Draft Australian Curriculum: Digital Technologies

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Overview

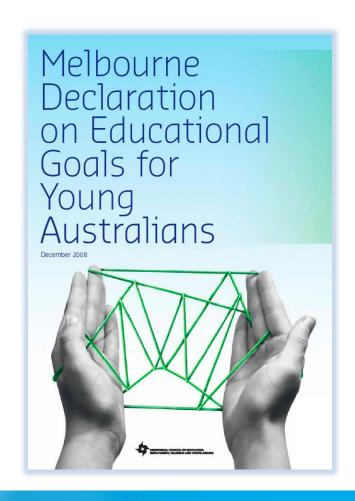
- The Australian Curriculum
- Draft Australian Curriculum: Digital Technologies
- National consultation
- Implementation



Learning for life

Australian governments committed to working in collaboration to promote equity and excellence in Australian schooling, with school sectors supporting all young Australians to become

- successful learners
- confident and creative individuals
- active and informed citizens.



The Australian Curriculum

- Sets out what all students are to be taught (content) and what students are typically able to understand and able to do (achievement standards).
- Affirms the central importance of discipline-based knowledge and skills as well as general capabilities and cross-curriculum priorities.
- Acknowledges that classroom teachers are best placed to organise learning for students; they will make decisions about the pedagogical approach intended to achieve the best learning outcomes.



A world-class curriculum for

the 21st century

Dimensions of the Australian Curriculum

Learning areas

- English
- Mathematics
- Science
- Humanities and social sciences history, geography, economics and business, civics and citizenship
- Arts
- Languages
- Health and physical education
- **Technologies**

General capabilities

- Literacy
- Numeracy
- Information and communication technology capability
- · Critical and creative thinking
- Personal and social capability
- Ethical behaviour
- Intercultural understanding

Cross-curriculum priorities

- Aboriginal and Torres Strait Islander Histories and Cultures
- Asia and Australia's engagement with Asia
- Sustainability



Draft Australian Curriculum: Technologies



Technologies curriculum

Curriculum has been developed:

- from Foundation to Year 8 in two subjects: Design and Technologies and Digital Technologies
- in F–2 band and then in two year bands to Year 8
- from Years 9 to 10 in two optional subjects: Design and Technologies and Digital Technologies (states and territories will continue to offer Technologies subjects that do not duplicate those developed by ACARA)
- with two related strands *Knowledge and understanding* and *Processes and production skills*.



ICT in the Australian Curriculum

- ICT is the focus of two subjects: Digital Technologies and Media Arts
- ICT knowledge and skills are developed across all learning areas: ICT capability
- the capability assists students to become effective users of ICT
- the Digital Technologies curriculum assists students to become confident developers of digital solutions



Elements of the capability



Organising elements of ICT capability



ICT capability in English: Year 4

Content description and elaboration

LITERACY (INTERPRETING, ANALYSING, EVALUATING)

Use comprehension strategies to build literal and inferred meaning to expand content knowledge, integrating and linking ideas and analysing and evaluating texts

- •making connections between the text and students' own experience and other texts
- •making connections between information in print and images
- •building and using prior knowledge and vocabulary
- •finding specific literal information
- asking and answering questions
- •creating mental images
- •finding the main idea of a text
- •inferring meaning from the ways communication occurs in digital environments including the interplay between words, images, and sounds
- •bringing subject and technical vocabulary and concept knowledge to new reading tasks, selecting and using texts for their pertinence to the task and the accuracy of their information

ICT capability learning continuum

Locating and accessing data and information

plan, locate (using search engines and basic search functions), retrieve and organise information in meaningful ways



Digital Technologies curriculum

will enable students to:

- pursue specialist knowledge in the field of digital technologies
- precisely define problems
- identify the steps and processes required to create solutions
- realise solutions through the application of computational thinking and the use of information systems.

It will also contribute to students developing a set of critical thinking skills and ICT capability.



Key concepts

A number of key concepts underpin the Digital Technologies curriculum:

- Abstraction, which underpins all content, particularly the content descriptions relating to the concepts of data representation and specification, algorithms and implementation
- Data collection (properties, sources and collection of data), data representation (symbolism and separation) and data interpretation (patterns and contexts)
- Specification (descriptions and techniques), algorithms (following and describing) and implementation (translating and programming)
- Digital systems (hardware, software and networks and the internet)
- Interactions (people and digital systems, data and processes) and impact (impacts and empowerment).



National consultation

australian curriculum, assessment and reporting authority

Timeline of key activities

Activity	When
National consultation on draft Australian Curriculum: Technologies and intensive engagement project	February-May 2013
Consultation report and recommendations for revision	May-June 2013
Revision of curriculum	June-July 2013
Validation of achievement standards	August 2013
Revised drafts available for viewing	August-September 2013
Publication online	Late 2013



Consultation

- 19 February to 10 May 2013
- 300+ online survey respondents
- 80+ written submissions
- 20 focussed on Digital Technologies only
- Critical friend feedback



Intensive engagement

- Digital: 34 schools, 56 teachers
- 70+ survey responses
- Wiki; Mapping document; Assessment tasks and work samples
- Validation of achievement standards
- Appendix 4: consultation report



Key strengths

- rationale and aims of the learning area and subjects
- organisation of the learning area
- key ideas of creating preferred futures, systems thinking and project management for the learning area
- establishment of a developmental curriculum for Digital Technologies
- strong links between Mathematics and Science learning areas
- key concepts as a way to frame the Digital Technologies curriculum
- differentiation between ICT capability and Digital Technologies curriculum



Matters for improvement

- balance between computational thinking, computer science and information systems
- volume of content for indicative writing time
- complexity of language:
 - description of key concepts
 - content descriptions
- creativity and design need to be more evident 'design, development and critical analysis' skills
- multimedia in the Australian Curriculum needs clarification



Key directions for revision

Revise:

- messaging about the intent of Digital Technologies
- description of key concepts
- content descriptions and elaborations for complexity
- consistency of terminology

Strengthen:

- design, creativity, process and project management
- connections to other learning areas
- messages about multimedia in the Australian Curriculum



Industry perspectives

- computer science
- higher education pathways
- implementation



Computer science

- Shape of the Australian Curriculum: Technologies
- Key concepts provide framework
- English curriculum consultation data currently being reviewed
- Other international curriculum: US; Israel; Vietnam
- Resources: Scratch, Alice, Tynker, Raspberry Pi, CS unplugged, CS4HS



Higher education pathways

- Senior secondary proposal for Ministers end 2013
- VET and university pathways
- Computer science; information systems; multimedia



Implementation

australian curriculum, assessment and reporting authority

Implementation discussion

- Australian Computer Society
- Australian Council for Computers in Education
- Australian Council for Deans of Education
- Australian Council of Deans of ICT
- Australian Institute for Teaching and School Leadership
- Information Technology Industry Innovation Council
- Queensland ICT Leaders Group
- National ICT Australia (NICTA)
- Australian Information Industry Association (AIIA)
- Education Services Australia



Key implementation issues

- Professional development
- Initial teacher education
- Resources

How could implementation of Digital Technologies subject be supported?

What possible roles or strategies could be undertaken by participant organisations?

Australian Workforce and Productivity Agency



Resources

- Education Services Australia has already started to identify resources to support content descriptions
- Links from content descriptions to Scootle portal



Digital Technologies

Rationale/Aims

Organisation

Foundation to Year 10 curriculum

Previous | F-2 | 3-4 | 5-6 | 7-8 | 9-10 | Next

Years 5 and 6

Years 5 and 6 Description

The Digital Technologies curriculum comprises two interrelated strands: Knowledge and understanding and Processes and production skills. Teaching and learning programs should balance and integrate both strands. Together the strands focus on developing students' knowledge, understanding and skills in computational thinking and on students considering the role and impact of information systems across local, national and global communities for a range of purposes and audiences.

Elaborations

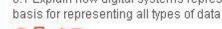
In Years 5 and 6, students think computationally by using digital systems to automate tasks and analyse...

Read full description

Years 5 and 6 Content Descriptions

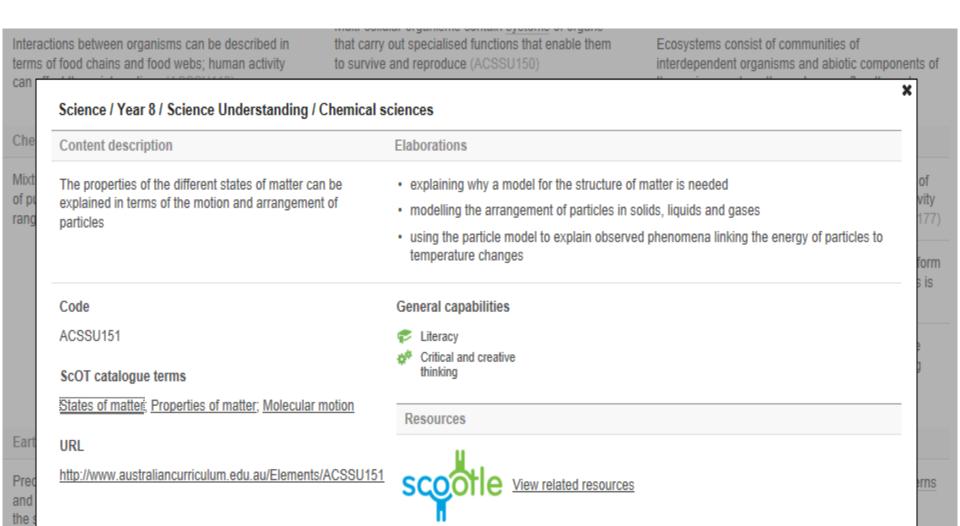
Digital Technologies knowledge and understanding





CHE.

- 6.1 Explain how digital systems represent whole numbers as a identifying that every type of data must be represented in digital systems as numbers, for
- example, a letter (or other character) is represented using a number and an image is represented using arrays of numbers · explaining that binary represents numbers using just 1s and 0s and these are represented as
- on and off electrical states in hardware representing everyday numbers in binary, for example counting in binary from zero to 15, using the binary system to write a friend's birthdate in binary or using binary code to create secret messages
- 6.2 Describe the internal and external components of common digital systems, their functions and interactions, and identify different connections for digital networks
- describing digital systems as having internal and external components that perform different functions, for example, external components for inputting data include keyboard, microphone, stylus; internal processing components include the central processing unit and motherboard; external output components include speakers, projector, screen; and data and information storage components include cloud, hard drives, USB flash drive



Some of Earth's resources are renewable, but others are non-renewable (ACSSU116)







Advanced search

Find by Australian Curriculum Learning paths Community <u>⋒</u> 📄 🖂 A to Z Home Map Timeline **Improve** + Add this content description and selected items to my learning path Back to search results Science / Year 8 / Science Understanding / Chemical sciences View on Australian Curriculum website 📮 🗵 Include in Learning Path

Curriculum content descriptions

The properties of the different states of matter can be explained in terms of the motion and arrangement of particles (ACSSU151)

Elaborations

- · explaining why a model for the structure of matter is needed
- · modelling the arrangement of particles in solids, liquids and gases
- using the particle model to explain observed phenomena linking the energy of particles to temperature changes

General capabilities

acara Australian Curriculu.



Critical and creative thinking

ScOT catalogue terms States of matter, Properties of matter, Molecular motion



Contact

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