

COLLINSVILLE STATE HIGH SCHOOL

Design and Technologies Education Plan

2022



		Term 1	Term 2	Term 3	Term 4
Design Technologies	7		<p>Introduction to Materials and Design</p> <p>In this unit, students analyse ways to produce designed solutions through selecting and combining characteristics and properties of materials, systems, components, tools and equipment.</p> <p>Students will apply these processes and production skills by:</p> <ul style="list-style-type: none"> • critiquing needs or opportunities • comparing different scenarios – impact, thermal, moisture, abrasion • generating design ideas and communicating them using appropriate technical terms and technologies including graphical representation techniques • producing a functional item by effectively selecting and safely using a range of materials, components, tools, equipment and techniques • collaborating and working individually throughout the process • using project management processes to coordinate production. <p>Note: during this unit students will be taught the basics of technical drawing.</p>		<p>Introduction to Materials and Design</p> <p>In this unit, students analyse ways to produce designed solutions through selecting and combining characteristics and properties of materials, systems, components, tools and equipment.</p> <p>Students will apply these processes and production skills by:</p> <ul style="list-style-type: none"> • critiquing needs or opportunities • comparing different scenarios – impact, thermal, moisture, abrasion • generating design ideas and communicating them using appropriate technical terms and technologies including graphical representation techniques • producing a functional item by effectively selecting and safely using a range of materials, components, tools, equipment and techniques • collaborating and working individually throughout the process • using project management processes to coordinate production. <p>Note: during this unit students will continue to build their knowledge and skills of technical drawing.</p>

Make it respond

In this unit, students analyse how motion, force and energy are used to manipulate and control systems when designing simple, engineered solutions. They will apply design thinking as they develop prototype dragster.

They will explore factors that impact on designs that meet community needs and explain the contribution of design and technology innovations and enterprise to society.

Students will apply these processes and production skills:

- investigating by:
 - analysing aerodynamics
 - testing relevant materials, components, tools and techniques
- generating and documenting design ideas for prototype dragster
- producing prototype dragster
- collaborating and working individually throughout the process
- using project management processes to coordinate production.

Note: during this unit students will continue to build their knowledge and skills of technical drawing.

Protect It

In this unit, students analyse ways to produce designed solutions through selecting and combining characteristics and properties of materials, systems, components, tools and equipment. They will apply design thinking as they develop a solution to protect a valued item from loss or damage.

They will explore factors, including sustainability, that impact on designs that meet community needs.

Students will apply these processes and production skills:

- investigating by:
 - critiquing needs or opportunities for protective solutions
 - comparing different protection need scenarios – impact, thermal, moisture, abrasion
 - comparing properties of materials, structures for particular purposes
- generating design ideas for a protective solution and communicating them using appropriate technical terms and technologies including graphical representation techniques producing a functional prototype by effectively selecting and safely using a range of materials, components, tools, equipment and techniques
- independently developing criteria for success including sustainability and evaluating design ideas, processes and solutions
- collaborating and working individually throughout the process
- using project management processes to coordinate production.

Note: during this unit students will continue to build their knowledge and skills of technical drawing.

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Materials and technologies specialisations (Metal and Acrylic)

In this unit, students investigate and make judgments on how the characteristics and properties of materials, systems, components, tools and equipment can be combined to create designed solutions. They critically analyse factors, including social, ethical and sustainability considerations, that impact on designed solutions for global preferred futures.

Students will apply design thinking as they design and make a solution that addresses a real-world need or opportunity by combining characteristics and properties of materials and technologies.

Students will apply these processes and production skills:

- investigating how emerging technologies and products are being fused together to meet the changing needs and opportunities of communities
- generating design ideas that consider key characteristics and properties of materials, systems, components, tools and equipment to enhance design features
- producing functional well designed products
- evaluating ideas, processes and solutions against comprehensive criteria for success including sustainability
- collaborating and working individually throughout the process
- managing by using digital technologies to develop project plans that include time, cost, risk and production processes.

Materials and technologies specialisations (Wood)

In this unit, students investigate and make judgments on how the characteristics and properties of materials, systems, components, tools and equipment can be combined to create designed solutions. They critically analyse factors, including social, ethical and sustainability considerations, that impact on designed solutions for global preferred futures.

Students will apply design thinking as they design and make a solution that addresses a real-world need or opportunity by combining characteristics and properties of materials and technologies.

Students will apply these processes and production skills:

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Engineering principles and systems

In this unit, students investigate and make judgments on how the characteristics and properties of materials are combined with force, motion and energy to create engineered solutions. They critically analyse factors, including social, ethical and sustainability considerations, that impact on designed solutions for global preferred futures.

Students will apply design thinking as they design a solar powered concept boat that applies engineering principles and emerging technologies to increase energy efficiency.

Students will apply these processes and production skills:

- investigating how vehicle designs are influenced by the characteristics of materials and evolve in response to preferred futures and the impact of emerging technologies including solar power
- generating ideas for improving the performance of a vehicle by considering characteristics and properties of materials, systems, components, tools and equipment
- producing a testable prototype of their vehicle and methods for testing, recording data and comparing designs
- evaluating ideas, processes and solutions, against comprehensive criteria for success including sustainability
- collaborating and working individually throughout the process
- managing by using digital technologies to develop project plans that include time, cost, risk and production processes.

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Balance and coverage of general capabilities and cross-curriculum priorities across 7–10

Key		Literacy Numeracy ICT capability Critical and creative thinking Ethical behaviour Personal and social capability Intercultural understanding Aboriginal and Torres Strait Islander histories and cultures Asia and Australia's engagement with Asia Sustainability																																								
		Term 1								Term 2								Term 3								Term 4																
Design Technologies	7										X	X	X	X	X	X	X			X												X	X	X	X	X	X	X			X	
	8	X	X	X	X	X	X	X		X												X	X	X	X	X	X	X			X											
	9/10 A	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X			X
	9/10 B	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X			X

Whole school assessment plan: 7–10 overview

	Term 1	Term 2	Term 3	Term 4
7		<p>Portfolio</p> <p>Students produce and evaluate a product by combining characteristics and properties of materials and technologies.</p> <p>Assessment will gather evidence of their ability to:</p> <ul style="list-style-type: none"> • explain factors that influence the design of their product to meet identified needs • create a product based on evaluation of needs • independently and safely produce product for intended need • apply project management skills to document processes. 		<p>Portfolio</p> <p>Students produce and evaluate a product by combining characteristics and properties of materials and technologies.</p> <p>Assessment will gather evidence of their ability to:</p> <ul style="list-style-type: none"> • explain factors that influence the design of their product to meet identified needs • create a product based on evaluation of needs • independently and safely produce product for intended need • apply project management skills to document processes.
8	<p>Portfolio</p> <p>Students design, produce and evaluate a product that protects an item of value from loss or damage by selecting and combining characteristics and properties of materials and technologies.</p> <p>Assessment will gather evidence of their ability to:</p> <ul style="list-style-type: none"> • explain factors that influence the design of their product to meet identified needs • explain the contribution of materials and technologies innovations and enterprise to society and how the features of these technologies impact the design of products • create a product based on evaluation of needs • independently and safely produce product for intended client • develop design ideas, including design and production processes, prioritising factors and technologies • apply project management skills to document processes. 		<p>Portfolio</p> <p>Students design a CO₂ dragster.</p> <p>Assessment will gather evidence of their ability to:</p> <ul style="list-style-type: none"> • explain the influence of competing factors in the design of prototype • generate and refine ideas to communicate to different audiences using a variety of graphical representations • independently and safely produce an CO₂ dragster • establish and use criteria for success to evaluate the suitability of design solutions and processes • use project plans to manage production processes. 	
9/ 10 23	<p>Portfolio (each term)</p> <p>Students design and make a solution that addresses a real-world need or opportunity by combining characteristics and properties of materials and technologies. Assessment will gather evidence of the student's ability to:</p> <ul style="list-style-type: none"> • explain how designers consider factors and features of technologies • investigate the appropriateness of technologies to realise preferred futures • critically evaluate needs or opportunities • develop design idea and justify decisions • select and use technologies skilfully and safely to produce a high quality product • establish criteria for success to evaluate ideas, designs and processes • apply sequenced production and management plans. 		<p>Portfolio (each term)</p> <p>Students design and make a solution that addresses a real-world need or opportunity by combining characteristics and properties of materials and technologies. Assessment will gather evidence of the student's ability to:</p> <ul style="list-style-type: none"> • critically evaluate needs or opportunities • develop design idea and justify decisions • select and use technologies skilfully and safely to produce a high quality product • establish criteria for success to evaluate ideas, designs and processes • apply sequenced production and management plans. 	

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Portfolio

Students design and make a solution that addresses a real-world need or opportunity by combining characteristics and properties of materials and technologies. Assessment will gather evidence of the student's ability to:

- explain how designers consider factors and features of technologies
- investigate the appropriateness of technologies to realise preferred futures
- critically evaluate needs or opportunities
- develop design idea and justify decisions
- select and use technologies skilfully and safely to produce a high-quality product
- establish criteria for success to evaluate ideas, designs and processes
- apply sequenced production and management plans.

(Letterbox)

Portfolio

Students design a solar powered concept boat that applies engineering principles and emerging technologies to increase energy efficiency. Assessment will gather evidence of the student's ability to:

- explain how factors including emerging technologies influence the designed solutions
- explain how sustainable design meets preferred futures in society
- investigate needs or opportunities
- create and communicate ideas
- independently and safely produce a designed solution
- use criteria for success, including sustainability, to judge the suitability of ideas, designed solutions and processes
- use and adapt project plans to manage production processes.


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- critically evaluate needs or opportunities
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- select and use technologies skilfully and safely to produce a high-quality product
- establish criteria for success to evaluate ideas, designs and processes
- apply sequenced production and management plans.

Timing of assessment across 7–10 by learning area

^ School reporting deadlines

 Systemic assessment

 School-based assessment

¥ The assessment provides an opportunity for planned consistency of teacher judgments activities

Week	Term 1										Term 2										Term 3										Term 4									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
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8	PAT							¥	^																				¥	^										
9A	PAT					NP		¥	^				N						¥	^									¥	^									¥	^
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