

## Information and Communication Technology (ICT) competence



### *Continuum*

ICT competence is presented as a continuum of learning that describes the knowledge, skills and dispositions students can reasonably be expected to have developed at three stages of schooling (the end of Years 2, 6 and 10).

The continuum is based on the belief that students need opportunities to develop ICT competence over time and across learning areas. What is learned in the early years supports all subsequent learning. The continuum describes expected learning for each element of ICT at each of the three stages of schooling.

The continuum is presented in two formats: the first shows expected learning for each stage of schooling; the second shows expected learning across the three stages of schooling.

### **Elements of ICT competence**

The continuum is structured into five interrelated elements of ICT competence:

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

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

ICT competence develops within a context of social and ethical practice. This includes students developing an understanding of:

- intellectual property such as copyright, acknowledging sources of information; referencing methods for text, images, music, video
- information security and practices that violate the integrity of information such as hacking, spamming, fraud, advertising, viruses, scams, phishing, and computer protection when sharing information online, for example when peer-to-peer (p2p) file sharing
- personal security and their responsibility to:
  - protect the rights, identity, privacy and emotional safety of online audiences
  - avoid and prevent cyber bullying such as bullying through exclusion and malicious messaging
  - consider the consequences of actions such as blogging and uploading images
  - ensure security (physical, mental, social) of self or other persons such as reporting online security concerns, being aware of 'grooming or luring' and cyberstalking
  - respect audiences, known and unknown, for example in use of language, formality of



- style, type of content, forms of address
- be aware of the portrayal of self and identity of others.
- the benefits and consequences of the use of ICT for individuals, groups and communities in society, such as:
  - enhancing participation, functioning and equity, meeting special needs, improving civic participation, allowing accessibility, decreasing geographic isolation
  - being drivers of ICT, for example having realistic attitudes, becoming positive creators not just recipients, creating a positive digital footprint
  - understanding how changes in technology impact on and relate to changes in society, for example use of avatars, virtual worlds, chat rooms, gaming, online shopping, and seeking to balance digital relationships and time online with face-to-face relationships.

### **Managing and operating ICT**

Students operate ICT to investigate, create and communicate. This involves applying the technical knowledge and skills that underpin the use of computers to work when and as required with information and use information classification and organisation schemes. This involves:

- efficient and ergonomic use of hardware and software including:
  - troubleshooting
  - monitoring occupational health and safety issues such as eye strain, repetitive strain injury, and neck, shoulders and back injuries
- selecting appropriate hardware and software from a range with increasing scope to match the needs of the user and the task
- understanding ICT systems and transferability of knowledge and skills between systems and applications
- using software to manage and maintain information in digital files, for example generic file and software functions such as opening and saving files in given locations, resizing images, copying and pasting text, naming and organising/managing files, file formats, security of files.

### **Investigating with ICT**

Students use ICT to access data and information from a range of primary and secondary sources when investigating questions, topics or problems. To do this effectively and efficiently, students use processes of defining, planning, locating, accessing, selecting, organising and assessing information and data. This involves using ICT to:

- define and plan information searches to:
  - identify what students already know and what they need to know, such as posing research questions and using graphic organisers
- locate and access data and information through:
  - search engines, search functions and general and specialised directories
  - navigation tools between and within documents, accessing documents that have some



- form of restriction such as password-protected files
- different file formats such as PDFs, negotiating user accounts, selecting information from within a document or website, and using peripheral devices
- organising data and information using a range of ICT tools.
- select and evaluate data and information and apply criteria to:
  - verify the integrity of data and information and their sources, for example for usefulness, credibility, reliability, validity, relevance, bias, timeliness, author, date.

## Creating with ICT

Students generate ideas, plans, processes and solutions to challenges or learning area tasks. These may relate to learning a concept, completing an activity and responding to a need, and may be self-generated or requested. This involves using ICT to:

- generate ideas, plans and processes to:
  - clarify a task or the steps or processes required to develop responses to questions or solutions, such as using visualisation thinking tools, classification, pattern identification, filtering, graphic organisers, concept/mind maps and flow charts
- generate products or solutions for challenges and learning area tasks to:
  - develop, refine and present new understandings, for example a presentation incorporating an online tool, a report, a video, a podcast, a digital story
  - create an input or a process to support an output (for example, collecting data or developing a design to be used in another product; programming to enable the control of traffic lights (control technologies) and modelling with spreadsheets and simulation packages)
  - transform information, for example converting a set of instructions to a flow chart to represent a sequence of activities, converting a table of data to a graph or chart, creating animations for film, and taking static information and making it dynamic as in digital storytelling.

## Communicating with ICT

Students use ICT to communicate ideas and information with others and collaboratively construct knowledge, in adherence with social protocols appropriate to the communicative context (purpose, audience and technology). They:

- share, exchange and collaborate to enhance learning by:
  - sharing information, such as on social networking sites
  - exchanging information through reciprocal communication, such as by email, instant messaging, bulletin boards, online friends, public forums, blogs, video conferencing
  - collaborating and collectively contributing to a product, such as using wiki project management tools, file management, online docs, interactive whiteboard software
- understand and apply social protocols to:
  - receive, send and publish taking into account characteristics of users, such as culture, gender, location, status, and expertise, and the permanence of digital histories
- apply techniques or strategies to ensure security of information to:



- control levels of access to sites
- protect files
- block inappropriate users and report abuse.

## **Capability descriptions by element and stage of schooling**

### **Applying social and ethical protocols and practices**

#### **By the end of Year 2**

Students recognise that people create information resources and that information they create or provide can be used or misused by others.

They follow class rules about using these resources and apply basic guidelines to secure personal information.

They identify how ICT is used in their homes and at school.

#### **By the end of Year 6**

Students apply practices that comply with legal obligations regarding the ownership and use of information resources.

They apply strategies for protecting the security of personal information, and recognise the rights, identity, privacy and emotional safety of themselves and others when using ICT.

They explain the use of ICT at school and in the local community, and understand its impact on their lives.

#### **By the end of Year 10**

Students recognise ethical dilemmas and apply practices that protect intellectual property. They use a range of strategies for securing and protecting information and understand the need for codes and conduct.

They apply appropriate strategies to protect the rights, identity, privacy and emotional safety of others when using ICT in a range of contexts.

They assess the impact of ICT in the workplace and in society. They speculate on its role in the future and how they can influence the use of ICT.

### **Managing and operating ICT**

#### **By the end of Year 2**

Students safely use a limited range of devices, functions and commands when operating an ICT system and identify appropriate software for a task.

They use basic ICT terminology to describe hardware and software features and their operations, and manage their digital files with guidance.



**By the end of Year 6**

Students use a range of devices ergonomically and with increasing efficiency.

They select and apply appropriate software functions and use basic troubleshooting procedures to solve routine malfunctions.

They apply an understanding of basic ICT system components to use functions, processes and procedures, and apply basic software commands to effectively manage and maintain files on different storage mediums.

**By the end of Year 10**

Students efficiently, effectively and ergonomically use and optimise a selected range of devices and software functions to meet particular tasks and to solve routine ICT system problems.

They make changes to functions, processes, procedures and devices to fit the purpose of the solutions.

They apply strategies and procedures for efficient, secure and effective management and maintenance of files in a variety of different storage mediums and formats.

**Investigating with ICT**

**By the end of Year 2**

Students use ICT to identify, record, group and classify textual and graphic information to show what is known and what needs to be investigated.

They locate and retrieve textual and graphic information from a range of digital sources, and explain the usefulness of located information.

**By the end of Year 6**

Students use appropriate ICT to identify and represent patterns in sets of information and to pose questions.

They plan, locate (using search engines and basic search functions), retrieve and organise information in meaningful ways, and assess the suitability of information using appropriate criteria.

**By the end of Year 10**

Students select and use appropriate ICT independently and collaboratively to analyse information to frame questions and plan search strategies.

They use advanced search tools and techniques to locate precise data and information that supports the development of new understandings.

They develop and use criteria systematically to evaluate the quality, suitability and credibility of located information and sources.



## **Creating with ICT**

### **By the end of Year 2**

Students use ICT to prepare simple plans to find solutions or answers to questions.

They experiment with ICT as a creative tool to generate simple solutions for particular audiences or purposes.

They use the basic functionality of limited software to experiment with manipulating different data types such as text, images (still and moving), audio and numbers.

### **By the end of Year 6**

Students use ICT effectively to record ideas, represent their thinking and plan solutions.

They create ICT solutions, independently or collaboratively, for particular audiences and purposes, and use a range of software types and functions to edit a range of data types such as text, images (still and moving), audio and numbers.

### **By the end of Year 10**

Students select and use ICT to articulate ideas and concepts and plan the development of complex solutions.

They design and modify creative ICT solutions, independently and collaboratively, for particular audiences and for a range of purposes.

They use an extensive range of software types and functions and peripherals to manipulate and edit multiple data types, such as text, images (still and moving), audio and numbers.

## **Communicating with ICT**

### **By the end of Year 2**

Students use identified ICT tools safely to share and exchange information with appropriate audiences. They apply basic social protocols when communicating with known audiences and use limited techniques to ensure digital security.

### **By the end of Year 6**

Students select and use appropriate ICT tools safely to share and exchange information and to collaborate with others when creating solutions.

They apply generally accepted social protocols when sharing information in online environments, taking into account different social and cultural contexts. They independently establish secure accounts for approved online environments.

### **By the end of Year 10**

Students select and use a range of ICT tools efficiently and safely to share and exchange



information and to construct knowledge collaboratively.

They discriminate between protocols suitable for different communication tools when collaborating with local and global communities, and assess the risks associated with online environments and establish appropriate security strategies as required.

## **Capability descriptions by stage of schooling and element**

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#### **Applying social and ethical protocols and practices**

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They follow class rules about using these resources and apply basic guidelines to secure personal information.

They identify how ICT is used in their homes and at school.

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