



LiteracyWorks

LITERACY WORKS FOR Technology 7-8

What you need to know
PLUS sample pages



Literacy Works for Technology

Practical literacy worksheets for Technology 7-8

Help students write like Technology experts to complete a better folio

Literacy worksheets for each focus area:

- Digital and communications technologies
- Engineering technologies and systems
- Food and agricultural practices
- Materials and production processes

Follows the design process:

- Identifying and defining
- Researching and planning
- Producing and implementing
- Testing and evaluating

What is literacy in Technology?

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

Technology specialists:

- Understand the design problem and brief
- Describe a variety of designs
- Explain factors that impact on design
- Present design plans and justify design decisions
- Evaluate their 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 Technology 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

| | Literacy modules | Design project examples in each module |
|---------------------|--------------------------------------------------------|------------------------------------------------------------------------------------------|
| Focus area 1 | Digital and communication technologies | |
| | Module 1.1 Coding | <i>Scratch, micro:bit</i> |
| | Module 1.2 Software | <i>Create a website, design an infographic</i> |
| Focus area 2 | Engineering technologies and systems | |
| | Module 2 Engineering technologies and systems | <i>Create a model bridge, make a CO2 dragster, make a solar powered car</i> |
| Focus area 3 | Food and agricultural practices | |
| | Module 3.1 Food | <i>Make a healthy pizza, design a lunch box for a child, healthy snack for teenagers</i> |
| | Module 3.2 Agriculture | <i>Design and make a vertical garden, plant and grow microgreens</i> |
| Focus area 4 | Materials and production processes | |
| | Module 4.1 Textiles | <i>Make a tote bag from recycled jeans, make an apron</i> |
| | Module 4.2 Timber | <i>Construct a bird house, make a desk organiser</i> |
| Fact sheets | | |

What skills do students learn?

| <i>Stage of the design process</i> | <i>Literacy skills covered in this book</i> <i>Students learn to:</i> |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Identifying and defining | <ul style="list-style-type: none"> • understand a design situation or problem and the design brief • identify factors affecting design and design criteria • learn and use vocabulary, terminology and technical terms • explain and justify design criteria |
| Researching and planning | <ul style="list-style-type: none"> • 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 • show design options • justify the final design |
| Producing and implementing | <ul style="list-style-type: none"> • complete a weekly reflection on the production process • recount the production process: what they did, when, how and why they did each step |
| Testing and evaluating | <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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 units with integrated focus areas? | 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


LiteracyWorks

LITERACY WORKS FOR
Technology 7-8

STAGE 4

Digital and communication technologies
Engineering technologies and systems
Food and agricultural practices
Materials and production processes

Trish Weekes PhD

Quality literacy
resources for
subject areas

literacyworks.com.au



**Coding
sample
pages**

Contents

| Module 1.1 Coding | | | | |
|-------------------|-----------------------------------|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|
| Page | Design process | Page title | Literacy skills Students learn to: | Design projects |
| 2 | | Syllabus links | | |
| 4-5 | <i>Identifying and defining</i> | Factors affecting design and design criteria | Understand vocabulary and meanings of design criteria related to the focus area. | <i>micro:bit</i> |
| 6-7 | | Explaining how code works | Explain how code works and how a program works in a sequential explanation. | |
| 8-9 | | How data is transmitted through a network | Learn about active and passive voice for explaining. | |
| 10-11 | <i>Researching and planning</i> | Describing computer games | Teaching and learning cycle. Modelling: Match paragraph phases to parts of a paragraph describing Frogger. Identify elements of a game from screenshots. | <i>Describe three classic digital games</i> |
| 12-13 | | Describing computer games | Supported writing: Complete a second paragraph describing Tetris. Independent writing: Write a third paragraph to describe Pac-Man. | |
| 14-15 | | PMI chart | Complete a PMI chart. | <i>Describe two classic digital games</i> |
| 16-17 | | Justifying your final design | Explain your decision or choice and provide a reason or benefit. Match types of games to their definitions. | <i>Design and code a game (Scratch)</i> |
| 18-19 | <i>Producing and implementing</i> | Annotating block code | Read a model annotation and then write an annotation of block code. | <i>Design and code a game (Scratch)</i> |
| 20-21 | | 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>micro:bit</i> |
| 22-23 | | 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>Design and code a game (Scratch)</i> |
| 24-25 | <i>Testing and evaluating</i> | 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 | <i>Design and code a game (Scratch)</i> |

Syllabus links

Technology 7-8 (2023)

Digital and communication technologies

Module 1.1 Coding

Outcomes

TE4-SDP-01 explains relationships between sustainability, design and production

TE4-DES-01 communicates and evaluates design ideas and solutions

TE4-PPM-01 applies processes in the planning, management and production of projects

Content

Identifying and defining digital and communication technologies

- Identify appropriate hardware and software to develop design ideas and solutions
- Outline factors affecting the design of digital solutions

Researching and planning ideas and solutions

- Describe how digital solutions and communication technologies can contribute to sustainability
- Create written texts and use graphics applications to communicate design ideas and solutions

Producing and implementing processes, solutions and projects

- Document design processes when using digital and communication technologies

Testing and evaluating data, tools, systems and technologies

- Evaluate authenticity, accuracy and timeliness of data and information
- Use factors affecting design to evaluate user interfaces (UI) and user experiences (UX)

Sample page

Factors affecting design and design criteria Teacher page

★ Knowledge about literacy

This page helps students to learn about factors affecting design and design criteria, as well as 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 factors affecting design: as a noun (a concept or thing such as sustainability) and as an adjective (a describer such as sustainable.)

▶ Link to the design process

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



✓ Answers

| factors affecting design | | jumbled design criteria |
|---------------------------|-------------------------------|-----------------------------------------------------------------------------|
| 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

| factors affecting design | |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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. |

Factors affecting design and design criteria

Factors affecting design are the important things that designers need to think about, such as *accuracy*. Designers use these factors to develop **design criteria**, which are the specific requirements for the final product. For example, if *accuracy* is a **factor affecting design**, a **design criterion** might be 'the LED display shows the correct message or symbol.' (The word 'criteria' is plural. A 'criterion' is one requirement.)

Factors affecting design 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.

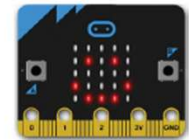
👁️ Design example

Design and code an interactive solution using micro:bit



The table below shows factors affecting design with jumbled design criteria.

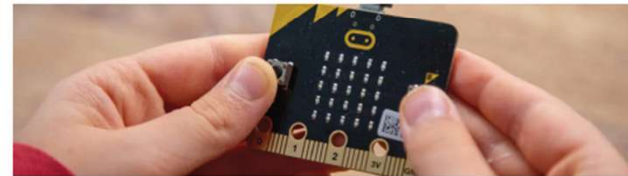
1. Draw a line to match the factors affecting design with the correct design criteria.
2. Complete the table by adding the name of the factor as a noun or adjective.



| factors affecting design | | jumbled design criteria |
|---------------------------|-------------------------------|-----------------------------------------------------------------------------|
| 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 factors affecting design that are referred to in the paragraph and write them in the left column. They are not the same as the ones above.



| factors affecting design | |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | 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. |

sample

MODULE 1.2

Software sample pages



Contents

Focus area 1: Digital and communication technologies Module 1.2 Software

| Page | Design process | Page title | Literacy skills Students learn to: | Design projects |
|-------|-----------------------------------|-----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| 26 | | Syllabus links | | |
| 28-29 | <i>Identifying and defining</i> | Understanding the design situation | Read and comprehend the design situation and design problem and how it relates to the design brief. | <i>infographic tiny houses</i> |
| 30-31 | | Factors affecting design and design criteria | Understand vocabulary and factors affecting design. Select priority design criteria for different users. | |
| 32-33 | <i>Researching and planning</i> | Parts of webpages | Learn technical terms for parts of webpages and label the parts on a screenshot of a page. | <i>website</i> |
| 34-35 | | 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. | <i>website aimed at reducing waste</i> |
| 36-37 | | Describe this webpage | Analyse a webpage from End Food Waste Australia. | |
| 38-39 | | PMI chart | Complete a PMI chart for two infographics. | <i>infographic</i> |
| 40-41 | | 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. | <i>infographic</i> |
| 42-43 | | Justifying your final design | Explain your design decisions and choices and provide reasons or benefits to justify the decisions. Use sensing verbs to show what you thought, wanted, chose etc. | <i>website</i> |
| 44-45 | <i>Producing and implementing</i> | Procedural Recount | Learn about a Procedural Recount. Sequence images showing steps in a production process. Write a procedural recount of each step including when, what and why. | <i>infographic</i> |
| 46-47 | <i>Testing and evaluating</i> | Evaluating your final design product | Learn about the 4 Es of evaluating. Identify positive and negative evaluative language related to design criteria. Link evaluative language to design criteria. Add evaluative language and design criteria to an evaluation. | <i>website</i> |
| 48-49 | | Explaining, evidence and exceptions | Support evaluations with reasons and evidence related to design criteria. Use adverbials, prepositions and conjunctions to modify strong evaluations. | <i>website</i> |

Syllabus links

Technology 7-8 (2023)

Digital and communication technologies

Module 1.2 Software

Outcomes

TE4-SDP-01 explains relationships between sustainability, design and production

TE4-DES-01 communicates and evaluates design ideas and solutions

TE4-PPM-01 applies processes in the planning, management and production of projects

Content

Identifying and defining digital and communication technologies

- Identify appropriate hardware and software to develop design ideas and solutions
- Outline factors affecting the design of digital solutions

Researching and planning ideas and solutions

- Describe how digital solutions and communication technologies can contribute to sustainability
- Create written texts and use graphics applications to communicate design ideas and solutions

Producing and implementing processes, solutions and projects

- Document design processes when using digital and communication technologies

Testing and evaluating data, tools, systems and technologies

- Evaluate authenticity, accuracy and timeliness of data and information
- Use factors affecting design to evaluate user interfaces (UI) and user experiences (UX)

Sample page

PMI chart

Teacher page

Teaching suggestions

PMI charts are commonly found in the design folio. However, students can be unsure about what to include in a PMI chart and often revert to simplistic statements such as 'I like it' or 'I don't like it'. This activity shows students how to link observations and descriptions to design criteria.

- Teachers could read the definitions of Plus, Minus and Interesting at the top of the page and add any extra ideas they consider to be important.
- Teachers could help students to notice the features of the infographic such as the headings, labels, icons and arrows. Then students can rewrite the dot points in the PMI chart.
- Students can work in pairs or independently to analyse the second infographic and fill in a couple of points under each heading.

Link to the design process

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

Researching
and
planning

Answers

| Plus | Minus | Interesting |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> the heading clearly states the topic so it is relevant to reducing food waste the five ways of reducing food waste all start with R which is memorable | <ul style="list-style-type: none"> the text under the icons is small and not easy to read the deep colours are not eye catching so aesthetic appeal is limited the arrows suggest one thing causing the next thing, but the ideas are separate | <ul style="list-style-type: none"> each idea has its own icon, such as bin for recycling and a plant for rot (composting) I could choose an icon to represent each idea in my infographic |

Suggested answers

| Plus | Minus | Interesting |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> the large heading 'food waste' clearly communicates the purpose subheadings provide three simple ideas for how to reduce waste the simple icons and limited text make the infographic easy to understand quickly the green and yellow colour scheme is aesthetically appealing and suits the environmental topic | <ul style="list-style-type: none"> the image on the left is of one type of person (an adult female character) not a range of people the muted colour palette is not very eye-catching there is a thought bubble from the woman showing a broken circle but it is not clear what this means - is it rubbish? | <ul style="list-style-type: none"> the layout has two panels like a 'before' (full rubbish bin) and 'after' (recycling bins) to show how she has changed her recycling practices the infographic has three suggestions not five like the other example on the right, there are three words but two images |

PMI chart

A PMI chart helps you to record information about other designs when you are researching and planning. A PMI chart shows your evaluation related to the factors affecting design. You can use dot points or full sentences.

| Plus | Minus | Interesting |
|--------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> positive features or advantages of the design, including reasons | <ul style="list-style-type: none"> negative features or disadvantages of the design, including reasons | <ul style="list-style-type: none"> unusual features similarities or differences from other designs ideas to use in your own design |

Imagine you have to design an Infographic. The infographic below is about reducing waste. Analyse the infographic then arrange the dot points under the correct headings.

The 5Rs of Zero Waste

Reduce Reuse Recycle Refuse Rot

the text under the icons is small and not easy to read
 the heading clearly states the topic so it is relevant to reducing food waste
 the deep colours are not eye catching so aesthetic appeal is limited
 each idea has its own icon, such as bin for recycling and a plant for rot (composting)
 the five ways of reducing food waste all start with R which is memorable
 I could choose an icon to represent each idea in my infographic
 the arrows suggest one thing causing the next thing, but the ideas are separate

| Plus | Minus | Interesting |
|------|-------|-------------|
| | | |

Look at the Infographic below left. Fill in a PMI chart for this design. Add one or two points per column.

| Plus | Minus | Interesting |
|------|-------|-------------|
| | | |

sample



MODULE 2

Engineering
technologies
and systems
sample pages

Contents

Focus area 2: Engineering technologies and systems Module 2

| Page | Design process | Page title | Literacy skills Students learn to: | Design projects |
|-------|-----------------------------------|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| 50 | | Syllabus links | | |
| 52-53 | <i>Identifying and defining</i> | Understanding the design situation | Read and comprehend the design situation and design problem and how it relates to the design brief. | <i>model bridge portable shelter</i> |
| 54-55 | | Factors affecting design and design criteria | Understand vocabulary and meanings of factors affecting design. | <i>model bridge</i> |
| 56-57 | | Explaining and justifying design criteria | Present design decisions and support them with reasons or benefits. | <i>CO2 dragster</i> |
| 58-59 | <i>Researching and planning</i> | 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. | <i>types of bridges</i> |
| 60-61 | | 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. | <i>types of bridges</i> |
| 62-63 | | Describing like an engineer | Pack information into a sentence in an expanded noun group. | <i>types of bridges</i> |
| 64-65 | | PMI chart | Complete a PMI chart about two solar powered car designs. | <i>solar car</i> |
| 66-67 | | 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. | <i>types of forces</i> |
| 68-69 | | Explaining how to reduce air resistance | Explain how something happens using cause and effect language. | <i>CO2 dragster</i> |
| 70-71 | | 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. | <i>CO2 dragster</i> |
| 72-73 | | Justifying your final design | Explain your decision or choice and provide a reason or benefit. | <i>model bridge</i> |
| 74-75 | <i>Producing and implementing</i> | Project plan and reflection | Arrange the parts of a project plan and reflection in a table. Find sensing verbs. | <i>CO2 dragster</i> |
| 76-77 | | 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>CO2 dragster</i> |
| 78-79 | <i>Testing and evaluating</i> | 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. | <i>model bridge</i> |
| 80-81 | | Explain and give evidence | Support evaluations with reasons and evidence related to design criteria. | <i>CO2 dragster</i> |
| 82-83 | | 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. | <i>CO2 dragster</i> |

Syllabus links

Technology 7-8 (2023)

Engineering technologies and systems

Outcomes

TE4-SDP-01 explains relationships between sustainability, design and production

TE4-PDP-01 describes the practices and processes of designers and producers

TE4-MS-01 explains how materials, systems and components contribute to solutions

TE4-DES-01 communicates and evaluates design ideas and solutions

TE4-PPM-01 applies processes in the planning, management and production of projects

Content

Identifying and defining engineering technologies and systems

- Identify the characteristics and properties of components in engineered systems
- Describe products, systems and technologies developed by engineers and manufacturers
- Outline factors affecting the design of engineered systems

Researching and planning ideas and solutions

- Describe how engineered solutions use materials, components and systems
- Explain how force, motion and energy apply to engineered systems
- Explore engineered solutions that address societal needs and contribute to sustainability
- Use graphical communication techniques to present ideas for products and systems

Producing and implementing processes, solutions and projects

- Document design and production processes when developing projects

Testing and evaluating tools, materials, systems and technologies

- Apply engineering processes to create and evaluate prototypes and working models
- Justify materials and components used when testing engineering technologies and systems
- Use results of testing and evaluating to contribute to an engineering report
- Evaluate engineering technologies and systems developed to improve sustainability
- Use factors affecting design to evaluate the quality of engineered solutions

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

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

- The designer can reduce air resistance **by _____ing** the front of the car narrow and rounded.
- The dragster can become more aerodynamic **by _____** the shape of the body.
- The designer can make the car more aerodynamic **by _____** the overall body shape.
- A smoother, streamlined surface can be achieved _____ it with sandpaper.
- Air resistance can be reduced _____ the height of the dragster so it has less surface area exposed to the air.
- The car can create less turbulence _____ exposed parts that might be sticking up into the airstream.
- 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

Design example

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



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



MODULE 3.1

Food sample pages

Contents

| Module 3.1 Food | | | | |
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| Page | Design process | Page title | Literacy skills Students learn to: | Design projects |
| 84 | | Syllabus links | | |
| 86-87 | <i>Identifying and defining</i> | Understanding the design situation | Read and comprehend the design situation and design problem and how they relate to the design brief. | <i>muffin healthy pizza</i> |
| 88-89 | | Factors affecting design and design criteria | Understand vocabulary and factors affecting design. | <i>healthy pizza</i> |
| 90-91 | | Aesthetic appeal | Learn about vocabulary related to aesthetic appeal and evaluate the aesthetic appeal of two meals. | |
| 92-93 | | Explaining and justifying design criteria | Present design decisions and support them with reasons or benefits. | <i>healthy pizza</i> |
| 94-95 | <i>Researching and planning</i> | 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. | <i>lunch box</i> |
| 96-97 | | 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. | <i>lunch box</i> |
| 98-99 | | Describing like a food technologist | Pack information into a sentence in an expanded noun group. | <i>lunch box</i> |
| 100-101 | | PMI chart | Complete a PMI chart about two healthy snacks. | <i>teenager snack</i> |
| 102-103 | | How to write a recipe | Learn how to write a recipe, especially the method steps including HOW to complete the step. | <i>banana caramel topping</i> |
| 104-105 | | How to write a recipe | Write the last two steps in the recipe using the model on the previous page. | <i>banana caramel topping</i> |
| 106-107 | | 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. | <i>lunch box</i> |
| 108-109 | | <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?' |
| 110-111 | <i>Testing and 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>healthy pizza</i> |
| 112-113 | | Explain and give evidence | Support evaluations with reasons and evidence related to design criteria. | <i>healthy pizza</i> |
| 114-115 | | 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. | <i>healthy pizza</i> |

Syllabus links

Technology 7-8 (2023)

Food and agricultural practices

Module 3.1 FOOD

Outcomes

TE4-SDP-01 explains relationships between sustainability, design and production

TE4-PDP-01 describes the practices and processes of designers and producers

TE4-DES-01 communicates and evaluates design ideas and solutions

TE4-PPM-01 applies processes in the planning, management and production of projects

Content

- Identifying and defining food and agricultural practices
- Identify the characteristics and properties of food, fibre and agricultural products
- Outline factors affecting the design of food and agricultural practice

Researching and planning ideas and solutions

- Apply critical and creative thinking to assess ideas for quality food and/or agricultural solutions
- Create written texts to document food production processes and/or agricultural practices

Producing and implementing processes, solutions and projects

- Document design processes when producing food and agricultural projects

Testing and evaluating food, tools, practices and technologies

- Evaluate how ingredient selection and preparation techniques enhance the nutritional value of food
- Justify the selection of equipment, tools, technologies and processes when developing food and/or agricultural solutions
- Use factors affecting design to evaluate the quality of food and/or agricultural solutions

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 factors affecting design.

Link to the design process

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

Researching
and
planning

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

| Factors affecting design | 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

→


Reason or benefit

I want to include a wrap 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.

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.

Design example

Design and create a healthy lunch box for a child.



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.

| Factors affecting design | 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 3.2

Agriculture sample pages



Contents

Focus area 3: Food and agricultural practices Module 3.2 Agriculture

| Page | Design process | Page title | Literacy skills Students learn to: | Design projects |
|---------|-----------------------------------|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| 116 | | Syllabus links | | |
| 118-119 | <i>Identifying and defining</i> | Design problem and factors affecting design | Read and comprehend the design problem and design brief. Match factors affecting design with criteria. | <i>vertical garden</i> |
| 120-121 | | Explaining and justifying design criteria | Present design decisions and support them with reasons or benefits. | <i>vertical garden</i> |
| 122-123 | <i>Researching and planning</i> | 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. | |
| 124-125 | | 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. | |
| 126-127 | | PMI chart | Complete a PMI chart for two designs of vertical gardens. | <i>vertical garden</i> |
| 128-129 | | Types of growing media | Read a descriptive report about types of growing media and fill in a table to summarise key points. | |
| 130-131 | | 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> |
| 133-133 | <i>Producing and implementing</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> |
| 134-135 | | 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> |
| 136-137 | <i>Testing and 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> |
| 138-139 | | 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

Technology 7-8 (2023)

Food and agricultural practices

Module 3.2 AGRICULTURE

Outcomes

TE4-SDP-01 explains relationships between sustainability, design and production

TE4-PDP-01 describes the practices and processes of designers and producers

TE4-DES-01 communicates and evaluates design ideas and solutions

TE4-PPM-01 applies processes in the planning, management and production of projects

Content

- Identifying and defining food and agricultural practices
- Identify the characteristics and properties of food, fibre and agricultural products
- Outline factors affecting the design of food and agricultural practice

Researching and planning ideas and solutions

- Apply critical and creative thinking to assess ideas for quality food and/or agricultural solutions
- Create written texts to document food production processes and/or agricultural practices

Producing and implementing processes, solutions and projects

- Document design processes when producing food and agricultural projects

Testing and evaluating food, tools, practices and technologies

- Evaluate how ingredient selection and preparation techniques enhance the nutritional value of food
- Justify the selection of equipment, tools, technologies and processes when developing food and/or agricultural solutions
- Use factors affecting design to evaluate the quality of food and/or agricultural solutions

Sample page

Describe food and agriculture industries Teacher page

Teaching suggestions

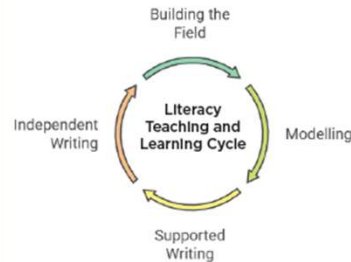
These activities can be a Teaching and Learning Cycle for literacy. The genre/text type is a Description. The overall purpose of the text is to describe an industry, even though two of the paragraph phases involve explaining.

Building the field: Teachers can find out what students know about the agriculture, fisheries and livestock industries. They may have learned about supply chains in Geography so teachers could check for prior knowledge.

Modelling: Teachers can guide students to read the phases (sub-sections) of the model paragraph about the agriculture industry. Students match the phase names to the paragraph parts. Identify cause and effect language. Fill in the flow chart showing the steps in the process of food manufacture and processing.

Supported writing: On the next page, students can work with a peer or group to complete the paragraph about the fisheries industry.

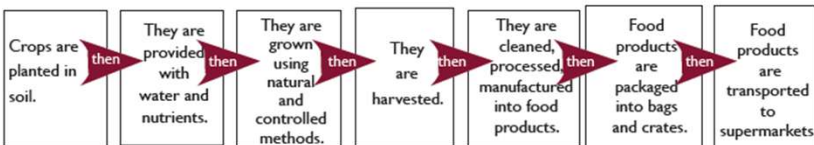
Independent writing: Students can work in a pair or independently to describe the livestock industry.



Answers

cause and effect language is in bold

| phase | jumbled paragraph parts |
|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Identify the industry | For example, wheat grown on farms in the New South Wales Riverina region is harvested by combine harvesters, milled into flour and other products. These are packaged and then distributed to shops and bakeries. |
| Explain how food is grown, harvested, manufactured, packaged and distributed | The design of agricultural practices is influenced by many factors including sustainability and finances. Sustainability is important because farmers must manage soil health and water use carefully in order to ensure land remains productive for future generations. Finances are also an important influence since farmers need to pay for equipment, seeds and workers while still making a profit from selling their products. |
| Example | Crops are planted in soil, provided with water and nutrients, and grown using natural and controlled methods such as irrigation and fertilisers. When the crops are fully grown, they are harvested. Then they are cleaned, processed or manufactured into food products. In the final stage, food products are packaged into bags or crates and transported to supermarkets and restaurants. |
| Outline two factors that affect practices in the industry | Agriculture is the industry that involves growing crops and plants for food, fibre and other products. |



Describe food and agriculture industries

These activities show you how to describe three food and agriculture industries: agriculture, fisheries and livestock.

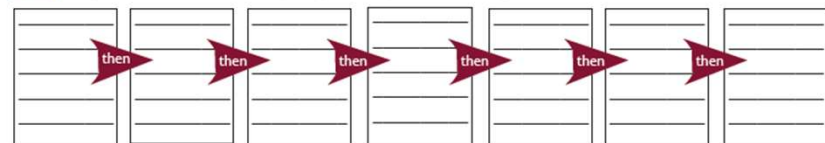


Right: A combine harvester harvesting wheat.

The paragraph below describes the agriculture industry but the phases (sub-sections) are jumbled. Draw a line to match each phase with the correct paragraph part.

| phase | jumbled paragraph parts |
|------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Identify the industry | For example, wheat grown on farms in the New South Wales Riverina region is harvested by combine harvesters, milled into flour and other products. These are packaged and then distributed to shops and bakeries. |
| Explain how food is grown, harvested, manufactured, packaged and distributed | The design of agricultural practices is influenced by many factors including sustainability and finances. Sustainability is important because farmers must manage soil health and water use carefully in order to ensure land remains productive for future generations. Finances are also an important influence since farmers need to pay for equipment, seeds and workers while still making a profit from selling their products. |
| Example | Crops are planted in soil, provided with water and nutrients, and grown using natural and controlled methods such as irrigation and fertilisers. When the crops are fully grown, they are harvested. Then they are cleaned, processed or manufactured into food products. In the final stage, food products are packaged into bags or crates and transported to supermarkets and restaurants. |
| Outline two factors that affect practices in the industry | Agriculture is the industry that involves growing crops and plants for food, fibre and other products. |

Explain the process of how food is grown and processed by adding the steps in the diagram below. You can group some processes together in the same box.



The final paragraph phase explains factors that affect practices in the industry. Find and highlight cause and effect language in the 'outline two factors' paragraph phase above. Cause and effect language can be found in the box below.

- factors affect is influenced by influence
- because since in order to

MODULE 4.1

Textiles sample pages



Contents

| Module 4.1 Textiles | | | | |
|---------------------|-----------------------------------|----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Page | Design process | Page title | Literacy skills Students learn to: | Design projects |
| 140 | | Syllabus links | | |
| 142-143 | <i>Identifying and defining</i> | Design problem and factors affecting design | Read and comprehend a design problem and brief. Understand vocabulary and factors affecting design. | <i>tote bag</i> |
| 144-145 | | Explaining and justifying design criteria | Choose and justify design criteria that would be suitable for different users. Support design decisions with a reason or benefit. | <i>apron</i> |
| 146-147 | <i>Researching and planning</i> | 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. | |
| 148-149 | | 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> |
| 150-151 | | 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> |
| 152-153 | | Describing like a designer | Pack information into a sentence in an expanded noun group. | <i>apron</i> |
| 154-155 | | PMI chart: pockets for aprons | Complete a PMI chart about two aprons for a chef. | <i>apron</i> |
| 156-157 | | 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> |
| 158-159 | <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> |
| 160-161 | <i>Testing and 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> |
| 162-163 | | 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

Technology 7-8 (2023)

Materials and production processes

Module 4.1 Textiles

Outcomes

TE4-SDP-01 explains relationships between sustainability, design and production

TE4-PDP-01 describes the practices and processes of designers and producers

TE4-MSD-01 explains how materials, systems and components contribute to solutions

TE4-DES-01 communicates and evaluates design ideas and solutions

TE4-PPM-01 applies processes in the planning, management and production of projects

Content

Identifying and defining materials and production processes

- Identify the characteristics and properties of materials
- Describe products and systems created by designers, producers and manufacturers
- Outline factors affecting the design of products and solutions

Researching and planning ideas and solutions

- Describe how the properties of materials and production techniques contribute to the quality of solutions
- Communicate the development of design ideas and solutions, using annotations

Producing and implementing processes, solutions and projects

- Document design processes when using materials and production technologies

Testing and evaluating tools, materials and technologies

- Evaluate ideas and solutions using written, visual, verbal or multimodal communication forms
- Justify the selection and use of a range of tools, materials, techniques and technologies
- Use factors affecting design to evaluate the quality of ideas and solutions

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:



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 | |
| Reasons | Preview the three 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. |
| General statement | Explain why it leads to waste | 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. |
| | 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. |
| General statement | 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 | since | so |
| | as a result | consequently | therefore |
| Verbs (processes or happenings) | caused | led to | resulted in |
| | results in | impacts | 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 | _____ | 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. |
| 1 | _____ | _____ |

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

| | | |
|---------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reasons | _____ | 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. |
| 2 | _____ | _____ |

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.

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

MODULE 4.2

Timber sample pages



Contents

Focus area 4: Materials and production processes Module 4.2 Timber

| Page | Design process | Page title | Literacy skills Students learn to: | Design projects |
|---------|-----------------------------------|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| 164 | | Syllabus links | | |
| 166-167 | <i>Identifying and defining</i> | Factors affecting design and design criteria | Match design criteria to definitions. Consider two design projects and answer questions about how design criteria apply differently to each project. | <i>desk organiser bird house</i> |
| 168-169 | <i>Researching and planning</i> | 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. | <i>bird house</i> |
| 170-171 | | 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. | <i>bird house</i> |
| 172-173 | | PMI chart | Complete a PMI chart for two designs of desk organisers. | <i>desk organiser</i> |
| 174-175 | | Types of timber joints | Read a descriptive report about types of timber joints and fill in a table to summarise benefits and disadvantages. | |
| 176-177 | | 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. | <i>bird house</i> |
| 178-179 | <i>Producing and implementing</i> | 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. | <i>bird house</i> |
| 180-181 | | 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. | <i>bird house</i> |
| 182-183 | <i>Testing and evaluating</i> | 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. | <i>desk organiser</i> |
| 184-185 | | 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. | <i>desk organiser</i> |

Syllabus links

Technology 7-8 (2023)

Materials and production processes

Module 4.1 Textiles

Outcomes

TE4-SDP-01 explains relationships between sustainability, design and production

TE4-PDP-01 describes the practices and processes of designers and producers

TE4-MSD-01 explains how materials, systems and components contribute to solutions

TE4-DES-01 communicates and evaluates design ideas and solutions

TE4-PPM-01 applies processes in the planning, management and production of projects

Content

Identifying and defining materials and production processes

- Identify the characteristics and properties of materials
- Describe products and systems created by designers, producers and manufacturers
- Outline factors affecting the design of products and solutions

Researching and planning ideas and solutions

- Describe how the properties of materials and production techniques contribute to the quality of solutions
- Communicate the development of design ideas and solutions, using annotations

Producing and implementing processes, solutions and projects

- Document design processes when using materials and production technologies

Testing and evaluating tools, materials and technologies

- Evaluate ideas and solutions using written, visual, verbal or multimodal communication forms
- Justify the selection and use of a range of tools, materials, techniques and technologies
- Use factors affecting design to evaluate the quality of ideas and solutions

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 factors affecting design. They also complete an evaluation paragraph using evaluative language.

Link to the design process

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



Answers

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

Answers

| evaluative language | factors affecting design | | | |
|------------------------|--------------------------|-----------|-----------------------|------------------|
| | 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.
evaluation reason

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.
reason evaluation

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.

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



| negative | positive |
|-------------|-----------|
| inefficient | efficient |
| | |
| | |
| | |
| | |
| | |
| | |



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

| evaluative language | factors affecting design | | | |
|------------------------|--------------------------|-----------|-----------------------|------------------|
| | 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 factors affecting design. 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.

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