Years 3 and 4 standard elaborations — Australian Curriculum: Digital 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 Digital 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: Digital Technologies achievement standard
By the end of Year 4, students describe how a range of digital systems (hardware and software) and their peripheral devices can be used for different purposes. They explain how the same data sets can be represented in different ways. Students define simple problems, design and implement digital solutions using algorithms that involve decision-making and user input. They explain how the solutions meet their purposes. They collect and manipulate different data when creating information and digital solutions. They safely use and manage information systems for identified needs using agreed protocols and describe how information systems are used.

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

Years 3 and 4 Digital Technologies standard elaborations

		A	B	C	D	E
		The folio of a student's work has the following characteristics:				
Knowledge and understanding	**Digital systems**	comprehensive description of how a range of digital systems (hardware and software) and their peripheral devices can be used for different purposes including the transmission of data	detailed description of how a range of digital systems (hardware and software) and their peripheral devices can be used for different purposes including the transmission of data	description of how a range of digital systems (hardware and software) and their peripheral devices can be used for different purposes	identification of digital systems (hardware and software) and their peripheral devices and how they can be used	statements about use of digital systems (hardware and software)
	Representation of data	comprehensive explanation of how the same data sets can be represented in different ways	detailed explanation of how the same data sets can be represented in different ways	explanation of how the same data sets can be represented in different ways	description of how data sets can be represented	statements about how data sets can be represented
Processes and production skills	**Collecting, managing and analysing data**	considered collection and manipulation of different data when creating information and digital solutions	effective collection and manipulation of different data when creating information and digital solutions	collection and manipulation of different data when creating information and digital solutions	collection and manipulation of data when creating information and digital solutions	fragmented collection and manipulation of data
	Investigating and defining	considered definition of simple problems	informed definition of simple problems	definition of simple problems	partial definition of simple problems	fragmented definition of simple problems

		A	B	C	D	E
Processes and production skills	**Generating and designing; producing and implementing**	considered design and implementation of digital solutions using algorithms that involve decision-making and user input	informed design and implementation of digital solutions using algorithms that involve decision-making and user input	design and implementation of digital solutions using algorithms that involve decision-making and user input	partial design and implementation of digital solutions using algorithms that involve decision-making and user input	fragmented design and implementation of digital solutions
	Evaluating	considered explanation of how the solutions meet their purposes	informed explanation of how the solutions meet their purposes	explanation of how the solutions meet their purposes	description of how solutions meet their purposes	statements about solutions and purposes
		thorough description of how information systems are used	informed description of how information systems are used	description of how information systems are used	identification of how information systems are used	statements about how information systems are used
	Collaborating and managing	safe use and considered management of information systems for identified needs using agreed protocols	safe use and effective management of information systems for identified needs using agreed protocols	safe use and management of information systems for identified needs using agreed protocols	safe use and partial management of information systems for identified needs using protocols	safe use and fragmented management of information systems using protocols

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 Digital Technologies SEs

These terms clarify the descriptors in the Years 3 and 4 Digital 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
algorithm	the step-by-step procedures required to solve a problem; see also computational thinking
collaborating and managing (technologies process)	creating and communicating information, especially online, by creating websites, and interacting safely using appropriate technical and social protocols; in Years 3 and 4, students plan, create and communicate ideas and information independently and with others, applying agreed ethical and social protocols
collecting, managing and analysing data (processes and productions skills strand)	involves the nature and properties of data, how they are collected and interpreted using a range of digital systems and peripheral devices and interpreting data when creating information; in Years 3 and 4, students collect, access and present different types of data using simple software to create information and solve problems
comprehensive	detailed and thorough, including all that is relevant
computational thinking	a problem-solving method that involves various techniques and strategies that can be implemented by digital systems; techniques and strategies include organising data logically, breaking down problems into parts (decomposing), defining abstract concepts, and designing and using algorithms, patterns and models
considered	thought about deliberately with a purpose; in Technologies, *considered* includes informed
creation; create; creating	putting elements together to form a coherent or functional whole; reorganising elements into a new pattern or structure through designing, planning, or implementing; *creating* requires users to put parts together in a new way or synthesise parts into something new or different to form a new product: in Technologies, it involves bringing a solution into existence through the process of investigating and defining, generating and designing, producing and implementing, evaluating, and collaborating and managing

Term	Description
critique; critiquing	a careful judgement in which opinions are given about the positive and negative aspects of something; considers good as well as bad performances, the individual parts, relationships of the individual parts and the overall performance; see also evaluating
data	in Digital Technologies, *data* refers to the discrete representation of information using number codes; may include characters (alphabetic, numbers, symbols), images (still and moving), sounds and instructions that can be manipulated, stored and communicated by digital systems
decompose; decomposing	to separate a complex problem into parts to allow it to be more easily understood; see also computational thinking
description; describe	give an account of characteristics or features
detailed	meticulous; including many of the parts
digital solution; digital solutions	the result (or output) of transforming data into information or action using digital systems, skills, techniques and processes to meet a need or opportunity; in Digital Technologies: • students create solutions that will use data, require interactions with users and within systems, and will have impacts on people, the economy and environments • solutions may be developed using combinations of readily available hardware and software applications, and/or specific instructions provided through programming (e.g. instructions for a robot, an adventure game, products featuring interactive multimedia including digital stories, animations and websites) in Years 3 and 4, students create a range of digital solutions such as interactive adventures that involve user choice, modelling simplified real world systems, and simple guessing games
digital systems (knowledge and understanding strand)	digital hardware and software components (internal and external) used to transform data into digital solutions; when digital systems are connected they form a network; for example: • a smartphone is a digital system that has software (apps, an operating system), input components (e.g. touch screen, keyboard, camera and microphone), output components (e.g. screen and speakers), memory components (e.g. silicon chips, solid state drives), communication components (e.g. SIM card, wi-fi, bluetooth or mobile network antennas), and a processor made up of one or more silicon chips • a desktop computer with specific software and hardware components for dairy farming; the computer is connected via cables to milking equipment and via wi-fi to sensors that read tags on the cows; through these hardware components the software records how much milk each cow provides; such systems can also algorithmically control attaching milking equipment to each cow, providing feed and opening gates

Term	Description
digital technologies	any technologies controlled using digital instructions, including computer hardware and software, digital media and media devices, digital toys and accessories, and contemporary and emerging communication technologies; these technologies are based on instructions given using *binary* (0 or 1) code that invariably mean one or more processors are present to respond to these instructions; computers, smartphones, digital cameras, printers and robots are all examples of digital technologies
discerning	showing good judgment to make thoughtful choices; in Technologies, *discerning* includes informed
effective	meeting the assigned purpose in a considered and/or efficient manner to produce a desired or intended result
evaluate; evaluating (technologies process)	examine and judge the merit or significance of something; in Technologies, *evaluate* means measures performance against established criteria; estimates the nature, quality, ability, extent or significance to make a judgment determining the value; see also critique; in Digital Technologies, *evaluating* includes: • solutions that have been developed by students • examining how well existing information systems meet different needs in Years 3 and 4, students explain how student solutions and existing information systems meet common, personal, school or community needs
explanation; explain	provide additional information that demonstrates understanding of reasoning and/or application
fragmented	disjointed, incomplete or isolated
generating and designing (technologies process)	states what is required of the solution
identification; identify	to establish or indicate who or what someone or something is
implement; implementing; implementation	to put into effect by means of a plan or procedure; in Digital Technologies, *implementing* a solution involves using specific software functions and items of hardware
information systems	the combination of digital hardware and software components (digital systems), data, processes and people that interact to create, control and communicate information
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 (technologies process)	describes the problem and/or opportunity and states what is required of the solution; in Years 3 and 4, students define simple problems, and describe and follow a sequence of steps and decisions (algorithms) needed to solve them
partial	attempted; incomplete evidence provided

Term	Description
processes and production skills	the skills needed to create digital solutions; see technologies process
producing and implementing (technologies process)	actively realising (making) digital solutions using appropriate resources and means of production; in Years 3 and 4, students implement simple digital solutions as visual programs with algorithms involving branching (decisions) and user input
product; products	one of the outputs of technologies process, 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
proficient	competent or skilled in doing or using something; in Digital Technologies, *proficient* means consistently in all digital solutions
representation of data (knowledge and understanding strand)	how data are represented and structured symbolically for use by digital systems; in Years 3 and 4, students recognise different types of data and explore how the same data can be represented in in different ways
social protocols	generally accepted rules or behaviours for when people interact in online environments (e.g. using language that is not rude or offensive to particular cultures, not divulging personal details about people without their permission)
statement	a sentence or assertion
sustainability	supports the needs of the present without compromising the ability of future generations to support their needs
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
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 Technologies, the *technologies processes* involve: • investigating and defining • generating and designing • producing and implementing • evaluating • collaborating and managing
user	one who uses a computer, computer program, or online service