Portfolio summary

This portfolio of student work shows that the student can describe competing considerations in the design of products, services and environments, taking into account sustainability (WS1, WS2, WS3). The student describes how design and technologies contribute to meeting present and future needs (WS3) and explains how the features of technologies impact on designed solutions for each of the prescribed technologies contexts (WS1, WS2, WS3).

The student can create designed solutions for each of the prescribed technologies contexts suitable for identified needs or opportunities (WS1, WS2, WS3). The student suggests criteria for success, including sustainability considerations, and uses these to evaluate their ideas and designed solutions (WS1, WS2, WS3). The student combines design ideas and communicates these to audiences using graphical representation techniques and technical terms (WS1, WS2, WS3). The student records project plans including production processes (WS2, WS3) and selects and uses appropriate technologies and techniques correctly and safely to produce designed solutions (WS2, WS3, WS4).

Work sample 1:
Design project: Gardening tool

Work sample summary

Students critiqued garden tools, designed for adults, and identified the issues they have with using them. They researched ergonomics and developments by designers of garden tools in shape, size and materials used. Students explained the issues they have with their selected tool(s) and produced designed solutions to address their garden tool critique. They presented their critiques and designed solutions to the class by means of an oral and a visual presentation. Students documented the design and development process.

The focus of this task was to design and produce a product for the technologies context materials and technologies specialisations.

Years 5 and 6 subject achievement standard

The parts of the achievement standard targeted in the assessment task are highlighted.

By the end of Year 6, students describe competing considerations in the design of products, services and environments, taking into account sustainability. They describe how design and technologies contribute to meeting present and future needs. Students explain how the features of technologies impact on designed solutions for each of the prescribed technologies contexts.

Students create designed solutions for each of the prescribed technologies contexts suitable for identified needs or opportunities. They suggest criteria for success, including sustainability considerations, and use these to evaluate their ideas and designed solutions. They combine design ideas and communicate these to audiences using graphical representation techniques and technical terms. Students record project plans including production processes. They select and use appropriate technologies and techniques correctly and safely to produce designed solutions.

Years 5 and 6 learning area achievement standard

The parts of the achievement standard targeted in the assessment task are highlighted.

By the end of Year 6, students explain how social, ethical, technical and sustainability considerations influence the design of solutions to meet a range of present and future needs. They explain how the features of technologies influence design decisions and how digital systems are connected to form networks.

Students describe a range of needs, opportunities or problems and define them in terms of functional requirements. They collect and validate data from a range of sources to assist in making judgements. Students generate and record design ideas for specified audiences using appropriate technical terms, and graphical and non-graphical representation techniques including algorithms. They plan, design, test, modify and create digital solutions that meet intended purposes including user interfaces and a visual program. Students plan and document processes and resources and safely produce designed solutions for each of the prescribed technologies contexts. They negotiate criteria for success, including sustainability considerations, and use these to judge the suitability of their ideas, solutions and processes. Students use ethical, social and technical protocols when collaborating, and creating and communicating ideas, information and solutions face-to-face and online.

Garden tool: Presentation

Hi my name my tool today is a spade the problem with a spade it can give you splints 1

The problem that we had last time we have fixed by putting a drink holder on the spade

The second problem with the splintess we have fixed by getting a meadle one 2

The third problem with it is it was to long but we can now make it shorter

BUT MY SPADE IS ONLY $15 NOMARLY $39

THANK YOU FOR LOOKEING AT MY GARDEN TOOL

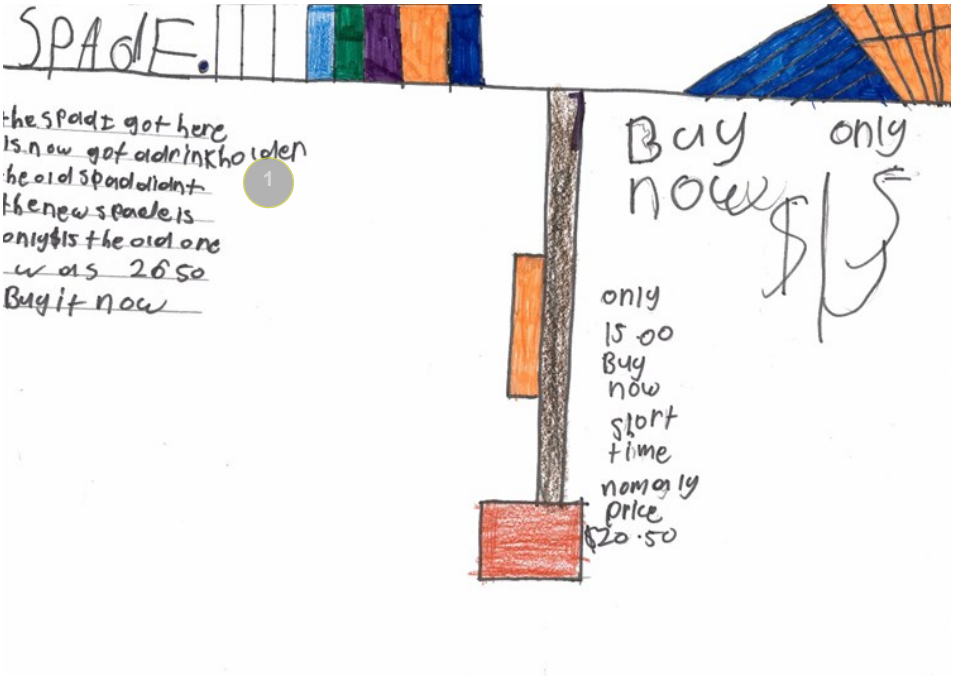
THE END

Annotations

Annotation 1
Identifies problems with existing product

Annotation 2
Suggests design ideas to resolve identified problems

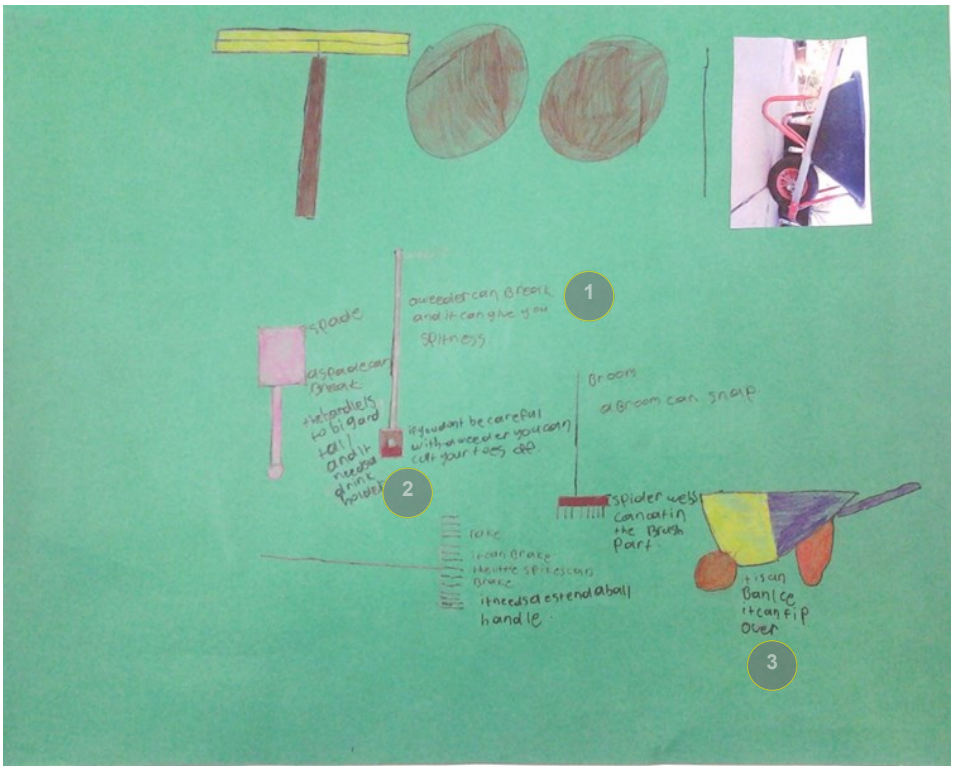
Garden tool: Promotional poster



Annotations

Annotation 1
Communicates a design idea in a persuasive poster with product drawing

Garden tool: Solution



Annotations

Annotation 1
Identifies problems users face using a range of tools

Annotation 2
Identifies a novel design feature

Annotation 3
Communicates information about tools

Work sample 2:
Design project: Automata

Work sample summary

Students investigated some of the key mechanical systems that are used and relied on in daily life, such as the muscles that move their own head, unlocking and opening a door, toys that move and mechanisms in the family car. They critiqued these key mechanical systems and then developed their own ideas for a toy with moving parts, that is, an automata. Students were explicitly taught some cardboard engineering techniques such as drawing, folding, cutting, scoring and gluing. The design task was to produce a moving toy showing the interrelationships of the chosen mechanical systems and recording modifications or redesigns of the mechanism(s) throughout the project. Students then considered how their device could be automated using electrical energy to control movement.

The focus of this task was to design and produce a product for the technologies context engineering principles and systems.

Years 5 and 6 subject achievement standard

The parts of the achievement standard targeted in the assessment task are highlighted.

By the end of Year 6, students describe competing considerations in the design of products, services and environments, taking into account sustainability. They describe how design and technologies contribute to meeting present and future needs. Students explain how the features of technologies impact on designed solutions for each of the prescribed technologies contexts.

Students create designed solutions for each of the prescribed technologies contexts suitable for identified needs or opportunities. They suggest criteria for success, including sustainability considerations, and use these to evaluate their ideas and designed solutions. They combine design ideas and communicate these to audiences using graphical representation techniques and technical terms. Students record project plans including production processes. They select and use appropriate technologies and techniques correctly and safely to produce designed solutions.

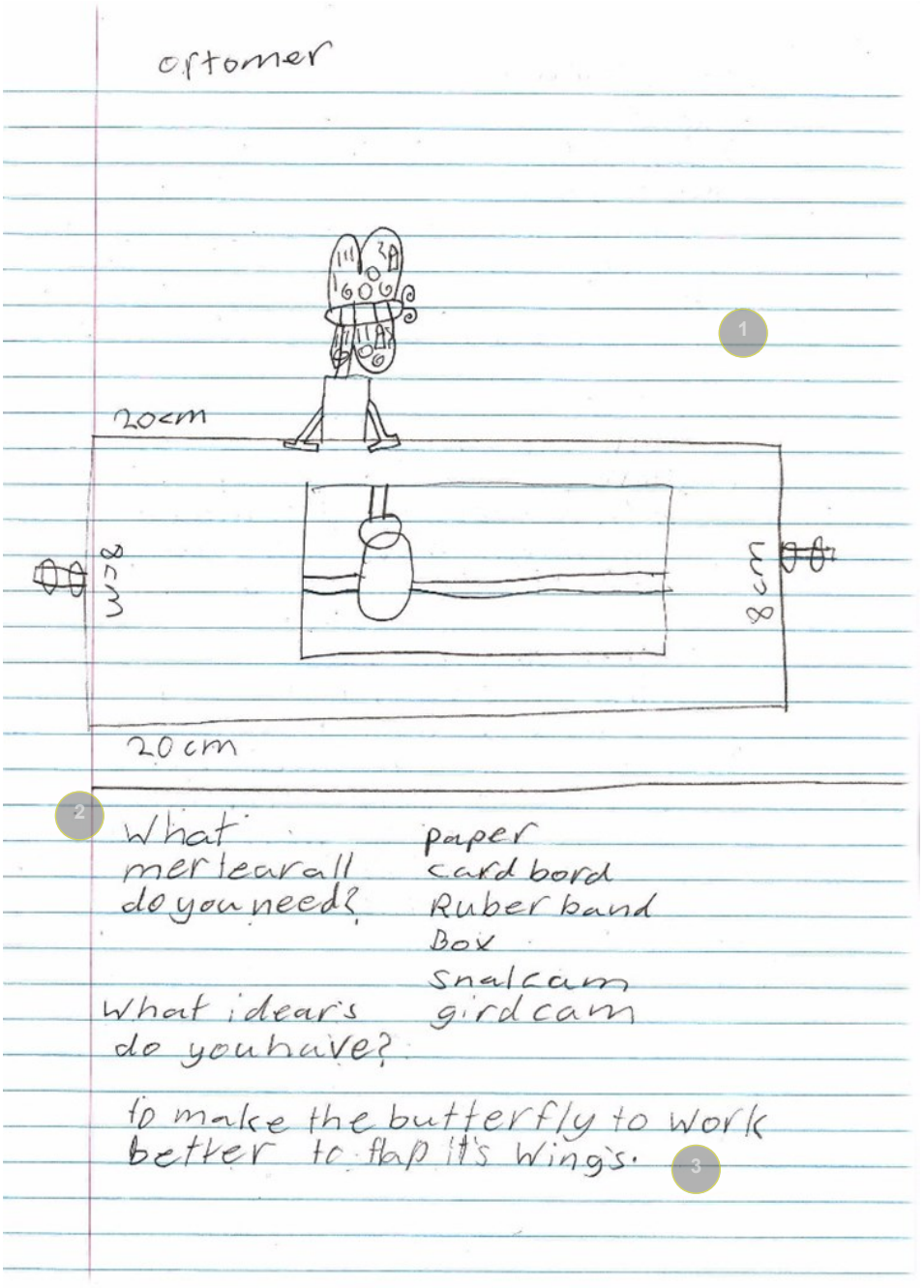
Years 5 and 6 learning area achievement standard

The parts of the achievement standard targeted in the assessment task are highlighted.

By the end of Year 6, students explain how social, ethical, technical and sustainability considerations influence the design of solutions to meet a range of present and future needs. They explain how the features of technologies influence design decisions and how digital systems are connected to form networks.

Students describe a range of needs, opportunities or problems and define them in terms of functional requirements. They collect and validate data from a range of sources to assist in making judgements. Students generate and record design ideas for specified audiences using appropriate technical terms, and graphical and non-graphical representation techniques including algorithms. They plan, design, test, modify and create digital solutions that meet intended purposes including user interfaces and a visual program. Students plan and document processes and resources and safely produce designed solutions for each of the prescribed technologies contexts. They negotiate criteria for success, including sustainability considerations, and use these to judge the suitability of their ideas, solutions and processes. Students use ethical, social and technical protocols when collaborating, and creating and communicating ideas, information and solutions face-to-face and online.

Design portfolio excerpts

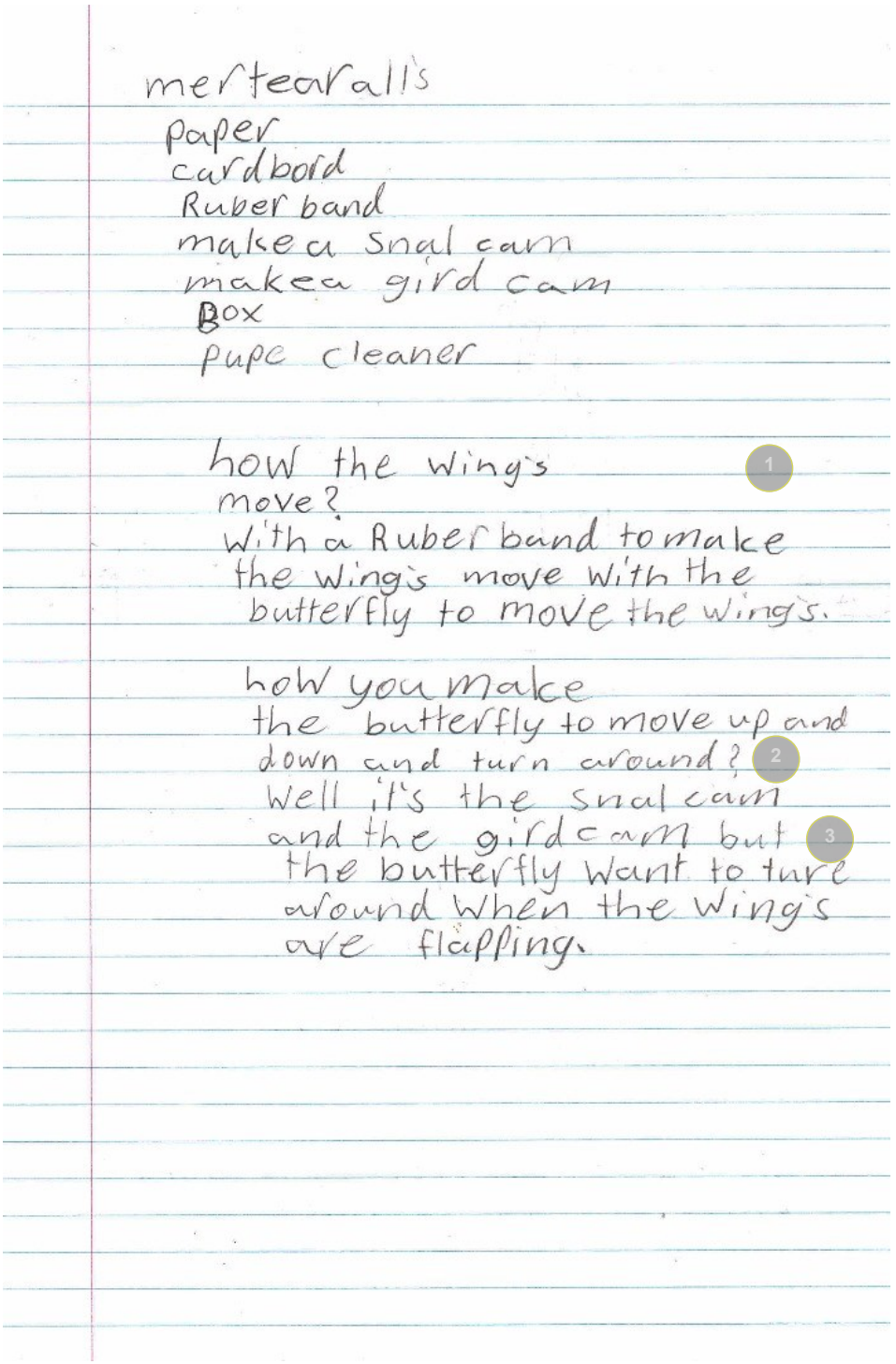


Annotations

Annotation 1
Develops design ideas for designed solution (automata) using drawings

Annotation 2
Plans the resources needed to make the automata

Annotation 3
Identifies the action the mechanical device will mimic (the movement of a butterfly)

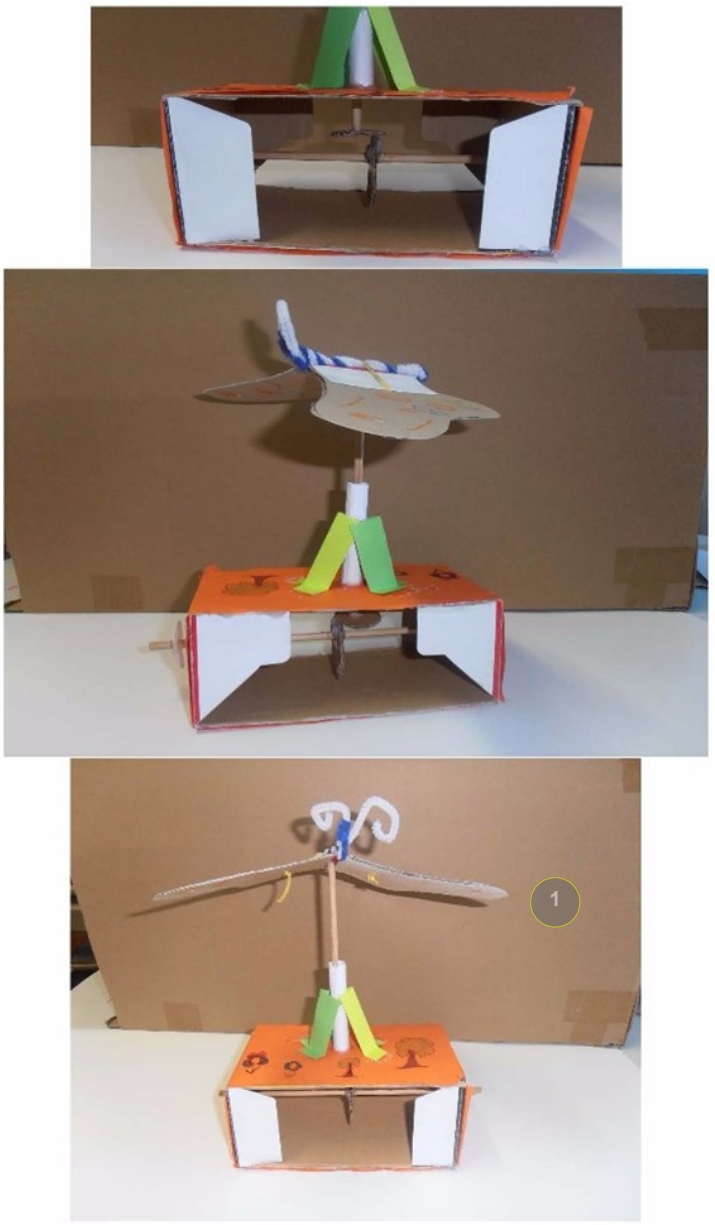


Annotations

Annotation 1
Explains how the action (wings moving) will be achieved

Annotation 2
Identifies the engineering mechanisms (cams) to be used to create movement

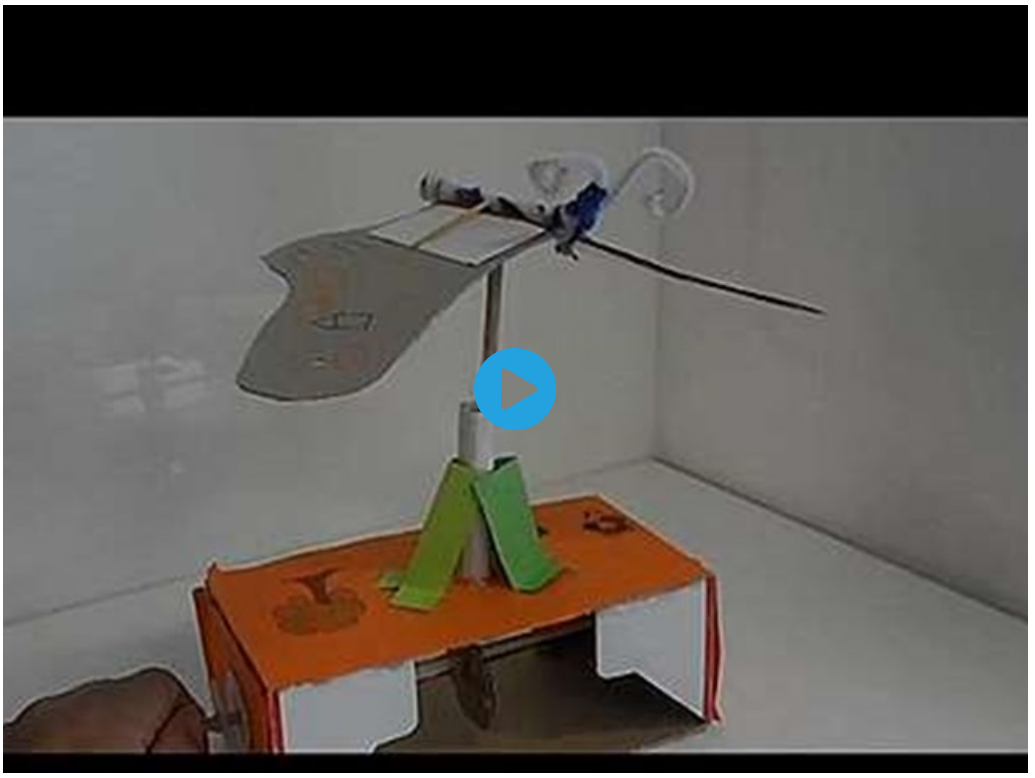
Annotation 3
Uses technical terminology correctly



Annotations

Annotation 1
Produces basic designed solution that satisfies the brief

Demonstration



Worksheet

Automatic automata

Automata is a type of mechanical device. What would happen if you used electrical energy to power the mechanical device?

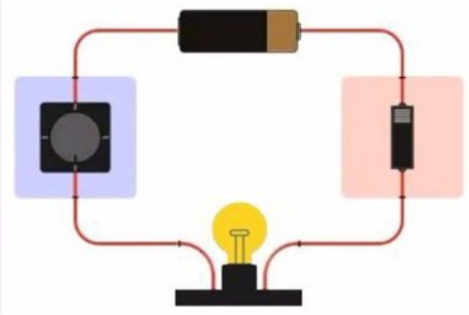
Mechanical device + electrical energy = Electromechanical device

Here's some facts:

- One use of an electrical circuit is to change electrical energy into energy of movement.
- Batteries **store** electrical energy for later use and **release** the energy when required in a closed circuit.
- Electrical motors **use** electrical energy to cause a shaft (axle) to move, that is, to turn around (rotate).
- Switches **close (complete) a circuit**, allowing electricity to flow through the wires **turning on devices** such as motors and lights.
- **Turning devices off** is done by **opening (breaking) a circuit** and stopping the flow of electricity.

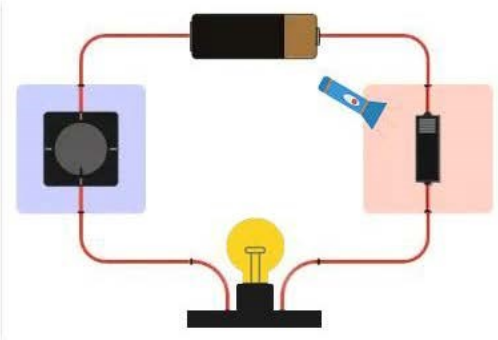
Manual switches

- **Manual switches** are used by people to **close and open circuits**, for example, when we turn on and off the lights for a room.
- The diagram below shows a battery, a switch, a lamp and a settings box so the light can be made brighter.



Making it automatic

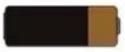
- Have you also noticed there are switches that are not turned on and off by people but that work **automatically**?
- A light sensitive 'sensor' can sense or tell when it is light and when it is dark. When it is dark it might close a circuit to turn on electric lights or electric devices and when it is light it might open a circuit to turn them off.
- Another example is a motion sensor. When someone walks past a house with a motion sensor light, the lights switch on.

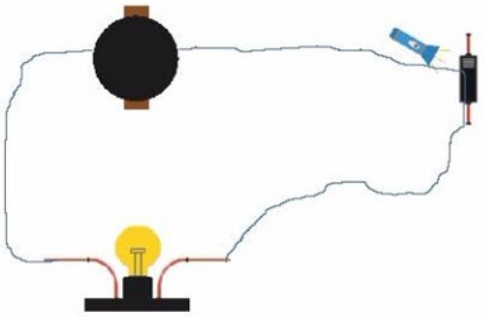


Motors can also be switched on and off with manual and automatic switches.

Activity

Select the images you need from the table below to form a circuit to power your automata so that it runs without human power, that is, it runs using a motor. Copy and drag the images and add lines to create a circuit. You may need to rotate the images to make a circuit.

Battery (9 volt) 	Manual switch 
Motor 	Light sensitive switch 
Your automata 	Lamp 



1

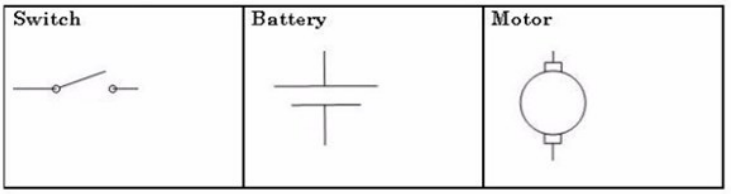
Annotations

Annotation 1
Demonstrates some understanding of electrical circuits

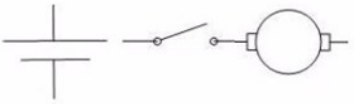
Extension activity

Another way to represent these circuit diagrams is to use symbols (electric circuit symbols).

Investigate how these diagrams are drawn. Using the symbols below to draw an open circuit that includes a battery, switch and motor.



1



Annotations

Annotation 1
Attempts to represent a circuit using symbols

Work sample 3:
Design project: Kitchen garden

Work sample summary

Students investigated the advantages of planting crops in season, or of adapting the environment to extend the life of plants. They investigated nutrient requirements for plants and optimal growing conditions. Students designed and planned a garden for food consumption for the school, considering a range of factors. They justified their decisions and presented their findings to the class. As part of the presentation, students discussed an improved layout for the existing school garden and made recommendations for change.

Students researched and produced a healthy snack for a specific dietary requirement. They described and demonstrated safety considerations when processing, preparing and presenting their product, and experimented with plating and presentation of the food for visual appeal using digital photographs.

The focus of this task was to design and produce an environment and a healthy food product for the technologies context food and fibre production/food specialisations.

Years 5 and 6 subject achievement standard

The parts of the achievement standard targeted in the assessment task are highlighted.

By the end of Year 6, students describe competing considerations in the design of products, services and environments, taking into account sustainability. They describe how design and technologies contribute to meeting present and future needs. Students explain how the features of technologies impact on designed solutions for each of the prescribed technologies contexts.

Students create designed solutions for each of the prescribed technologies contexts suitable for identified needs or opportunities. They suggest criteria for success, including sustainability considerations, and use these to evaluate their ideas and designed solutions. They combine design ideas and communicate these to audiences using graphical representation techniques and technical terms. Students record project plans including production processes. They select and use appropriate technologies and techniques correctly and safely to produce designed solutions.

Years 5 and 6 learning area achievement standard

The parts of the achievement standard targeted in the assessment task are highlighted.

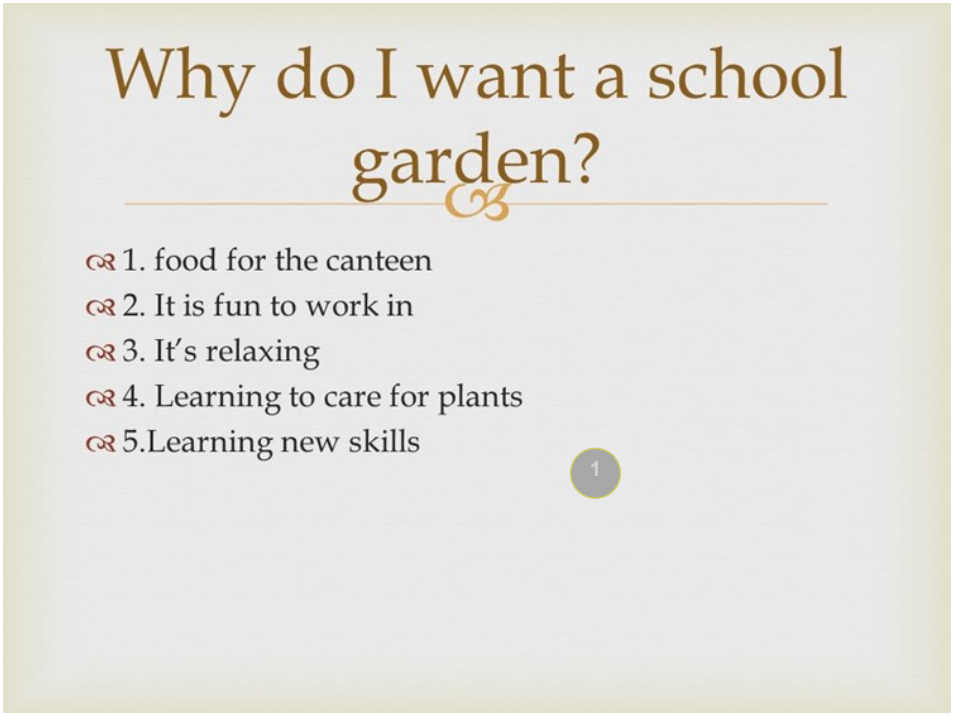
By the end of Year 6, students explain how social, ethical, technical and sustainability considerations influence the design of solutions to meet a range of present and future needs. They explain how the features of technologies influence design decisions and how digital systems are connected to form networks.

Students describe a range of needs, opportunities or problems and define them in terms of functional requirements. They collect and validate data from a range of sources to assist in making judgements. Students generate and record design ideas for specified audiences using appropriate technical terms, and graphical and non-graphical representation techniques including algorithms. They plan, design, test, modify and create digital solutions that meet intended purposes including user interfaces and a visual program. Students plan and document processes and resources and safely produce designed solutions for each of the prescribed technologies contexts. They negotiate criteria for success, including sustainability considerations, and use these to judge the suitability of their ideas, solutions and processes. Students use ethical, social and technical protocols when collaborating, and creating and communicating ideas, information and solutions face-to-face and online.

Presentation

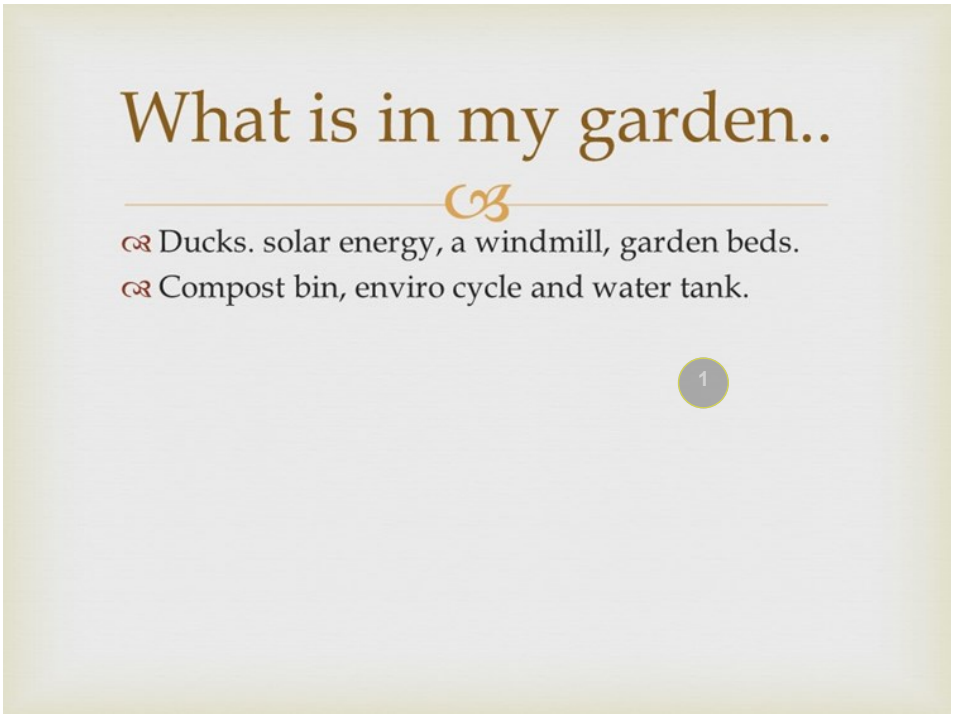
Annotations

Annotation 1
Identifies list of fruits and vegetables for the designed solution (garden)



Annotations

Annotation 1
Outlines reasons for a school garden



Annotations

Annotation 1
Identifies some design features for the designed solution (garden)

Recipe

Creating a dietary suitable snack

Number:

Chosen Food Intolerance: Egg intolerance 1

RECIPE

Blender
3 glasses
3 straws
Knife

6 banana, frozen, peeled
3 cup strawberries
4 cup pineapple juice
6 strawberry and a small slice of pineapple, to serve 2

1. Place banana strawberries pineapple juice in the jug of the blender.
2. Blend until smooth
3. Pour into a serving glass 3

How did your recipe cater for your chosen food intolerance?

Our group chose egg intolerance.

Our recipe catered for egg intolerance by not putting any egg into our recipe.

PHOTOS

The ingredients being put into the blender

The ingredients being blended in the blender

The smoothie being pored into the the glasses. 4

5

Annotations

Annotation 1
Identifies an opportunity (food intolerance) for a designed solution

Annotation 2
Identifies some equipment and ingredients required to complete the designed solution (make the fruit smoothie)

Annotation 3
Explains most steps of the procedure to produce the designed solution (fruit smoothie)

Annotation 4
Works collaboratively and safely when pouring liquids

Annotation 5
Prepares and serves a basic recipe

Work sample 4:
Video: Safe procedures

Work sample summary

Students filmed or photographed activities in which they were selecting technologies and applying safe procedures.

Years 5 and 6 subject achievement standard

The parts of the achievement standard targeted in the assessment task are highlighted.

By the end of Year 6, students describe competing considerations in the design of products, services and environments, taking into account sustainability. They describe how design and technologies contribute to meeting present and future needs. Students explain how the features of technologies impact on designed solutions for each of the prescribed technologies contexts.

Students create designed solutions for each of the prescribed technologies contexts suitable for identified needs or opportunities. They suggest criteria for success, including sustainability considerations, and use these to evaluate their ideas and designed solutions. They combine design ideas and communicate these to audiences using graphical representation techniques and technical terms. Students record project plans including production processes. They select and use appropriate technologies and techniques correctly and safely to produce designed solutions.

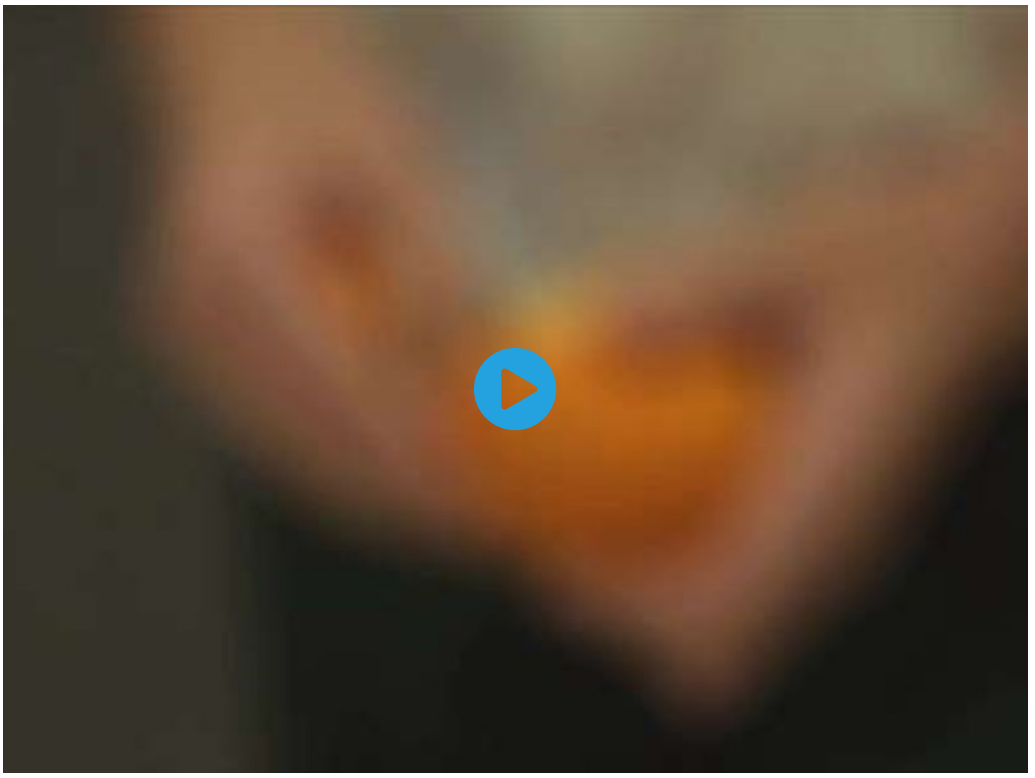
Years 5 and 6 learning area achievement standard

The parts of the achievement standard targeted in the assessment task are highlighted.

By the end of Year 6, students explain how social, ethical, technical and sustainability considerations influence the design of solutions to meet a range of present and future needs. They explain how the features of technologies influence design decisions and how digital systems are connected to form networks.

Students describe a range of needs, opportunities or problems and define them in terms of functional requirements. They collect and validate data from a range of sources to assist in making judgements. Students generate and record design ideas for specified audiences using appropriate technical terms, and graphical and non-graphical representation techniques including algorithms. They plan, design, test, modify and create digital solutions that meet intended purposes including user interfaces and a visual program. Students plan and document processes and resources and safely produce designed solutions for each of the prescribed technologies contexts. They negotiate criteria for success, including sustainability considerations, and use these to judge the suitability of their ideas, solutions and processes. Students use ethical, social and technical protocols when collaborating, and creating and communicating ideas, information and solutions face-to-face and online.

Safe procedures: Food



Safe procedures: Tools