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|  | Years 3 and 4 standard elaborations — Australian Curriculum:  Digital Technologies |

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| 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. |
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| 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. | |
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| **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](https://www.australiancurriculum.edu.au/f-10-curriculum/technologies/digital-technologies) |

## Years 3 and 4 Digital Technologies standard elaborations

|  | | A | B | C | D | E |
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|  | | 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 |
| 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 |

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| 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.

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| 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](https://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](#computational_thinking) |
| collaborating and managing ([technologies process](#technologies_processes)) | 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](#process_and_production_skills)) | 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](#digital_systems); techniques and strategies include organising data logically, breaking down problems into parts ([decomposing](#decompose)), defining abstract concepts, and designing and using [algorithms](#algorithm), patterns and models |
| considered | thought about deliberately with a purpose;  in Technologies, *considered* includes [informed](#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 |
| 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](#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](#digital_systems) |
| decompose; decomposing | to separate a complex problem into parts to allow it to be more easily understood;  see also [computational thinking](#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](#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](#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 |
| 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](#informed) |
| effective | meeting the assigned purpose in a considered and/or efficient manner to produce a desired or intended result |
| evaluate; evaluating ([technologies process](#technologies_processes)) | 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](#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](#technologies_processes)) | 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](#digital_systems)), [data](#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](#process_and_production_skills) when solving problems and creating solutions |
| investigating and defining ([technologies process](#technologies_processes)) | 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 |
| processes and production skills | the skills needed to create [digital solutions](#digital_solution);  see [technologies process](#technologies_processes) |
| producing and implementing ([technologies process](#technologies_processes)) | 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](#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 |
| 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](#data) are represented and structured symbolically for use by [digital systems](#digital_systems);  in Years 3 and 4, students recognise different types of [data](#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](#process_and_production_skills)) | the processes that allow the creation of a solution for an audience (end user, client or consumer) and involve the purposeful use of [technologies](#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](#investigating_and_defining) * [generating and designing](#generating_and_designing) * [producing and implementing](#producing_and_implementing) * [evaluating](#evaluating) * [collaborating and managing](#collaborating_and_managing) |
| user | one who uses a computer, computer program, or online service |