

Years 7–8 Design and Technologies Curriculum and assessment plan

Example A

Level description	Context and cohort considerations
<p>By the end of Year 8 students should have had the opportunity to create at least 3 types of designed solutions, and addressed each of the 4 technologies contexts:</p> <ul style="list-style-type: none"> • Engineering principles and systems • Food and fibre production • Food specialisations • Materials and technologies specialisations. <p>Students should have opportunities to design and produce products, services and environments. There are rich connections to other learning areas and subjects, for example Science, Geography and Health and Physical Education.</p> <p>Students investigate and select from a range of technologies — tools, equipment, processes, materials, systems and components. They consider how the characteristics and properties of technologies can be combined to design and produce sustainable designed solutions to problems for individuals and the community, considering ethical, economic, environmental and social sustainability factors. Students use innovation and enterprise skills with increasing independence and collaboration. They respond to feedback from others and evaluate design processes and designed solutions for preferred futures. Students investigate design and technologies professions and the contributions that each makes to society locally, regionally and globally through innovation and enterprise. They critique the advantages and disadvantages of design ideas and technologies.</p> <p>Using a range of technologies including a variety of graphical representation techniques to communicate, students generate and clarify ideas through sketching, modelling and technical drawing techniques (for example, perspective and orthogonal drawings). They use a range of symbols and technical terms in a variety of contexts to produce patterns; annotate concept sketches and drawings; and use scale, pictorial and aerial views to communicate design ideas and designed solutions.</p> <p>With greater autonomy, students identify the sequences and steps involved in design tasks. They develop plans to manage design tasks, including safe and responsible use of materials and tools, and apply their plans to successfully complete these tasks. Students establish safety procedures that minimise risk and manage a project with safety and efficiency when making designed solutions.</p>	<p>Design and Technologies is timetabled for one semester in Year 7 and one semester in Year 8, represented as four context-specific units across the band of learning. Lessons are scheduled twice a week. The knowledge and skills taught in each technologies context allow students to make informed decisions for subject selection in Years 9 and 10.</p> <p>The school's goal of encouraging students to become responsible citizens is embedded within the creation of designed solutions that respond to community needs or opportunities. An incursion with an industry representative from a social enterprise has been planned for Year 8 in Term 4.</p>

Unit 1 — Engineered solutions	Unit 2 — Managed environments	Unit 3 — Promoting healthy food in the digital age	Unit 4 — Sustainable social enterprise
<p>Timing: Term 3, Year 7 Duration: 10 weeks</p> <p>Technologies context: Engineering principles and systems</p> <p>In this unit, students learn about a range of traditional, contemporary and emerging engineered solutions. They consider how solutions are designed to meet community needs and investigate how designers use design thinking when they analyse needs and opportunities and evaluate impacts (positive, negative and unintended).</p> <p>Students collaboratively apply the design process to creatively adjust and improve a given design (e.g. windmill) to meet provided design criteria. They analyse how force, motion and energy are used to manipulate or control solutions.</p> <p>Students consider how engineered solutions can be used to meet sustainability goals. They independently design and collaboratively produce a prototype solution for transporting water from a water source (e.g. creek, dam) to meet a need in an off-grid environment (e.g. water livestock or vegetable garden, supply water to a campsite). They select materials, components, tools, equipment and processes to create designed solutions for this service.</p>	<p>Timing: Term 4, Year 7 Duration: 10 weeks</p> <p>Technologies context: Food and fibre production</p> <p>Sustainable managed environments provide new opportunities for food and fibre production. After analysing how food and fibre are produced in sustainable managed environments (e.g. greenhouses that reduce water and pesticide use) students select a managed environment to analyse how it has met needs, how its designers considered ethical and sustainability factors, how food and/or fibre were produced, and any impacts of innovations and technologies. Students then collaboratively consider how the solution could be adapted to a different context. They practise a range of graphical representation techniques (e.g. landscape plans, perspective drawings) by hand and using drawing software.</p> <p>Students use critical thinking to generate ideas and individually create a community garden design that addresses a need relating to flooding, pests or accessibility. They present their design solution to the class using a multimodal presentation that includes annotated graphical representations. They support their design solution by providing reasons and arguments for the choices they've made.</p>	<p>Timing: Term 3, Year 8 Duration: 10 weeks</p> <p>Technologies context: Food specialisations</p> <p>Many celebrity chefs and online influencers share innovative solutions for healthy meals to encourage different eating experiences. In this unit, students will analyse properties of foods and experiment with ingredients to determine preparation and presentation techniques to use when designing solutions for healthy eating.</p> <p>Students explore online platforms to source healthy meal recipes and food preparation techniques. They analyse healthy meal recipes and evaluate them against co-developed design criteria.</p> <p>Students select and adapt a healthy meal recipe. They capture images using digital tools while experimenting with the preparation and presentation of the meal. They communicate their recipe and encourage healthy eating experiences using a mock social media post or digital recording.</p>	<p>Timing: Term 4, Year 8 Duration: 10 weeks</p> <p>Technologies context: Materials and technologies specialisations</p> <p>Social entrepreneurs can have a positive impact on individuals and communities by creating innovative solutions to social, ethical and environmental needs. In this unit, students examine how a range of Australian social enterprises (e.g. Boomerang Bags, Substation33, Precious Plastic Melbourne) have generated positive solutions aimed at improving people's lives. Students explore how the characteristics of a range of materials, systems, components, tools and equipment (e.g. fabric durability, techniques for attaching components, the use of 3D printers to support rapid prototyping) can be combined to create upcycling solutions. They explore ways to manage projects and practise a range of relevant graphical representation techniques (e.g. sketches and mood boards).</p> <p>Students analyse the needs and opportunities for upcycling and explain key design decisions for an upcycling enterprise. They apply the design process to create and evaluate design ideas and prototype solution for an upcycled product.</p>

Unit 1 — Engineered solutions	Unit 2 — Managed environments	Unit 3 — Promoting healthy food in the digital age	Unit 4 — Sustainable social enterprise
They develop project plans and manage production processes collaboratively.			

	Unit 1 — Engineered solutions		Unit 2 — Managed environments		Unit 3 — Promoting healthy food in the digital age		Unit 4 — Sustainable social enterprise	
	Assessment 1 — Sustainable water transportation	Term/week	Assessment 2 — Community garden design	Term/week	Assessment 3 — Promoting healthy food in the digital age	Term/week	Assessment 4 — Upcycling for a sustainable future	Term/week
Assessment	<p>Description: Students collaboratively select an opportunity or need that can be met by a low-tech water transport solution in an off-grid environment or vegetable garden. They independently sketch a design and explain how force, motion and/or energy are used in their solution. They collaboratively select one of the group’s designs and document and manage the safe production of a prototype.</p> <p>Technique: Project</p> <p>Mode: Practical</p> <p>Conditions:</p> <ul style="list-style-type: none"> • 2 A3 pages or equivalent digital media that includes graphical representations with annotations • 200–400 words that may include graphical representations • designed solution as negotiated 	Term 3 Week 9	<p>Description: Students explain how the designers of a community garden have met community needs to sustainably produce food. They independently create a community garden design that addresses a need related to flooding, pests or accessibility. Students annotate their designed solution to communicate design features. They present their designed solution to the class using a multimodal presentation and justify their decisions.</p> <p>Technique: Investigation</p> <p>Mode: Multimodal</p> <p>Conditions:</p> <ul style="list-style-type: none"> • 3 A3 pages or equivalent digital media that includes graphical representations with annotations 	Term 4 Week 8	<p>Description: Students analyse needs and opportunities for sharing meal recipes and using food preparation and presentation techniques to encourage healthy eating. They select and adapt a recipe considering time, food preparation skills and presentation.</p> <p>They safely produce the recipe and capture images to support the recipe’s step-by-step instructions and the presentation of the finished meal. Students communicate their designed solution to encourage healthy eating using a mock social media post or digital recording including digital images.</p> <p>Technique: Project</p> <p>Mode: Multimodal</p> <p>Conditions:</p> <ul style="list-style-type: none"> • 200–400 words mock social media post that includes images or 2–3 minutes video 	Term 3 Week 9	<p>Description: Students analyse needs or opportunities for upcycling and explain design decisions for an existing upcycling enterprise. They independently create an upcycled product to meet a community need, e.g. repurposing fabrics to make durable pet toys, making self-watering planters from plastic bottles. They document design process decisions, including annotated sketches, in a project folio. Students create and follow a production plan to safely produce the upcycled product.</p> <p>Technique: Project</p> <p>Mode: Practical</p> <p>Conditions:</p> <ul style="list-style-type: none"> • 2–4 A3 pages or equivalent digital media that includes graphical representations with annotations • designed solution as negotiated 	Term 4 Week 8
Achievement standard	By the end of Year 8 students explain how people design, innovate and produce products, services and environments for preferred futures. For each of the 4 prescribed technologies contexts they explain how the features of technologies impact on design decisions, and create designed solutions based on analysis of needs or opportunities. Students create and adapt design ideas, processes and solutions, and justify their decisions against developed design criteria that include sustainability. They communicate design ideas and solutions to audiences using technical terms and graphical representation techniques, including using digital tools. They independently and collaboratively document and manage production processes to safely produce designed solutions.		By the end of Year 8 students explain how people design, innovate and produce products, services and environments for preferred futures. For each of the 4 prescribed technologies contexts they explain how the features of technologies impact on design decisions, and create designed solutions based on analysis of needs or opportunities. Students create and adapt design ideas, processes and solutions, and justify their decisions against developed design criteria that include sustainability. They communicate design ideas and solutions to audiences using technical terms and graphical representation techniques, including using digital tools. They independently and collaboratively document and manage production processes to safely produce designed solutions.		By the end of Year 8 students explain how people design, innovate and produce products, services and environments for preferred futures. For each of the 4 prescribed technologies contexts they explain how the features of technologies impact on design decisions, and create designed solutions based on analysis of needs or opportunities. Students create and adapt design ideas, processes and solutions, and justify their decisions against developed design criteria that include sustainability. They communicate design ideas and solutions to audiences using technical terms and graphical representation techniques, including using digital tools. They independently and collaboratively document and manage production processes to safely produce designed solutions.		By the end of Year 8 students explain how people design, innovate and produce products, services and environments for preferred futures. For each of the 4 prescribed technologies contexts they explain how the features of technologies impact on design decisions, and create designed solutions based on analysis of needs or opportunities. Students create and adapt design ideas, processes and solutions, and justify their decisions against developed design criteria that include sustainability. They communicate design ideas and solutions to audiences using technical terms and graphical representation techniques, including using digital tools. They independently and collaboratively document and manage production processes to safely produce designed solutions.	
Moderation	Conferencing: Refer to QCAA moderation advice on the QCAA website under the Assessment tab in the learning area.		Calibration: Refer to QCAA moderation advice on the QCAA website under the Assessment tab in the learning area.		Conferencing: Refer to QCAA moderation advice on the QCAA website under the Assessment tab in the learning area.		Calibration: Refer to QCAA moderation advice on the QCAA website under the Assessment tab in the learning area.	

Content descriptions	Units				Content descriptions	Units			
Knowledge and understanding	1	2	3	4	Processes and production skills	1	2	3	4
Technologies and society analyse how people in design and technologies occupations consider ethical and sustainability factors to design and produce products, services and environments AC9TDE8K01	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Investigating and defining analyse needs or opportunities for designing, and investigate and select materials, components, tools, equipment and processes to create designed solutions AC9TDE8P01	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
analyse the impact of innovation and the development of technologies on designed solutions for global preferred futures AC9TDE8K02	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Generating and designing generate, test, iterate and communicate design ideas, processes and solutions using technical terms and graphical representation techniques, including using digital tools AC9TDE8P02	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Technologies context: Engineering principles and systems analyse how force, motion and energy are used to manipulate and control engineered systems AC9TDE8K03	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Producing and implementing select, justify and use suitable materials, components, tools, equipment, skills and processes to safely make designed solutions AC9TDE8P03	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Technologies context: Food and fibre production analyse how food and fibre are produced in managed environments and how these can become sustainable AC9TDE8K04	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Evaluating develop design criteria collaboratively including sustainability to evaluate design ideas, processes and solutions AC9TDE8P04	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Technologies context: Food specialisations analyse how properties of foods determine preparation and presentation techniques when designing solutions for healthy eating AC9TDE8K05	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Collaborating and managing develop project plans to individually and collaboratively manage time, cost and production of designed solutions AC9TDE8P05	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Technologies context: Materials and technologies specialisations analyse how characteristics and properties of materials, systems, components, tools and equipment can be combined to create designed solutions AC9TDE8K06	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>					

General capabilities	Units			
	1	2	3	4
Critical and creative thinking	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Digital literacy	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Ethical understanding	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Intercultural understanding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Literacy	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Numeracy	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Personal and social capability	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Cross-curriculum priorities	Units			
	1	2	3	4
Aboriginal and Torres Strait Islander histories and cultures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Asia and Australia's engagement with Asia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sustainability	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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