Years 3 and 4 standard elaborations — Australian Curriculum: Design and Technologies

Purpose

The standard elaborations (SEs) provide additional clarity when using the Australian Curriculum achievement standard to make judgments on a five-point scale. They can be used as a tool for:

- making consistent and comparable judgments about the evidence of learning in a folio of student work
- developing task-specific standards for individual assessment tasks.

Structure

The SEs are developed using the **Australian Curriculum achievement standard**. The Design and Technologies achievement standard describes the learning expected of students at each band. Teachers use the achievement standard during and at the end of a period of teaching to make on-balance judgments about the quality of learning students demonstrate.

In Queensland the achievement standard represents the **C standard** — a sound level of knowledge and understanding of the content, and application of skills. The SEs are presented in a **matrix**. The discernible differences or degrees of quality associated with the five-point scale are highlighted to identify the characteristics of student work on which teacher judgments are made. Terms are described in the Notes section following the matrix.

Years 3 and 4 Australian Curriculum: Design and Technologies achievement standard
By the end of Year 4, students explain how products, services and environments are designed to best meet needs of communities and their environments. They describe contributions of people in design and technologies occupations. Students describe how the features of technologies can be used to produce designed solutions for each of the prescribed technologies contexts.
Students create designed solutions for each of the prescribed technologies contexts. They explain needs or opportunities and evaluate ideas and designed solutions against identified criteria for success, including environmental sustainability considerations. They develop and expand design ideas and communicate these using models and drawings including annotations and symbols. Students plan and sequence major steps in design and production. They identify appropriate technologies and techniques and demonstrate safe work practices when producing designed solutions.

Source	Australian Curriculum, Assessment and Reporting Authority (ACARA), *Australian Curriculum Version 8 Design and Technologies for Foundation–10*, www.australiancurriculum.edu.au/f-10-curriculum/technologies/design-and-technologies

For all Queensland schools

Years 3 and 4 Design and Technologies standard elaborations

		A	B	C	D	E
		The folio of a student's work has the following characteristics:				
Knowledge and understanding	**Technologies and society**	<u>thorough</u> explanation of how products, services and environments are designed to best meet needs of communities and their environments	<u>informed</u> explanation of how products, services and environments are designed to best meet needs of communities and their environments	explanation of how products, services and environments are designed to best meet needs of communities and their environments	<u>description</u> of how products, services and environments are designed to best meet needs of communities and their environments	<u>statements about how</u> products, services and environments are designed to meet needs of communities and their environments
		<u>thorough</u> description of contributions of people in design and technologies occupations	<u>informed</u> description of contributions of people in design and technologies occupations	description of contributions of people in design and technologies occupations	<u>identification</u> of contributions of people in design and technologies occupations	<u>statements about</u> people in design and technologies occupations
	Technologies contexts	<u>thorough</u> description of how the features of technologies can be used to produce designed solutions for each of the prescribed technologies contexts	<u>informed</u> description of how the features of technologies can be used to produce designed solutions for each of the prescribed technologies contexts	description of how the features of technologies can be used to produce designed solutions for each of the prescribed technologies contexts	<u>identification</u> of features of technologies used to produce designed solutions for each of the prescribed technologies contexts	<u>statements about</u> the technologies used to produce designed solutions for each of the prescribed technologies contexts

		A	**B**	**C**	**D**	**E**
Processes and production skills	**Investigating and defining**	comprehensive explanation of needs or opportunities for each of the prescribed technologies contexts	detailed explanation of needs or opportunities for each of the prescribed technologies contexts	explanation of needs or opportunities for each of the prescribed technologies contexts	description of needs or opportunities for each of the prescribed technologies contexts	statement about needs or opportunities for each of the prescribed technologies contexts
	Generating and designing	considered development and expansion of design ideas	informed development and expansion of design ideas	development and expansion of design ideas	partial development and expansion of design ideas	fragmented expansion of given design ideas
		thorough and effective communication of design ideas using models and drawings including annotations and symbols	effective communication of design ideas using models and drawings including annotations and symbols	communication of design ideas using models and drawings including annotations and symbols	partial communication of design ideas using aspects of models and partially labelled drawings	fragmented communication of design ideas using aspects of models and drawings
	Producing and implementing	proficient production of designed solutions: • demonstrating safe work practices • identifying appropriate technologies and techniques	effective production of designed solutions: • demonstrating safe work practices • identifying appropriate technologies and techniques	production of designed solutions: • demonstrating safe work practices • identifying appropriate technologies and techniques	partial production of designed solutions: • demonstrating safe work practices • identifying technologies and techniques	guided production of designed solutions: • demonstrating safe work practices • identifying aspects of technologies and techniques
	Evaluating	considered evaluation of ideas and designed solutions against identified criteria for success, including environmental sustainability considerations	informed evaluation of ideas and designed solutions against identified criteria for success, including environmental sustainability considerations	evaluation of ideas and designed solutions against identified criteria for success, including environmental sustainability considerations	explanation of ideas and designed solutions against identified criteria for success, including aspects of environmental sustainability considerations	statements about ideas and designed solutions against identified criteria for success
	Collaborating and managing	considered planning and comprehensive sequencing of major steps in design and production	informed planning and detailed sequencing of major steps in design and production	planning and sequencing of major steps in design and production	partial planning and partial sequencing of steps in design and production	fragmented planning and fragmented steps in design and production

Key	shading emphasises the qualities that discriminate between the A–E descriptors

Notes

Australian Curriculum common dimensions

The SEs describe the qualities of achievement in the two dimensions common to all Australian Curriculum learning area achievement standards — understanding and skills.

Dimension	Description
understanding	the concepts underpinning and connecting knowledge in a learning area, related to a student's ability to appropriately select and apply knowledge to solve problems in that learning area
skills	the specific techniques, strategies and processes in a learning area

Terms used in Years 3 and 4 Design and Technologies SEs

These terms clarify the descriptors in the Years 3 and 4 Design and Technologies SEs. Definitions are drawn from the ACARA Australian Curriculum Technologies glossary (www.australiancurriculum.edu.au/f-10-curriculum/technologies/glossary) and from other sources to ensure consistent understanding.

Term	Description
apply; **applying**	use, utilise or employ in a particular situation
appropriate	fitting, suitable to the context
aspects	particular parts or features
clear	easy to perceive, understand, or interpret; without ambiguity
collaborating and managing (**design process**)	students learn to work collaboratively and to manage time and other resources to effectively create designed solutions; in Years 3 and 4, students: • work individually and collaboratively • plan a sequence of production steps when making designed solutions individually and collaboratively
communicate; **communication**	conveying information or ideas to others through appropriate representations, text types and modes; in Design and Technologies, *communicate* means sharing of information and design ideas; includes using graphical representation techniques (e.g. drawing, sketching and modelling) to create innovative ideas that focus on high-quality designed solutions
comprehensive	detailed and thorough, including all that is relevant
considered	thought about deliberately with a purpose; see well-considered; in Technologies, *considered* includes informed
constructed environments	environments developed, built and/or made by people for human and animal activity, including buildings, streets, gardens, bridges and parks; include natural environments after they have been changed by people for a purpose

Term	Description
creation; create; creating	putting elements together to form a coherent or functional whole; reorganising elements into a new pattern or structure through generating, planning, or producing; *creating* requires users to put parts together in a new way or synthesise parts into something new and different a new form or product; in Design and Technologies, *creating* involves bringing a solution (product, environment or service) into existence through the design process
criteria for success	a descriptive list of essential features against which success can be measured; may be predetermined, negotiated with the class or developed by students; compilation of *criteria for success* involves: • literacy skills to select and use appropriate terminology • clarifying the project task and defining the need or opportunity to be resolved in Years 3 and 4, students: • develop a criteria for success with guidance • include care for the environment
demonstrate	give a practical exhibition or explanation
description; describe	give an account of characteristics or features
design process (processes and productions skills strand)	• in Design and Technologies, *design process* means a process to create a designed solution that considers social, cultural and environmental factors and typically involves: • investigating and defining • generating and designing • producing and implementing • evaluating • collaborating and managing; see also technologies processes
designed solutions	the products, services or environments that have been created for a specific purpose or intention as a result of design thinking, design processes and production processes; in Years 3 and 4, students: • create designed solutions for the prescribed technologies contexts • produce a range of types of designed solutions (products, services, environments); this may occur through integrated learning
detailed	meticulous; including many of the parts
digital environments	environments that are entirely presented or experienced with digital technologies; can be a situation, a sphere of activity, or a simulated place (e.g. a social network that provides a digital environment for communicating with friends, software that provides a digital environment for editing photographs)
effective	meeting the assigned purpose in a considered and/or efficient manner to produce a desired or intended result
environment	one type of designed solution; a place or space in which technologies processes operate and/or one of the outputs of technologies processes; environments can be natural, managed, constructed or digital

Term	Description
evaluate; evaluating (design process)	examine and judge the merit or significance of something; students evaluate and make judgments throughout a design process and about the quality and effectiveness of their designed solutions and those of others; in Years 3 and 4, students: • develop criteria for success with guidance • include care for the environment in the criteria for success • evaluate design ideas, processes and solutions using the criteria for success
explanation; explain	provide additional information that demonstrates understanding of reasoning and/or application
features	a distinctive attribute, characteristic, property or quality of something (e.g. an object, material, living thing, system or event)
fragmented	disjointed, incomplete or isolated
generating and designing (design process)	students develop and communicate ideas for a range of audiences; *generating creative and innovative ideas* involves thinking differently; it entails proposing new approaches to existing problems and identifying new design opportunities considering preferred futures; *generating and developing ideas* involves identifying various competing factors that may influence and dictate the focus of the idea in Years 3 and 4, students: • generate, develop and communicate design ideas and decisions • use appropriate technical terms and graphical representation techniques
graphical representation techniques	techniques used to communicate ideas and plans (e.g. sketching, drawing, modelling, making patterns, technical drawing, computer-aided drawing); in Years 3 and 4, students: • progress from basic drawing to annotated diagrams • modelling objects as 3D images from different views by rotating images and using different materials • use technical terms and graphical representation techniques • recognise techniques for documenting design and production ideas such as basic drawing symbols and use simple flow diagrams
guided; guidance	visual and/or verbal prompts to facilitate or support independent action
identification; identify	to establish or indicate who or what someone or something is
informed	having relevant knowledge; being conversant with the topic; in Technologies, *informed* refers to the underpinning knowledge, understanding and skills of processes and production skills when solving problems and creating solutions
investigating and defining (design process)	students critique, explore and investigate needs, opportunities and information; in Years 3 and 4, students: • critique needs or opportunities for designing • explore and test a variety of materials, components, tools and equipment • explore and test techniques needed to produce designed solutions
managed environments	environments coordinated by humans (e.g. farms, forests, marine parks, waterways, wetlands, storage facilities)

Term	Description
materials	a substance from which a thing is or can be made; used to create products or environments and their structure can be manipulated by applying knowledge of the origins, structure, characteristics, properties and uses; natural materials (e.g. animals, food, fibre, timber) and fabricated materials (e.g. metals, alloys, plastics, textiles)
natural environments	environments in which humans do not make significant interventions (e.g. oceans, natural woodlands, national parks)
partial	attempted; incomplete evidence provided
prescribed technologies contexts	see technologies contexts
processes and production skills	the skills needed to create designed solutions; see also technologies processes
producing and implementing (design process)	actively realising (making) designed solutions using appropriate resources and means of production; in Years 3 and 4, students make designed solutions by: • selecting and using materials, components, tools, equipment and techniques • using safe work practices
product; products	one type of designed solution; one of the outputs of technologies processes, the end result of processes and production; *products* are the tangible end results of natural, human, mechanical, manufacturing, electronic or digital processes to meet a need or want
production processes	in Design and Technologies, *production processes* are the technologies context-specific processes used to transform technologies into products, services or environments (e.g. the steps used for producing a product)
proficient	competent or skilled in doing or using something; in Design and Technologies, *proficient* means using knowledge and understanding of technologies in a skilful and adept application to produce high-quality design solutions
service	one type of designed solution; one of the outputs of technologies processes, the end result of processes and production; *services* are the less tangible outcome (compared to products) of technologies processes to meet a need or want; they may involve development or maintenance of a system and include catering, cloud computing (software as a service), communication, transportation and water management; services can be communicated by charts, diagrams, models, posters and procedures
statement	a sentence or assertion
sustainable; sustainability	supports the needs of the present without compromising the ability of future generations to support their needs
systems	the structure, properties, behaviour and interactivity of people and components (inputs, processes and outputs) within and between natural, managed, constructed and digital environments

Term	Description
technologies and society (knowledge and understanding strand)	technologies and society focuses on how people use and develop technologies taking into account social, economic, environmental, ethical, legal, aesthetic and functional factors and the impact of technologies on individuals; families; local, regional and global communities; the economy; and the environment − now and into the future; in Years 3 and 4, students: • critically analyse factors, including social, ethical and sustainability considerations, that impact on designed solutions for global preferred futures and the complex design and production processes involved; • explain how products, services and environments evolve with consideration of preferred futures and the impact of emerging technologies on design decisions
technologies contexts (knowledge and understanding strand)	in Design and Technologies, these are the contexts that students can focus on when using processes and production skills to design and produce products, services and environments; in Years 3 and 4, the prescribed *technologies contexts* are: • engineering principles and systems • food and fibre production • food specialisations • materials and technologies specialisations
technologies processes (processes and productions skills strand)	the processes that allow the creation of a solution for an audience (end user, client or consumer) and involve the purposeful use of technologies and other resources and appropriate consideration of impact when creating and using solutions; typically require critical and creative thinking such as: computational, design or systems thinking in Design and Technologies, *technologies processes* involve: • design processes • technologies-specific production processes
technologies	the materials, data, systems, components, tools and equipment used to create solutions for identified needs and opportunities, and the knowledge, understanding and skills used by people involved in the selection and use of these
use	to operate or put into effect