WHAT HAS CHANGED AND WHY?

Proposed revisions to the Foundation – Year 10 (F–10) Australian Curriculum: Technologies

Overview

This document summarises the proposed revisions to the Foundation – Year 10 (F–10) Australian Curriculum: Technologies, presented in the consultation version, and provides an explanation for the changes.

The proposed revisions make clear the essential technological knowledge, understanding and skills students need to be confident and creative individuals, successful lifelong learners and active, informed members of the community. These revisions also ensure our curriculum remains world class.

The current F–10 Australian Curriculum: Technologies was first published in 2015, and this included two subjects – Design and Technologies, and Digital Technologies. The inclusion of Digital Technologies as a separate subject was new, particularly for F–6. Since publication, there has been a considerable focus in states and territories and nationally to support implementation of both subjects, but particularly Digital Technologies, and this has informed revisions. The Australian Curriculum Review has also drawn upon research on the development of Technologies curriculum internationally.

The Technologies curriculum compares very well with these, but given the rapid pace of technological change, there is a need to update the curriculum to ensure students continue to have the opportunity to develop contemporary knowledge, understanding and skills. As a result, the revisions aim to remove outdated and non-essential content, add new content important for students to learn now and give teachers greater clarity and guidance about what they are expected to teach.

An important change in Technologies has been the identification of content for the Foundation year, separate from Years 1–2, in both subjects. This provides a clear set of expectations for Foundation and allows for alignment of content with all the other learning areas.

In Design and Technologies, there has been a reduction of content descriptions in Foundation – Year 4.

In Digital Technologies, a new sub-strand focused on privacy and security has been added. This addition reflects content from a new sub-element in the Digital Literacy general capability. Data collection and interpretation content descriptions across F–6 have been reduced by embedding them in the Australian Curriculum: Mathematics, *statistics* strand.

The consultation version of the F–10 Australian Curriculum: Technologies does <u>not</u> include:

- the glossary, student work samples and other support resources – these materials will be revised once the consultation process has been completed
- ‘tagging’ to show where general capabilities and cross-curriculum priorities are incorporated in the content descriptions and elaborations – these connections will be made explicit when the updated curriculum is published on the website.

The terms of reference for the Australian Curriculum Review also directed ACARA to improve the digital presentation of the Australian Curriculum in line with agreed revisions and teachers' user experience. In parallel with the content review process, ACARA is undertaking a redesign to improve the functionality of the current Australian Curriculum website. The aim is for the updated version of the F–10 Australian Curriculum to be available on a new Australian Curriculum website at the start of 2022. The current Australian Curriculum website will also remain live to support jurisdictions and teachers to plan for transition to the updated curriculum.

Proposed revisions to the introductory sections of the F–10 Australian Curriculum: Technologies

	Nature of the revision	Rationale for the revision
Rationales	Minor editorial changes to the rationales for Technologies and the two subjects.	The current rationales have been updated to align with minor revisions to the organisation of the learning area.
Aims	Minor editorial changes.	The edits align with minor revisions to the organisation of the learning area.
Organisation of the learning area	This section still describes how the curriculum is structured. It now also includes an overview of the learning area core concepts – those big ideas, understandings, skills or processes central to the Technologies curriculum.	The terms of reference for the Review required ACARA to refine and reduce content by identifying core concepts. In the review process, core concepts helped identify the essential Technologies content students should learn to develop deep and increasingly sophisticated understanding and skills. While the prime purpose of the core concepts in the Review was to help make decisions about essential content, feedback from the Teacher Reference Group indicated that teachers may find this information useful. The notion of core concepts is not new to Technologies. The current curriculum has key ideas for Technologies and key concepts for Digital Technologies. The core concepts have been developed from the current key ideas and key concepts.
Key connections	This is a new section in the introduction. It replaces the learning area-specific information sheets on general capabilities and the learning area-specific advice for the cross-curriculum priorities, currently published separately from the Technologies curriculum. This section also outlines key connections to other learning areas.	This new section makes transparent the connections across the three dimensions of the Australian Curriculum. It provides teachers with clear information as to the key relationships of Technologies subjects to the general capabilities and cross-curriculum priorities – specifically highlighting those that have the most authentic fit and will provide meaningful learning through the learning area content. It also highlights the important opportunities to connect Technologies with other learning areas' content, which will be particularly useful for primary teachers.
Key considerations	This section contains similar information to what exists under the 'Key ideas' section in the current introduction to the curriculum.	This section has been retitled to more accurately reflect that the information contained in the section is about the key aspects teachers should consider when planning for and teaching the curriculum. In the case of Technologies, these key considerations relate to safety, biosecurity, and privacy and security when working with a variety of systems, materials, food, plants and animals.

Proposed revisions to the curriculum content of the F–10 Australian Curriculum: Technologies

	Nature of the revision	Rationale for the revision
Band level descriptions	A small number of minor revisions and refinements have been made to the current descriptions. A new level description has been written for the Foundation year to reflect the new content descriptions and achievement standard.	The band level descriptions have been improved to ensure they provide teachers with a clear overview of the learning that students should experience at each band. They have also been improved to ensure there is consistency between subjects. As the Foundation year has been separated from the F–2 band, a new year level description has been written.
Achievement standards	The achievement standards have been revised to improve their quality and alignment to the content descriptions.	The revised achievement standards have better cognitive alignment with the essential content described in the content descriptions. They also have improved in their consistency and clarity of language. The achievement standards clearly describe the expected quality of learning students should typically be able to demonstrate by the end of each year/band.
	All achievement standards have been written as one paragraph instead of the current presentation as two paragraphs.	Achievement standards have been written as one paragraph to highlight the relationship between the *knowledge and understanding* strand and the *processes and production skills* strand. This has also resulted in less repetition. With the improved functionality of the new website, content descriptions will be linked to specific statements within the achievement standard.
	In both subjects, the achievement standard is presented in a design process order.	Presenting the achievement standards in the same order across the two Technologies subjects supports primary teachers to see the relationship between the subjects, and the progression of knowledge, understanding and skills across F–6.
Content descriptions	Many of the content descriptions have been revised, refined and realigned to ensure they specify the essential Technologies content that students should learn and to give greater clarity to teachers about what to teach. Some content has been removed, added and de-emphasised, while other content has been given more emphasis. In some instances, the sequence in which content is presented has been	The revised content descriptions clearly specify the essential knowledge, understanding and skills in each band. They have been improved to: • remove ambiguity and ensure the meaning is clear to teachers • remove unnecessary duplication • ensure consistency and clarity of language • better align the cognitive demand described in the content descriptions to that in the achievement standards • reflect new language and terms in Technologies.

	Nature of the revision	Rationale for the revision
	realigned. The clarity and consistency of language has been improved in the content descriptions. In some cases, this has meant splitting one content description into two or three.	*Details of the specific content changes are presented separately in tables 1 and 2.*
Content elaborations	Content elaborations have been revised or deleted and new elaborations, which align with revised content descriptions, have been developed.	The revised content elaborations provide teachers with improved suggestions and illustrations of ways to teach the content descriptions. They illustrate the content descriptions with diverse relevant examples, clearly unpacking the content description. They target the general capabilities and cross-curriculum priorities that provide the most appropriate and authentic opportunities to enrich the content of Technologies.

Table 1: Details of proposed content revisions to the F–10 Australian Curriculum: Design and Technologies

Nature of the content revision	Rationale for the revision
Content removed or reduced	
Foundation There is no prescribed context for Foundation.	In Foundation, the technologies context is selected by the school. This provides flexibility for schools to select a context that is most relevant for their situation and also reduces the overall content demand of the Foundation year.
F–2 Reduction in the *processes and production skills* strand: • from five content descriptions to one for Foundation • from five to four content descriptions for Years 1 and 2.	In Foundation year, one broad content description has been developed to provide opportunities for students to produce solutions using technologies. It addresses aspects of three sub-strands. Students in Years 1 and 2 work through a slightly adjusted design process, which still provides a progression to later years while reducing the amount of content to be covered. These revisions remove duplication with Science and The Arts, provide flexibility for teachers to make connections between learning areas and help reduce the overall content of the F–2 curriculum.
Years 1–4 Reduction in the prescribed Technologies contexts from three to two.	From Year 1 to Year 8, students have the opportunity to create designed solutions at least once in each of the prescribed technologies contexts at least once in each band. For the Years 1–2 and Years 3–4 bands, the prescribed contexts have been reduced to two by combining the contexts. By the end of each band, students create designed solutions at least once in each of the two combined technologies contexts: • *engineering principles and systems*; *materials and technologies specialisations* • *food and fibre production*; *food specialisations*. This removes duplication of materials with Science and The Arts and helps reduce the overall content of the Years 1–4 curriculum.
Content resequenced	
F–10 The *materials and technologies specialisations* sub-strand has been moved above *food and fibre production*.	Changing the order of the Technologies contexts allows the content descriptions for *materials and technologies specialisations* to be viewed next to the *engineering principles and systems* so that the connection between the two, especially in the early years, is clearer.
Content separated	
Years 1–6 Content descriptions for *food and fibre production* and *food specialisations* have been split into two content descriptions to improve clarity.	Splitting these content descriptions allows teachers to more easily identify opportunities for connecting with other learning areas. While this has increased the number of content descriptions, no new content has been added.

Nature of the content revision	Rationale for the revision
Content added	
Foundation Content descriptions and achievement standards have been specified for Foundation year, separated from the current Years F–2 band.	This revision provides a clear set of expectations for Foundation year and allows for improved alignment of content across all learning areas. It is a manageable approach to Technologies education in Foundation. The *technologies and society* content description provides the required knowledge and understanding for the application outlined in the *processes and production skills* strand. The new *processes and production skills* strand content description provides an opportunity for teachers to select a context that is most meaningful for their students.

Table 2: Details of proposed content revisions to the F–10 Australian Curriculum: Digital Technologies

Nature of the content revision	Rationale for the revision
Content removed	
Years 1 and 2 *Data collection and interpretation*	One content description has been removed. This content overlapped with similar content within the Mathematics curriculum. Content descriptions have been revised in Mathematics, under the *statistics* strand, to develop understanding about data collection, data visualisation and data interpretation. On the redesigned Australian Curriculum website, these content descriptions will be linked to the content descriptions in the Mathematics curriculum. This will highlight for teachers the complementary nature of these contexts when teaching data.
Years 3 and 4 *Data collection and interpretation*	One content description has been removed. This content complemented the content within the Mathematics curriculum. Content descriptions have been written for Mathematics, under the *statistics* strand, to develop understanding about data collection, data visualisation and data interpretation. On the redesigned Australian Curriculum website, these content descriptions will be linked to the content descriptions in the Mathematics curriculum. This will highlight for teachers the complementary nature of these contexts when teaching data.
Years 5 and 6 *Data collection and interpretation*	Two content descriptions have been removed. This content complemented the content within the Mathematics curriculum. Content descriptions have been written for Mathematics, under the *statistics* strand, to develop understanding about data collection, data visualisation and data interpretation. On the redesigned Australian Curriculum website these, content descriptions will be linked to the content descriptions in the Mathematics curriculum. This will highlight for teachers the complementary nature of these contexts when teaching data.

Content separated	
F–10 Online safety content descriptions split in the *collaborating and managing* sub-strand.	Safety has been explicitly defined to refer to personal safety for Digital Technologies. The splitting of content descriptions within this sub-strand emphasises and better explains to teachers the requirement for students to develop online safety skills. It also provides clarity for teachers on where they can make authentic links, for example with the Health and Physical Education curriculum under the *personal, social and community health* strand.
Years 3 and 4 Transmission of data and hardware components content descriptions split in *digital systems* sub-strand.	Splitting this content description provides greater clarity to teachers about what is to be taught. In the current content description, data transmission is meant to focus on transmission between devices such as sending an email or using an ATM. Because it is currently linked with hardware components, teachers may misinterpret data transmission to be concerned with internal transmission, such as between primary memory and the CPU, ignoring the intended focus of transmission of data between devices.
Year 5 and 6 *Data representation* content description has been split to include binary.	Splitting this content description provides greater clarity to teachers about what is to be taught, it directs teachers to focus on what people can perceive is going on in a computer (numbers representing data) and what the computer actually deals with (circuits being on or off).
Years 7 and 8 *Data representation* sub-strand: exploring how whole numbers are represented in binary is split from how data is represented in numbers.	Splitting this content description provides greater clarity to teachers about what is to be taught. The intent is to separate how a computer deals with instructions and data (such as the colour of a pixel) as a series of on and off circuits represented as binary, to how we may communicate the same data typically using number systems that we are familiar with, such as base 10.
Years 9 and 10 *Data representation* sub-strand: data compression has been split from presentation and content.	Splitting this content description provides greater clarity to teachers about what is to be taught. These are two different pieces of content: data compression is a distinct idea separate from data presentation techniques. Data compression has to do with faster transmission of data, which also takes less space in memory. Presentation techniques have to do with keeping data separate from techniques that would otherwise alter the original data. Original data should not be altered. Working on a 'copy' of the original data will enable the original to stay intact.
Years 7–10 *Acquiring, managing and analysing* sub-strand: data collection and storage have been split from analysing and visualising.	Splitting this content description provides greater clarity to teachers about what is to be taught. Data collection and storage are distinct activities from analysing and visualising data. Collection and storage are about the capture and retention of data. Analysing and visualising are about the communication of what the data can be interpreted to mean.
Years 7–10 *Designing and generating* sub-strand: designing algorithms have been split from validating and testing the output.	In both bands, validating and testing are separate processes that can be taught and assessed independently of algorithm design. Separating these two aspects makes it easier for teachers to plan teaching and learning.

Content repurposed or realigned	
Years 5–10 User interface (UI) and user experience (UX) content has been moved from *collaborating and managing* sub-strand to *generating and designing* sub-strand.	This content has been moved to the *generating and designing* sub-strand as the UI and UX should be considered very early in the design process when user stories are being considered. It is currently misplaced in *collaborating and managing*.
Years 5 and 6 Binary has been moved from Years 7 and 8 to Years 5 and 6.	As students in Years 5–6 are fully aware of place value, it is an opportune time to relate place value of base 10 (denary) with place value of base 2 (binary). This will allow students to make direct relationships between binary and decimal (denary), i.e. the same rules of place value are enacted when you run out of digits or combinations, you add another column to the left and start over.
Content added	
Foundation Content descriptions and achievement standards have been specified for Foundation year, separated from the current F–2 band.	This revision provides a clear set of expectations for the Foundation year and allows for improved alignment of content across all learning areas. It is a manageable approach to Technologies education in Foundation. The *digital systems* content description provides the required knowledge and understanding. The new *processes and production skills* strand content description provides an opportunity for teachers to introduce digital literacy skills and make meaningful connections with Mathematics through *data representation*.
F–10 *Considering privacy and security* sub-strand has been added.	The revised ICT capability, now known as Digital Literacy, includes a new sub-element, *manage online privacy and safety*. Digital Technologies is the foundational subject for the development of Digital Literacy. A new Digital Technologies sub-strand, *considering privacy and security*, has been developed to provide opportunities for this Digital Literacy content to be explicitly taught.