



SAMPLE TEACHING AND LEARNING TEMPLATE

TECHNOLOGIES

DESIGN AND TECHNOLOGIES: MATERIALS AND TECHNOLOGIES

SPECIALISATIONS

YEAR 7

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Any resources such as texts, websites and so on that may be referred to in this document are provided as examples of resources that teachers can use to support their teaching and learning programs. Their inclusion does not imply that they are mandatory or that they are the only resources relevant to the learning area syllabus.

This document is an introduction for a sample plan with syllabus content for Year 7 Design and Technologies: Materials and technologies specialisations context. It provides suggested sequencing and timing for teaching the syllabus content, giving students the opportunity to study at least one of the contexts for Design and Technologies. For further details on curriculum requirements and available options, teachers should refer to the School Curriculum and Standards Authority's (the Authority's):

- *Policy Standards for Pre-primary to Year 10: Teaching, Assessing and Reporting*
- Table 1: *Western Australian Curriculum and Assessment Outline*: curriculum requirements and available options.

Schools may choose to teach the syllabus content for two hours per week for a semester, **or** one hour per week for the year. This *Year 7 Sample Teaching and Learning Template* provides an elaboration of syllabus content to support teachers in their understanding of Design and Technologies: Materials and technologies specialisations context. Teachers should develop suitable and relevant learning experiences for students, from which authentic assessment should be drawn.

A presentation (*Western Australian Curriculum Technologies Presentation*), which unpacks the process to develop this plan, is available on the Presentations page of the [Authority website](https://k10outline.scsa.wa.edu.au/home/resources/presentations) (<https://k10outline.scsa.wa.edu.au/home/resources/presentations>).

Year 7 Syllabus Content – Design and Technologies: Materials and technologies specialisations context

Content	Description
Technologies and society	Competing factors, including social, ethical and sustainability considerations, in the development of technologies Ways in which products, services and environments evolve locally, regionally and globally
Materials and technologies specialisations	Material and technology decisions and processes influence the selection and combination of materials, systems, components, tools and equipment
Investigating and defining	Define and break down a given task, identifying the purpose Consider components/resources to develop solutions, identifying constraints
Designing	Design, develop, review and communicate design ideas, plans and processes within a given context, using a range of techniques, appropriate technical terms and technology Follow a plan designed to solve a problem, using a sequence of steps
Producing and implementing	Safely make solutions using a range of components, equipment and techniques
Evaluating	Independently apply given contextual criteria to evaluate design processes and solutions
Collaborating and managing	Work independently, and collaboratively when required, to plan, develop and communicate ideas and information, using management processes

Year Level Description

Learning in Design and Technologies builds on concepts, skills and processes developed in earlier years, and teachers will revisit, strengthen and extend these as needed.

In Year 7, students have opportunities to learn about technologies in society at least once in the following technologies contexts: Engineering principles and systems; Food and fibre production; Food specialisations; and Materials and technologies specialisations. Students are provided with opportunities to design and produce products, services and environments.

Students have opportunities to select from a range of technologies, materials, components, tools and equipment. They consider the ways characteristics and properties of technologies can be combined to design and produce sustainable solutions. They develop strategies which enable them to consider society and ethics; social, ethical and sustainability factors. Students' use of creativity, innovation and enterprise skills is encouraged to increase independence and collaboration.

Students are given opportunities to respond to feedback from others and evaluate their design processes and solutions. They investigate design and technology solutions and the implications for each on society, locally, regionally and globally. Students develop their techniques for evaluating the advantages and disadvantages of design ideas.

Students have opportunities to engage with a range of technologies, including a variety of graphical representation techniques to communicate ideas. Students generate and clarify ideas through sketching, modelling and perspective drawings.

Students identify the increasingly complex sequences and steps involved in design tasks. They develop plans to manage design tasks, including safe and responsible use of materials and tools to successfully complete design tasks.

Year 7 Learning Area: Technologies – Design and Technologies (context: Materials and technologies specialisations)

Year 7 Achievement Standard

At Standard, students outline ways in which products, services and environments evolve locally, regionally and globally and recognise competing factors, including social, ethical and sustainability in the development of technologies. In Engineering principles and systems, students identify the use of motion, force and energy to manipulate and to control electromechanical and mechanical systems. In Food and fibre production, students identify components of food and fibre production systems including key features of their design. In Food specialisations, students identify nutritional values and physical properties of food to determine preparation techniques and presentation. In Materials and technologies specialisations, students identify how the selection of material and technology process is influenced by the combination of materials, systems, components, tools and equipment.

With all Design and Technologies contexts, students develop solutions and identify the purpose for a given task by considering constraints and components/resources. Students use a range of techniques, appropriate technical terms and technologies to design, develop, review and communicate design ideas, plans and processes. They follow sequenced steps to a problem-solving plan. Students apply safe procedures to make solutions, using a range of components, equipment and techniques. They apply given contextual criteria to independently evaluate design processes and solutions. Students work independently, and collaboratively, to plan, develop and communicate ideas and information, when using management processes.

Weeks	Syllabus content	Content unpacked	Possible learning experiences
1–2	<p>Investigating and defining Define and break down a given task, identifying the purpose</p> <p>Consider components/resources to develop solutions, identifying constraints</p> <p>Technologies and society Competing factors, including social, ethical and sustainability considerations, in the development of technologies</p> <p>Ways in which products, services and environments evolve locally, regionally and globally</p>	<ul style="list-style-type: none"> • Given task may include production of an individual product, such as: <ul style="list-style-type: none"> ▪ a storage box, novelty toy, jigsaw puzzle, carry bag, heat/cold pack, acrylic picture frame/stand, hot-pot trivet etc. • Break down the given task: <ul style="list-style-type: none"> ▪ efficiently defines the purpose ▪ consider and list appropriate components ▪ consider and list resources required to develop solution, i.e. the product and its end use. • Describe constraints, such as: <ul style="list-style-type: none"> ▪ materials from given list, including required number of pre-sized components ▪ availability of tools (for cutting, holding etc.), specialised equipment (for measurement etc.) and skills to operate machines ▪ needs of the consumer ▪ time frame ▪ cost. • Identify competing factors, such as: <ul style="list-style-type: none"> ▪ social factors – use of product in various local community settings, collection of individual products for a local group, shared development of a series of products (theme) ▪ ethical factors, such as logos, colours, religious symbols, offensive shapes ▪ sustainable use of materials, limit wastage, re-use of components ▪ use of sustainable materials, such as polar fleece (recycled polyester). • Explain ways in which a product may evolve locally, such as: <ul style="list-style-type: none"> ▪ donate/adapt to assist others in the community ▪ proximity of resources, knowledge and skilled personnel/community members ▪ cost of materials. 	

Weeks	Syllabus content	Content unpacked	Possible learning experiences
3–5	<p>Designing Design, develop, review and communicate design ideas, plans and processes within a given context, using a range of techniques, appropriate technical terms and technology</p> <p>Follow a plan designed to solve a problem, using a sequence of steps</p> <p>Materials and technologies specialisations Material and technology decisions and processes influence the selection and combination of materials, systems, components, tools and equipment</p>	<ul style="list-style-type: none"> • Design development: <ul style="list-style-type: none"> ▪ ideas – inspiration prompts/stimuli, origins, comprehensive ideas, shape, size, colour combinations, themes, purpose, end use, available materials, consider range of techniques etc. ▪ plans – line drawings, sketches, illustrations, software generated images, various views, annotate appropriate technical terms etc. ▪ processes – break down given outline of sequence of steps, use a range of appropriate technologies, such as tools, equipment, machines etc. • Review and clearly communicate: <ul style="list-style-type: none"> ▪ design ideas – prioritise, rank ideas, reflect on possibilities, reasons for choice, validate selection etc. ▪ plans – sketches/drawings/illustrations, detailed, annotated, appropriate use of technical terms etc. ▪ processes – follow a logical sequence of steps, problem-solve, consider modifications, appropriate use of technology etc. • Sequence of steps: <ul style="list-style-type: none"> ▪ guided by the plans (design ideas, sketches etc.) to create the product ▪ follow the logical sequence of steps ▪ problem-solve – consider and implement modifications, where necessary. • For the given task, consider influences on: <ul style="list-style-type: none"> ▪ materials selection – appropriateness for end use (purpose), function, aesthetics, durability, cost etc. ▪ technology decisions – appropriate for skill of the developer, operator skills, availability, alternative/substitute technology, consider construction method for specific section/piece, for example, process for joining materials ▪ processes – prescribed method, break down given step-by-step procedure, identify potential difficulty or skill development need ▪ combination of materials – for aesthetics (colour, theme, fashion etc.), strength/durability, reduces costs, adds interest and impacts on production process ▪ systems – appropriate break down of step-by-step procedures, method, techniques, procedure organisation, coordinate use of tools, equipment etc. ▪ components – appropriate for final product, ease of use, substitute part, element, section or piece etc. ▪ tools – correct terminology, safe use, storage, maintenance etc. ▪ equipment – follow correct procedure for safe preparation, operation, emergency, cleaning, storage and maintenance. 	

Weeks	Syllabus content	Content unpacked	Possible learning experiences
6–8	<p>Producing and implementing Safely make solutions using a range of components, equipment and techniques</p> <p>Collaborating and managing Work independently, and collaboratively when required, to plan, develop and communicate ideas and information, using management processes</p>	<ul style="list-style-type: none"> • Safely make solutions, use a range of: <ul style="list-style-type: none"> ▪ components – materials list, aware of quality measures, pre-fabricated, terminology to identify parts, elements, sections or pieces ▪ equipment – tools, utensils suitable for given task ▪ techniques – risk assessment, including method of use, systems for safety, practice specific skill development, rehearse procedure ▪ select and consistently apply safe procedures for the scheduled production plan, timeline and documents progress, such as notes and images. • Work independently to: <ul style="list-style-type: none"> ▪ plan ▪ develop ▪ communicate ideas. • Work collaboratively to: <ul style="list-style-type: none"> ▪ plan ▪ develop ▪ communicate ideas and information. • Discuss management processes, such as: <ul style="list-style-type: none"> ▪ planning – setting goals and decision-making ▪ organising – resources, materials, sequencing and time ▪ evaluating – compare and communicate performance against established criteria. 	
9–10	<p>Evaluating Independently apply given contextual criteria to evaluate design processes and solutions</p>	<ul style="list-style-type: none"> • Given contextual criteria, consider: <ul style="list-style-type: none"> ▪ purpose, end use, background, appropriate for intended product design ▪ standard, measure, conditions ▪ independent application of evaluation criteria. • Evaluate: <ul style="list-style-type: none"> ▪ design process – modifications in design, plans (drawings etc.), sequence of steps ▪ solution – suitability for end use/purpose, production of individual product (refer to notes and/or images of any modifications). 	