

## Information and communication technology (ICT) capability

### Introduction

In the Australian Curriculum, students develop ICT capability as they learn to use ICT effectively and appropriately to access, create and communicate information and ideas, solve problems and work collaboratively in all learning areas at school, and in their lives beyond school. The capability involves students in learning to make the most of the digital technologies available to them, adapting to new ways of doing things as technologies evolve and limiting the risks to themselves and others in a digital environment.

The *Melbourne Declaration on the Educational Goals for Young Australians* (MCEETYA 2008) recognises that in a digital age, and with rapid and continuing changes in the ways that people share, use, develop and communicate with ICT, young people need to be highly skilled in its use. To participate in a knowledge-based economy and to be empowered within a technologically sophisticated society now and into the future, students need the knowledge, skills and confidence to make ICT work for them at school, at home, at work and in their communities.

Information and communication technologies are fast and automated, interactive and multimodal, and they support the rapid communication and representation of knowledge to many audiences and its adaptation in different contexts. They transform the ways that students think and learn and give them greater control over how, where and when they learn.

### Scope of ICT capability

The nature and scope of ICT capability is not fixed, but is responsive to ongoing technological developments. This is evident in the emergence of advanced internet technology over the past few years and the resulting changes in the ways that students construct knowledge and interact with others.

Students develop capability in using ICT for tasks associated with information access and management, information creation and presentation, problem solving, decision making, communication, creative expression, and empirical reasoning. This includes conducting research, creating multimedia information products, analysing data, designing solutions to problems, controlling processes and devices, and supporting computation while working independently and in collaboration with others.

Students develop knowledge, skills and dispositions around ICT and its use, and the ability to transfer these across environments and applications. They learn to use ICT with confidence, care and consideration, understanding its possibilities, limitations and impact on individuals, groups and communities.

For a description of the organising elements for ICT capability, go to [Organising elements](#).

### ICT capability across the curriculum

ICT capability supports and enhances student learning across all areas of the curriculum. Students develop and apply ICT knowledge, skills and appropriate social and ethical

protocols and practices to investigate, create and communicate, as well as developing their ability to manage and operate ICT to meet their learning needs.

Learning areas provide the content and contexts within which students develop and apply the knowledge, skills, behaviours and dispositions that comprise ICT capability.

## ICT capability and the Technologies learning area

Information and communication technology is represented in two ways in the Australian Curriculum: through the ICT capability that applies across all learning areas and within the Technologies curriculum through Digital technologies. The ICT capability will be reviewed (and revised if necessary) to ensure that there is consistency with the Technologies curriculum following its development.

The ICT capability is addressed through the learning areas and is identified wherever it is developed or applied in content descriptions. It is also identified where it offers opportunities to add depth and richness to student learning in content elaborations. An icon indicates where ICT capability has been identified in learning area content descriptions and elaborations. A filter function on the Australian Curriculum website assists users to find where ICT capability has been identified in F–10 curriculum content. Teachers may find further opportunities to incorporate explicit teaching of ICT capability depending on their choice of activities. Students can also be encouraged to develop capability through personally relevant initiatives of their own design.

- [Information and communication technology in English](http://www.australiancurriculum.edu.au/English/General-capabilities)  
(<http://www.australiancurriculum.edu.au/English/General-capabilities>)
- [Information and communication technology in Mathematics](http://www.australiancurriculum.edu.au/Mathematics/General-capabilities)  
([www.australiancurriculum.edu.au/Mathematics/General-capabilities](http://www.australiancurriculum.edu.au/Mathematics/General-capabilities))
- [Information and communication technology in Science](http://www.australiancurriculum.edu.au/Science/General-capabilities)  
([www.australiancurriculum.edu.au/Science/General-capabilities](http://www.australiancurriculum.edu.au/Science/General-capabilities))
- [Information and communication technology in History](http://www.australiancurriculum.edu.au/History/General-capabilities)  
([www.australiancurriculum.edu.au/History/General-capabilities](http://www.australiancurriculum.edu.au/History/General-capabilities))

## Background

This background summarises the evidence base from which the ICT capability's introduction, organising elements and learning continuum have been developed. It draws on recent international and national research, as well as initiatives and programs that focus on ICT across the curriculum.

ICT capability is based on sets of relevant knowledge, skills, behaviours and dispositions. Internationally, such capability is typically represented developmentally across interrelated domains or elements to show increasingly sophisticated experiences with the technology. For example, the ICT curriculum for England presents 'lines of progression' in strands and sub-strands. The National Education Technology Standards (NETS) for students provided by the International Society for Technology in Education (ISTE) represent capability with six sets of standards. In Australia, the Statements of Learning for ICT were presented as five broadly defined conceptual organisers, representing key aspects of ICT that apply across

the curriculum. The Australian Council for Educational Research (ACER) has also identified a progression in research associated with the National Assessment Program – ICT Literacy.

Early researchers into ICT in education, such as Papert (1980) and Turkle (1984), considered that students constructed reality from experience and prior knowledge. The student interacts with the environment and, to cope with this environment, develops a conceptual framework to explain the interaction.

More recent theorists, such as Dede (2009), echo these earlier propositions even as technologies evolve, giving rise to the set of constructs upon which the ICT capability is based. In particular, the overarching element Applying social and ethical protocols and practices when using ICT addresses the personal, social and cultural contexts introduced by theorists such as Papert and Turkle.

ICT capability is based on the assumption that technologies are digital tools that enable the student to solve problems and carry out tasks. That is, the ICT system needs to suit the student and the task, while the student needs to develop an understanding of what the machine can do and an appreciation of the limitations under which it operates. In this way, students come to perceive ICT systems as useful tools rather than feeling that they themselves are the tools of the machine (Maas 1983). The latter often occurs when users have little information about how ICT systems operate and simply follow set, standard procedures, determined for them by the system.

Therefore, the ICT capability needs to take account of the types of tasks that provide authentic contexts for learning. The range of tasks is categorised into three sets: Investigating with ICT, Communicating with ICT and Creating with ICT. Students also need the knowledge and skills to use ICT based on an understanding of the 'nature of the machine'. This is encompassed in the Managing and operating ICT element of the continuum.

## References

Curriculum Corporation (2006), *Statements of Learning for Information and Communication Technologies*, (ICT) [www.curriculum.edu.au/verve/resources/SOL06\\_ICT.pdf](http://www.curriculum.edu.au/verve/resources/SOL06_ICT.pdf), (accessed 14 October, 2011)

Dede, C. 2009, *Comparing Frameworks for '21st Century Skills'*: [www.watertown.k12.ma.us/dept/ed\\_tech/research/pdf/ChrisDede.pdf](http://www.watertown.k12.ma.us/dept/ed_tech/research/pdf/ChrisDede.pdf) (accessed 14 October 2011).

Department for Education 2011, *The National Strategies*: <http://nationalstrategies.standards.dcsf.gov.uk/node/16087> (accessed 14 October 2011).

Department for Education and Employment/Qualifications and Curriculum Authority 1999, *Information and Communication Technology – The National Curriculum for England*: [http://curriculum.qcda.gov.uk/uploads/ICT%201999%20programme%20of%20study\\_tcm8-12058.pdf](http://curriculum.qcda.gov.uk/uploads/ICT%201999%20programme%20of%20study_tcm8-12058.pdf) (accessed 14 October 2011).

International Society for Technology in Education 2007, *Profiles for Technology (ICT) Literate Students*: [www.iste.org/Libraries/PDFs/NETS-S\\_2007\\_Student\\_Profiles\\_EN.sflb.ashx](http://www.iste.org/Libraries/PDFs/NETS-S_2007_Student_Profiles_EN.sflb.ashx) (accessed 14 October 2011).

International Society for Technology in Education 2007, *National Educational Technology Standards (NETS) and Performance Indicators for Students*: [www.iste.org/standards/nets-for-students.aspx](http://www.iste.org/standards/nets-for-students.aspx) (accessed 14 October 2011).

Maas, S. (1983). Why systems transparency? In T. R. G. Green, S. J. Payne, & G. C. van der Veer (Eds.), *Psychology of computer use* (pp. 19-28). London: Academic Press.

Ministerial Council for Education, Early Childhood Development and Youth Affairs 2007, *National Assessment Program – ICT Literacy: Years 6 and 10 Report 2005*, Curriculum Corporation, Carlton South, Melbourne.

Ministerial Council for Education, Early Childhood Development and Youth Affairs 2010, *National Assessment Program – ICT Literacy: Years 6 and 10 Report 2008*, Curriculum Corporation, Carlton South, Melbourne.

Ministerial Council on Education, Employment, Training & Youth Affairs 2008, *Melbourne Declaration on Educational Goals for Young Australians*: [www.curriculum.edu.au/verve/resources/National\\_Declaration\\_on\\_the\\_Educational\\_Goals\\_for\\_Young\\_Australians.pdf](http://www.curriculum.edu.au/verve/resources/National_Declaration_on_the_Educational_Goals_for_Young_Australians.pdf) (accessed 14 October 2011).

Papert, S. 1980, *Mindstorms: Children, Computers and Powerful Ideas*, Harvester Press, New York.

Turkle, S. 1984, *The Second Self: Computers and the Human Spirit*, Simon & Schuster, New York.

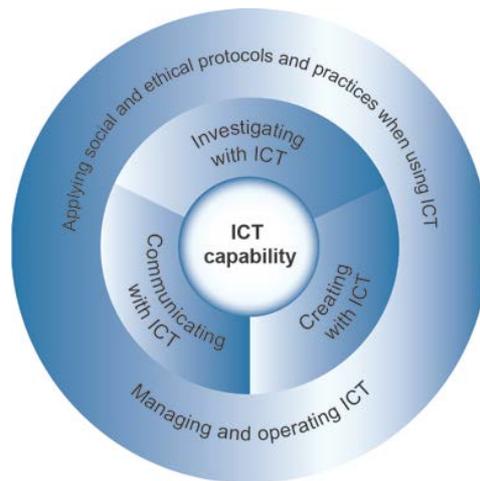
WestEd 2009, *Technological Literacy Framework for the 2012 National Assessment of Educational Progress*, WestEd, San Francisco, CA.

## Organising elements

The ICT capability learning continuum is organised into five interrelated elements:

- Applying social and ethical protocols and practices when using ICT
- Investigating with ICT
- Creating with ICT
- Communicating with ICT
- Managing and operating ICT

The diagram below sets out these elements.



Organising elements for ICT capability

### Applying social and ethical protocols and practices when using ICT

This element involves students in developing an understanding of intellectual property for digital information, and applying appropriate practices to recognise the intellectual property of themselves and others. Students use appropriate practices for the physical and logical storage and security of digital information, and apply appropriate protocols when using ICT to safely create, communicate or share information. They gain an understanding of the benefits and consequences of the use of ICT by individuals, groups and communities and the impact of the use of ICT on the fabric of society. In developing and acting with information and communication technology capability, students:

- recognise intellectual property
- apply digital information security practices
- apply personal security protocols
- identify the impacts of ICT in society.

### Investigating with ICT

This element involves students in using ICT to define and plan information searches of a range of primary and secondary sources when investigating questions, topics or problems. Students use ICT to locate, access, generate, organise and/or analyse data and information

and apply criteria to verify the integrity and value of the digital data, information and sources. In developing and acting with information and communication technology capability, students:

- define and plan information searches
- locate, generate and access data and information
- select and evaluate data and information.

### **Creating with ICT**

This element involves students in using ICT to generate ideas, plans and processes that clarify a task or steps in order to respond to questions, realise creative intentions and create solutions to challenges and tasks. Students use ICT to generate and manage digital solutions to challenges arising from learning activities or responding to a need or creative intention. In developing and acting with information and communication technology capability, students:

- generate ideas, plans and processes
- generate solutions to challenges and learning area tasks.

### **Communicating with ICT**

This element involves students in using ICT to communicate and share ideas and information to collaboratively construct knowledge and digital solutions. Students develop an understanding of the context when communicating using ICT, including a sense of the audience, the form of communication, the techniques used and the characteristics of the users and the technologies. In developing and acting with information and communication technology capability, students:

- collaborate, share and exchange
- understand computer mediated communications.

### **Managing and operating ICT**

This element involves students applying technical knowledge and skills to select, use and troubleshoot appropriate digital technologies when investigating, creating and communicating. Students develop an understanding of hardware and software components, and operations of appropriate ICT systems, including their functions, processes, procedures and devices. They apply technical knowledge and skills to efficiently and securely manage and maintain digital data. In developing and acting with information and communication technology capability, students:

- select and use hardware and software
- understand ICT systems
- manage digital data.

## Information and Communication Technology Capability Learning Continuum

### Applying social and ethical protocols and practices when using ICT

Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Typically by the end of Foundation Year, students:	Typically by the end of Year 2, students:	Typically by the end of Year 4, students:	Typically by the end of Year 6, students:	Typically by the end of Year 8, students:	Typically by the end of Year 10, students:
<b>Recognise intellectual property</b>					
<p>recognise ownership over their own digital work</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>recognising that they own text, photos and videos they produce</li> </ul>	<p>recognise ownership of digital products that others produce and that what they create or provide can be used or misused by others</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>understanding that they should not copy someone else's work without getting permission</li> </ul>	<p>acknowledge when they use digital products created by someone else, and start to indicate the source</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>explaining where an image was sourced</li> </ul>	<p>identify the legal obligations regarding the ownership and use of digital products and apply some referencing conventions</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>listing all sources, authors names and URLs of information they use</li> </ul>	<p>apply practices that comply with legal obligations regarding the ownership and use of digital products resources</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>naming sources, avoiding plagiarism, knowing what may or may not be copied, checking for permissions and legal obligations before publishing of work</li> </ul>	<p>identify and describe ethical dilemmas and consciously apply practices that protect intellectual property</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>understanding that pirating denies musicians payment for their work, understanding Creative Commons licensing</li> </ul>
<b>Apply digital information security practices</b>					
<p>follow class rules about using digital information</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>participating in a class discussion about why personal information should not be used</li> </ul>	<p>follow class rules about applying selected standard guidelines and techniques to secure digital information</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>recognising that when logging onto the network they are only able to access their</li> </ul>	<p>independently apply standard guidelines and techniques for particular digital information</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>saving to their own folder or device, logging on to server and email using a</li> </ul>	<p>independently apply strategies for determining and protecting the security of digital information and assess the risks associated with online environments</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>checking whether a friend can access the information, checking whether someone else</li> </ul>	<p>independently apply strategies for determining the appropriate type of digital information suited to the location of storage and adequate security for online environments</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>not storing private information on public online sites, setting user access and</li> </ul>	<p>use a range of strategies for securing and protecting information, assess the risks associated with online environments and establish appropriate security strategies and codes of conduct</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>using complex security settings for online sites; varying password structures;</li> </ul>

Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Typically by the end of Foundation Year, students:	Typically by the end of Year 2, students:	Typically by the end of Year 4, students:	Typically by the end of Year 6, students:	Typically by the end of Year 8, students:	Typically by the end of Year 10, students:
online	own folders or accounts <ul style="list-style-type: none"> <li>only logging on to class computer with their own username and password</li> </ul>	personal password	can find the web link to their online posts, using non-predictable user names and passwords	privacy parameters	separating information with folders or sites and understanding how to modify default parameters within social networking sites
follow class rules when sharing personal information with known audiences and demonstrate an awareness of applying social protocols when using ICT to communicate	follow class guidelines when sharing personal information and apply basic social protocols when using ICT to communicate with known audiences	apply standard guidelines and take action to avoid the common dangers to personal security when using ICT and apply appropriate basic social protocols when using ICT to communicate with unknown audiences	identify the risks to identity, privacy and emotional safety for themselves when using ICT and apply generally accepted social protocols when sharing information in online environments, taking into account different social and cultural contexts	identify and value the rights to identity, privacy and emotional safety for themselves and others when using ICT and apply generally accepted social protocols when using ICT to collaborate with local and global communities	independently apply appropriate strategies to protect rights, identity, privacy and emotional safety of others when using ICT, and discriminate between protocols suitable for different communicating tools when collaborating with local and global communities
<b>Examples</b> <ul style="list-style-type: none"> <li>making a digital recording about their family that does not offend or upset the viewer</li> </ul>	<b>Examples</b> <ul style="list-style-type: none"> <li>messaging only to people they know, only allowing certain people to access their online space; keeping passwords secret; addressing recipients appropriately in emails, videos or posts</li> </ul>	<b>Examples</b> <ul style="list-style-type: none"> <li>sharing personal photographs only in appropriate environments; using polite but impersonal language in posted messages; recognising forms of cyber bullying</li> </ul>	<b>Examples</b> <ul style="list-style-type: none"> <li>understanding the dangers of providing personal information; recognising and reporting cyber bullying; only posting a photo with the owner's permission; not revealing details of identity; avoiding language offensive to particular groups of people; actively avoiding incidences of cyber bullying</li> </ul>	<b>Examples</b> <ul style="list-style-type: none"> <li>forwarding personal communications from friends only with permission; being aware of time zones and differences in meaning of terms and concepts due to location and culture; using the bcc email field; recognising when others are being cyber bullied</li> </ul>	<b>Examples</b> <ul style="list-style-type: none"> <li>analysing possible consequences of posting personal information on social networking sites; taking responsibility for the effect of their communications on other people; using appropriate salutations; adjusting length and formality of message to suit form of communication; independently employing anti-cyber bullying strategies</li> </ul>
<b>Apply personal security protocols</b>					

Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Typically by the end of Foundation Year, students:	Typically by the end of Year 2, students:	Typically by the end of Year 4, students:	Typically by the end of Year 6, students:	Typically by the end of Year 8, students:	Typically by the end of Year 10, students:
identify how they use ICT in multiple ways on multiple devices	identify how ICT is used at home and at school	identify the value and role of ICT use at home and school	explain the main uses of ICT at school, home and in the local community, and recognise its potential positive and negative impacts on their lives	explain the benefits and risks of the use of ICT for particular people in work and home environments	assess the impact of ICT in the workplace and in society, and speculate on its role in the future and how they can influence its use
<b>Examples</b> <ul style="list-style-type: none"> <li>taking a photo or playing a digital game with a phone, using a simulation or reading an online book on a tablet</li> </ul>	<b>Examples</b> <ul style="list-style-type: none"> <li>identifying how ICT is used in personal communicating, shopping, banking, finding information, keeping class information, online lunch ordering</li> </ul>	<b>Examples</b> <ul style="list-style-type: none"> <li>valuing ICT as a quick method to find information, playing games with friends; taking virtual tours; observing events in real time</li> </ul>	<b>Examples</b> <ul style="list-style-type: none"> <li>ordering food from restaurants using a mobile devices, or scanning QR codes to access information</li> </ul>	<b>Examples</b> <ul style="list-style-type: none"> <li>explaining that Voice Over Internet Protocol (VoIP) allows people to stay in touch, some people's jobs are replaced by computers, worker productivity may increase when computers are used</li> </ul>	<b>Examples</b> <ul style="list-style-type: none"> <li>recognising the potential of enhanced inclusivity for people with disability through ICT, the digital divide, new types of work, globalisation</li> </ul>

## Investigating with ICT

Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Typically by the end of Foundation Year, students:	Typically by the end of Year 2, students:	Typically by the end of Year 4, students:	Typically by the end of Year 6, students:	Typically by the end of Year 8, students:	Typically by the end of Year 10, students:
use ICT to identify where information is located	use ICT to identify, record and classify textual and graphic information to show what is known and what needs to be	use ICT to plan an information search or generation of information, recognising some pattern within the information,	use a range of ICT to identify and represent patterns in sets of information and to pose questions to guide searching for, or	use a range of ICT to analyse information in terms of implicit patterns and structures as a basis to plan an information	select and use a range of ICT independently and collaboratively, analyse information to frame questions and plan search strategies or data
<b>Define and plan information searches</b>					

Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Typically by the end of Foundation Year, students:	Typically by the end of Year 2, students:	Typically by the end of Year 4, students:	Typically by the end of Year 6, students:	Typically by the end of Year 8, students:	Typically by the end of Year 10, students:
<p><b>Examples</b></p> <ul style="list-style-type: none"> <li>using icon based programs to locate information</li> </ul>	<p><b>Examples</b></p> <ul style="list-style-type: none"> <li>using colour coding and drawing software to show steps in a sequence</li> </ul> <p>Mathematics <a href="#">ACMMMG045</a> Science <a href="#">ACSIIS039</a> History <a href="#">ACHHK044</a></p>	<p><b>Examples</b></p> <ul style="list-style-type: none"> <li>listing what information is required and suggesting where it may be located, creating methods of recording data from experiments</li> </ul> <p>Mathematics <a href="#">ACMSP069</a> Science <a href="#">ACSIIS054</a> History <a href="#">ACHHS068</a></p>	<p><b>Examples</b></p> <ul style="list-style-type: none"> <li>using tables, charts and graphic organisers such as concept maps</li> </ul> <p>English <a href="#">ACELY1712</a> Mathematics <a href="#">ACMSP119</a> Science <a href="#">ACSIIS086</a> History <a href="#">ACHHS120</a></p>	<p><b>Examples</b></p> <ul style="list-style-type: none"> <li>using graphic organisers to plan a search with links to sources</li> </ul> <p>Mathematics <a href="#">ACMNA174</a> Science <a href="#">ACSIIS125</a> History <a href="#">ACHHS208</a></p>	<p><b>Examples</b></p> <ul style="list-style-type: none"> <li>using wikis or other shared documents; searching databases</li> </ul> <p>Science <a href="#">ACSIIS165</a> History <a href="#">ACHHS168</a></p>
<b>Locate, generate and access data and information</b>					
use icons to locate or generate required information	locate information from a given set of digital sources	locate, retrieve or generate information from a range of digital sources	locate, retrieve or generate information using search engines and simple search functions and classify information in meaningful ways	locate, retrieve or generate information using search facilities and organise information in meaningful ways	use advanced search tools and techniques or simulations and digital models to locate or generate precise data and information that supports the development of new understandings
<p><b>Example</b></p> <ul style="list-style-type: none"> <li>making choices from icon-based menus</li> </ul>	<p><b>Examples</b></p> <ul style="list-style-type: none"> <li>locating information following hyperlinks; printing pages; copying and pasting text and images; experimenting in a simulation environment to test decisions</li> </ul>	<p><b>Examples</b></p> <ul style="list-style-type: none"> <li>locating information by typing in simple URLs; saving text and images; collecting data from a simulation environment</li> </ul>	<p><b>Examples</b></p> <ul style="list-style-type: none"> <li>searching and locating files within school directory; searching across web or within site; organising in folders, tables or databases, using simulations to generate and organise information on real world</li> </ul>	<p><b>Examples</b></p> <ul style="list-style-type: none"> <li>searching within document – find/search/buttons/tabs; using search strings; accessing primary data through online or local equipment; using simulation tools to test hypotheses to</li> </ul>	<p><b>Examples</b></p> <ul style="list-style-type: none"> <li>using logical statements such as true/false; searching within fields or for data type; using data logger equipment; digital microscope; using digital models to test and adjust hypotheses to</li> </ul>

Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
<p>Typically by the end of Foundation Year, students:</p> <p>English <a href="#">ACELY1649</a></p>	<p>Typically by the end of Year 2, students:</p> <p>English <a href="#">ACELY1660</a>            Mathematics <a href="#">ACMMG045</a>            Science <a href="#">ACSYS026</a>            History <a href="#">ACHHK044</a></p>	<p>Typically by the end of Year 4, students:</p> <p>English <a href="#">ACELA1793</a>            Mathematics <a href="#">ACMSP098</a>            Science <a href="#">ACSYS066</a>            History <a href="#">ACHHS078</a></p>	<p>Typically by the end of Year 6, students:</p> <p>problems</p> <p>English <a href="#">ACELY17123</a>            Mathematics <a href="#">ACMSP145</a>            Science <a href="#">ACSYS104</a>            History <a href="#">ACHHS101</a></p>	<p>Typically by the end of Year 8, students:</p> <p>problems</p> <p>English <a href="#">ACELY1733</a>            Mathematics <a href="#">ACMSP284</a>            Science <a href="#">ACSYS129</a>            History <a href="#">ACHHS208</a></p>	<p>Typically by the end of Year 10, students:</p> <p>problems</p> <p>Mathematics <a href="#">ACMSP227</a>            Science <a href="#">ACSYS199</a>            History <a href="#">ACHHS186</a></p>
<b>Select and evaluate data and information</b>					
<p>explain how located data or information was used</p> <p><b>Example</b></p> <ul style="list-style-type: none"> <li>explaining how digital information was used in an activity</li> </ul>	<p>explain the usefulness of located data or information</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>explaining how digital information answers a question</li> </ul>	<p>explain why located data or information was selected</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>explaining why a source of digital information was used or trusted in preference to another</li> </ul>	<p>assess the suitability of data or information using a range of appropriate given criteria</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>selecting the most useful/reliable/relevant digital resource from a set of three or four alternatives</li> </ul>	<p>assess the suitability of data or information using appropriate own criteria</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>applying criteria developed for an enquiry or project; considering the adequacy of source of information</li> </ul>	<p>develop and use criteria systematically to evaluate the quality, suitability and credibility of located data or information and sources</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>comparing objective data from multiple digital sources to evaluate the likely credibility of the information provided</li> </ul>
<p>English <a href="#">ACELA1793</a>            Mathematics <a href="#">ACMNA057</a>            History <a href="#">ACHHS068</a></p>	<p>English <a href="#">ACELA1793</a>            Mathematics <a href="#">ACMNA128</a>            Science <a href="#">ACSYS087</a>            History <a href="#">ACHHS116</a></p>	<p>English <a href="#">ACELY1704</a>            Mathematics <a href="#">ACMNA128</a>            Science <a href="#">ACSYS087</a>            History <a href="#">ACHHS116</a></p>	<p>English <a href="#">ACELY1734</a>            Science <a href="#">ACSYS125</a>            History <a href="#">ACDSEH030</a></p>	<p>Mathematics <a href="#">ACMSP239</a>            Science <a href="#">ACSYS165</a>            History <a href="#">ACHHS187</a></p>	

## Creating with ICT

Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Typically by the end of Foundation Year, students:	Typically by the end of Year 2, students:	Typically by the end of Year 4, students:	Typically by the end of Year 6, students:	Typically by the end of Year 8, students:	Typically by the end of Year 10, students:
<b>Generate ideas, plans and processes</b>					
<p>use ICT to follow or contribute to a simple plan for a solution</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>using online and multimedia short sequence of instructions; contributing to a class digital product plan</li> </ul>	<p>use ICT to prepare simple plans to find solutions or answers to questions</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>drawing simple mind maps using conceptual mapping software; using drawing software to show steps in a sequence</li> </ul>	<p>use ICT to generate ideas and plan solutions</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>using tables, photos and sketches in planning documents</li> </ul>	<p>use ICT effectively to record ideas, represent thinking and plan solutions</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>using timeline software to plan processes; using concept mapping and brainstorming software to generate key ideas; using graphic and audio visual software to record ideas</li> </ul>	<p>use appropriate ICT to collaboratively generate ideas and develop plans</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>sharing documents including text, graphics and numbers</li> </ul>	<p>select and use ICT to articulate ideas and concepts, and plan the development of complex solutions</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>using software to create hyperlinks, tables and charts; using design and project planning software</li> </ul>
English <a href="#">ACELY1674</a>	English <a href="#">ACELY1674</a>	English <a href="#">ACELY1682</a> Science <a href="#">ACSYS054</a> History <a href="#">ACHHK078</a>	English <a href="#">ACELY1704</a> Mathematics <a href="#">ACMNA123</a> Science <a href="#">ACSYS086</a>	English <a href="#">ACELY1720</a> Mathematics <a href="#">ACMNA189</a> Science <a href="#">ACSYS144</a>	English <a href="#">ACELY1751</a>
<b>Generate solutions to challenges and learning area tasks</b>					
<p>use ICT as a creative tool to generate simple solutions, modifications or data representations for personal or school purposes</p>	<p>experiment with ICT as a creative tool to generate simple solutions, modifications or data representations for particular audiences or purposes</p>	<p>create and modify simple digital solutions, creative outputs or data representation/transformation for particular purposes</p>	<p>independently or collaboratively create and modify digital solutions, creative outputs or data representation/transformation for particular audiences and purposes</p>	<p>design and modify simple digital solutions, or multimodal creative outputs or data transformations for particular audiences and purposes following recognised conventions</p>	<p>Design, modify and manage complex digital solutions, or multimodal creative outputs or data transformations for a range of audiences and purposes</p>

Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Typically by the end of Foundation Year, students:	Typically by the end of Year 2, students:	Typically by the end of Year 4, students:	Typically by the end of Year 6, students:	Typically by the end of Year 8, students:	Typically by the end of Year 10, students:
<b>Examples</b> <ul style="list-style-type: none"> <li>using appropriate software to enter text, images; audio and numbers; editing a class-created digital product; representing a data set in a digital product</li> </ul>	<b>Examples</b> <ul style="list-style-type: none"> <li>using the basic functionality of selected software to manipulate text, images, audio and numbers; representing data numerically or graphically; editing own work and that of others</li> </ul>	<b>Examples</b> <ul style="list-style-type: none"> <li>editing text, images, audio, and video for presentations and story-telling; transforming data between numerical and graphical digital representation; applying editing strategies</li> </ul>	<b>Examples</b> <ul style="list-style-type: none"> <li>manipulating and combining images, text, video and sound for presentations; creating podcasts; applying purposeful editing and refining processes</li> </ul>	<b>Examples</b> <ul style="list-style-type: none"> <li>creating movies, animations, websites and music; programming games; using spread sheets; managing and editing original source materials</li> </ul>	<b>Examples</b> <ul style="list-style-type: none"> <li>modelling solutions in spread sheets, creating movies, animations, websites and music; programming games; using databases; creating web pages for visually impaired users; using advanced functions to manage and edit digital products for desired effects</li> </ul>
English <a href="#">ACELY1651</a> History <a href="#">ACHHS022</a>	English <a href="#">ACELY1664</a> Mathematics <a href="#">ACMMG042</a> History <a href="#">ACHHS054</a>	English <a href="#">ACELY1685</a> Mathematics <a href="#">ACMMG091</a> History <a href="#">ACHHS071</a>	English <a href="#">ACELT1618</a> Mathematics <a href="#">ACMSP119</a> Science <a href="#">ACSI090</a> History <a href="#">ACHHS106</a>	English <a href="#">ACELY1728</a> Mathematics <a href="#">ACMNA187</a> Science <a href="#">ACSI129</a> History <a href="#">ACHHS214</a>	English <a href="#">ACELT1773</a> Mathematics <a href="#">ACMNA229</a> Science <a href="#">ACSI203</a> History <a href="#">ACHHS193</a>

### Communicating with ICT

Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Typically by the end of Foundation Year, students:	Typically by the end of Year 2, students:	Typically by the end of Year 4, students:	Typically by the end of Year 6, students:	Typically by the end of Year 8, students:	Typically by the end of Year 10, students:
use purposefully selected ICT tools safely to view information shared by trusted adults	use purposefully selected ICT tools safely to share and exchange information with appropriate local audiences	use appropriate ICT tools safely to share and exchange information with appropriate known audiences	select and use appropriate ICT tools safely to share and exchange information and to safely collaborate with others	select and use appropriate ICT tools safely to lead groups in sharing and exchanging information, and taking part in online projects or active collaborations with appropriate global	select and use a range of ICT tools efficiently and safely to share and exchange information, and to collaboratively and purposefully construct knowledge
<b>Collaborate, share and exchange</b>					

Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
<p>Typically by the end of Foundation Year, students:</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>viewing information placed on a secure site by the teacher</li> </ul> <p>English ACELY1580 History ACHHS022</p>	<p>Typically by the end of Year 2, students:</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>using class online discussion board or blog to read and post electronic messages; composing a message and sending it with support</li> </ul> <p>English ACELY1664 History ACHHS038</p>	<p>Typically by the end of Year 4, students:</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>using emails and online discussion boards to read and post electronic messages</li> </ul> <p>English ACELT1794 History ACHHS087</p>	<p>Typically by the end of Year 6, students:</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>contributing to the content of a wiki; blogging and posting to bulletin boards</li> </ul> <p>English ACELY1711 Science ACSIS107 History ACHHS125</p>	<p>Typically by the end of Year 8, students:</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>setting up a wiki or blog for an associated user group</li> </ul> <p>English ACELA1528 Science ACSIS133 History ACHHS157</p>	<p>Typically by the end of Year 10, students:</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>using online applications and management tools for collaborative projects such as online portals, wikis; using common social networking tools for strategic purposes</li> </ul> <p>Science ACSIS174 History ACHHS175</p>
<b>Understand computer mediated communications</b>					
<p>understand that messages are recorded, viewed or sent in computer mediated communications for others to receive</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>understanding that a response to a question on an online environment will be</li> </ul>	<p>understand that computer mediated communications may be received later by the receiver</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>understanding that a communication on a blog may be viewed later by other students</li> </ul>	<p>understand that computer mediated communications are directed to an audience for a purpose</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>understanding that a text message may be sent to one or more persons</li> </ul>	<p>understand that particular forms of computer mediated communications and tools are suited to synchronous or asynchronous and one-to-one or group communications</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>understanding differences in the characteristics, features and use of</li> </ul>	<p>understand that there are various methods of collaboration through computer mediated communications that vary in form and control</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>understanding the characteristics, features and use of electronic learning</li> </ul>	<p>understand that computer mediated communications have advantages and disadvantages in supporting active participation in a community of practice and the management of collaboration on digital materials</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>understanding the advantages and disadvantages of using websites and</li> </ul>

Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Typically by the end of Foundation Year, students:  received by the teacher  English <a href="#">ACELY1784</a>	Typically by the end of Year 2, students:  English <a href="#">ACELY1671</a>	Typically by the end of Year 4, students:  English <a href="#">ACELY16942</a>	Typically by the end of Year 6, students:  Skype compared with blogs or wikis  English <a href="#">ACELT1618</a> Science <a href="#">ACSYS110</a> History <a href="#">ACHHS106</a>	Typically by the end of Year 8, students:  environments for collaborating  English <a href="#">ACELY1808</a> Science <a href="#">ACSYS148</a>	Typically by the end of Year 10, students:  online environments for managing collaboration  Science <a href="#">ACSYS208</a>

## Managing and operating ICT

Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Typically by the end of Foundation Year, students:	Typically by the end of Year 2, students:	Typically by the end of Year 4, students:	Typically by the end of Year 6, students:	Typically by the end of Year 8, students:	Typically by the end of Year 10, students:

### Select and use hardware and software

<p>Identify and safely operate ICT systems to complete relevant simple specified tasks and seek help when encountering a problem</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>selecting and using a camera to take a photograph or using a printer to print a picture, using a tablet, notebook or desktop computer to read a book or draw a picture; knowing when something has not worked as expected</li> </ul>	<p>Identify and safely operate a selected range of appropriate devices, software, functions and commands when operating an ICT system and attempt to solve a problem before seeking help</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>using page layout software for posters, using a mouse, USB flash drive, printer, digital camera, or robot supervised by the teacher; taking initial steps in coping with the unexpected and then seeking help</li> </ul>	<p>Identify and independently operate a range of devices; software, functions and commands, taking into consideration ergonomics when operating appropriate ICT systems, and seek solutions when encountering a problem</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>using a camera, a microphone and slideshow software to create a presentation, adjusting the placement and orientation of the mouse, keyboard and screen to ensure ease and comfort when using; attempting to</li> </ul>	<p>select from, and safely operate, a range of devices to undertake specific tasks and use basic troubleshooting procedures to solve routine malfunctions</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>selecting specific graphics software or graphic tools in word processors, using printer queues, file servers, scanners, probes, digital cameras</li> </ul>	<p>independently select and operate a range of devices by adjusting relevant software functions to suit specific tasks, and independently use common troubleshooting procedures to solve routine malfunctions</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>selecting a spread sheet to model a budget or a fast processor to edit movies; adjusting digital camera settings; creating shortcuts</li> </ul>	<p>justify the selection of, and optimise the operation of, a selected range of devices and software functions to complete specific tasks, for different purposes and in different social contexts</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>selecting an appropriate option for creating a website such as an online tool or an HTML editor, altering toolbars, sorting and layout functions; using duplex printing; setting proxies; using filters to divert junk</li> </ul>
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Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Typically by the end of Foundation Year, students:  and seeking help  English <a href="#">ACELY1654</a>	Typically by the end of Year 2, students:  English <a href="#">ACELY1674</a>	Typically by the end of Year 4, students:  resolve a technical problem  English <a href="#">ACELY1697</a> Mathematics <a href="#">ACMNA076</a> Science <a href="#">ACSYS066</a>	Typically by the end of Year 6, students:  English <a href="#">ACELY1717</a> Science <a href="#">ACSYS105</a>	Typically by the end of Year 8, students:  English <a href="#">ACELY1738</a> Science <a href="#">ACSYS141</a>	Typically by the end of Year 10, students:  mail, optimising the functions and features of online tools for a particular purpose  English <a href="#">ACELY1748</a> Science <a href="#">ACSYS200</a>
<b>Understand ICT systems</b>					
identify common consumer ICT systems with input and output functions  <b>Examples</b> <ul style="list-style-type: none"> <li>identifying and/or listing different ICT systems such as desktop, notebook, tablet and mobile systems</li> </ul>	identify the main components of common consumer ICT systems, their fundamental functions, and describe them using basic ICT terminology  <b>Examples</b> <ul style="list-style-type: none"> <li>identifying basic hardware and peripherals, such as mouse, keyboard, monitor, printer, and some software programs, such as word processing, drawing and paint software</li> </ul>	identify and compare the use of the main components of different ICT systems  <b>Examples</b> <ul style="list-style-type: none"> <li>comparing the use of a touch screen and apps on a mobile with mouse and applications on a desktop computer</li> </ul>	identify, compare and classify basic ICT system components  <b>Examples</b> <ul style="list-style-type: none"> <li>understanding the uses of standard input, processing, output and storage components such as, input – keyboard, microphone; process – central processing unit; output –monitor, speakers, projector; storage – cloud, USB, hard drive; understanding the use and role of system and application software</li> </ul>	identify and compare networked ICT system components including between hardware, software and data  <b>Examples</b> <ul style="list-style-type: none"> <li>identifying and comparing the concepts of local area networks, server-client networks, cloud systems, saving files in differing formats so that they are compatible across different software platforms</li> </ul>	apply an understanding of networked ICT system components to make changes to functions, processes, procedures and devices to fit the purpose of the solutions  <b>Examples</b> <ul style="list-style-type: none"> <li>applying their understanding to decide whether to use cloud, local server or local storage; deciding whether to use a webcam or digital video camera</li> </ul>
<b>Manage digital data</b>					
save and retrieve digital	manage and maintain	manage and maintain	manage and maintain data	manage and maintain data	manage and maintain data

Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
<p>Typically by the end of Foundation Year, students:</p> <p>data with support</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>using the Save and Open functions on an application</li> </ul>	<p>Typically by the end of Year 2, students:</p> <p>digital data with guidance</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>saving and retrieving data; providing unique names for files; applying basic functions such as opening and dragging-and dropping files</li> </ul>	<p>Typically by the end of Year 4, students:</p> <p>digital data using common methods</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>managing and maintaining lists, favourites, bookmarks, folders and files</li> </ul>	<p>Typically by the end of Year 6, students:</p> <p>on different storage mediums – locally and on networks</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>saving/exporting data in files of different formats; routinely backing up and protecting data; moving data from one location to another</li> </ul>	<p>Typically by the end of Year 8, students:</p> <p>for groups of users using a variety of methods and systems</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>setting up and maintaining shared folders</li> </ul>	<p>Typically by the end of Year 10, students:</p> <p>securely in a variety of storage mediums and formats</p> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>designing and using logical and sustainable file/folder naming conventions; maintaining version control of documents; limiting access to data by location or password</li> </ul>
	<p>Science <a href="#">ACSIIS039</a></p>	<p>Mathematics <a href="#">ACMSP069</a> Science <a href="#">ACSIIS055</a></p>	<p>Science <a href="#">ACSIIS104</a></p>	<p>Science <a href="#">ACSIIS141</a></p>	<p>Science <a href="#">ACSIIS199</a></p>