that time died from brutal treatment or malnutrition.

1. Teachers could show students a map of Africa and find out what students already know. Locate the two countries: Botswana and DR Congo and find out if students know anything about these countries. Use the images as stimulus.

2. Teachers could revise the meaning of the UN's Human Development Index (from previous pages in this unit). Students may need to be reminded about HDI ranking, HDI value and Gross National Income (GNI).

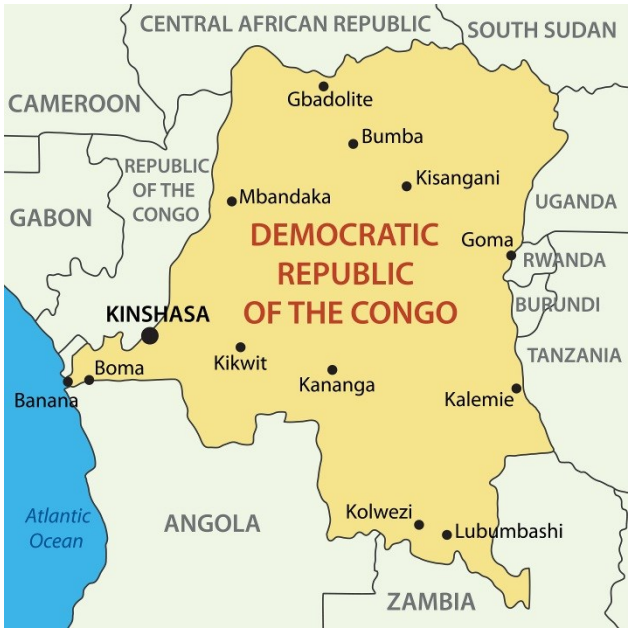
3. Teachers could explain that this table compares Botswana and DR Congo. Botswana is the success story of Africa, while DR Congo is one of the poorest countries in Africa. The table shows 14 criteria, with brief information about each. Check that students know the meaning of the criteria (e.g. topography, infrastructure)

4. Teachers could read through each criterion and explain what each one is about. Teachers could divide the class into pairs or groups to read and explain one criterion each to the class.

5. Based on the activity on the previous page, teachers could divide students into groups. Each group discusses the following causes of inequality in wellbeing in DR Congo:

- economic
- social
- political.

Each group identifies the criteria in the table that relate to the factors. The teacher can ask each group to write three points on the board about each of the causes.



Literacy Works for Geography Book 2 © Literacy Works

Explain spatial variation in Africa

The table below compares two African countries: Botswana and Democratic Republic of Congo (DR Congo).

Above left
Tourism in a national park in Botswana

Below left:
Mountain gorillas in a rainforest in DR Congo

Right
Map of southern Africa showing DR Congo in the middle and Botswana in the south

	Botswana	Democratic Republic of the Congo
HDI ranking	100th (high development)	175th (low development)
HDI Value	0.735	0.480
Life expectancy	69.6 years	60.7 years
Gross National Income (GNI)	$16,437 per person	$1,063 per person
Population	2.2 million; 12% of the population live in the capital city, Gaborone	72 million
Topography	flat, tablelands, lakes, desert	dense rainforest, mountains, lakes
Climate	hot, dry, low rainfall	hot, high rainfall (tropical, equatorial)
Resources	diamonds, coal; tourism; cattle	cobalt, diamonds, copper
Government	stable, peaceful democracy; independent legal system; good policymaking	since 2006 it has been a Presidential democracy; before 2006: dictatorships, unstable government, wars with neighbouring countries, tribal violence; millions of deaths; corruption; conflict continues
Economy	fastest growth in the world; government owns 50% of diamond industry; government invested wealth from diamonds in infrastructure, overseas investment and six-year National Development plans; tourism is popular	richest mineral wealth in the world; poorest citizens; economic mismanagement; government corruption; corrupt private companies own mines
Infrastructure	good roads, rail, airports; produces coal for electricity; 95% of the population have access to safe drinking water	poor; infrastructure is poorly maintained, poor roads and rail; little access to safe water
Healthcare	95% of the population live within 5km of healthcare; diseases are a problem (HIV/AIDS) for 20% of adults; some malnutrition	very poor; diseases such as Ebola, malaria, yellow fever, measles; world's second highest rate of child mortality; half of children are malnourished
Education	all students have 10 years of basic education, secondary education not compulsory	primary school education is not compulsory; during the wars, few children received an education
Society	civil liberties and human rights are respected	major problems: child soldiers, violence against women; conflict; child labour in mines

Data from United Nations Human Development Index (hdr.undp.org) and World Bank (worldbank.org)

Explain causes of spatial variation in Africa

Teacher page

Children working in a mine in DR Congo
Source: Wikipedia, Julien Harneis CC2.0

The fourth largest diamond in the world from Botswana's Karowe mine. Photo: W.Carter

Cobalt chips and a cobalt cube. Cobalt is used for to make paints and for many other industrial purposes.
Photo: Alchemist-hp. CC3.0

Teaching suggestions

Teachers should help students to understand the language features of the paragraph at the top of the page.

1. Firstly, teachers could tell students the overall goal: **to explain the causes of spatial inequality of wellbeing in two countries.**
2. Next, teachers can show students the phases of the explanation paragraph (in italics in the left column). The phases show the function of each part of the paragraph. The phases are more specific than PEEL or TEEL and they relate to the exact task.
3. For each phase, teachers could ask students to highlight or underline the language features on their copy of the text. This is so students are actively involved in reading and deconstructing the model text, so they know what to do when they have to write the second paragraph.
4. The table on the right shows useful language for comparing and contrasting the two nations.

language for comparing	language for contrasting
both	however
also	in contrast
and	on the other hand
similarly	but
likewise	whereas
similar	different
similar to	difference
	better
	worse

Possible answers

Identify type of cause	Another way of explaining the spatial variation between Botswana and DR Congo is by examining **political** causes.	*Identify the type of cause*
Define	Political causes are related to government stability, peace and war and corruption.	*Write a short definition*
Explain similarities	Both Botswana and DR Congo have a democratic government at present.	*Use language for comparing*
Explain differences in wellbeing	However, the political situation in Botswana and DR Congo is different. Botswana has a stable, peaceful democracy with an independent legal system and a history of good policy making. In contrast, the DR Congo has only been a democracy since 2006. Previously there were dictatorship with unstable governments and many wars and conflicts with neighbouring countries. The death toll from violence was in the millions, and conflict continues. As a consequence, the people in DR Congo have suffered from low living standards and low life expectancy. Corruption in the government has also led to mismanagement of the country's natural resources, leading to more poverty.	*Use language for contrasting: however, but, in contrast, difference, whereas* *Use evidence and statistics* *Use cause and effect language for explaining*
Summarise the economic causes of spatial inequality and the impact on the HDI ranking	War, conflict and violence have led to severe problems in DR Congo, whereas Botswana has had a peaceful past. As a result, Botswana has been able to grow and provide a good standard of living for its people and a HDI value of 0.735. However, the people of DR Congo continue to suffer from lower standards of living, contributing to the HDI value of 0.480.	*Summarise the main cause of spatial inequality and the main impact on wellbeing for each country*

Explain causes of spatial variation in Africa

Read the model paragraph below that explains economic causes of spatial inequality between Botswana and DR Congo. Notice and highlight the language features.

Identify type of cause	The spatial variation between Botswana and DR Congo can be explained by economic causes.	*Identify the type of cause*
Define	Economic causes refer to income, employment, production and consumption of goods and services	*Write a definition*
Explain similarities	Both Botswana and DR Congo are rich in natural resources. Botswana has diamonds and coal and DR Congo has cobalt, diamonds and copper.	*Use language for comparing: both, also, similarly*
Explain differences in wellbeing	However, the main difference is in the economic management of mineral resources by the governments. Botswana's government owns half of the diamonds and have invested money in infrastructure and foreign investment. In Botswana, there are good roads, rail and airports, and 95% of the population has access to safe water. **As a result**, the people have benefited from a higher standard of living. In contrast, DR Congo's government was corrupt and mismanaged the resources and sold the mines to corrupt private companies. **Therefore**, the people did not receive any benefit at all. There is little or no infrastructure for the people, and little access to safe drinking water. DR Congo's people are the poorest in the world, with a Gross National Income (GNI) of $1,063 per person, whereas Botswana's people have a GNI of $16,437, which is 16 times higher.	*Use language for contrasting: however, but, in contrast, difference, whereas* *Evidence and statistics* *Use **cause and effect language** for explaining* *Evidence and statistics*
Summarise the economic causes of spatial inequality and the impact on the HDI ranking	The economic mismanagement of DR Congo's mineral wealth has **resulted in** huge profits for companies and corrupt government officials whereas DR Congo's citizens are the poorest in the world. In contrast, good policymaking from the Botswanan government has provided infrastructure and services for its people, **leading to** a higher standard of living and a high HDI ranking.	*Summarise the main cause of spatial inequality and the main impact on wellbeing for each country*

Fill in the gaps and follow the hints to complete a paragraph about political causes.

Identify type of cause	Another way of explaining the spatial variation between Botswana and DR Congo is by examining _____ causes.	*Identify the type of cause*
Define	_____ _____	*Write a definition*
Explain similarities	_____ _____	*Use language for comparing*
Explain differences in wellbeing	However, the political situation in Botswana and DR Congo is different. _____ _____ _____ _____ _____ _____ _____ _____ _____	*Use language for contrasting: however, but, in contrast, difference, whereas* *Use evidence and statistics* *Use cause and effect language for explaining*
Summarise the political causes of spatial inequality and the impact on the HDI ranking	War, conflict and violence have led to severe problems in_____ whereas _____ _____ _____ _____	*Summarise the main cause of spatial inequality and the main impact on wellbeing for each country*

Explain spatial variation in Africa

Teacher page

Teaching suggestions

The paragraph writing activity on this page can be differentiated.

- The teacher can start the text on the board with suggestions from students.
- Students who need more support can work in pairs or groups to write the paragraph.
- More experienced students can work independently.
- Teachers can assist students who need more support.

Possible answers

Identify type of causes	Another reason for spatial variation in wellbeing between Botswana and DR Congo involves social causes.	*Identify the type of cause*
Define	Social causes relate to the quality of life and wellbeing of people, including education and health.	*Write a definition*
Explain similarities	The people of both Botswana and DR Congo suffer both from malnutrition problems and disease. In Botswana, HIV/AIDS is a problem for 20% of adults, and there are diseases in DR Congo such as Ebola, malaria, yellow fever and measles.	*What is a similar problem that both countries face? Give examples*
Explain differences in wellbeing:	However, social problems are far worse in DR Congo. There is very poor access to health infrastructure in DR Congo, whereas in Botswana, 95% of the population live within 5km of healthcare. In contrast, DR Congo has the world's second highest rate of child mortality and half of the children are malnourished. In terms of education, Botswana has a better education system. All students have 10 years of basic education, but in DR Congo, primary school education is not compulsory. During the wars, few children received an education so many adults are not educated. Due to the violence in society in DR Congo, there are many major social problems including child soldiers, child labour in mines, violence against women and continuing conflict in some areas. In contrast, Botswana's society is peaceful and human rights are respected.	*Use language for contrasting: however, but, in contrast, difference, whereas* *Use evidence and statistics* *Use cause and effect language for explaining*
- health ***- education*** ***- society***		
Summarise the economic causes of spatial inequality and the impact on the HDI ranking	War, conflict and violence have led to severe problems in DR Congo, whereas Botswana has been more peaceful. As a result, Botswana has been able to grow and provide a good standard of living for its people and a HDI value of 0.735. However, the people of the DR Congo continue to suffer from lower standards of living, contributing to the HDI value of 0.480.	*Summarise the main cause of spatial inequality and the main impact on wellbeing for each country*

Explain spatial variation in Africa

Follow the hints to write a paragraph about the social causes of spatial inequality in wellbeing. Focus on health, education and other social factors.

School children in Botswana celebrate Independence Day

Children working in a mine in DR Congo

Identify type of cause		*Identify the type of cause.*
Define		*Write a definition*
Explain similarities		*What is a similar problem that both countries face? Give examples*
Explain differences in wellbeing:		*Use language for contrasting: however, but, in contrast, difference, whereas*
- health		*Use evidence and statistics*
- education		*Use cause and effect language for explaining*
- society		
Summarise the social causes of spatial inequality and the impact on the HDI ranking		*Summarise the main cause of spatial inequality and the main impact on wellbeing for each country*

Explain malnutrition in India

Teacher page

Teaching suggestions

The next pages build towards an explanation of the causes and consequences of spatial variation in wellbeing in India. The focus will be on the indicator of malnutrition and comparison of urban areas where poor and non-poor people have different health outcomes.

- 'Poor' mostly refers to people living in slums, although there are some poor people who do not live in slums.
- 'Non-poor' means anyone else, including middle class and wealthy people.

The example of Mumbai will be given to illustrate places in India where spatial inequality is clearly evident.

Curriculum links

NSW Stage 5

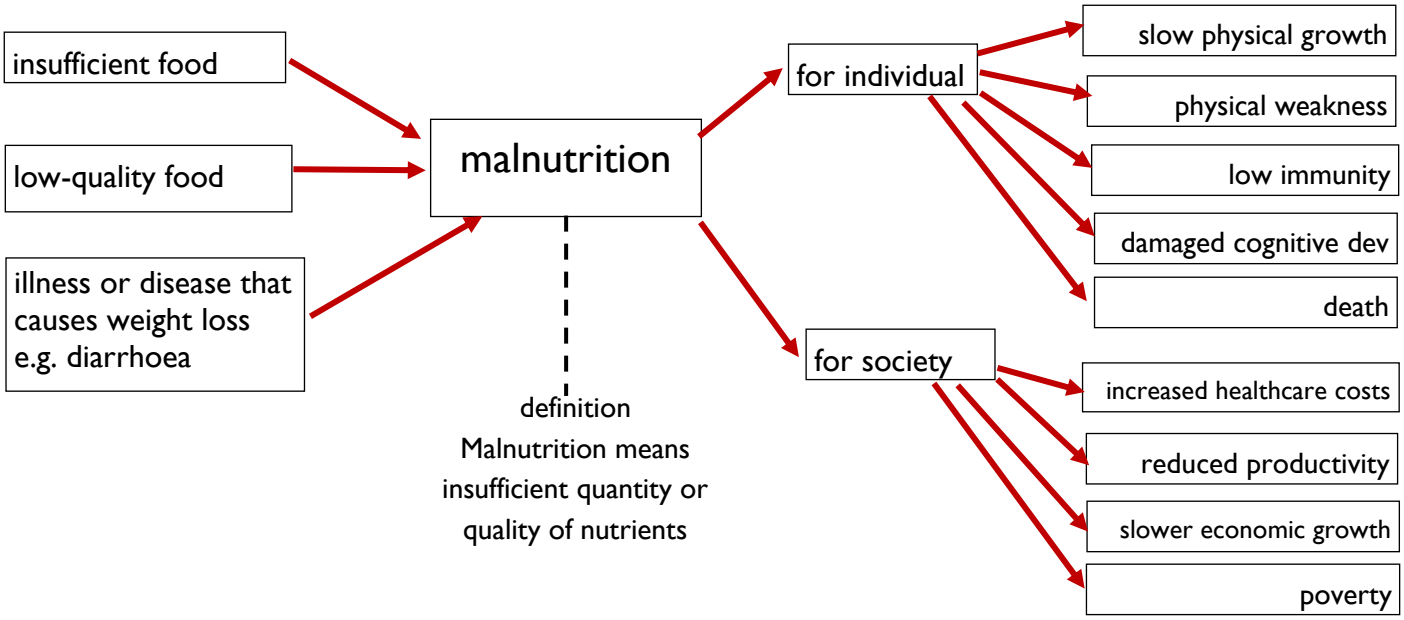
Spatial variations in human wellbeing

Students investigate causes, issues and consequences of spatial variations in human wellbeing, for example: (ACHGK077, ACHGK078, ACHGK079)

- description of spatial variations in human wellbeing and development between and within countries using selected indicators
- examination of reasons for and consequences of spatial variations in human wellbeing and development
- discussion of issues affecting the development of places and their impact on human wellbeing in ONE country or region

Answers

Malnutrition occurs when someone does not have sufficient quality or quantity of nutrients. India has more than a third of the world's most malnourished children. Malnutrition **is caused by** insufficient food or low quality food. Children may also be malnourished **if** they experience illness and disease, such as diarrhoea or respiratory diseases, which cause them to lose weight. **Consequences** of malnutrition for an individual are slow physical growth, physical weakness and low immunity to infections and disease. Another **effect** of malnutrition is damaged cognitive development which means that the individual has less capacity to learn and receive a good education and highly-paid employment. In severe cases, it also **causes** death. The **impacts** of malnutrition for society include increased healthcare costs, reduced productivity, slower economic growth and greater poverty. Overall, malnutrition **leads to** lower wellbeing for individuals and society.



Literacy Works for Geography Book 2 © Literacy Works

Explain malnutrition in India

Read the following paragraph about the causes and consequences of malnutrition in India. Underline the cause and effect language. Then use the information to fill in the graphic organiser below. Draw arrows to link cause and effect relationships.

Malnutrition occurs when someone does not have sufficient quality or quantity of nutrients. India has more than a third of the world's most malnourished children. Malnutrition is caused by insufficient food or low quality food. Children may also be malnourished if they experience illness and disease, such as diarrhoea or respiratory diseases, which cause them to lose weight. Consequences of malnutrition for an individual are slow physical growth, physical weakness and low immunity to infections and disease. Another effect of malnutrition is damaged cognitive development which means that the individual has less capacity to learn and receive a good education and highly-paid employment. In severe cases, it also causes death. The impacts of malnutrition for society include increased healthcare costs, reduced productivity, slower economic growth and greater poverty. Overall, malnutrition leads to lower wellbeing for individuals and society.

causes

malnutrition

for individuals

for society

definition

consequences

Interpret malnutrition data

Teacher page

Teaching suggestions

Teachers could discuss the concept of slums with students before tackling this activity. There are photos online that show how rich and poor live side by side in Mumbai. Search for Mumbai Rich Poor drone photos.

Teachers could write on the board the meanings of difficult words (on the right).

This page is a numeracy activity that helps students to interpret data and compare and contrast data.

- Teachers could explain the three malnutrition indicators: stunting, wasting and underweight.
- Teachers could ask students to highlight the numbers in the table and discuss before doing the written activities (e.g. Highlight the percentage of children with wasting in poor areas. Highlight the percentage of children with wasting in non poor areas. What do you notice? Why could that be the case?)

Word box

chronic
from ancient Greek Khronos, time
(means persists for a long time)

malnutrition
mal is Latin and French for bad
(means bad nutrition)

diarrhoea
from Ancient Greek
This mnemonic might help with spelling

Dash to the loo
In
A
Real
Rush,
Hurry,
Or
Else:
Accident.

1	Malnutrition has three indicators. Children who are underweight can be stunted or wasted or both. Define each indicator.	Stunted means too short for their age. Underweight is that they have low weight for their age. Wasted means they have suffered recent severe weight loss.
2	What are the causes of stunting?	Stunting is caused by chronic malnutrition and poverty.
3	What are the causes of being underweight?	Being underweight is due to inadequate nutrition.
4	What are the causes of wasting? Give an example.	Wasting is caused by illness such as diarrhoea that causes weight loss.
5	What percentage of children in poor urban areas are stunted? Roughly what proportion of children is this?	46.4%, nearly half of all children
6	Why are children in non-poor urban areas less stunted than those in poor areas?	Wealthier children have better nutrition throughout their childhood so they do no suffer from chronic malnutrition.
7	What indicator has the smallest differential between poor and non-poor areas? Why do you think this is?	There is only a 4.2% point difference between poor and non-poor areas for wasting. Wasting is caused by illness. These numbers show that illness occurs in both poor and non-poor areas and that it is not as much of a problem as chronic malnutrition.
8	Why is the World Health Organisation most concerned about indicators for malnutrition in children rather than adults?	Children grow up to be the adults of the society and they are the future of a society. Therefore, malnutrition in children prevents future growth of the society.
9	What strategies could the government put in place to help solve the problem of malnutrition?	The government could provide food for children in poor areas. They could also provide education programs for parents about the importance of nutrition for their babies. They could start healthcare programs to monitor the health of children. The government could fund programs to feed children in slums.

Source of data: Singh, S.K., Srivastava, S. & Chauhan, S. (2020) Inequality in child undernutrition among urban population in India: A decomposition analysis. *BMC Public Health 20*, 1852.

Interpret malnutrition data

India is becoming an urbanised society with several mega-cities with a population of more than 10 million people each. Many urban dwellers live in slums. Slums are densely-populated areas with poor housing conditions, no sanitation, no clean water or services.

Mumbai is an Indian megacity with 20 million inhabitants. There is inequality between rich and poor people in the city. Around half the population lives in slums. There are also many rich people, millionaires and billionaires living close to slums.

Slums in Mumbai near new building developments for the rich.

Analyse the health data below that compares child nutrition in richer urban areas of India compared with poor urban areas and slums. Answer the questions below.

Percentage of children under five years who experienced malnutrition in urban India, 2015–16

Indicators of malnutrition	urban areas non-poor	urban areas poor
stunting - children who are short for their age, reflects chronic (ongoing) malnutrition and poverty	28.5	46.4
underweight - low weight for age, caused by inadequate nutrition	26.7	44.4
wasting - children who have suffered recent and severe weight loss due to illness	19.4	23.6

1 Malnutrition has three indicators. Children who are underweight can be stunted or wasted or both. Define each indicator.

2 What are the causes of stunting?

3 What are the causes of being underweight?

4 What are the causes of wasting? Give an example.

5 What percentage of children in poor urban areas are stunted? Roughly what proportion of children is this?

6 Why are children in non-poor urban areas less stunted than those in poor areas?

7 What indicator has the smallest differential between poor and non-poor areas? Why do you think this is?

8 Why is the World Health Organisation most concerned about indicators for malnutrition in children rather than adults?

9 What strategies could the government put in place to help solve the problem of malnutrition?

Explain spatial inequality in India

Teacher page

Possible answer The text below brings together all the information and language features from the previous pages. Students can refer back to the previous pages while writing.

Explain causes and consequences of spatial variation in wellbeing using indicators of malnutrition in poor and non-poor urban areas in India.

Phenomenon to be explained	Malnutrition is a major problem in India. India has more than a third of the world's malnourished children. In many large Indian cities such as Mumbai, rich and poor people experience different health outcomes and spatial inequality in wellbeing, including malnutrition. This text will explain the causes and consequences of spatial variation in wellbeing using indicators of malnutrition in poor and non-poor urban areas of India.	*State that malnutrition of children is a problem in India* *Provide background on spatial variation in poor and non-poor urban areas.* *State the purpose of the explanation*
Causes *Causes of malnutrition*	Malnutrition means poor nutrition and it is caused by insufficient food or low-quality food. It can also be caused by illnesses and disease which lead to weight loss. Indicators of malnutrition are stunting (being short for age), underweight (low weight for age) and wasting (recent and severe weight loss due to illness). Stunting is caused by chronic malnutrition, usually due to ongoing poverty and lack of nutrition. Wasting is caused by a recent and severe illness, such as diarrhoea or respiratory illness, that has caused the child to lose weight.	*Define malnutrition and indicators of malnutrition* *Explain causes of stunting and wasting.*
Explain reasons for spatial variation	There is significant spatial inequality of malnutrition indicators between poor and non-poor urban areas of India. In poor urban areas, 46.4% of children are stunted and 23.6% are wasted. This is due to the fact that people in poor urban areas experience poverty and are unable to obtain nutritious food. In addition, disease is common due to the lack of sanitation or clean water, and diseases spread due to the crowded living conditions in slums. In contrast, the malnutrition rates are lower in non-poor urban areas, with 28.5% of children experiencing stunting and 19.4% with wasting. In non-poor areas, people experience less poverty so they can afford to buy more nutritious food. They are less likely to become sick and they can afford to obtain healthcare if they do become sick.	*Write a topic sentence: state that there is spatial inequality of malnutrition indicators between poor and non-poor urban areas in India.* *State the main statistics for malnutrition in poor and non-poor urban areas.* *Explain why indicators are worse in poor areas and better in non-poor areas.*
Consequences *Consequences of malnutrition*	Consequences of malnutrition are serious for individuals and for society. Individuals who experience malnutrition do not grow, they are physically weak and have low immunity to disease. Their cognitive development is limited, so they are less likely to be able to learn or gain a good education. Therefore, they are also unlikely to gain high incomes from skilled work. In their weak physical state, they are more likely to die from disease.	*Explain consequence of malnutrition for individuals and society*
Explain consequences of spatial variation	Since malnutrition of children is higher in poor urban areas, the poor residents are more likely to stay in poverty. They are unable to gain an education and high incomes to break out of poverty. Consequently, the community in poor areas remains poor. However, non-poor urban dwellers are able to gain an education and highly-paid work and become more wealthy and gain greater wellbeing for their families and community.	*Explain the consequences of malnutrition for poor and non-poor people* *Explain why wellbeing outcomes are different for poor and non-poor areas.*
General statement	Malnutrition of children is an indicator of wellbeing that shows the capacity of people to grow, learn and live healthy and productive lives. In Indian urban areas, nearly half of poor children experience malnutrition. Children in non-poor areas have far less malnutrition, which shows spatial inequality. For the wellbeing of India, malnutrition of children is an urgent problem that needs government funding and programs.	*State that malnutrition is an important indicator of wellbeing* *Restate the spatial inequality between poor and non-poor areas* *Recommend what the government should do*

Explain spatial inequality in India

Follow the prompts below to write an explanation about the causes and consequences of spatial inequality in poor and non-poor urban areas in India.

Explain causes and consequences of spatial variation in wellbeing using indicators of malnutrition in poor and non-poor urban areas in India.

Phenomenon to be explained	This text will explain _____	*State that malnutrition of children is a problem in India.* *Provide background on spatial variation in poor and non-poor urban areas.* *State the purpose of the explanation.*
Causes *Paragraph 1: Causes of malnutrition* *Paragraph 2: Explain reasons for spatial variation*		*Define malnutrition and indicators of malnutrition.* *Explain causes of stunting and wasting.* *Write a topic sentence: state that there is spatial inequality of malnutrition indicators between poor and non-poor urban areas in India.* *State the main statistics for malnutrition in poor and non-poor urban areas.* *Explain why indicators are worse in poor areas and better in non-poor areas.*
Consequences *Paragraph 1: Consequences of malnutrition* *Paragraph 2: Explain consequences of spatial variation*		*Explain consequence of malnutrition for individuals and society.* *Explain the consequences of malnutrition for poor and non-poor people* *Explain why wellbeing outcomes are different for poor and non-poor areas.*
General statement		*State that malnutrition is an important indicator of wellbeing.* *Restate the spatial inequality between poor and non-poor areas.* *Recommend what the government should do.*

Causes of poverty in Australia

Teacher page

Teaching suggestions

For this activity, teachers need to print or copy the student page for each student or give one page to a pair of students. Students can cut or tear the parts.

Tell students that this text is a Factorial Explanation. The stages are:

- Phenomenon to be explained
- Explanation - four paragraphs
- General Statement

1. Students underline the topic sentence in each paragraph. This shows that students may not need to read the entire text to do this activity.
2. Students rearrange the text. Ask them to justify the sequence. The final sentence of the first paragraph (Phenomenon to be explained) provides the sequence of the explanation paragraphs.
3. Students highlight the cause and effect language.

Curriculum links

NSW Stage 5

Human wellbeing in Australia

Students investigate the reasons for and consequences of spatial variations in human wellbeing in Australia, for example: (ACHGK080)

- identification of differences in human wellbeing in Australia using a range of indicators
- examination of reasons for and consequences of differences in human wellbeing for TWO groups of people in Australia eg cultural groups, unemployed, the aged, young people, people with disabilities
- analysis of how human wellbeing is influenced by where people live in Australia

Answers

Cause and effect language

Poverty is a concept used to describe the people in a society who cannot afford the essentials that most people take for granted. In Australia, poverty refers to people living in relative poverty: those whose living standards fall below an overall community standard. The Organisation for Economic Co-operation and Development (OECD) defines poverty as having less than 50 per cent of the median household income. According to Australian Council of Social Service (ACOSS) statistics released in 2020, there are an estimated 3.24 million people living below this poverty line in Australia, including 774,000 children. Causes of poverty in Australia are related to employment, housing, health and structural issues.

Lack of employment or insufficient employment is one of the main causes of poverty in Australia. The unemployment rate in Australia is only 4.6% but many people are underemployed, which means that they are only working casually or for a few hours per week. Since these jobs receive low wages, these people may experience poverty even though they are employed. Many other Australians rely on social security payments for their income. Social security payments are low so they are unlikely to have enough money for basic needs such as rent, clothing and food.

Housing costs in Australia are high and these can lead to poverty. Overall housing costs rose by an average of 4% a year from 2007 to 2017. According to ACOSS (2020), 13.2% of Australian households in 2015-16 were estimated to be in poverty when housing costs were deducted from their incomes. Housing costs are high in some areas for rentals. Mortgage costs are high for home owners as a consequence of Australia's high house prices. Due to the fact that housing prices are high, many people cannot live near work opportunities in the centre of cities. As a result, they are even less likely to find employment opportunities, making poverty worse or contributing to intergenerational unemployment.

References:
ACOSS (2020). Poverty and inequality. https://povertyandinequality.acoss.org.au/poverty/

Randolph, B., Liu, E. & Bradbury, B. (2020). *Poverty, Property and Place. A Geographic Analysis of Poverty After Housing Costs in Australia.* A report for the ACOSS-UNSW Poverty and Inequality Partnership by the City Futures Research Centre and the Social Policy Research Centre, UNSW. https://povertyandinequality.acoss.org.au/wp-content/

Answers continued over

Causes of poverty in Australia

Poverty in Australia refers to relative poverty, which means people who have less than half the median disposable income.

The jumbled text on this page is a Factorial Explanation of causes of poverty in Australia. Cut the text into sections. Underline the topic sentences of each paragraph. Arrange the text in sequence. Highlight or underline the cause and effect language.

Lack of employment or insufficient employment is one of the main causes of poverty in Australia. The unemployment rate in Australia is only 4.6% but many people are underemployed, which means that they are only working casually or for a few hours per week. Since these jobs receive low wages, these people may experience poverty even though they are employed. Many other Australians rely on social security payments for their income. Social security payments are low so they are unlikely to have enough money for basic needs such as rent, clothing and food.

The factors that cause poverty are complex and interrelated. Structural factors such as discrimination and disadvantage can result in situations where people find it hard to obtain employment and good healthcare. Consequently, issues such as unemployment, high housing costs and health problems can make it hard to break the poverty cycle.

Many people experience relative poverty as a consequence of health issues. Poor health due to a disability or mental health issues can lead to poverty because people are unable to find work or continue their education. Health issues may also give rise to poverty due to expensive hospital visits, treatments or medication not covered by Medicare. For these reasons, people experiencing health issues may be trapped on inadequate social welfare payments and unable to find suitable housing, social support or health services. Thus, poverty becomes worse.

Poverty is a concept used to describe the people in a society who cannot afford the essentials that most people take for granted. In Australia, poverty refers to people living in relative poverty: those whose living standards fall below an overall community standard. The Organisation for Economic Co-operation and Development (OECD) defines poverty as having less than 50 per cent of the median household income. According to Australian Council of Social Service (ACOSS) statistics released in 2020, there are an estimated 3.24 million people living below the poverty line in Australia, including 774,000 children (ACOSS, 2020). Causes of poverty in Australia are related to employment, housing, health and social/structural issues.

Structural factors can cause poverty as well as making poverty worse. Structural factors are economic and social factors that are a context for poverty, such as discrimination, marginalisation and injustice. People who belong to marginalised groups, such as Indigenous Australians, refugees and non-English speakers, are more likely to experience poverty because of many disadvantages, including low income, lack of education and poor health. Therefore, structural factors can cause poverty and also prevent people from breaking out of poverty.

Housing costs in Australia are high and these can lead to poverty. Overall housing costs rose by an average of 4% a year from 2007 to 2017. According to ACOSS (2020), 13.2% of Australian households in 2015-16 were estimated to be in poverty when housing costs were deducted from their incomes. Housing costs are high in some areas for rentals. Mortgage costs are high for home owners as a consequence of Australia's high house prices. Due to the fact that housing prices are high, many people cannot live near work opportunities in the centre of cities. As a result, they are even less likely to find employment opportunities, making poverty worse or contributing to intergenerational unemployment.

ACOSS. (2020). *Poverty and inequality*. https://povertyandinequality.acoss.org.au/poverty/

Spatial inequality in Australia

Teacher page

Answers from previous page

Many people experience relative poverty as a consequence of health issues. Poor health due to a disability or mental health issues can lead to poverty because people are unable to find work or continue their education. Health issues may also give rise to poverty due to expensive hospital visits, treatments or medication not covered by Medicare. For these reasons, people experiencing health issues may be trapped on inadequate social welfare payments and unable to find suitable housing, social support or health services. Thus, poverty becomes worse.

Structural factors can cause poverty as well as making poverty worse. Structural factors are economic and social factors that are a context for poverty, such as discrimination, marginalisation and injustice. People who belong to marginalised groups, such as Indigenous Australians, refugees and non-English speakers, are more likely to experience poverty because of many disadvantages, including low income, lack of education and poor health. Therefore, structural factors can cause poverty and also prevent people from breaking out of poverty.

The factors that cause poverty are complex and inter-related. Structural factors such as discrimination and disadvantage can result in situations where people find it hard to obtain employment and good health care. Consequently, issues such as unemployment, high housing costs and health problems can make it hard to break the poverty cycle.

Teaching suggestions

1. Teachers could read the paragraph to students.
2. Next, in pairs, students discuss and answer the questions orally.
3. Teachers go through the questions and ask students to highlight the wordings that relate to the questions. If students have forgotten 'average' and 'median', they could do this answer as a class.

Students can explore the interactive poverty map of their local area published by ACOSS and the University of New South Wales:

https://povertyandinequality.acoss.org.au/maps/

Answers

What are the two most common options of paying for housing?	renting or buying a home (mortgage, loan repayments)
What is a household? Give some examples of different kinds of households.	single living alone, singles or couples sharing, extended family living together, sole parent with children, two parents with children etc.
What is the median? What is the average? Calculate the median and average of these 5 numbers: 7 8 9 15 21	Median is the centre or middle number of a data set arranged from lowest to highest. The median is 9 because it's the middle number. Average is calculated by adding up all the values and dividing by the number of values. The total is 60, divided by the number of values. 60 / 5 = 12
What does spatial distribution mean?	An arrangement of particular phenomena or activities across the surface of the Earth.
What is disposable income?	Disposable means you can throw it away or spend it. Disposable income means the money you have left over after basic expenses.
ACOSS is a national advocacy group which researches, publishes data and promotes social issues. Is this is a reliable source? Why/why not?	ACOSS is a reliable source but it may have some bias in the way it prioritises social justice rather than business needs or the economy.
Which areas in Australia have the most expensive housing? Why?	Expensive areas are: capital cities near the city centre and employment opportunities; attractive coastal areas; near other wealthy people, good schools, near friends and family, entertainment options etc; near work opportunities.
Define relative poverty. Give an example if the median income of a single person is $856 per week with rent of $75 per week.	Relative poverty is if you earn less than half of the median income, less housing costs. 50% of the median income is $428 per week, less $75 for rent = $353. If you earn less than this, you are in relative poverty.
What does 'after housing costs' mean?	It means the cost of living minus housing costs.

Randolph, B., Liu, E. & Bradbury, B. (2020). *Poverty, Property and Place. A Geographic Analysis of Poverty After Housing Costs in Australia.* A report for the ACOSS-UNSW Poverty and Inequality Partnership by the City Futures Research Centre and the Social Policy Research Centre, UNSW. https://povertyandinequality.acoss.org.au/wp-content/uploads/2020/11/Poverty-property-and-place.pdf

Spatial inequality in Australia

Read the paragraph below and answer the questions in pairs. Discuss with the class.

What are the two most common options for paying for housing?

What is a household? Give some examples of different kinds of households.

What is disposable income?

What does spatial distribution mean?

In Australia, the main causes of poverty are low income and high housing costs. According to ACOSS (Australian Council of Social Service), a household is experiencing relative poverty if their income is at or below 50% of median disposable income minus housing costs. Australia has some of the most expensive housing in the world. The map below shows the spatial distribution of poverty in Australia. The areas in red have the highest rates of relative poverty after housing costs.

What does 'after housing costs' mean?

ACOSS is a national research and advocacy group that aims to reduce poverty and inequality. Is this is a reliable source?

What is the median? What is the average? Calculate the median and average of these 5 numbers: 7 8 9 15 21

Which areas in Australia have the most expensive housing? Why?

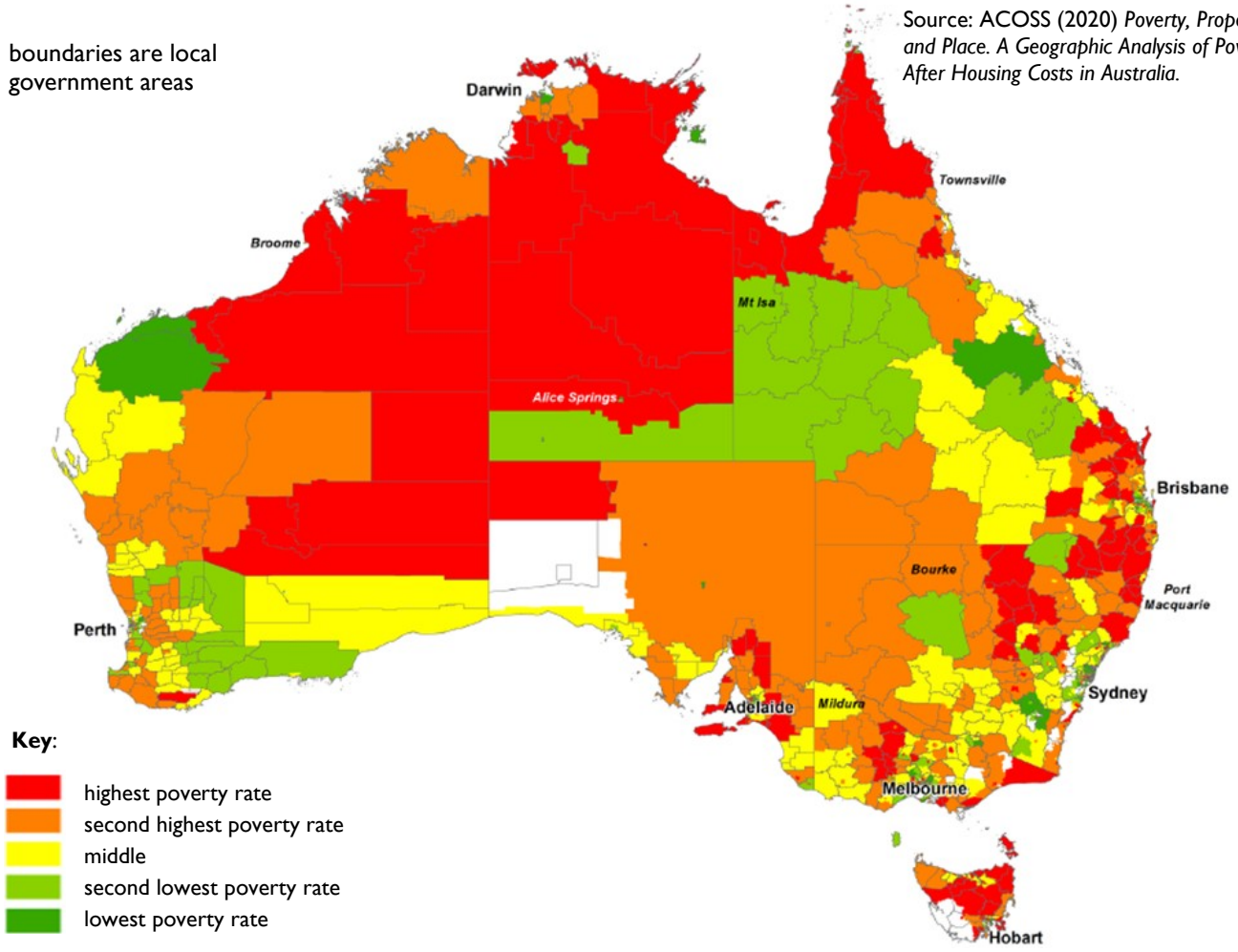
Define relative poverty. Give an example if the median income of a single person is $856 per week and they pay $75 rent.

Analyse the map below, especially related to your location. Circle the areas that are likely to have low housing costs. Draw a square around areas with high housing costs.

Figure 1: Poverty after housing costs, Australia, 2015-16

boundaries are local government areas

Source: ACOSS (2020) *Poverty, Property and Place. A Geographic Analysis of Poverty After Housing Costs in Australia.*



Explaining spatial inequality in Australia

Teacher page

Sophisticated writers in Geography use modal language to show their position. They often use low or medium modality for statements, supported by strong evidence and facts. Most of the statements on this page demonstrate medium or low modality. See Fact Sheet 2 for a list of Modal Language in Geography.

Possible answers

1 Is poverty caused by low income? It is **likely** that poverty is caused by low income **because** people need money to buy food and pay for housing and other costs. Poverty **can** be caused by low income **since** people need money to buy food and pay for housing.

2 Is poverty caused by high housing costs? High housing costs **may** cause poverty **if** people cannot afford to rent or buy a home/**if** they also have a low income.

3 What happens if someone has low income and also lives in an area with high housing costs? **If** someone has low income and high housing costs, it is **likely/certain** that they will experience poverty **because** they **may/ might** not have enough disposable income for a good quality of life.

4 Are large areas of rural Western Australia, Northern Territory and Queensland experiencing poverty due to high housing costs or low incomes? These areas **may/might/could/probably** experience poverty due to low incomes **since** housing costs are usually not high in most rural areas.

5 Why do some areas in capital cities experience poverty? It is **likely** that these areas experience poverty due to high housing costs and low incomes. / These areas **may/might/could/probably** experience poverty due to high housing costs and low incomes.

6 Why do some rural areas experience low poverty (e.g. the Pilbara in Western Australia where there are mines and around Mackay in Queensland where there is a port)? It is **probable/likely** that these areas experience low poverty because there are high paid jobs in mining or port industries to support households.

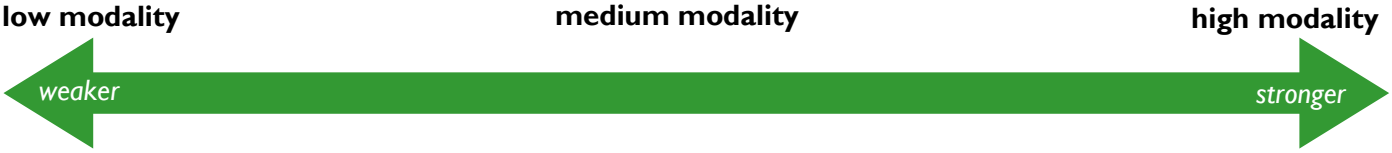
7 Does this map show evidence of poverty in Australia? This data **proves** that there is poverty throughout Australia **since** every state has some areas where people earn incomes below the poverty line after housing costs. It is **certain** that there is poverty in Australia **as** there are areas in each state where people earn insufficient income to afford housing.

Possible answers

It is likely that (suburb/ area names) have the highest poverty because they have high housing costs. In addition, the people who live there earn low salaries so they cannot afford the basic necessities for a good standard of living. (Suburb name) attracts many new migrants and refugees who are unlikely to earn high wages. They may be on social welfare and they need to use more than 50% of their welfare to afford to rent apartments. In (suburb name), the rate of unemployment is high so it is probable that households are experiencing low income, even though housing costs are not as high as in other areas. It is possible that many households experience intergenerational unemployment. Consequently, many households in this suburb experience poverty.

Explaining spatial inequality in Australia

Modal language helps the writer to take a position or present a point of view.
Stronger language has **higher modality**, e.g. must, should, definitely
Weaker language has **lower modality**, e.g. may, could, perhaps
In Geography, we often use low modality to show that we cannot be 100% certain of our position.



possible may, could, might suggests implies	can probable, probably, likely indicates shows	(no modal verb)	will definite, certain definitely, certainly proves, demonstrates
*Low income **may** cause poverty.* *It is **possible** that low income causes poverty.* *The data **suggests** that low income causes poverty.*	*Low income **probably** causes poverty.* *It is **likely** that low income causes poverty.* *Data **shows** that low income causes poverty.*	*Low income causes poverty.*	*It is **certain** that low income causes poverty.* *Data **proves** that low income causes poverty.*

Use the data on the previous page to answer these questions using modal language. Provide a reason for your answer using cause and effect language (e.g. because, as, if).

1 Is poverty caused by low income? _____

2 Is poverty caused by high housing costs? _____

3 What happens if someone has low income and also lives in an area with high housing costs? _____
_____

4 Are large areas of rural Western Australia, Northern Territory and Queensland experiencing poverty due to high housing costs or low incomes? _____
_____

5 Why do some areas within capital cities experience poverty? _____
_____

6 Why do some rural areas experience low poverty (e.g. the Pilbara in Western Australia where there are mines and Mackay in Queensland where there is a port)? _____
_____

7 Does this map show evidence of poverty in Australia? _____
_____

The table below shows areas within capital cities that experience high levels of poverty. Use your local knowledge to explain why these areas experience poverty.

Suburbs with high rates of poverty:
- In Melbourne: Carlton, Dandenong and Melton
- In Adelaide: Elizabeth, Christie Downs
- In Hobart: Bridgewater, Risdon Vale, Rokeby
- In Sydney: Lakemba, Mt Druitt, Penrith, Cabramatta
- In Brisbane: Logan, Caboolture
- In Perth: Armadale, Girraween
- In Darwin: Palmerston
- In ACT: Canberra East

_____
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Evaluation of Closing the Gap

Teacher page

The activities on these pages evaluate the Closing the Gap strategy that concluded in 2018. Since then, there are new strategies for Closing the Gap, with 17 new targets. These could be suitable to evaluate in follow-up activities for students after completing these worksheets.

The evaluation provided on these pages is based on an authentic work sample from a Year 10 student who achieved a high mark. Sources for the information on these pages are listed below.

Sources:
Australian Institute of Health and Welfare (AIHW). (2018). *Smoking*. Available from https://www.aihw.gov.au/reports-data/behaviours-risk-factors/smoking/overview

CIRCA. (2018). *Tackling Indigenous Smoking Program. Final Evaluation Report prepared for the Australian Government Department of Health*. https://www.health.gov.au/sites/default/files/tackling-Indigenous-smoking-program-final-evaluation-report.pdf

Commonwealth of Australia, Department of the Prime Minister and Cabinet. (2020). *Closing the Gap Report 2020*. www.closingthegap.gov.au. CC4.0. Images on this page are from this publication CC4.0.

Deloitte Access Economics. (2021). *Indigenous Employment Program Evaluation – Final Report.* Available from https://www.niaa.gov.au/sites/default/files/publications/Indigenous-employment-program-evaluation-final-report.pdf

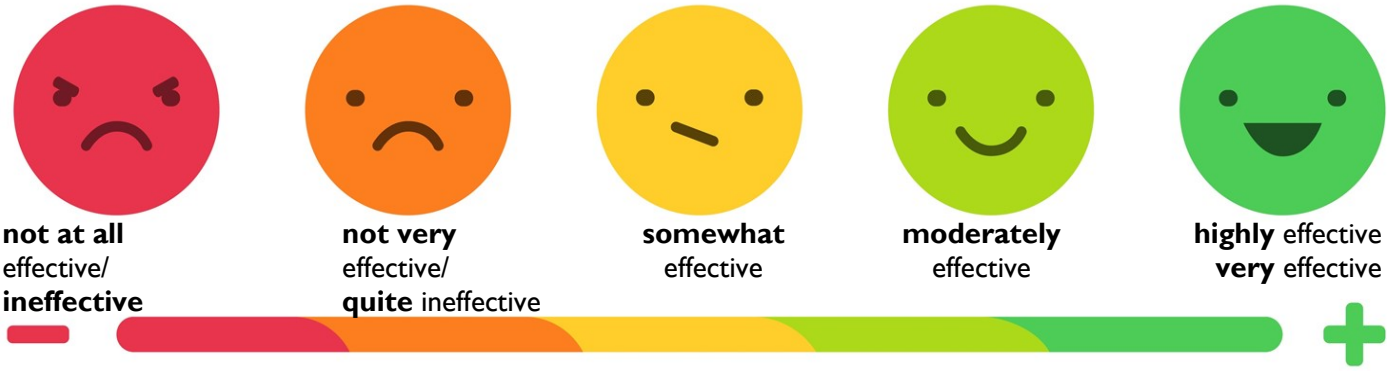
Secretariat of National Aboriginal and Islander Child Care (SNAICC). (2018). *Profiles of Aboriginal and Torres Strait Islander Child and Family Centres.* https://www.snaicc.org.au/policy-and-research/early-childhood/profiles-of-aboriginal-and-torres-strait-islander-child-and-family-centres/

Curriculum links

NSW Stage 5
Improving human wellbeing
Students investigate initiatives to improve human wellbeing in Australia and other countries, for example: (ACHGK081)

- evaluation of initiatives by governments and non-government organisations to reduce spatial variations in human wellbeing
- proposal for action by governments, organisations or individuals to improve the wellbeing of ONE group in Australia

Answers



no progress has been made the target is not on track the gap has widened	most results did not improve	some progress has been made the target is partly on track	there has been moderate improvement	the target is on track the gap has narrowed substantially

Evaluation of Closing the Gap

These activities will help you write an evaluation of a program that aims to improve the wellbeing of a group of people. Closing the Gap is an Australian government strategy that aims to improve the wellbeing of Aboriginal and Torres Strait Islander people. Non-Indigenous Australians tend to have better wellbeing outcomes for health, employment and education, compared with Indigenous Australians. The difference in outcomes is called 'the gap'. These activities evaluate the first Closing the Gap strategy that started in 2008 and ended in 2018.

To evaluate means to judge something according to criteria. The stages of this Evaluation are:

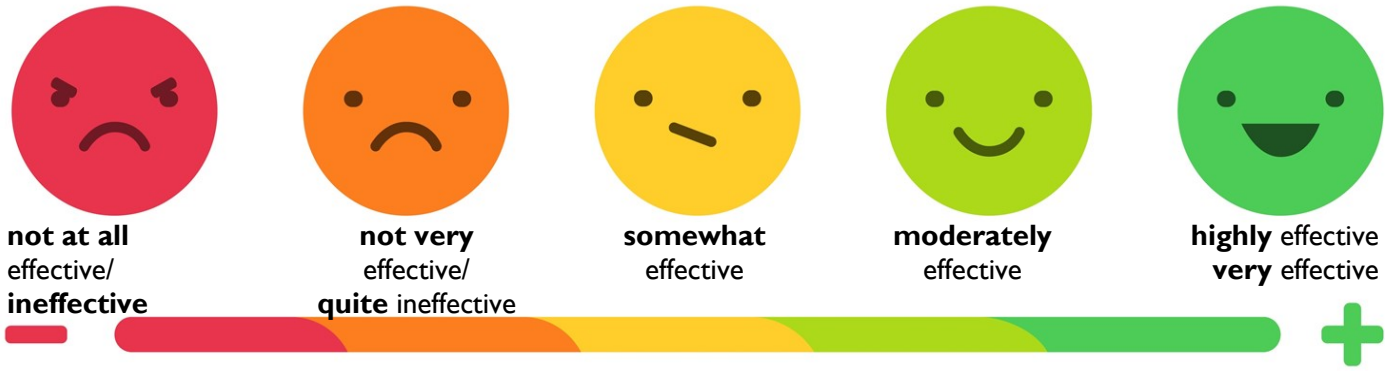
- Phenomenon to be evaluated
- Evaluations
- Overall evaluation

The language features of an Evaluation include:

1. evaluative language to take a position
2. use of evidence, statistics and references to support evaluations
3. cause and effect language to explain why progress has or has not been made
4. language for comparing and contrasting to show the gaps.

The overall evaluation of Closing the Gap could range from not effective to effective along a scale. Add the evaluative wordings below to a suitable place on the scale.

some progress has been made
no progress has been made
the target is on track
the target is not on track
the target is partly on track
most results did not improve
the gap has widened
there has been moderate improvement
the gap has narrowed substantially



Evaluation of the life expectancy gap

Teacher page

Teaching suggestions

Teachers can assist students to read and understand the model paragraph on the page by asking them to highlight and underline features. Teachers could ask students to draw arrows linking the language feature or purpose in the right hand column and the text. The reading of the model text should be an active process and students should be busy and engaged. One way of doing this is to make sure the teacher does not state the exact wordings in the text. Instead the teacher uses paraphrases. For example, the teacher could say: 'find the statistics about how long males live' (not 'life expectancy for males') or 'find the word that shows a contrasting idea is coming' (not 'highlight however'). The language features are shown in detail on the text below, for the teacher's reference.

Answers

Evaluative language has been underlined in bold below.
Statistics are in green.
Language for comparing and contrasting is in red bold.
Cause and effect language is in blue bold.

Heading	**Close the life expectancy gap by 2018**	Identify the target
Describe the results for the gap	Life expectancy refers to how long someone is expected to live at the time of their birth. The life expectancy gap between Indigenous and non-Indigenous Australians is around 8 years. In 2015-2017, life expectancy was 71.6 years for males (8.6 years less than non-Indigenous males) and 75.6 years for females (7.8 years less than non-Indigenous females). Between 2006 and 2018, life expectancy **improved** by 10% for Indigenous Australians. **However**, life expectancy also **improved** during this period for non-Indigenous Australians, **so** the gap **did not close**. Since 2006, mortality rates for circulatory disease have **reduced** (heart disease and stroke) **but** there has been an **increase** in cancers. **As a consequence**, the life expectancy gap **is widening**.	Define the target Provide statistics and data about the target. Describe relevant data Explain progress or lack of progress Use language for contrasting ideas (however, but) Use cause and effect language for explaining Finish with an overall evaluation
Evaluate an individual program that aimed to narrow the gap	One of the programs aimed at **improving** life expectancy was to **reduce** smoking. Smoking is a **serious** health **risk** and **reduces** life expectancy. The Tackling Indigenous Smoking (TIS) program provided online resources for health and community organisations to help smokers to **quit** and to **encourage** young people not to start smoking. Daily smoking among Indigenous Australians over 15 years old **decreased** from 41% in 2012-2013 to 37% in 2018-2019. **Although** these reductions are **positive**, the smoking rate is still **too high**, with more than a third of Indigenous adults smoking, **compared with** 11% of all Australian adults (AIHW, 2018). The TIS program made **some progress but far more needs to be done** to **impact** life expectancy.	Describe a program that aimed to help reach the target Were there improvements? References to give authority to statements Evaluate the progress
Evaluate the gap	These results show that the life expectancy gap is **widening** and that this target has **not been met**.	Give an overall evaluation of the target.

Evaluation of the life expectancy gap

Imagine that you have been given the assignment prompt below**.** Let's explore how to deal with it.

We need to write an evaluation and present a judgement about how effective it was.

We need to choose three of the targets in Closing the Gap.

Evaluate the **effectiveness** of the Closing the Gap strategy based on three targets. Refer to **specific programs** that were aimed to help meet the targets.

We need to refer to specific programs for each target we choose.

Before we make an overall evaluation, we need to research and write about three targets and strategies without those targets. Closing the Gap 2008-2018 had seven targets. The three targets we choose to evaluate are:

1. Close the life expectancy gap within a generation by 2031.
2. Halve the gap in employment outcomes between Indigenous and non-Indigenous Australians by 2018.
3. Enrol 95 per cent of all Indigenous four year-olds in early childhood education by 2025.

Read the evaluation of the first criterion (life expectancy). Notice the paragraph phases and language features. Underline evaluative language that shows the evaluation of this target.

Heading	**Close the life expectancy gap by 2018**	Identify the target
Describe the results for the gap	Life expectancy refers to how long someone is expected to live at the time of their birth. The life expectancy gap between Indigenous and non-Indigenous Australians is around 8 years. In 2015-2017, life expectancy was 71.6 years for males (8.6 years less than non-Indigenous males) and 75.6 years for females (7.8 years less than non-Indigenous females). Between 2006 and 2018, life expectancy improved by 10% for Indigenous Australians. However, life expectancy also improved during this period for non-Indigenous Australians, so the gap did not close. Since 2006, mortality rates for circulatory disease have reduced (heart disease and stroke) but there has been an increase in cancers. As a consequence, the life expectancy gap is widening**.**	Define the target Provide statistics and data about the target. Describe relevant data Explain progress or lack of progress Use language for contrasting ideas (however, but) Use cause and effect language for explaining Finish with an overall evaluation
Evaluate an individual program that aimed to narrow the gap	One of the programs aimed at improving life expectancy was to reduce smoking. Smoking is a serious health risk and reduces life expectancy. The Tackling Indigenous Smoking (TIS) program provided online resources for health and community organisations to help smokers to quit and to encourage young people not to start smoking. Daily smoking among Indigenous Australians over 15 years old decreased from 41% in 2012-2013 to 37% in 2018-2019. Although these reductions are positive, the smoking rate is still too high, with more than a third of Indigenous adults smoking, compared with 11% of all Australian adults (AIHW, 2018). The TIS program made some progress but far more needs to be done to impact life expectancy.	Describe a program that aimed to help reach the target Were there improvements? Use references to give authority to statements Evaluate the progress
Evaluate the gap	These results show that the life expectancy gap is widening and that this target has not been met.	Give an overall evaluation of the target

Evaluation of the employment gap

Teacher page

Teaching suggestions

This activity can be differentiated to meet the needs of the class. The teacher can work on the board to create a class text if that suits the needs of less experienced writers. After creating a few sentences together as a class, the teacher can ask students to work in groups on posters, or in pairs. More experienced writers can work independently.

Possible answers

Heading	**Halve the gap in employment outcomes between Indigenous and non-Indigenous Australians by 2018**	Identify the target
Describe the results for the gap	Employment outcomes refer to having a job that provides income. In 2018, the rate of Indigenous Australians aged 15-64 years who were employed was 49% which means more than half were unemployed. In comparison, 75% of non-Indigenous Australians were working at this time. Over the decade from 2008-2018, there was a slight improvement in the employment rate for Indigenous Australians (1%) but the non-Indigenous employment also improved a little. Therefore, the gap has not changed. Remote areas had a wider gap between Indigenous and non-Indigenous employment where the employment was 35%. These figures show that the employment target has not been met and the gap is widening.	Define the target Provide statistics and data about the target. Describe relevant data Explain progress or lack of progress Use language for contrasting ideas (however, but) Use cause and effect language for explaining Finish with an overall evaluation
Evaluate an individual program that aimed to narrow the gap	Some employment programs such as Vocational Education Training and Employment (VTEC) programs aim to prepare Indigenous jobseekers for long term employment and to train industry employers. A review of multiple Indigenous employment programs including VTEC by Deloitte (2021) found that there were many problems and challenges with the programs and no fully-effective programs. They recommended longer programs that have been co-designed with Indigenous communities. These results show that current employment programs are not effective in improving Indigenous employment.	Describe a program that aimed to help reach the target. Were there improvements? Use references to give authority to statements Evaluate the progress
Evaluate the gap	These results show that the gap in employment outcomes is widening between Indigenous and non-Indigenous Australians and that current employment programs are not effective.	Give an overall evaluation of the target.

Literacy Works for Geography Book 2 © Literacy Works

Evaluation of the employment gap

Write an evaluation of another target of Closing the Gap using the model on the previous page and the fact box to help you.

Target: Halve the gap in employment outcomes between Indigenous and non-Indigenous Australians by 2018

- In 2018, 49% of Indigenous Australians aged 15-64 years were employed; 75% of non-Indigenous Australians were employed
- From 2008-2018, there was a slight improvement of 1% in the employment rate for Indigenous Australians
- Non-Indigenous employment also improved a little so there was no change in the gap
- Employment in remote areas is even lower (39% of Indigenous Australians are employed)
- VTEC (Vocational Education Training and Employment) program aims to prepare jobseekers for long-term employment and train industry employers.
- Research into multiple employment programs including VTEC by Deloitte (2021) found many problems and challenges, no fully effective programs; the report recommended longer programs that have been co-designed with Indigenous communities.

Heading		Identify the target
Describe the results for the gap		Define the target Provide statistics and data about the target Describe relevant data Explain progress or lack of progress Finish with an overall evaluation
Evaluate an individual program that aimed to narrow the gap		Describe a program that aimed to help reach the target. What is the evaluation? Evaluate the progress
Evaluate the gap		Give an overall evaluation of the target.

Evaluation of early childhood education

Teacher page

Teaching suggestions

This page covers a Closing the Gap target that has been met, to contrast with the previous targets that were not met. Evaluations are more powerful if they cover some negative aspects and some positive aspects. Including at least one contrasting position shows that the writer has considered all aspects of the topic and has a balanced perspective. This gives the final evaluation more authority. (See the unit on Place and Liveability for additional language resources for writing a counter argument.) Before starting this activity, teachers could lead a class discussion about why early childhood education is so important. Research shows that it helps with the cognitive and social development of the child and it is an indicator of achievement in schooling, especially in relation to literacy and numeracy.

Heading	**95 per cent of all Indigenous four year-olds enrolled in early childhood education by 2025.**	Identify the target
Describe the results for the gap	Early childhood education is important because it helps with the cognitive and social development of the child and helps them to perform well in their schooling. In 2018, 86.4% of Indigenous four-year-olds were enrolled in early childhood education compared with 91.3% of non-Indigenous children. In the period between 2016 and 2018, Indigenous early childhood education improved by 10% (from 76.7% to 86.4%). These figures show that the target is on track to be met.	Define the target Provide statistics and data about the target. Describe relevant data Explain progress or lack of progress Finish with an overall evaluation
Evaluate an individual program that aimed to narrow the gap	An example of a highly effective program that encouraged early childhood education was the establishment of 38 Aboriginal Child and Family Centres (ACFCs). The ACFCs were set up across the country to provide health support, childcare, cultural programs and early childhood learning programs. They were very successful and effective in engaging the entire community and improving access to early childhood education (SNAICC 2018).	Describe a program that aimed to help reach the target. What is the evaluation? Evaluate the progress
Evaluate the target	In the important area of education, the target of achieving 95% of four year olds in early childhood education is on track.	Give an overall evaluation of the target.

Possible answers

Target 1: longevity	The target has not been met.
Target 2: employment	The target has not been met and the gap is widening.
Target 3: early childhood education	The target is on track to be met. Programs are successful.
Overall evaluation of Closing the Gap	Closing the Gap is not meeting most of its targets and it is mostly ineffective in meeting its aims.

Evaluation of early childhood education

Write an evaluation of another target using the model on the previous page and the fact box to help you.

Target: Enrol 95 per cent of all Indigenous four year-olds in early childhood education by 2025

- In 2018, 86.4% of Indigenous four-year-olds were enrolled in early childhood education (ECE); 91.3% of non-Indigenous children enrolled in ECE.
- From 2016-2018, Indigenous ECE improved by 10% (from 76.7% to 86.4%)
- Target is on track to close the gap
- Program example is Aboriginal Child and Family Centres (ACFCs): 38 Aboriginal and Torres Strait Islander Family Centres across Australia offer health support, childcare, community programs, early childhood education programs
- ACFCs very successful in engaging the entire community and improving access to early childhood education (SNAICC, 2018).

Heading		Identify the target
Describe the results for the gap		Define the target Provide statistics and data about the target. Describe relevant data Explain progress or lack of progress Finish with an overall evaluation
Evaluate an individual program that aimed to narrow the gap		Describe a program that aimed to help reach the target What is the evaluation? Evaluate the progress
Evaluate the target		Give an overall evaluation of the target.

Source: Secretariat of National Aboriginal and Islander Child Care (SNAICC). (2018). *Profiles of Aboriginal and Torres Strait Islander Child and Family Centres.* https://www.snaicc.org.au/

Write a statement in each box below to summarise the evaluations of the three targets and Closing the Gap overall.

Target 1: longevity	
Target 2: employment	
Target 3: early childhood education	
Overall evaluation of Closing the Gap	

Evaluation of Closing the Gap

Teacher page

This activity focuses on the first and final paragraphs of the Evaluation. The three Evaluation paragraphs have been summarised in the middle. After this activity, students would be well-placed to evaluate another government initiative and use similar language features and paragraph structures to complete their text.

Possible answers

Evaluate the effectiveness of the Closing the Gap strategy based on three targets. Refer to specific programs that were aimed to help meet the targets.

Phenomenon to be evaluated	Closing the Gap is a government strategy that aims to reduce disadvantage among Aboriginal and Torres Strait Islander Australians in relation to health, life expectancy, education and employment. The first phase of Closing the Gap ran from 2008-2018 with seven targets to close the gap in wellbeing outcomes between Indigenous and non-Indigenous Australians. Three targets will be evaluated below involving life expectancy, employment outcomes and early childhood education.	Define the aims of Closing the Gap Preview which three targets will be evaluated
Evaluations Target 1: longevity	(excerpts) 1. **Close the life expectancy gap within a generation by 2031** Life expectancy refers to how long someone is expected to live at the time of their birth ... Between 2006 and 2018, life expectancy improved by 10% for Indigenous Australians. However, life expectancy also improved during this period for non-Indigenous Australians, so the gap did not narrow ... The TIS program made some progress but far more needs to be done to impact on life expectancy. These results show that the life expectancy gap is widening and that this target has not been met.	
Target 2: employment	**2. Halve the gap in employment outcomes between Indigenous and non-Indigenous Australians by 2018** Employment outcomes mean whether someone has a job that provides income… Over the decade from 2008-2018, there was a slight improvement in the employment rate for Indigenous Australians (1%) but non-Indigenous employment also improved a little. Therefore, the gap has not changed ... A review of multiple Indigenous employment programs including VTEC by Deloitte (2021) found that there were many problems and challenges with the programs and no fully effective programs ... These results show that current employment programs are not effective in improving Indigenous employment.	
Target 3: early childhood education	**3. Enrol 95 per cent of all Indigenous four year-olds in early childhood education by 2025** Early childhood education is important because it helps with the cognitive and social development of the child and helps them to perform well in their schooling … In the period between 2016 and 2018, Indigenous early childhood education improved by 10% (from 76.7% to 86.4%). These figures show that the target is on track to be met. An example of a highly effective program that encouraged early childhood education was the establishment of 38 Aboriginal and Torres Strait Islander Family Centres (ACFCs) … In the important area of education, the target of enrolling 95% of four year olds in early childhood education is on track.	
Overall evaluation	Overall, the Closing the Gap strategy has not met most of its targets to improve the wellbeing of Aboriginal and Torres Strait Islander people. It has been mostly ineffective and the gap is widening. The strategy has not lived up to its name and 'closed the gap' because Indigenous and non-Indigenous Australians still experience spatial inequality in wellbeing even after the ten-year program. The strategy had some success with early childhood education targets, but it failed to meet targets for longevity and employment. In the future, the government should work more closely with Indigenous communities and organisations to co-design programs that meet the needs of Indigenous Australians. More money and resources should be dedicated to this important aim of improving wellbeing for Indigenous Australians.	Provide an overall evaluation of the program Has it lived up to its name and closed the gap? Why/ why not? Which targets were not met and which were met? Make recommendations about what should happen in the future

Evaluation of Closing the Gap

Follow the instructions below to write the first and final paragraphs of the evaluation.

Evaluate the effectiveness of the Closing the Gap strategy based on three targets. Refer to specific programs that were aimed to help meet the targets.

Phenomenon to be evaluated

_____

_____

_____

The first phase of Closing the Gap ran from 2008-2018 with seven targets to close the gap in wellbeing outcomes between Indigenous and non-Indigenous Australians. Three targets will be evaluated involving

_____

Define Closing the Gap

Preview which three targets will be evaluated

Evaluations

(excerpts)

Target 1: longevity

Target 1. Close the life expectancy gap within a generation by 2031

Life expectancy refers to how long someone is expected to live at the time of their birth. .. Between 2006 and 2018, life expectancy improved by 10% for Indigenous Australians. However, life expectancy also improved during this period for non-Indigenous Australians, so the gap did not narrow ... The TIS program made some progress but far more needs to be done to impact life expectancy. These results show that the life expectancy gap is widening and that this target has not been met.

Target 2: employment

Target 2. Halve the gap in employment outcomes between Indigenous and non-Indigenous Australians by 2018

Employment outcomes mean whether someone has a job that provides income … Over the decade from 2008-2018, there was a slight improvement in the employment rate for Indigenous Australians (1%) but non-Indigenous employment also improved a little. Therefore, the gap has not changed ... A review of multiple Indigenous employment programs including VTEC by Deloitte (2021) found that there were many problems and challenges with the programs and no fully effective programs ... These results show that current employment programs are not effective in improving Indigenous employment.

Target 3: early childhood education

Target 3. Enrol 95 per cent of all Indigenous four year-olds enrolled in early childhood education by 2025

Early childhood education is important because it helps with the cognitive and social development of the child and helps them to perform well in their schooling … In the period between 2016 and 2018, Indigenous early childhood education improved by 10% (from 76.7% to 86.4%). These figures show that the target is on track to be met. An example of a highly effective program that encouraged early childhood education was the establishment of 38 Aboriginal and Torres Strait Islander Family Centres (ACFCs) … In the important area of education, the target of enrolling 95% of four year olds in early childhood education is on track.

Overall evaluation

_____

_____

_____

_____

_____

_____

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_____

_____

_____

Provide an overall evaluation of the program

Has it lived up to its name and closed the gap? Why/ why not?

Which targets were not met and which were met?

Make recommendations about what should happen in the future

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Fact Sheet 1: Cause and effect language in Geography

Students of Geography need to understand cause and effect. The words 'cause' and 'effect' and 'explain' are found many times in the curriculum. Geography students need to learn how to explain effectively and to use cause and effect language in a sophisticated way. The list below shows some of the language resources that Geographers use to express cause and effect. This is a reference list for teachers and it is not recommended to give students all of these options at once. Instead, teachers can introduce them gradually, throughout Years 7-10, as shown in this book.

Cause and effect relationships can be shown in different ways through language:

conjunctions	e.g. because	People migrated to the city **because** they needed to find work.
preposition phrases	e.g. due to	People migrated to the city **due to** the need for work.
verb or verb groups	e.g. caused	The need for work **caused** people to move to migrate to the city.
nouns	e.g. reason	The **reason** people migrated to the city was to find work.
text connectives	e.g. therefore	People needed to find work. **Therefore**, they migrated to the city.

The table below is a handy list of common explaining language for Geography.

conjunctions for linking ideas within a sentence	(to show a reason) as, because, since, as a result of, so (to show a purpose) so that, in order to, so as to, in order that (conditional) as long as, if, in case, unless, on condition that (sequential explanation) when (*x happens, y happens)*
prepositions for starting a phrase	because of, due to, as a result of, for, through
verb group explains what is happening	causes, leads to, results in, contributes to, creates, makes … happen, gives rise to, generates, means, brings about, shapes, affects, influences, enables, allows for, impacts, induces, helps to, achieves, gains, interconnects with, is interdependent with, depends on, is dependent on, originated *(Cause and effect is also shown through these verb forms)* to + (verb) e g. to protect … (means 'in order to protect') by + (-ing verb) e.g. by protecting … through + (-ing verb) e.g. through protecting …
noun a thing	*(a cause)* cause, factor, influence, consideration, agent (*an effect)* effect, consequence, result, outcome, repercussion, impact (*cause and effect relationship)* interconnection, dependency, interdependency *(a reason)* reason, motive, purpose, motivation, rationale, origin (*a purpose)* purpose, goal, aim, objective, intention, plan, strategy
text connectives for linking sentences or longer sections of a text	therefore, so, consequently, for that reason, because of this, as a result, thus

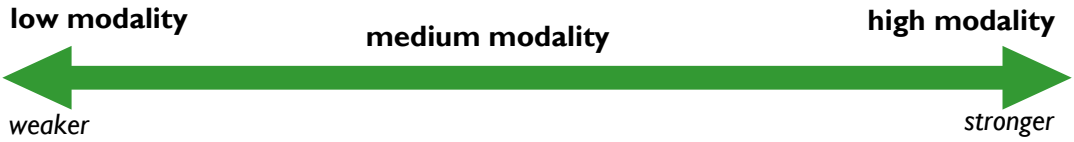
Source: Halliday, M. A. K., & Matthiessen, C. (2004). *An introduction to functional grammar (3rd ed.).* London: Continuum

Fact Sheet 2: Modal language in Geography

Modal language helps the writer to take a position or present a point of view.

Stronger language has **higher modality**, e.g. must, should, definitely
Weaker language has **lower modality**, e.g. may, could, perhaps

In Geography, we often use low modality to show that we may not have all the evidence about a phenomenon or issue. Also, new evidence, unpredicted events or technology may change what will happen in unexpected ways. We can use high modality for statements that have a weight of convincing evidence supporting them.



modal verbs *(note: modal verbs are combined with other verbs, e.g. must go, will go, can go)*	may, could, might *Carbon trading **may** reduce greenhouse gases.*	can, will, would, should (or no modal verb) *Carbon trading **will** reduce greenhouse gases.*	must, ought to, need to, has to, had to, are required to *Carbon trading **must** reduce greenhouse gases.*
showing verbs	suggests, implies	shows, means, indicates	proves, demonstrates, finds, reveals
saying verbs (what people can do or say)	suggest, hypothesise, infer, think	explain, point out, acknowledge	assert, prove, demonstrate, state, discover, find, discover
modal adverbials *(adverbials give us more information about what is happening)*	possibly, perhaps, maybe, potentially *Carbon trading will **possibly** reduce greenhouse gases.*	probably, usually, generally, likely, unlikely *Carbon trading will **probably** reduce greenhouse gases.*	certainly, definitely, always, never, absolutely, completely, without doubt, surely, conclusively *Carbon trading will **definitely** reduce greenhouse gases.*
modal nouns (*a thing, person, place or concept)*	possibility, suggestion, potential *There is a **possibility** that carbon trading will reduce greenhouse gases.*	probability, likelihood *There is a **probability** that carbon trading will reduce greenhouse gases.*	certainty, necessity, requirement, obligation *There is **certainty** that carbon trading will reduce greenhouse gases.*
modal adjectives *(a describer)*	possible, feasible *It is **possible** that carbon trading will reduce greenhouse gases.*	probable, likely, unlikely, reasonable, plausible, believable *It is **probable** that carbon trading will reduce greenhouse gases.*	certain, sure, doubtless, positive, convincing, impossible *It is **definite** that carbon trading will reduce greenhouse gases.*
useful sentence starters	It is possible that… This suggests that…. Some evidence indicates that... *This **suggests** that carbon trading will reduce greenhouse gases.*	It is likely that… Most of the evidence shows that... *Most of the evidence **shows** that carbon trading will reduce greenhouse gases.*	It is definite that… It is certain that… It is obvious that… There is no doubt that.. Evidence proves/shows that *Evidence **proves** that carbon trading will reduce greenhouse gases.*

Fact Sheet 3: Advanced evaluative language

Geographers use a range of evaluative language for evaluations, persuasive texts and recommending strategies to address environmental problems. This page shows positive and negative evaluative language that is suitable for a range of topics in Geography.

Useful evaluative language

Topics	positive	negative
general	effective useful efficient sustainable reliable solution important realistic appropriate clear easy cheap	ineffective damaging inefficient unsustainable exploited problem unsuitable difficult inappropriate unclear difficult expensive
energy / environment	efficient renewable sustainable healthy natural clean remediation	inefficient non-renewable unsustainable fossil fuels pollution dirty polluted toxic hazardous
community/ migration	inclusive, inclusion diverse, diversity respectful, respect activism tolerant flexible growth understanding interesting expand opportunities benefits success, successful well-being	disengagement apathy exploitation exploited discriminatory discrimination prejudice criticism burden concern inadequate unfair overcrowding

Evaluative language for human impacts on environments

positive	negative
minor very little effect no impact less impact positive	serious effect major impact large effect more impact
positive verbs	**negative verbs**
support sustain restore develop help renew recycle reuse grow enable remediate heal	restrict pollute damage disrupt interfere degrade destroy harm devalue diminish compromise limit
positive nouns	**negative nouns**
importance significance value sustainability safety wellbeing biodiversity restoration quality nature solution	exploitation pollution problem crisis monoculture danger inability disease loss waste

Adverbials can make evaluative language more specific and nuanced	minimally slightly a little somewhat moderately very extremely

Fact Sheet 4: Conjunctions and text connectives

Conjunctions and text connectives are linking words.

Conjunctions are used within sentences and connect words and clauses.

Text connectives are signposts for the reader in longer stretches of texts, e.g. sections or paragraphs.

Common conjunctions

Purpose	Examples
Adding	and, besides, as well as
Time and sequencing	then, next, afterwards, first, finally, last of all, lastly meanwhile, all that time, until then, up to that point, at this moment, next, secondly, first, next, soon, after a while, on another occasion, that year
Causality	so, for, because, since, so that, then, therefore, as a consequence, consequently, as a result,, on account of this, for that reason, for that purpose, because of this
Contrast	but, yet, however, although, though, whereas, while, even if, even though, despite

Common text connectives

Purpose		Examples
Elaborating	restating in other words	in other words, that is, to put it another way
	giving examples	for example, for instance, thus, to illustrate
Clarifying	correcting	or rather, to be more precise
	being specific	in particular
	summarising	in short, to sum up, in conclusion, briefly, in summary
	giving facts	actually, as a matter of fact, in fact
Adding	positive	moreover, in addition
	contrasting ideas	on the other hand, however, on the contrary, instead, in contrast
Varying	giving exceptions	apart from that, except for that
	giving alternatives	alternatively
Space and time	see list above	
Manner	comparing	likewise, similarly, in a different way
	means	thus, thereby, by, by some means
Cause and effect	general	so, then, therefore, consequently, hence, because of that, for
	result	in consequence, as a result,
	reason	on account of this, for that reason
	purpose	for that purpose, with this in view
	conditional	then, in that case, in that event, under the circumstances, otherwise
	concession	despite this, however, even so, nevertheless

Source: Halliday, M. A. K., & Matthiessen, C. (2004). *An introduction to functional grammar (3rd ed.).* London: Continuum

References and further reading

The resources on this page are references for this book and also useful further reading on Systemic Functional Linguistics and scaffolding pedagogy.

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About the author

Dr Trish Weekes is a literacy consultant, researcher and teacher-educator. Trish is an experienced teacher and is a specialist in developing literacy skills and teaching resources in specific subject areas. She holds a Ph.D. in literacy education in secondary schooling and has authored numerous papers and book chapters in conjunction with leading academics across Australia and internationally in the field of literacy. In developing Literacy Works for Geography, Trish has worked closely with Geography teachers and hopes the resources will support literacy education across our country.

For more literacy resources, visit www.literacyworks.com.au