Years 5 and 6 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 5 and 6 Australian Curriculum: Design and Technologies achievement standard
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.

Years 5 and 6 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**	comprehensive description of: • competing considerations in the design of products, services and environments taking into account sustainability • how design and technologies contribute to meeting present and future needs	detailed description of: • competing considerations in the design of products, services and environments taking into account sustainability • how design and technologies contribute to meeting present and future needs	description of: • competing considerations in the design of products, services and environments taking into account sustainability • how design and technologies contribute to meeting present and future needs	identification of: • considerations in the design of products, services and environments taking into account aspects of sustainability • design and technologies meeting needs	statements about: • considerations in the design of products, services and environments • design and technologies meeting needs
	Technologies contexts	comprehensive explanation of how the features of technologies impact on designed solutions for each of the prescribed technologies contexts	detailed explanation of how the features of technologies impact on designed solutions for each of the prescribed technologies contexts	explanation of how the features of technologies impact on designed solutions for each of the prescribed technologies contexts	partial explanation of how the features of technologies impact on designed solutions for each of the prescribed technologies contexts	statements about features of technologies and designed solutions for each of the prescribed technologies contexts
Processes and production skills	**Investigating and defining**	identification and explanation of needs or opportunities for each of the prescribed technologies contexts	identification and description of needs or opportunities for each of the prescribed technologies contexts	identification of needs or opportunities for each of the prescribed technologies contexts	identification of aspects of needs or opportunities for each of the prescribed technologies contexts	statements about needs or opportunities for each of the prescribed technologies contexts
	Generating and designing	considered combination of design ideas	informed combination of design ideas	combination of design ideas	partial combination of design ideas	fragmented combination of design ideas
		comprehensive and effective communication of design ideas to audiences using: • graphical representation techniques • technical terms	effective communication of design ideas to audiences using: • graphical representation techniques • technical terms	communication of design ideas to audiences using: • graphical representation techniques • technical terms	partial communication of design ideas to audiences using aspects of: • graphical representation techniques • technical terms	fragmented communication of design ideas to audiences using aspects of: • representation techniques • everyday language

		A	B	C	D	E
Processes and production skills	**Producing and implementing**	**proficient** production of designed solutions by selecting and using appropriate technologies and techniques correctly and safely	**effective** production of designed solutions by selecting and using appropriate technologies and techniques correctly and safely	production of designed solutions by selecting and using appropriate technologies and techniques correctly and safely	**partial** production of designed solutions by using technologies and techniques correctly and safely	**guided** production of designed solutions by using technologies safely
	Evaluating	provision of **considered** suggestions for criteria for success, including sustainability considerations	provision of **informed** suggestions for criteria for success, including sustainability considerations	provision of suggestions for criteria for success, including sustainability considerations	provision of **partial** suggestions for criteria for success, including sustainability considerations	**statements about** criteria for success
		considered evaluation of their ideas and designed solutions using their suggested criteria for success, including sustainability considerations	**informed** evaluation of their ideas and designed solutions using their suggested criteria for success, including sustainability considerations	evaluation of their ideas and designed solutions using their suggested criteria for success, including sustainability considerations	**explanation** of their ideas and designed solutions using their suggested criteria for success, including **aspects of** sustainability considerations	**statements about** their ideas and designed solutions using their suggested criteria for success
	Collaborating and managing	**comprehensive** recording of project plans including production processes	**detailed** recording of project plans including production processes	recording of project plans including production processes	**partial** recording of project plans including **aspects of** production processes	**fragmented** recording of project plans

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 5 and 6 Design and Technologies SEs

These terms clarify the descriptors in the Years 5 and 6 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 5 and 6, students: • develop project plans • include consideration of resourcing • working both 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 5 and 6, students: • negotiate criteria for success • include sustainability considerations • use it to evaluate designing ideas, processes and solutions
demonstrate	give a practical exhibition or explanation
description; describe	give an account of characteristics or features
design brief	a concise statement clarifying the project task and defining the need or opportunity to be resolved after some analysis, investigation and research; it usually identifies the users, criteria for success, constraints, available resources and timeframe for the project and may include possible consequences and impacts
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 5 and 6, 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

Term	Description
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
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 5 and 6, students: • negotiate criteria for success • include sustainability considerations • use it to evaluate design ideas, processes and solutions
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 5 and 6, students: • generate, develop and communicate designing ideas and processes for audiences • use appropriate technical terms • use 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 5 and 6, students: • represent objects and ideas in a variety of forms (e.g. thumbnail sketches, models, drawings, diagrams and storyboards) to illustrate the development of designed solutions • use a range of techniques (e.g. labelling and annotating sequenced sketches and diagrams) to illustrate how products function • recognise and use a range of drawing symbols in context to give meaning and direction
guided	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

Term	Description
investigating and defining (design process)	students critique, explore and investigate needs, opportunities and information; in Years 5 and 6, students: • critique needs or opportunities to develop design briefs • investigate and select an increasingly sophisticated range of materials, systems, components, tools and equipment to develop design ideas
managed environments	environments coordinated by humans (e.g. farms, forests, marine parks, waterways, wetlands, storage facilities)
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 5 and 6, students: • apply knowledge about components, materials and their characteristics and properties to ensure their suitability for use • select appropriate materials, components, tools, equipment and techniques • apply safe procedures to make designed solutions • develop accurate production skills to achieve quality designed solutions • use work practices that respect the need for sustainability
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
project management	the responsibility for planning, organising and controlling resources, monitoring timelines and activities and completing a project to achieve a goal that meets identified criteria for judging success; students should also identify and establish safety procedures that minimise risk and manage projects with safety and efficiency in mind, maintaining safety standards and management procedures to ensure success

Term	Description
project plan	detailed project plans incorporate elements such as sequenced time, cost and action plans to manage a range of design tasks safely, and to enable changing direction when necessary to successfully complete design tasks
project	the set of activities undertaken by students to address specified content, involving: • understanding the nature of a problem, situation or need • creating, designing and producing a solution to the project task • documenting the process; a project has: • a benefit, purpose and use • a user or audience who can provide feedback on the success of the solution • limitations to work within • a real-world technologies context influenced by social, ethical and environmental issues • criteria for success to judge its success
prototype; prototyping	a trial product or model built to test an idea or process to inform further design development; a *prototype* can be developed in the fields of service, design, electronics or software programming; its purpose is to see if and how well the design works; prototypes are tested by users and systems analysts; *prototyping* is the process of developing a prototype; it provides specifications for a real, working product or system rather than a virtual or theoretical one
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
suggestion	put forward for consideration
suitable	appropriate, fitting
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 5 and 6, 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 5 and 6, 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