

LITERACY WORKS FOR
Technologies
Years 7 and 8 AC V9

More information and sample pages

Literacy Works for Technologies

Practical literacy worksheets for Technologies Years 7 and 8 AC V9

Help students write like experts to complete a better folio

Literacy worksheets for two subjects:

- Digital Technologies
- Design and Technologies:
 - ✓ Engineering principles and systems
 - ✓ Food and fibre production
 - ✓ Food specialisations
 - ✓ Materials and technologies specialisations

Follows design processes and production skills:

- Investigating and defining
- Generating and designing
- Producing and implementing
- Collaborating and managing
- Evaluating

What is literacy in Technologies?

Literacy involves how to communicate like a professional such as a product designer, a software expert, a timber or textiles designer, a food technologist or an agriculturalist.

Technologies specialists:

- Understand the design brief
- Research a variety of options
- Choose solutions for users
- Present design plans and justify design decisions
- Evaluate the final product

How do they write?

They

- Use technical terminology
- Write paragraphs
- Include diagrams, visuals and sketches with annotations
- Use tables and dot points

They do **not**:

- Write long texts
- Use literary language
- Waffle

Literacy Works for Technologies is easy to use

Works with each **focus area**

Saves time – just copy or print and teach

Easy to share - an unlimited site licence is included for printing and copying and downloading at your school.

Great for **mixed ability classes**

Perfect for **extra lessons** if you're away

Money back guarantee so that you can be sure that it suits you

Literacy Works Contents

Subject		Literacy modules
2-35	Digital technologies	Module 1 Digital technologies
36-69	Design and technologies	Module 2 Engineering principles and systems
70-93		Module 3 Food and fibre production
94-125		Module 4 Food specialisations
126-149		Module 5A Materials and technologies specialisations: Textiles
150-171		Module 5B Materials and technologies specialisations: Timber
172-174	Fact sheets	

What skills do students learn?

<i>Processes and production skills</i>	<i>Literacy skills covered in this book Students learn to:</i>
Investigating and defining	• understand a design situation or problem and the design brief • identify design criteria that will meet user needs • learn and use vocabulary, terminology and technical terms • explain and justify design criteria • describe a variety of designs using technical terms • label images of designs • describe different features of designs • explain how things work • explain causes and effects • describe types of designs and solutions • complete a PMI chart
Generating and designing	• show design options • justify the final design
Producing and implementing	• recount the production process: what they did, when, how and why they did each step
Collaborating and managing	• complete a weekly reflection on the production process
Evaluating	• use evaluative language to evaluate a completed design project • support evaluations with reasons related to design criteria and evidence from the final product • provide a balanced evaluation of the final design project including at least one exception or limitation

What format is best for you?

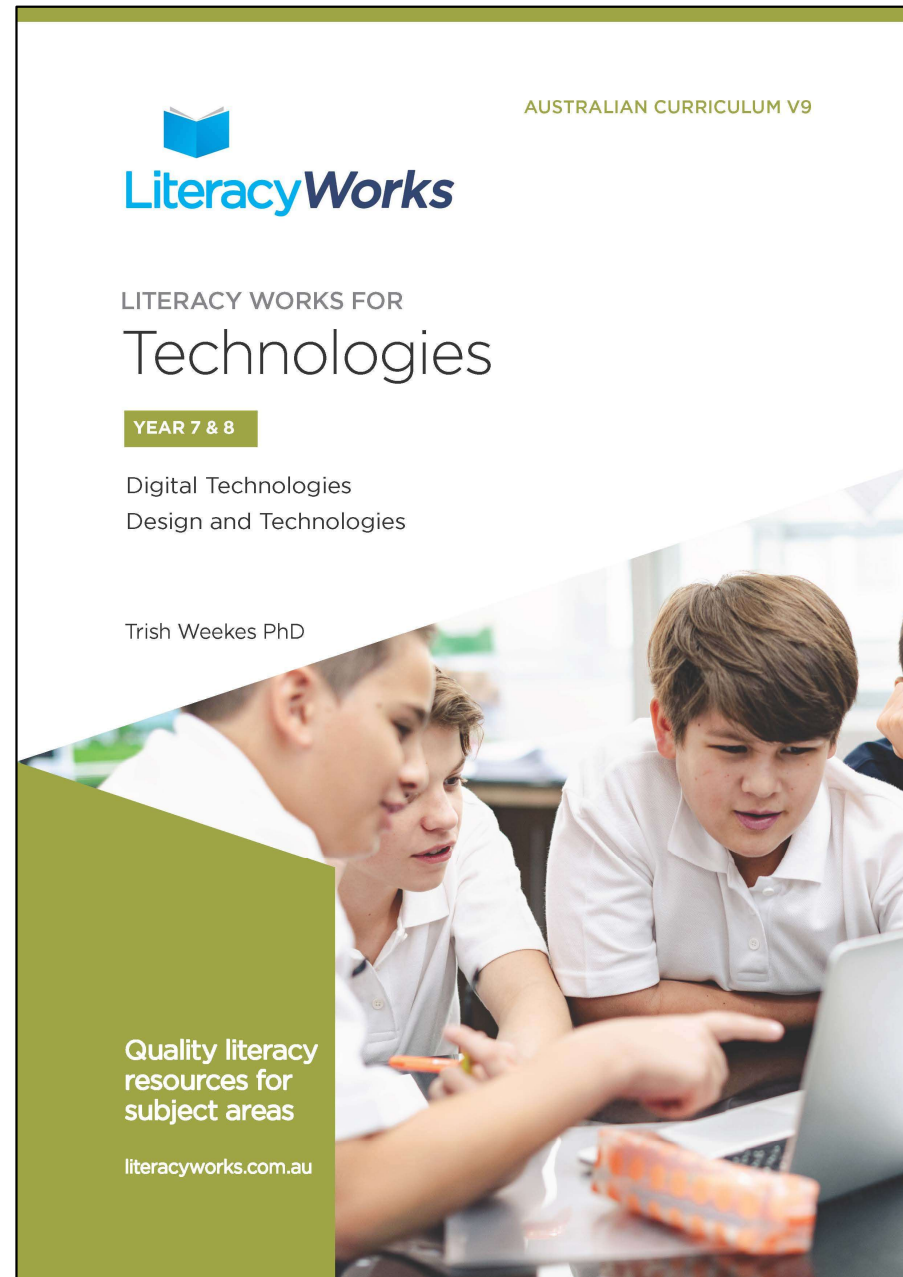
Format		Why might this suit me?
Printed book	188 page coloured book containing student worksheets and teacher answers; includes licence for unlimited copying	You prefer a hard copy printed book and photocopying worksheets for students
ePack	The ePack contains: • teacher eBook (PDF of printed book, with student worksheets, answers and teaching suggestions) • student eBook (PDF of blank worksheets) • site licence for unlimited digital use on student devices, unlimited printing and sharing at your school	You want to share digital resources with other teachers You want students to type/write using their devices You prefer to print worksheets.
PowerPoints	PowerPoints of every module – activities and answers	You want to save time and make it even easier for teachers
eBundle	ePack and PowerPoints	You want the ePack and PowerPoints
The Lot	Printed book and eBundle	You want the flexibility of flicking through the printed book, photocopying AND sharing resources electronically and printing out pages for students

Unlimited site licence is included for use by all teachers and students at your school.
Prices are on the final slide.

FAQ

Questions	Answers
What if we don't teach the same design projects as the ones in the book?	The projects are just examples. The literacy skills in this resource are linked to the design process so you can apply them to any project.
What if we teach integrated units?	The resource is flexible. Teachers can select activities from different focus areas and projects while still supporting the design process.
How do we share the resources in the book with other teachers?	The Head Teacher can keep the printed book and relevant modules can be copied for teachers. Digital ePack and eBundle can be shared within your faculty. A site licence is included for unlimited use and sharing at your school.
Is this resource suitable for mixed ability classes?	Yes. The activities include a range of models and supported reading and writing activities that suit a range of learners.
How much preparation is needed?	Not much preparation is required. Teachers can use complete modules or selected activities that suit their students. Teacher pages provide teaching suggestions and answers – just copy and teach.

Sample pages for each module



A group of five students, three boys and two girls, are gathered around a laptop in a classroom. They are all looking at the screen with interest. The boy in the center is pointing at the screen. The girl on the right is holding a pen. The boy on the left is resting his head on his hand. The background shows a classroom with a window and some posters on the wall.

MODULE 1

Digital Technologies sample pages

Contents

Module 1 Digital technologies

Page	Processes and production skills	Page title	Literacy skills Students learn to:	Design projects
2		Syllabus links		
4-5	Investigating and defining	Understanding the design brief	Read and comprehend the design situation and problem and how it relates to the design brief.	infographic tiny houses
6-7		Design criteria	Understand vocabulary and meanings of design criteria related to the focus area.	micro:bit
8-9		User stories and priorities	Identify different design criteria for four users of a website.	website
10-11		Explaining how code works	Explain how code works and how a program works in a sequential explanation.	
12-13		How data is transmitted through a network	Use active and passive voice for explaining.	
14-15		Parts of webpages	Use technical terms for parts of webpages and label the parts on a screenshot of a page.	website
16-17		Describing webpages	Teaching and learning cycle. Modelling: Match paragraph phases to parts of a paragraph describing a webpage. Supported writing: Complete a second paragraph describing a second webpage. Independent writing: Students choose a webpage and write a paragraph based on the model.	website aimed at reducing waste
18-19		Describe this webpage	Analyse a webpage from End Food Waste Australia.	
20-21		PMI chart	Complete a PMI chart for two infographics.	infographic
22-23	Generating and designing	Explaining and justifying design options	Show what design criteria and features you will include using high modality, or what you might include using low modality. Also describe what you will NOT do.	infographic
24-25		Justifying your final design	Explain design decisions and choices and provide reasons or benefits to justify the decisions. Use sensing verbs to show what you thought, wanted, chose etc.	website
26-27	Producing and implementing	Annotating block code	Read a model annotation and then write an annotation of block code.	design and code a game (Scratch)
28-29		Procedural Recount	Learn about a Procedural Recount. Match events in the correct order and link them to sentence parts to show 'how?' and 'why?'	website
30-31	Collaborating and managing	Project plan and reflection	Arrange the parts of a project plan and reflection in a table. Find sensing verbs to show what the student is thinking.	micro:bit
32-33	Evaluating	Evaluating your final design product	Learn about the 4 Es of evaluating. Identify positive and negative evaluative language related to design criteria. Write a positive evaluation of a website design.	website
34-35		Explaining, evidence and exceptions	Support evaluations with reasons and evidence related to design criteria. Use adverbials, prepositions and conjunctions to modify strong evaluations.	website

Syllabus links

Technologies AC V9

Module 1 Digital Technologies Years 7-8

Strand: Knowledge and understanding

Sub-strand: Digital systems

Students learn to:

- investigate how data is transmitted and secured in wired and wireless networks including the internet AC9TDI8K02

Strand: Processes and production skills

Sub-strand: Investigating and defining

- define and decompose real-world problems with design criteria and by creating user stories AC9TDI8P04

Sub-strand: Generating and designing

- design the user experience of a digital system AC9TDI8P07
- generate, modify, communicate and evaluate alternative designs AC9TDI8P08

Sub-strand: Producing and implementing

- implement, modify and debug programs involving control structures and functions in a general-purpose programming language AC9TDI8P09

Sub-strand: Evaluating

- evaluate existing and student solutions against the design criteria, user stories and possible future impact AC9TDI8P10

Sub-strand: Collaborating and managing

- select and use a range of digital tools efficiently, including unfamiliar features, to create, locate and communicate content, consistently applying common conventions AC9TDI8P11

Sample page

Design criteria

Teacher page

Knowledge about literacy

This page helps students to learn about design criteria and how these are applied in a design project such as coding an interactive solution for a micro:bit.

Students also learn about two ways of expressing a criterion: as a noun (a concept or thing such as sustainability) and as an adjective (a descriptor such as sustainable.)

Link to design skills

This page relates to processes and production skills for:



Answers

design criteria		jumbled definitions
noun	adjective	
function or functionality	functional	the code is accurate and the program operates without glitches or errors
quality of production	high quality/ well programmed	the controls respond to user input and the program is engaging for the user
usability	usable	the program works as expected and does the job it was designed to do
interactivity	interactive	the program coding should be completed and tested within the set timeframe
planning/ time management	well-planned	the program is easy to understand and easy to use

Answers

design criteria	
reliability	The program should work consistently without crashing or freezing when used multiple times.
testing and debugging	The student must systematically test their program at each stage of development, identify any errors or bugs and record how they fixed them.
creativity / originality	The program must show original thinking in how it uses the micro:bit's features. The student should make deliberate design choices rather than copying an existing example.
annotation and documentation	The student must document their project throughout the design process. This includes annotating their code with comments to explain what each section does, so that someone else could read and understand the program.

Design criteria

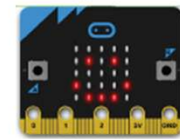
Design criteria are the requirements for the design solution. They are used to determine if the final product meets the requirements of the design brief.

Design criteria can be expressed as nouns (things) which are concepts or names of things e.g. sustainability. They can also be shown as adjectives (describers) e.g. sustainable.

Criteria are many requirements. A criterion is one requirement.

Design example

Design and code an interactive solution using micro:bit

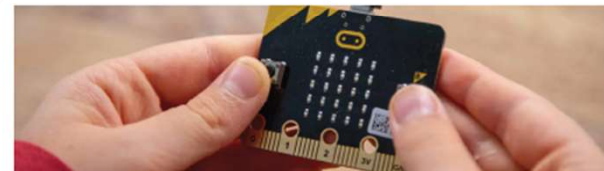


The table below shows design criteria with jumbled definitions.

1. Draw a line to match the design criteria with the correct definition.
2. Complete the table by adding the name of the criterion as a noun or adjective.

design criteria		jumbled definitions
noun	adjective	
function or functionality	_____	the code is accurate and the program operates without glitches or errors
_____ of production	high quality/ well programmed	the controls respond to user input and the program is engaging for the user
usability	_____	the program works as expected and does the job it was designed to do
interactivity	_____	the program coding should be completed and tested within the set timeframe
planning/ time-management	well-_____	the program is easy to understand and easy to use

Read the paragraph below. Identify the four design criteria that are referred to in the paragraph and write them in the left column. They are not the same as the ones above.



design criteria

	The program should work consistently without crashing or freezing when used multiple times. The student must systematically test their program at each stage of development, identify any errors or bugs and record how they fixed them. The program must show original thinking in how it uses the micro:bit's features. The student should make deliberate design choices rather than copying an existing example. The student must document their project throughout the design process. This includes annotating their code with comments to explain what each section does, so that someone else could read and understand the program.
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sample



MODULE 2

Engineering principles and systems sample pages

Contents

Design and Technologies Module 2 Engineering principles and systems				
Page	Processes and production skills	Page title	Literacy skills Students learn to:	Design projects
36		Syllabus links		
38-39	Investigating and defining	Understanding the design brief	Read and comprehend the design brief and design problem.	model bridge portable shelter
40-41		Design criteria	Understand vocabulary and meanings of design criteria.	model bridge
42-43		Explaining and justifying design criteria	Present design decisions and support them with reasons or benefits.	CO2 dragster
44-45		Describing designs of bridges	Teaching and learning cycle. Building the field: Learn about force, load, compression and tension. Modelling: Match paragraph phases to parts of a paragraph describing a beam bridge. Label an image of a beam bridge.	types of bridges
46-47		Describing designs of bridges	Supported writing: Complete a second paragraph describing an arch bridge. Independent writing: Write a third paragraph to describe a truss bridge.	types of bridges
48-49		Describing like an engineer	Pack information into a sentence in an expanded noun group.	types of bridges
50-51		PMI chart	Complete a PMI chart about two solar powered car designs.	solar car
52-53		Classifying types of forces	Teaching and learning cycle. Modelling: Add the names of paragraph phases (sub-sections) to a paragraph about tension. Supported writing: Rearrange paragraph parts to describe torsion. Independent writing: Write a paragraph about compression.	types of forces
54-55	Generating and designing	Explaining how to reduce air resistance	Explain how something happens using cause and effect language.	CO2 dragster
56-57		Showing design options	Show what design criteria and features you will include using high modality, or what you might include using low modality. Also describe what you will NOT do.	CO2 dragster
58-59		Justifying your final design	Explain your decision or choice and provide a reason or benefit.	model bridge
60-61	Collaborating and managing	Project plan and reflection	Arrange the parts of a project plan and reflection in a table. Find sensing verbs.	
62-63	Producing and implementing	Procedural Recount	Learn about a Procedural Recount. Match events in the correct order and link them to sentence parts to show 'how!' and 'why?'	CO2 dragster
64-65	Evaluating	Evaluating your final design product	Learn about the 4 Es of evaluating. Identify positive and negative evaluative language related to design criteria. Rewrite evaluations with precise evaluative language.	model bridge
66-67		Explain and give evidence	Support evaluations with reasons and evidence related to design criteria.	CO2 dragster
68-69		Exceptions for a balanced evaluation	Identify if evaluations are strong or if they have an exception or limitation. Use adverbials, prepositions and conjunctions to modify strong evaluations.	CO2 dragster

Syllabus links

Design and Technologies AC V9 Engineering principles and systems

Strand: Knowledge and understanding

Sub-strand: Engineering principles and systems

Students learn to:

analyse how force, motion and energy are used to manipulate and control engineered systems

AC9TDE8K03

Strand: Processes and production skills

Sub-strand: Investigating and defining

analyse needs or opportunities for designing, and investigate and select materials, components, tools, equipment and processes to create designed solutions

AC9TDE8P01

Sub-strand: Generating and designing

generate, test, iterate and communicate design ideas, processes and solutions using technical terms and graphical representation techniques, including using digital tools AC9TDE8P02

Sub-strand: Producing and implementing
select, justify and use suitable materials, components, tools, equipment, skills and processes to safely make designed solutions AC9TDE8P03

Sub-strand: Evaluating

develop design criteria collaboratively including sustainability to evaluate design ideas, processes and solutions AC9TDE8P04

Sub-strand: Collaborating and managing

develop project plans to individually and collaboratively manage time, cost and production of designed solutions AC9TDE8P05

Sample page

Explaining how to reduce air resistance Teacher page



Teaching suggestions

When explaining, students often rely on basic cause and effect language like 'because' or 'so'. This is not adequate for explaining HOW something happens. On this page, students learn a range of cause and effect language that helps them to explain **how something happens**, such as how air resistance can be reduced on a CO₂ dragster. Even if students are not completing the dragster project, they would benefit from learning about the ways of explaining HOW something happens or WAYS of achieving something.

A master list of cause and effect language can be found in Fact Sheet 1 at the back of this book.



Link to the design process

This page relates to the following stage of the design process:



Answers

1. The designer can reduce air resistance **by making** the front of the car narrow and rounded.
2. The dragster can be made more aerodynamic **by smoothing** the shape of the body.
3. The designer can make the car more aerodynamic **by narrowing/curving** the overall body shape.
4. A smoother, streamlined surface can be achieved **by sanding** it with sandpaper.
5. Air resistance can be reduced **by lowering** the height of the dragster so it has less surface area exposed to the air.
6. The car can create less turbulence **by covering** exposed parts that might be sticking up into the airstream.
7. The designer can help air move smoothly around the dragster **by curving/narrowing** the front and sides of the car.



Answers

The shape of the dragster **impacts on** air resistance. One way to make a dragster aerodynamic is **by creating** a streamlined shape. **If** the body of the car is long, thin and smooth, **then** it has less friction with the air. Rounded edges can reduce air resistance **because** air can move smoothly across the surface. This **leads to** reduced turbulence that can slow the car down. A smaller, curved front also reduces the surface area **so** less air needs to be pushed aside. **As a result**, the dragster can move more quickly through the air and reach higher speeds.



Suggested answers

Many answers are possible.
Cause and effect language is in bold.

The surface of the dragster also **impacts on** air resistance. A smooth, well-sanded and polished finish reduces air resistance **so** the dragster can move through the air quickly. Rough surfaces **lead to** greater resistance and can slow the dragster. **If** the surface is rough with edges sticking out, **then** air resistance is greater. **Consequently**, smoothing the surface **by sanding** it can reduce air resistance.

Explaining how to reduce air resistance

Air resistance, also called **drag**, is a force that slows the motion of an object as it moves through air.

A CO₂ dragster needs to minimise air resistance so that it can travel smoothly and quickly. When a dragster minimises air resistance, it is **streamlined** and **aerodynamic** so air moves smoothly over and around the car.

Below: Simulation of airflow moving around a car and turbulence (spinning pockets of air) behind the car.



When explaining HOW something happens, writers can use the cause and effect language: **by + (verb)ing**. Choose options from the box to complete each sentence.

by + (verb)ing

Air resistance can be reduced **by making** the car body streamlined.

by curving by smoothing by covering
by sanding by narrowing by making by lowering

1. The designer can reduce air resistance **by** _____ **ing** the front of the car narrow and rounded.
2. The dragster can become more aerodynamic **by** _____ the shape of the body.
3. The designer can make the car more aerodynamic **by** _____ the overall body shape.
4. A smoother, streamlined surface can be achieved _____ it with sandpaper.
5. Air resistance can be reduced _____ the height of the dragster so it has less surface area exposed to the air.
6. The car can create less turbulence _____ exposed parts that might be sticking up into the airstream.
7. The designer can help air move smoothly around the dragster _____ the front and sides of the car.



Read the explanation below and highlight all the cause and effect language found in the paragraph below.

Cause and effect language
by _____ing so because if ... then
impacts on leads to as a result

The shape of the dragster **impacts on** air resistance. One way to make a dragster aerodynamic is **by creating** a streamlined shape. **If** the body of the car is long, thin and smooth, **then** it has less friction with the air. Rounded edges can reduce air resistance **because** air can move smoothly across the surface. This **leads to** reduced turbulence that can slow the car down. A smaller, curved front also reduces the surface area **so** less air needs to be pushed aside. **As a result**, the dragster can move more quickly through the air and reach higher speeds.



Write a short paragraph explaining how a smooth surface can reduce air resistance. Use information from the fact box and a range of cause and effect language.

Fact box
smooth surface:
well-sanded, polished
→ reduced air resistance

rough, edges sticking out
→ greater air resistance

Design example

Design and build a CO₂ dragster (a small model car powered by carbon dioxide gas cartridge)



MODULE 3

Food and fibre production sample pages



Contents

Design and Technologies Module 3 Food and fibre production

Page	Processes and production skills	Page title	Literacy skills Students learn to:	Design projects
70		Syllabus links		
72-73	<i>Investigating and defining</i>	The design brief and design criteria	Read and comprehend the design problem and design brief. Match design criteria with definitions.	<i>vertical garden</i>
74-75		Explaining and justifying design criteria	Present design decisions and support them with reasons or benefits.	<i>vertical garden</i>
76-77		Describe food and agriculture industries	Teaching and learning cycle. Modelling: Match paragraph phases to parts of a paragraph about agriculture. Fill in a cause and effect chart to show how food is grown and processed.	
78-79		Describe food and agriculture industries	Supported writing: Complete a second paragraph describing the fisheries industry. Independent writing: Write a third paragraph to describe the livestock industry.	
80-81		PMI chart	Complete a PMI chart for two designs of vertical gardens.	<i>vertical garden</i>
82-83		Types of growing media	Read a descriptive report about types of growing media and fill in a table to summarise key points.	
84-85	<i>Generating and designing</i>	Justifying your final design	Explain your decision or choice and provide a reason or benefit. Justify the choice of two growing media for a vertical garden, referring to the previous page.	<i>vertical garden</i>
86-87	<i>Collaborating and managing</i>	Project plan and reflection	Arrange the parts of a project plan and reflection in a table. Find sensing verbs to show what the student is thinking.	<i>microgreens</i>
88-89	<i>Producing and implementing</i>	Procedural Recount	Learn about a Procedural Recount. Match events in the correct order and link them to sentence parts to show 'how?' and 'why?'	<i>microgreens</i>
90-91	<i>Evaluating</i>	Evaluating your final design product	Learn about the 4 Es of evaluating. Annotate the 4 Es in a paragraph and identify design criteria. Change weak and casual evaluations to more precise evaluations.	<i>vertical garden</i>
92-93		Explaining and exceptions	Rewrite an evaluation by adding missing parts. Use adverbials, prepositions and conjunctions to modify strong evaluations to show a limitation or weakness.	<i>vertical garden</i>

Syllabus links

Design and Technologies AC V9

Food and fibre production

Strand: Knowledge and understanding

Sub-strand: Food and fibre production

Students learn to:

analyse how food and fibre are produced in managed environments and how these can become sustainable
AC9TDE8K04

Strand: Processes and production skills

Sub-strand: Investigating and defining

analyse needs or opportunities for designing, and investigate and select materials, components, tools, equipment and processes to create designed solutions
AC9TDE8P01

Sub-strand: Generating and designing

generate, test, iterate and communicate design ideas, processes and solutions using technical terms and graphical representation techniques, including using digital tools
AC9TDE8P02

Sub-strand: Producing and implementing
select, justify and use suitable materials, components, tools, equipment, skills and processes to safely make designed solutions
AC9TDE8P03

Sub-strand: Evaluating

develop design criteria collaboratively including sustainability to evaluate design ideas, processes and solutions
AC9TDE8P04

Sub-strand: Collaborating and managing

develop project plans to individually and collaboratively manage time, cost and production of designed solutions
AC9TDE8P05

Sample page

Explaining and justifying design criteria Teacher page



Teaching suggestions

This page helps students select, explain and justify their choice of design criteria for their project. The requirement for the solution is more specific than the name of the design criterion. See Fact Sheet 3 for a master list of common design criteria.

This page focuses on two useful cause and effect wordings to show the reason, purpose or effect: 'so' and 'so that'. For more cause and effect language, see Fact Sheet 1.



Link to design skills

This page relates to processes and production skills for:



Suggested answers

design criteria	requirement	cause and effect language	reason or benefit
function	The vertical garden needs to be functional	so that/so	it provides light and water for plants to grow and be healthy.
size	It has to be compact	so/ so that	it fits in a small urban space.
cost	The garden must be created with a set budget of \$10	so that/ so	it is cost-effective and uses materials and resources efficiently.
durability	It should be durable and well-constructed	so that / so	it stays together and does not fall apart.
sustainability	It will use some reused products such as plastic bottles or timber offcuts	so / so that	the design is sustainable and reduces the impact on the environment.



Teaching suggestions

For the final activity, teachers could show students the master list of design and design criteria in Fact Sheet 3. They could choose relevant criteria such as the suggested answers below.



Suggested answers

design criteria	requirement	cause and effect language	reason or benefit
safety	The garden must be safe	so that	the growing containers and materials do not create hazards and the herbs or vegetables are safe to eat.
aesthetic appeal	It should be attractive and suit the surroundings	so	users enjoy having the vertical garden in their space.

Explaining and justifying design criteria

You may need to choose design criteria and then justify why you have selected those to guide your design process. In order to do this, you can outline the design requirement then link it to a reason or benefit. You can use the sentence structure below to help you.



Write like a designer

Your reasons need to relate to design criteria
NOT your personal preferences:

e.g. because I think it's a good idea X
e.g. so it looks cool X



Design example

Design and create a vertical garden.



The sentences below justify design criteria for a vertical garden. Complete the sentences by adding a requirement, cause and effect language and reasons.

design criteria	requirement	cause and effect language	reason or benefit
function	The vertical garden needs to be functional	_____	it provides light and water for plants to _____
size	It has to be compact	_____	_____
cost	The garden must be created with a set budget of \$10	_____	it is cost-effective and _____
durability	It should be _____ and well-constructed	_____	_____
sustainability	_____	_____	the design is sustainable and reduces the impact on the environment.



Choose and justify two more design criteria for the vertical garden. Perhaps you could select safety, aesthetic appeal or other criteria of your choice.

design criteria	requirement	cause and effect language	reason or benefit
_____	_____	_____	_____
_____	_____	_____	_____

MODULE 4

Food specialisations sample pages



Contents

Design and Technologies Module 4 Food specialisations

Page	Processes and production skills	Page title	Literacy skills Students learn to:	Design projects
94		Syllabus links		
96-97	Investigating and defining	Understanding the design brief	Read and comprehend the design situation and design problem and how they relate to the design brief.	muffin healthy pizza
98-99		Design criteria	Understand vocabulary and design criteria.	healthy pizza
100-101		Aesthetic appeal	Learn about vocabulary related to aesthetic appeal and evaluate the aesthetic appeal of two meals.	
102-103		Explaining and justifying design criteria	Present design decisions and support them with reasons or benefits.	healthy pizza
104-105		Describing healthy lunch boxes	Teaching and learning cycle. Building the field: Learn about requirements for a healthy lunch box. Modelling: Match paragraph phases to parts of a paragraph about one lunch box. Label an image of a second lunch box.	lunch box
106-107		Describing healthy lunch boxes	Supported writing: Complete a second paragraph describing a healthy lunch box. Independent writing: Write a third paragraph to describe a third lunch box.	lunch box
108-109		Describing like a food technologist	Pack information into a sentence in an expanded noun group.	lunch box
110-111		PMI chart	Complete a PMI chart about two healthy snacks.	teenager snack
112-113	Generating and designing	How to write a recipe	Learn how to write a recipe, especially the method steps including HOW to complete the step.	banana caramel topping
114-115		How to write a recipe	Write the last two steps in the recipe using the model on the previous page.	banana caramel topping
116-117		Justifying your final design	Explain your decision or choice and provide a reason or benefit. Include sensing verbs to show what you chose, decided, wanted, plan to do etc.	lunch box
118-119	Producing and implementing	Procedural Recount	Learn about a Procedural Recount. Match events in the correct order and link them to sentence parts to show 'how?' and 'why?'	healthy pizza
120-121	Evaluating	Evaluating your final design product	Learn about the 4 Es of evaluating. Sort evaluative language according to design criteria. Arrange evaluative language on a scale from strongly negative to strongly positive.	healthy pizza
122-123		Explain and give evidence	Support evaluations with reasons and evidence related to design criteria.	healthy pizza
124-125		Exceptions for a balanced evaluation	Identify if evaluations are strong or if they have an exception or limitation. Use adverbials, prepositions and conjunctions to modify strong evaluations.	healthy pizza

Syllabus links

Design and Technologies AC V9 **Food specialisations**

Strand: Knowledge and understanding

Sub-strand: Food specialisations

Students learn to:

analyse how properties of foods determine preparation and presentation techniques when designing solutions for healthy eating AC9TDE8K05

Strand: Processes and production skills

Sub-strand: Investigating and defining

analyse needs or opportunities for designing, and investigate and select materials, components, tools, equipment and processes to create designed solutions AC9TDE8P01

Sub-strand: Generating and designing

generate, test, iterate and communicate design ideas, processes and solutions using technical terms and graphical representation techniques, including using digital tools AC9TDE8P02

Sub-strand: Producing and implementing

select, justify and use suitable materials, components, tools, equipment, skills and processes to safely make designed solutions AC9TDE8P03

Sub-strand: Evaluating

develop design criteria collaboratively including sustainability to evaluate design ideas, processes and solutions AC9TDE8P04

Sample page

Justifying your final design

Teacher page



Teaching suggestions

After students have considered and recorded their design options in the folio, they usually present a final sketch or plan. They also have to outline and justify their design decisions and choices.

This page helps students to show what they have decided (using sensing verbs). Then students link their decision to a reason related to the design criteria.



Link to design skills

This page relates to processes and production skills for



Suggested answers

sensing verbs are in bold
cause and effect language is circled
reasons are underlined.

I plan/intend/want to include several components in my lunch box so the lunch box has variety and a range of nutritious options. I want/plan/intend/decided to cut the wrap, vegetables and fruit into smaller pieces so that they are easier to eat at school. I chose/selected tiny carrots and sliced cucumber in order to provide crunchy contrasts.



Suggested answers

Design criteria	Decision or choice	Cause and effect language	Reason or benefit
1 function	I think that I will use a lunch box with three compartments	because	different food items can be kept separate and stay fresh.
2 nutrition	I plan to include rice, chicken, vegetables and fruit	in order to	provide a nutritious and balanced meal.
3 aesthetic appeal	I decided to include blueberries and bright orange carrots	so that	there is a variety of colours that appeal to children.
4 taste	I want/plan/intend to add sweet chilli sauce	so	the lunch is delicious and the flavours blend together.

Justifying your final design

After you have generated your ideas, you may be asked to present a sketch or outline of your final design and justify why it will meet the design brief. The language below can help you justify your choices.

Decision or choice

I want to include a wrap



Reason or benefit

because

it is easy for children to hold as they eat.

Sensing verbs

You can show your choices or decisions with sensing verbs. Sensing verbs express what is going on inside your head, including:

decided, have decided, consider
think, thought, am thinking
want, wanted, intend, plan
chose, have chosen, selected



Add sensing verbs to the design decisions below. Circle cause and effect language. Then underline the reasons that justify the choices.



Design example

Design and create a healthy lunch box for a child.

I _____ to include several components in my lunch box so the lunch box has variety and a range of nutritious options. I _____ to cut the wrap, vegetables and fruit into smaller pieces so that they are easier to eat at school. I _____ tiny carrots and sliced cucumber in order to provide crunchy contrasts.



Complete the table below to show a student's design plan for a healthy lunch box. Add cause and effect language and add reasons or benefits.

Design criteria	Decision or choice	Cause and effect language because, so, so that	Reason or benefit
1 function	I _____ that I will use a lunch box with three compartments	_____	different food items can be kept separate and stay fresh.
2 nutrition	I _____ to include rice, chicken, vegetables and fruit	_____	_____
3 aesthetic appeal	I _____ to include blueberries and bright orange carrots	_____	_____
4 taste	_____	_____	_____

MODULE 5A

Materials and technologies specialisations: Textiles



Contents

Design and Technologies Module 5A Materials and technologies specialisations: Textiles

Page	Processes and production skills	Page title	Literacy skills Students learn to:	Design projects
126		Syllabus links		
128-129	<i>Investigating and defining</i>	Design brief and design criteria	Read and comprehend a design problem and brief. Understand vocabulary and design criteria.	<i>tote bag</i>
130-131		Justify design criteria for different users	Choose and justify design criteria that would be suitable for different users. Support design decisions with a reason or benefit.	<i>apron</i>
132-133		Causes of textile waste	Learn about a Factorial Explanation. Arrange phases (sub-sections) or paragraphs, highlight cause and effect language and write one of the Reason paragraphs about poor quality materials and why they lead to textile waste.	
134-135		Describing types of aprons	Teaching and learning cycle. Building the field: Learn about types of aprons and utility pockets. Modelling: Match paragraph phases to parts of a paragraph about bib aprons. Label an image of a waist apron.	<i>apron</i>
136-137		Describing types of aprons	Supported writing: Complete a second paragraph describing a waist apron. Independent writing: Write a third paragraph about a full length apron.	<i>apron</i>
138-139		Describing like a designer	Pack information into a sentence in an expanded noun group.	<i>apron</i>
140-141		PMI chart: pockets for aprons	Complete a PMI chart about two aprons for a chef.	<i>apron</i>
142-143		Justifying your final design	Explain your decision or choice and provide a reason or benefit. Write a short paragraph justifying five design criteria.	<i>tote bag</i>
144-145	<i>Producing and implementing</i>	Procedural Recount	Learn about a Procedural Recount. Arrange images to show the correct sequence of steps in making a tote bag out of recycled jeans. Write each step as a sentence that shows when, what you did, and why.	<i>tote bag</i>
146-147	<i>Evaluating</i>	Evaluating your final design product	Learn about the 4 Es of evaluating. Sort evaluative language according to design criteria. Arrange evaluative language on a scale from strongly negative to strongly positive.	<i>tote bag</i>
148-149		Explaining and exceptions	Link evidence from a design project to relevant criteria. Write evaluation statements that include a reason and evidence. Use adverbials, prepositions and conjunctions to modify strong evaluations to show a limitation or weakness.	<i>tote bag</i>

Syllabus links

Design and Technologies AC V9 Materials and technologies specialisations

Strand: Knowledge and understanding

Sub-strand: Materials and technologies specialisations

Students learn to:

- analyse how characteristics and properties of materials, systems, components, tools and equipment can be combined to create designed solutions AC9TDE8K06

Strand: Processes and production skills

Sub-strand: Investigating and defining

- analyse needs or opportunities for designing, and investigate and select materials, components, tools, equipment and processes to create designed solutions AC9TDE8P01

Sub-strand: Generating and designing

- generate, test, iterate and communicate design ideas, processes and solutions using technical terms and graphical representation techniques, including using digital tools AC9TDE8P02

Sub-strand: Producing and implementing

- select, justify and use suitable materials, components, tools, equipment, skills and processes to safely make designed solutions AC9TDE8P03

Sub-strand: Evaluating

- develop design criteria collaboratively including sustainability to evaluate design ideas, processes and solutions AC9TDE8P04

Sample page

Causes of textile waste

Teacher page

Teaching suggestions

Students may be asked to research and explain something as part of the design process. This page shows students how to write a Factorial Explanation of causes of textile waste.

1. Teachers could ask students for their general knowledge of textile waste and why it is a problem.
2. Teachers could read about the Factorial Explanation genre and show students the cause and effect language table. A master list of cause and effect language is in Fact Sheet 1.
3. Teachers could read the first paragraph with students and ask students to add the names of the three paragraph phases (sub-sections).
4. Students can underline the reason and highlight cause and effect language in the first reason paragraph.
5. Next, students can write the names of phases next to the second reason paragraph.
6. Teachers can lead students to think of reasons why poor quality materials may lead to waste. Then students work in a pair to complete the third reason paragraph.
7. Students follow the phase names as instructions to complete the final paragraph, the General Statement.

Link to the design process

This page relates to the following stage of the design process:

Researching
and
planning

Factorial Explanation

A Factorial Explanation explains the causes or reasons for a phenomenon. The stages are:

- Phenomenon to be explained
- Reasons
- General Statement

Answers

cause and effect language is highlighted in green
reasons are underlined

Stage	Phase	Explanation
Phenomenon to be explained	Identify the issue	Textile waste is a growing environmental problem caused by the large amount of clothing and fabric that is thrown away each year. Textile waste includes old clothes, fabric scraps and unwanted household materials such as curtains or bedding. Textile waste has become a problem as a result of fast fashion, overproduction and poor-quality materials.
	Definition	
	Preview the three reasons	
Reasons	Identify the reason	One reason for textile waste is fast fashion. Many clothing companies produce cheap clothing based on trends that quickly go out of style. As a result, people often buy more clothes than they need and throw them away after a short time. Consequently, large amounts of unwanted clothing end up in landfill.
	Explain why it leads to waste	
	Identify the reason	Another factor that leads to textile waste is overproduction during manufacturing. Factories often produce extra fabric and clothing to meet demand. During the production process, leftover fabric pieces and damaged materials may be discarded because they cannot easily be reused. This leads to more waste before the products even reach stores.
	Explain why it leads to waste	
	Identify the reason	Poor-quality materials also contribute to textile waste. Some clothing is made from low-quality fabric so it wears out, fades or rips quickly. Clothing made from low-quality fabric is more likely to tear or wear out so people may throw it away. Therefore, low-quality fabric results in more waste.
	Explain why it leads to waste	
General statement	Restate the reasons	In summary, several factors cause textile waste including fast fashion, manufacturing waste and poor-quality materials. Reducing textile waste can reduce landfill, help protect the environment and encourage more sustainable use of resources.
	Implications of reducing textile waste	

Causes of textile waste

A Factorial Explanation explains causes or reasons for a phenomenon (something that happens) such as textile waste. Explanations include cause and effect language as shown in the box below.

Cause and effect language

Conjunctions and text connectives)	because as a result	since consequently	so therefore
Verbs (processes or happenings)	caused results in	led to impacts	resulted in contributes to
Nouns (things)	reason	cause	factor



Read the first paragraph: Phenomenon to be explained. Add the names of the paragraph phases next to the correct sentence. Circle cause and effect language.

Definition	Paragraph phases (jumbled): Preview the three reasons	Identify the issue
Phenomenon to be explained	Textile waste is a growing environmental problem caused by the large amount of clothing and fabric that is thrown away each year. Textile waste includes old clothes, fabric scraps and unwanted household materials such as curtains or bedding. Textile waste has become a problem as a result of fast fashion, overproduction and poor-quality materials.	

Read about the first reason below. Notice the paragraph phases. Underline the reason. Highlight the cause and effect language.

Identify the reason	Explain why it leads to waste
Reasons 1	One reason for textile waste is fast fashion. Many clothing companies produce cheap clothing based on trends that quickly go out of style. As a result, people often buy more clothes than they need and throw them away after a short time. Consequently, large amounts of unwanted clothing end up in landfill.

Read about the second reason. Write the names of the paragraph phases next to the correct paragraph parts. Highlight the cause and effect language.

Identify the reason	Explain why it leads to waste
Reasons 2	Another factor that leads to textile waste is overproduction during manufacturing. Factories often produce extra fabric and clothing to meet demand. During the production process, leftover fabric pieces and damaged materials may be discarded because they cannot easily be reused. This leads to more waste before the products even reach stores.

Write a paragraph explaining the third reason: poor quality materials and why they lead to textile waste.

Follow the paragraph phases to help you write the final paragraph: General Statement.

Restate the reasons	Implications of reducing textile waste
General statement	In summary, textile waste is caused by several factors including _____ Reducing textile waste can _____

MODULE 5B

Materials and technologies specialisations: Timber



Contents

Design and Technologies Module 5B Materials and technologies specialisations: Timber

Page	Processes and production skills	Page title	Literacy skills Students learn to:	Design projects
150		Syllabus links		
152-153	Identifying and defining	Design criteria	Match design criteria to definitions. Consider two design projects and answer questions about how design criteria apply differently to each project.	desk organiser bird house
154-155	Researching and planning	Describe three bird house designs	Teaching and learning cycle. Modelling: Match paragraph phases to parts of a paragraph about one bird house. Analyse and label an image of a second bird house.	bird house
156-157		Describe bird house designs	Supported writing: Complete a second paragraph describing another bird house. Independent writing: Write a third paragraph describing a hexagonal bird house.	bird house
158-159		PMI chart	Complete a PMI chart for two designs of desk organisers.	desk organiser
160-161		Types of timber joints	Read a descriptive report about types of timber joints and fill in a table to summarise benefits and disadvantages.	
162-163		Justifying your final design	Explain your decision or choice and provide a reason or benefit. Explain and justify your choice of timber joints with reference to the previous page.	bird house
164-165	Producing and implementing	Reflection on the production process	Read and annotate a weekly reflection. Find sensing verbs to show what the student is thinking, action verbs to show what they did, and reasons for decisions.	bird house
166-167		Procedural Recount	Learn about a Procedural Recount. Add action verbs to events. Then rewrite the events as a Procedural Recount to include when, why and how the bird house was built.	bird house
168-169	Testing and evaluating	Evaluating your final design product	Learn about the 4 Es of evaluating. Arrange evaluative language as positive or negative. Link evaluative language to design criteria.	desk organiser
170-171		Explaining and exceptions	Complete evaluation statements by thinking of reasons and evidence. Use adverbials, prepositions and conjunctions to modify strong evaluations to show a limitation or weakness.	desk organiser

Syllabus links

Design and Technologies AC V9 Materials and technologies specialisations

Strand: Knowledge and understanding

Sub-strand: Materials and technologies specialisations

Students learn to:

- analyse how characteristics and properties of materials, systems, components, tools and equipment can be combined to create designed solutions AC9TDE8K06

Strand: Processes and production skills

Sub-strand: Investigating and defining

- analyse needs or opportunities for designing, and investigate and select materials, components, tools, equipment and processes to create designed solutions AC9TDE8P01

Sub-strand: Generating and designing

- generate, test, iterate and communicate design ideas, processes and solutions using technical terms and graphical representation techniques, including using digital tools AC9TDE8P02

Sub-strand: Producing and implementing

- select, justify and use suitable materials, components, tools, equipment, skills and processes to safely make designed solutions AC9TDE8P03

Sub-strand: Evaluating

- develop design criteria collaboratively including sustainability to evaluate design ideas, processes and solutions AC9TDE8P04

Sample page

Evaluating your final design product

Teacher page

Teaching suggestions

Teachers could show students the EEEE parts of an evaluation paragraph. These are not phases or stages. Instead, the parts can be mixed together in the evaluation paragraph.

Students learn about positive and negative evaluative language and how evaluative language applies to design criteria. They also complete an evaluation paragraph using evaluative language.

Link to design skills

This page relates to processes and production skills for

Answers

negative	positive
inefficient	efficient
uneven	strong
weak	attractive
unattractive	stable
wobbly	neat
poorly finished	accurate
ineffective	high quality

Answers

evaluative language	design criteria			
	functionality	stability	quality of production	aesthetic appeal
1 sturdy		✓		
2 accurate joins			✓	
3 attractive				✓
4 effective and useful	✓			
5 poorly finished			✓	
6 visually appealing				✓
7 wobbly		✓		

Answers

Sometimes the reason comes second in sentence, preceded by 'because', 'since' or 'as'.
e.g. The desk organiser is functional because it holds all the stationery items.

Sometimes the reason comes first in the sentence, followed by 'so' or 'so that'.
e.g. It is brightly coloured so it is aesthetically pleasing.

The desk organiser is functional because it holds all the stationery items in one place and keeps the desk tidy. The joins are accurate and securely attached so my design has a high quality of production. The product is stable because it is not wobbly and it will not fall over if it is bumped. It is brightly coloured so it is aesthetically appealing for the user.

Evaluating your final design product

Expert evaluations of final design products include the 4 Es.

E
Evaluate

Evaluate your design according to design criteria using evaluative language.

E
Explain

Explain and justify your evaluation with reasons.

E
Evidence

Give evidence for your evaluation using specific features of your product.

E
Exceptions

Show a balanced evaluation by including at least one exception or limitation.

This page covers evaluation and evaluative language. Designers use evaluative language when they are evaluating. Designers do NOT say 'I like it' or 'It looks good.' Evaluative language include words that have positive or negative meanings built in. For example, efficient is positive while inefficient is negative.

Write each evaluative word below in the correct column to show if it has a positive or negative meaning in design projects.

negative	positive
strong	weak
wobbly	neat
uneven	attractive
poorly finished	accurate
	stable
	ineffective
	unattractive
	high quality

negative	positive
inefficient	efficient

Each evaluative word below relates to one design criterion. Tick a box to show which criterion relates to each evaluative word.

evaluative language	design criteria			
	functionality	stability	quality of production	aesthetic appeal
1 sturdy				
2 accurate joins				
3 attractive				
4 effective and useful				
5 poorly finished				
6 visually appealing				
7 wobbly				

Complete the sentences below by adding evaluative language and design criteria. Underline reasons.

The desk organiser is _____ because it holds all the stationery items in one place and keeps the desk tidy. The joins are accurate and securely attached so my design has a high _____.

The product is _____ because it is not wobbly and it will not fall over if it is bumped. It is brightly coloured so it is _____ for the user.

What format is best for you?

Format		Prices including GST
Printed book	188 page coloured book containing student worksheets and teacher answers; includes licence for unlimited copying	\$199
ePack	The ePack contains: • teacher eBook (PDF of printed book, with student worksheets, answers and teaching suggestions) • student eBook (PDF of blank worksheets) • site licence for unlimited digital use on student devices, unlimited printing and sharing at your school	\$399
PowerPoints	PowerPoints of every module – activities and answers	\$99
eBundle	ePack and PowerPoints (save \$49)	\$449
The Lot	Printed book and eBundle (save \$100)	\$597

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