Digital Technologies in the Australian Curriculum

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Overview

• Curriculum development process
• Australian Curriculum: Technologies
• Key ideas
• Implementation and resources
Curriculum development process
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.
Dimensions of the Australian Curriculum

Cross-curriculum priorities
- Aboriginal and Torres Strait Islander Histories and Cultures
- Asia and Australia’s engagement with Asia
- Sustainability

Learning areas
- English
- Mathematics
- Science
- Humanities and social sciences – history, geography, economics and business, civics and citizenship
- The Arts
- Languages
- Health and physical education
- Technologies – design and technologies, digital technologies

General capabilities
- Literacy
- Numeracy
- Information and communication technology capability
- Critical and creative thinking
- Personal and social capability
- Ethical understanding
- Intercultural understanding
Australian Curriculum: Technologies Shaping Process

Research

Position Paper

Initial Advice Draft Shape Paper

Shape Paper
Australian Curriculum: Technologies writing process

Appointing of Writers and Advisory group → Writing → Consultation and Trialling → Revising → Available for use; awaiting final endorsement
Digital Technologies (Available for use; awaiting final endorsement)

Foundation to Year 2

Foundation to Year 2 Band Description
Learning in Digital Technologies builds on concepts, skills and processes developed in the Early Years Learning Framework. It focuses on developing foundational skills in computational thinking and an awareness of personal experiences using digital systems.

By the end of Year 2, students will have had opportunities to create a range of digital solutions through guided play...

Read full description

Foundation to Year 2 Content Descriptions

Digital Technologies knowledge and understanding

- Identify, use and explore digital systems (hardware and software components) for a purpose (ACTDIK001)
- Recognise and explore patterns in data and represent data as pictures, symbols and diagrams (ACTDIK002)

Digital Technologies processes and production skills

- Collect, explore and sort data, and use digital systems to present the data creatively (ACTDIP003)
- Follow, describe and represent a sequence of steps and decisions (algorithms) needed to solve simple problems (ACTDIP004)
- Explore how people safely use common information systems to meet information, communication and recreation needs (ACTDIP005)
- Work with others to create and organise ideas and information using information systems, and share these with known people in safe online environments (ACTDIP006)

Foundation to Year 2 Achievement Standard

By the end of Year 2, students identify how common digital systems (hardware and software) are used to meet specific purposes. They use digital systems to represent simple patterns in data in different ways.

Students design solutions to simple problems using a sequence of steps and decisions. They collect familiar data and display them to convey meaning. They create and organise ideas and information using information systems and share information in safe online environments.
Digital Technologies

Curriculum

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Foundation to Year 2 Achievement Standard

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Australian Curriculum: Technologies
Technologies curriculum

Curriculum has been developed:

• from Foundation to Year 8 in two subjects: Design and Technologies and Digital Technologies

• from Years 9 to 10 in two optional subjects: Design and Technologies and Digital Technologies
Digital Technologies structure

Comprises two related strands:

• Digital Technologies knowledge and understanding – the information system components of data, and digital systems (hardware, software and networks)

• Digital Technologies processes and production skills – using digital systems to create ideas and information, and to define, design and implement digital solutions, and evaluate these solutions and existing information systems against specified criteria.
ICT in the Australian Curriculum

- the capability assists students to become effective *users* of ICT
- the Digital Technologies curriculum assists students to become confident *creators* of digital solutions
Key ideas
Key ideas

• Creating preferred futures
• Project management
• Types of thinking:
  – systems thinking
  – design thinking
  – computational thinking
Computational thinking

- underpins learning in Digital Technologies and is used in Design and Technologies
- problem-solving method that is applied to create solutions that can be implemented using digital technologies
- involves integrating strategies, such as organising data logically, breaking down problems into parts, interpreting patterns and models and designing and implementing algorithms.
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).
Implementation and resources
Implementation

• Facilitating implementation support discussions with stakeholders: professional learning, initial teacher education and resources
• Developing work sample portfolios
• Working with ESA to identify resources on Scootle to support content descriptions
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 (AITSL)
- Information Technology Industry Innovation Council
- National ICT Australia (NICTA) and Group X National (Digital Careers)
- Australian Information Industry Association (AIIA)
- Education Services Australia
- CSIRO Education
- Office of the Chief Scientist
<table>
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<tr>
<th>Content description</th>
<th>Elaborations</th>
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<tr>
<td>Explore how technologies use forces to create movement in products</td>
<td>• exploring how the principles of push and pull are used in the design of toys, for example in a spinning toy such as an Aboriginal mammamandur</td>
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<td>• identifying, and playing and experimenting with, components such as wheels, balls, slides, springs and available local materials, tools and equipment to solve problems requiring movement</td>
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<td>• selecting materials to demonstrate how material properties are appropriate for particular designed solutions, for example materials that enable sliding or floating</td>
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<td>• exploring a system such as a marionette or Indonesian wayang kulit shadow puppet to see that by combining materials with forces movement can be created</td>
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<td>• combining materials and using forces in design, for example designing the door on a cage or a simple conveyor belt to move materials short distances</td>
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<td>• exploring how to manipulate materials using a range of tools, equipment and techniques to create movement, for example when constructing a toy boat that floats and moves</td>
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**Code**

ACTDEK002

**ScOT catalogue terms**

Engineering, Mechanical energy
Your search returned 204 results

Classroom resources [201]: Teacher reference materials [3];
Sourced from: Direct from publishers [3]; The Learning Federation [172]; Web [29];
Listed under: Arts > Design
Listed under: Technologies > Design

1 2 3 4 5 6 7 8 9 10 11 Next

- Tai hao le! My house: contents and parts
  Explore the names of objects in a house. Find objects such as a chair, table, television or door. This learning object is the first in a series of three objects. The series is also packaged as a combined learning object.

- Tai hao le! My house: where coloured things are
  Explore the location of objects around a wizard's table. Position objects around the table. Apply prepositions such as under, beside and behind. This learning object is the last in a series of three objects. The series is also packaged as a combined learning object.
Mentors

ICT in Schools welcomes you...

Scientists, Mathematicians and ICT in Schools is a national program that creates and supports long-term partnerships between primary or secondary school teachers and scientists, mathematicians or ICT professionals. Partnerships are flexible to allow for a style and level of involvement that suits each participant. Check out the showcase to see what some partnerships have been doing.

ICT professional

Information | Register

Teachers

Information | Register

Since the program began in July 2007, a total of 3729 partnerships have been established in 1415 schools across Australia. Currently, 1565 partnerships are active in 1140 schools as at 31 January 2014.
Student activities


Young ICT Explorers [www.youngictexplorers.net.au](http://www.youngictexplorers.net.au)

GROK learning offers courses and competitions:
- National Computer Science School
- National Computer Science Challenge
- Hour of code [https://groklearning.com](https://groklearning.com)
Do *you* follow?

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