

Design and Technologies - Below satisfactory - Years 5 and 6

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).

Design project: Gardening tool

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.

Achievement standard

Subject

Subject

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.

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 it was too long but we can now make it shorter

BUT MY SPADE IS ONLY \$15 NOMARLY \$39

THANK YOU FOR LOOKEING AT MY GARDEN TOOL

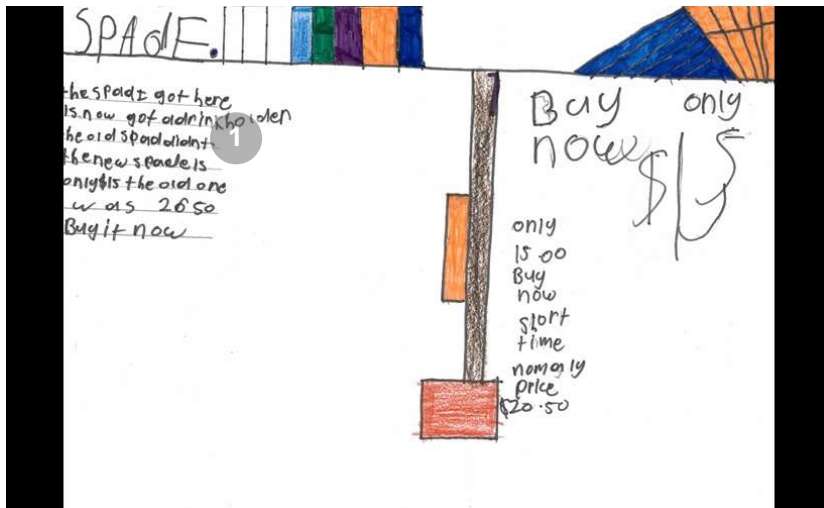
THE END

Annotations

1 Annotation 1
Identifies problems with existing product

2 Annotation 2
Suggests design ideas to resolve identified problems

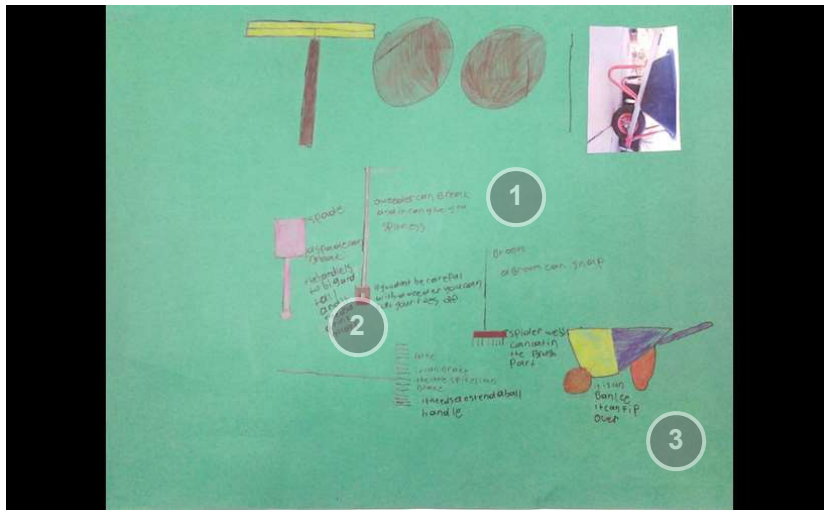
Garden tool: Promotional poster



Annotations

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

Garden tool: Solution



Annotations

- 1** **Annotation 1**
Identifies problems users face using a range of tools
- 2** **Annotation 2**
Identifies a novel design feature
- 3** **Annotation 3**
Communicates information about tools

Design project: Automata

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.

Achievement standard

Subject

Learning Area

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correctly and safely to produce designed solutions.

Design portfolio excerpts

customer

20cm

20cm

20cm

20cm

What materials do you need? paper, cardboard, rubber band, box

What ideas do you have? snail cam, gird cam

To make the butterfly work better to flap its wings.

Annotations

- 1 Annotation 1**
Develops design ideas for designed solution (automata) using drawings
- 2 Annotation 2**
Plans the resources needed to make the automata
- 3 Annotation 3**
Identifies the action the mechanical device will mimic (the movement of a butterfly)

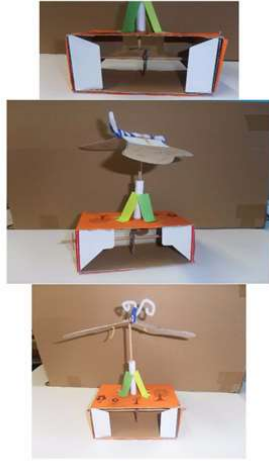
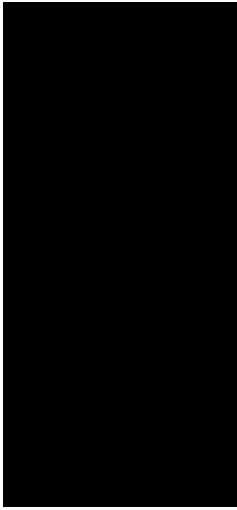
materials
paper
cardboard
Rubber band
make a snail cam
make a gird cam
Box
fuse cleaner

how the wings move?
with a Rubber band to make the wings move with the butterfly to move the wings.

how you make the butterfly to move up and down and turn around?
well its the snail cam and the gird cam but the butterfly want to turn around when the wings are flapping.

Annotations

- 1 Annotation 1**
Explains how the action (wings moving) will be achieved
- 2 Annotation 2**
Identifies the engineering mechanisms (cams) to be used to create movement
- 3 Annotation 3**
Uses technical terminology correctly



1



Annotations

- 1 **Annotation 1**
Produces basic designed solution that satisfies the brief

Demonstration

AC Design 56 WS2 B A2 Automata

Watch later Share

Worksheet

Automatic automata

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

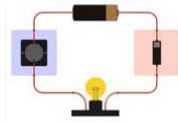
Mechanical device + electrical energy = Electromechanical device

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.

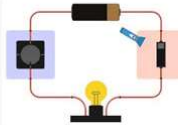
Manual switches

- **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.



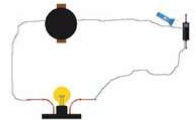
Motors can also be switched on and off with manual and automatic switches.



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.

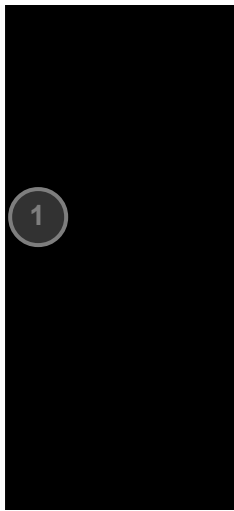
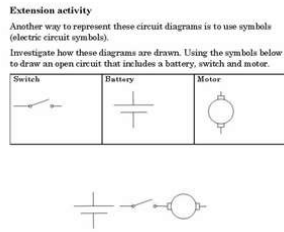
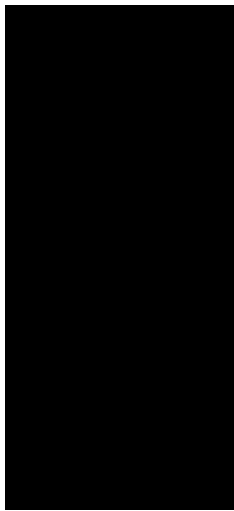
Battery (3 volt)	Manual switch
Motor	Light sensitive switch
Your automata	Lamp



Annotations

- 1 **Annotation 1**
Demonstrates some understanding of electrical circuits

1



Annotations

- 1 **Annotation 1**
Attempts to represent a circuit using symbols

Design project: Kitchen garden

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.

Achievement standard

Subject

Learning Area

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Presentation



Annotations

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



Why do I want a school garden?

- 1. food for the canteen
- 2. It is fun to work in
- 3. It's relaxing
- 4. Learning to care for plants
- 5. Learning new skills

1

Annotations

1 **Annotation 1**
Outlines reasons for a school garden

What is in my garden..

- Ducks, solar energy, a windmill, garden beds.
- Compost bin, enviro cycle and water tank.

1

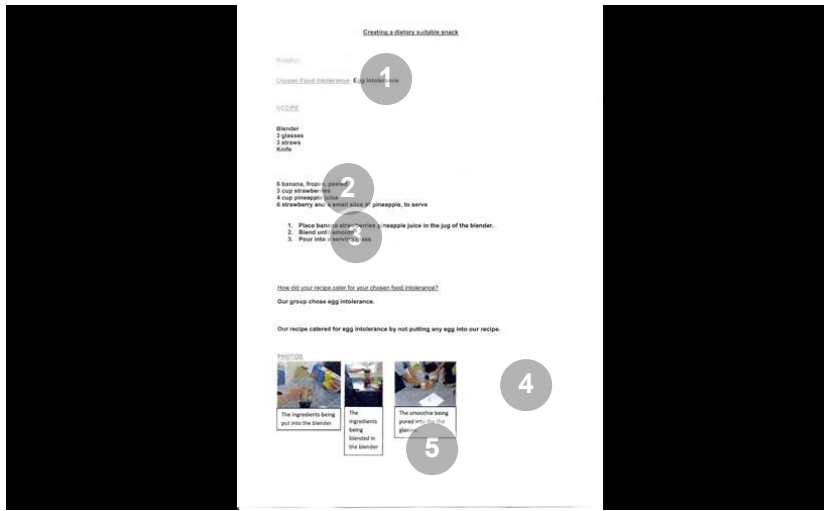
Annotations

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

Thanks for watching



Recipe



Annotations

- 1 Annotation 1**
Identifies an opportunity (food intolerance) for a designed solution
- 2 Annotation 2**
Identifies some equipment and ingredients required to complete the designed solution (make the fruit smoothie)
- 3 Annotation 3**
Explains most steps of the procedure to produce the designed solution (fruit smoothie)
- 4 Annotation 4**
Works collaboratively and safely when pouring liquids
- 5 Annotation 5**
Prepares and serves a basic recipe

Video: Safe procedures

Sample summary

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

Achievement standard

Subject

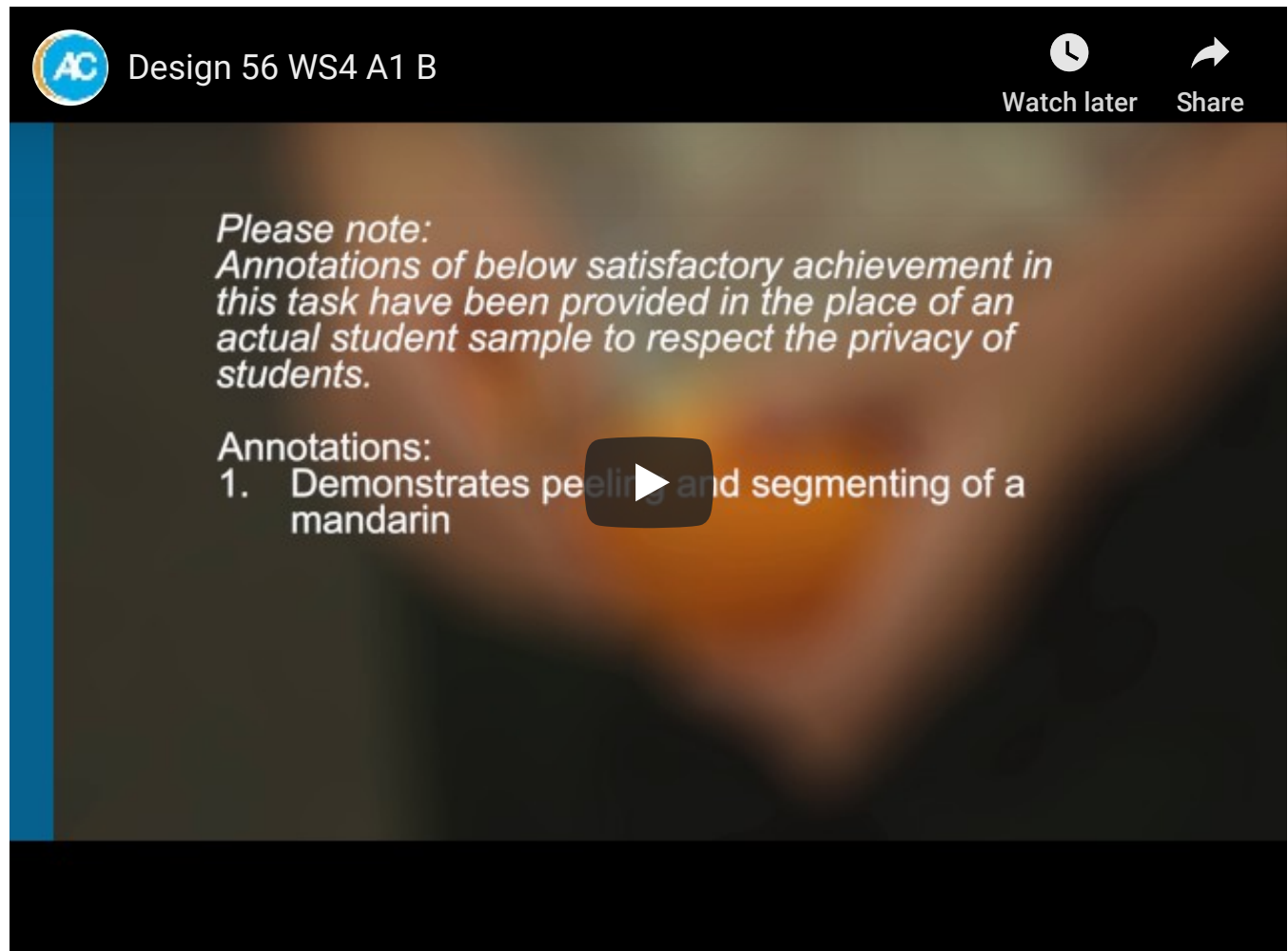
Learning Area

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Safe procedures: Food



The screenshot shows a video player interface. At the top left is the AC logo and the text 'Design 56 WS4 A1 B'. At the top right are icons for 'Watch later' and 'Share'. The main content area has a dark background with a blue vertical bar on the left. The text on the screen reads: 'Please note: Annotations of below satisfactory achievement in this task have been provided in the place of an actual student sample to respect the privacy of students.' Below this, under the heading 'Annotations:', there is a list item: '1. Demonstrates peeling and segmenting of a mandarin'. A play button icon is centered over the text.

Safe procedures: Tools



Design 56 WS4 A2 B



Watch later



Share

*Please note:
Annotations of below satisfactory achievement in
this task have been provided in the place of an
actual student sample to respect the privacy of
students.*

Annotations:

1. Demonstrates safe use of tools in most situations
2. Selects and uses tools, with assistance