National Assessment Program – ICT Literacy 2025 Years 6 and 10

Assessment Framework

ACARA AUSTRALIAN CURRICULUM, ASSESSMENT AND REPORTING AUTHORITY

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1 Overview

1.1 Background

The National Assessment Program (NAP) began as an initiative of ministers for education in Australia to monitor outcomes of schooling specified in the 1999 Adelaide Declaration on National Goals for Schooling in the Twenty-First Century (Adelaide Declaration). NAP was established to measure student achievement and to report this against key performance measures in relation to the national goals, using nationally comparable data across jurisdictions in each of literacy, numeracy, science literacy, information and communication technologies (ICT), and civics and citizenship.

The first collection of data from students in the National Assessment Program ICT Literacy (NAP–ICT Literacy) was in 2005; subsequent cycles of assessment have been conducted in 2008, 2011, 2014 and 2017, and 2022[1]. The seventh cycle of NAP–ICT Literacy takes place in 2025. From 2025, the assessment will be conducted in May, a shift forward of 5 months from previous cycles.

The content specifications for the NAP–ICT Literacy assessment were established before the first assessment cycle in 2005 and were largely unchanged through the first 5 assessment cycles, from 2005 to 2017. As part of the work on NAP–ICT Literacy 2017 and 2022, the NAP–ICT Literacy Assessment Framework was revised to describe and represent its relationship to the Australian Curriculum (AC): ICT Capability (released in 2012) and the AC: Digital Technologies (released in 2015).

This revision of the NAP–ICT Literacy Assessment Framework included a revised definition and description of ICT literacy with 2 purposes:

- to ensure that the NAP–ICT Literacy remains up to date in a world of rapid technological growth
- to allow for a stronger connection between what is measured and reported on in NAP–ICT Literacy, and what is taught and learnt through the implementation of the Australian Curriculum (AC): ICT Capability and the AC: Digital Technologies.

The educational outcomes measured and reported on in NAP–ICT Literacy and the outcomes achieved through the implementation of the AC: ICT Capability and AC: Digital Technologies are complementary and, in some areas, overlapping.

The AC: ICT Capability conceptualises ICT as a cross-disciplinary capability that comprises a set of interrelated organising elements that describe how to use ICT effectively and appropriately to access, create and communicate information and ideas, solve problems and work collaboratively. They cover learning in all learning areas at school and in life beyond school (ACARA 2012a).

The AC: Digital Technologies learning area aims to empower students to “shape change by influencing how contemporary and emerging information systems and practices are applied to meet current and future needs” (ACARA 2015b). The AC: Digital Technologies aims to foster knowledge and understanding of information systems to enable students to be creative and discerning decision-makers when they select, use and manage data, information, processes and digital systems to meet needs and shape preferred futures (ACARA 2015a).

[1]The sixth cycle of NAP–ICT Literacy was originally scheduled to take place in 2020 but was deferred as a result of the COVID-19 pandemic.

1.2 What does NAP–ICT Literacy measure?

One purpose of NAP–ICT Literacy is to measure and describe student achievement in ICT literacy and to monitor changes in achievement over time. Data collected as part of the first cycle of NAP–ICT Literacy in 2005 were used to establish the NAP–ICT Literacy achievement scale. The scale comprises 6 proficiency levels that describe the achievement of students in Year 6 and Year 10. The level descriptions have been updated as new assessment content has been progressively included in each cycle of NAP–ICT Literacy. Descriptions for each proficiency level for 2022 are provided in Appendix 1. The scale metric was set in 2005, with a mean score of 400 and standard deviation of 100 scale points for the national Year 6 sample. NAP–ICT Literacy scale scores across all assessment cycles have been reported on this same metric.

A further purpose of all NAP sample assessments (in ICT literacy, civics and citizenship, and science literacy) is to monitor, and report on, student attainment of key performance measures (KPMs) defined for each area. The proportion of students achieving at or above the proficient standard for each of Year 6 and Year 10 is the national KPM for ICT literacy specified in the Measurement Framework for Schooling in Australia (ACARA 2019).

The proficient standards "represent a 'challenging but reasonable' expectation of student achievement at a year level with students needing to demonstrate more than elementary skills expected at that year level" (ACARA 2019:5). The proficient standards in NAP–ICT Literacy (one for Year 6 and one for Year 10) were established as a result of consultations with ICT experts and representatives from all states and territories and all school sectors as part of the inaugural assessment in 2005. The standards-setting group included practising teachers with specific ICT expertise, ICT curriculum experts and educational assessment experts. The procedures followed by the group are outlined in the NAP–ICT Literacy public report (MCEETYA 2007:46–47). The proficient standard for Year 6 is the boundary between levels 2 and 3 on the NAP–ICT Literacy scale. The proficient standard for Year 10 is the boundary between levels 3 and 4 on the scale.

The public reports for each cycle of NAP–ICT Literacy report student ICT literacy achievement with reference to the NAP–ICT Literacy achievement scale. The reports also include details of the proportion of students meeting the proficient standard in each of Year 6 and Year 10 nationally, by state and territory, and according to their Indigenous status, gender, language background, geographic location and socio-economic background.

NAP–ICT Literacy aims to contribute to educators' and policymakers' understanding of the contexts in which students in Year 6 and Year 10 are using ICT and developing ICT literacy. To this end, the program includes measures obtained from students' responses to a questionnaire relating to students' access to ICT resources, their experience of using ICT, their use of ICT outside of school and at school, and their attitude to ICT. Students are asked about their use of software applications for a variety of purposes and to report on their experience of classroom activities associated with ICT. The NAP–ICT Literacy public reports include details both of students' responses to these questions and analyses of the associations between selected measures of ICT use and ICT literacy achievement. NAP–ICT Literacy public reports can be downloaded from the National Assessment Program website at: https://www.nap.edu.au/nap-sample-assessments/results-and-reports

To support educators to make use of and engage with the content of the NAP–ICT Literacy assessment, a suite of school-release materials is made publicly available through the ACARA website as part of each assessment cycle. These materials provide detailed information about the NAP–ICT Literacy assessment, together with scoring guides that have been used in the assessments. NAP–ICT Literacy school release materials can be downloaded from the National Assessment Program website at: https://www.nap.edu.au/nap-sample-assessments/the-tests

1.3 Purpose of the NAP–ICT Literacy Assessment Framework

The NAP–ICT Literacy Assessment Framework outlines the key aspects of the program. In addition to a brief description of the origin and development of NAP–ICT Literacy, it describes what is assessed in NAP–ICT Literacy and how the assessment is conducted. Furthermore, the assessment framework positions NAP–ICT Literacy in the broader context of the Australian Curriculum: ICT Capability and the Australian Curriculum: Digital Technologies.

1.4 Continuity with previous NAP–ICT Literacy Assessment Frameworks

Prior to the release of the Australian Curriculum: ICT Capability in 2012, and the Australian Curriculum: Digital Technologies in 2015, national standards for ICT literacy–related learning and achievement were instantiated only in the Statements of Learning for Information and Communication Technologies (ICT) (Curriculum Corporation 2006) and NAP–ICT Literacy.

While the definition and description of ICT literacy used in NAP–ICT Literacy remained unchanged during 2005–2017, information about the relationship between what is assessed in NAP–ICT Literacy and the Statements of Learning for ICT, the AC: ICT Capability and the AC: Digital Technologies has been elaborated over successive cycles of NAP–ICT Literacy. The development of the NAP–ICT Literacy Assessment Framework (2005–2022) is detailed in Appendix 2.

1.5 Structure of the NAP–ICT Literacy 2024 framework

This framework document is organised into the following chapters:

Chapter 1: Overview provides background information on the NAP–ICT Literacy 2025 Assessment Framework.

Chapter 2: NAP–ICT Literacy construct presents the ICT literacy construct revised for NAP–ICT Literacy 2025.

Chapter 3: Contextual framework documents the contextual data collected as part of NAP–ICT Literacy, as well as the instruments used to collect it. It briefly outlines findings from educational research about the relationship of contexts reflected in these data to ICT literacy.

Chapter 4: Assessment structure and reporting gives details about the NAP–ICT assessment instrument, test design and test interface, as well as an overview of how student achievement is reported.

2 NAP–ICT Literacy Construct

2.1 Overview

This chapter presents the ICT literacy construct revised for NAP–ICT Literacy 2025. As described in Chapter 1, the ICT literacy construct has been developed following reviews of the construct used in NAP–ICT Literacy from 2005 to 2022. The revision is a response to the evolution of NAP–ICT Literacy over this time, ongoing developments in ICT, and the implementation of the AC: ICT Capability and the AC: Digital Technologies. The 2025 framework maintains the definition, structure and described content of the NAP–ICT Literacy 2021 construct. Details of the historical development of the NAP–ICT Literacy construct are included in Appendix 2.

The NAP–ICT Literacy 2025 construct has been developed to:

- support the ongoing assessment and reporting of student achievement against the existing NAP–ICT Literacy achievement scale
- support the ongoing initiative to keep the NAP–ICT Literacy assessment content up to date and representative of learning relevant to the Australian Curriculum
- broaden the range of contexts by drawing from learning areas additional to Digital Technologies
- develop future-proof content that is consistent with changes in focus between AC version 8.4 and version 9.0[2].

The construct is informed by:

- the previous NAP–ICT Literacy Assessment Frameworks
- the AC: ICT Capability v8.4
- AC: Digital Technologies curriculum v8.4
- the Australian Curriculum: Critical and Creative Thinking capability (Version 8.4)
- the cross-curriculum priorities.

These are integrated by conceptualising each as problem-solving frameworks – each module is categorised as either “ICT” or “DT”, indicating the primary problem-solving framework. In “ICT” modules, students are presented with information literacy and communication problems. In “DT” modules, students are presented with practical real-world needs, opportunities or problems that require technology-based solutions. In each case, students are expected to research, plan, execute and evaluate digital solutions addressing a defined problem.

Both the AC: ICT Capability and the AC: Digital Technologies provide relevant curriculum paradigms for framing problems, planning, implementing and evaluating solutions. In NAP–ICT Literacy, digital solutions can be information based and digital tool (hardware and software) based. As such, the revised construct for NAP–ICT Literacy accommodates both problem-solving contexts.

[2] Version 9.0 of the Australian Curriculum was endorsed by education ministers on 1 April 2022. However, it has not yet been adopted by all Australian jurisdictions.

2.2 Defining ICT literacy

The current definition of ICT literacy, revised for NAP–ICT Literacy 2022, is:

> the ability to use ICT appropriately and safely to access, manage and evaluate information; develop new understandings; apply computational, design and systems thinking to create solutions; communicate and collaborate with others; and engage productively with emerging and future technologies.

The concluding clause of the above definition indicates that ICT literacy provides both a frame of reference for, and an intended outcome of, the development of ICT literacy. It also reflects the goal of the Alice Springs (Mparntwe) Education Declaration that all young Australians become successful lifelong learners who "… are able to adapt to emerging technologies into the future" (Education Council 2019:7).

The revised definition shifts the emphasis of ICT literacy from the use of ICT for the reception, production and communication of information to the use of ICT as the means for developing solutions across a broader range of ICT-based problem-solving contexts. In this definition, both historical information literacy contexts (for example, producing a digital information product) and contexts that require the development of digital solutions (for example, developing a digital product or computer algorithm) are considered as constituent elements of ICT literacy. The definition was revised in consultation with the NAP–ICT Literacy Working Group and ACARA curriculum specialists.

2.3 The NAP–ICT Literacy construct and the Australian Curriculum

The definition of ICT literacy and the content of the strands of the NAP–ICT Literacy 2025 construct have been informed by the AC: ICT Capability Version 8.4 and the AC: Digital Technologies curriculum version 8.4 as, at the time of development, AC Version 9.0 has not been implemented in all jurisdictions. The new modules for 2025, however, have been developed anticipating the move from an alignment with version 8.4 to an alignment with version 9.0 of the Australian curriculum in future cycles.

Better alignment of the content of NAP–ICT Literacy to the AC: ICT Capability and the AC: Digital Technologies was central to revision of the NAP–ICT Literacy construct. Content from the AC: Digital Technologies, which was related to ICT as conceptualised by NAP–ICT Literacy, was summarised and aligned with the processes from the NAP–ICT Literacy construct.

The AC: ICT Capability is organised into 5 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 definition and elaboration of the NAP–ICT Literacy construct are very closely aligned with the 5 elements of the AC: ICT Capability. While there is not necessarily a one-to-one correspondence between the elements of the AC: ICT Capability and the strands and aspects in the NAP–ICT Literacy construct, the correspondence between the 2 is clear. Managing and operating ICT aligns closely to the focus of strand 1 of the NAP–ICT Literacy construct (Understanding ICT and digital systems). Investigating with ICT aligns closely to strand 2 (Investigating and planning solutions with ICT). Creating with ICT and Communicating with ICT align closely to strand 3 (Implementing and evaluating digital solutions). Applying social and ethical protocols and practices when using ICT aligns closely to strand 4 (Applying safe and ethical protocols and practices when using ICT).

A number of key concepts underpin the AC: Digital Technologies. These establish a way of thinking about needs, opportunities, problems and information systems, and provide a framework for knowledge and practice. The key concepts of the AC: Digital Technologies represented in the NAP–ICT Literacy construct are:

- abstraction
- data collection, data representation and data interpretation
- specification, algorithms and implementation
- digital systems
- interactions and impacts.

The concepts of abstraction, data collection, representation and interpretation, specification, algorithms and implementation correspond to the key elements of computational thinking (ACARA 2015a).

The elements of the AC: ICT Capability and the concepts of the AC: Digital Technologies span the NAP–ICT Literacy 2025 construct, and provide a connection and a scaffold for measuring ICT literacy. While the structure and focus of the AC: Digital Technologies are different from that of the AC: ICT Capability, the content of some of the strands and sub-strands is complementary and, in some areas, overlapping.

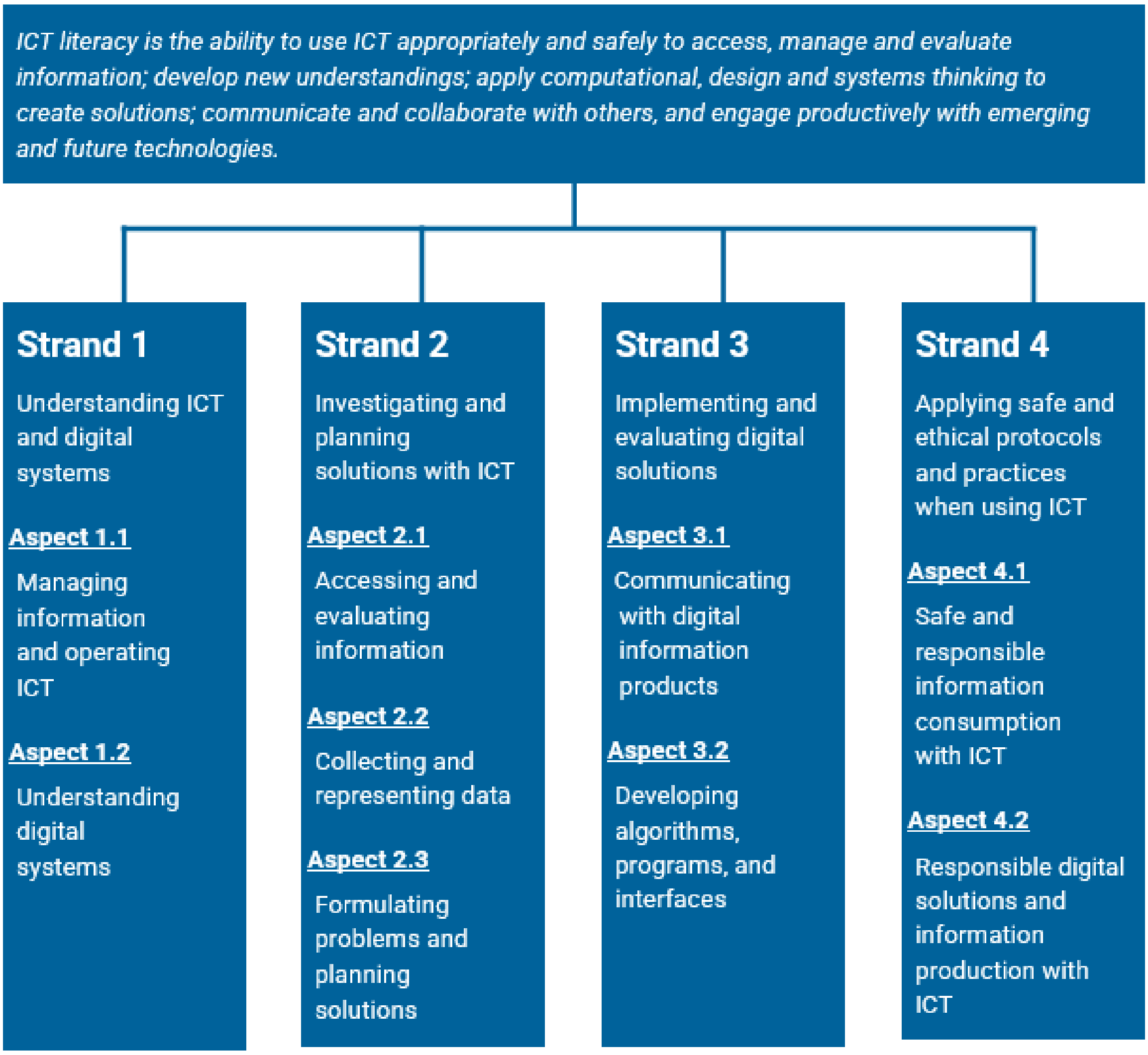
2.4 Structure of the NAP–ICT Literacy construct

The NAP–ICT Literacy construct includes the following elements:

- Strand: this refers to the overarching conceptual category for framing the skills, knowledge and actions addressed by the NAP–ICT Literacy instruments.
- Aspect: this refers to the specific content category within a strand.

The construct comprises 4 strands, which each contain 2–3 aspects. The structure of the construct is summarised in Figure 2.1 and the content of each strand is described in detail in section 2.5.

Figure 2.1: NAP–ICT Literacy 2025 construct definition, strands and aspects



2.5 Strands and aspects of the NAP–ICT Literacy construct

Strand 1: Understanding ICT and digital systems

This strand includes technical knowledge, skills and understanding relating to the principles of information processing and knowledge about the conventions of ICT and digital systems.

Aspect 1.1 Managing information and operating ICT

This aspect includes knowledge of software interface conventions that enable the operation of ICT. Examples include:

- file systems
- databases
- productivity software
- networked information communication
- communications and project management software.

Knowledge of software and interface conventions supports a range of procedures relating to the way information can be stored, retrieved, manipulated and transmitted using ICT. For example, at the declarative level, a student may describe the steps involved in moving a file from one folder to another, and the advantages or disadvantages of using ICT solutions for particular contexts, such as the benefits of compressing a file before transferring it to a remote server. At the procedural level, a student may locate a file in a folder, filter records in a database, format text in a document, retrieve files from a remote drive, compose and send messages, and schedule tasks in a calendar.

Aspect 1.2 Understanding digital systems

This aspect includes an understanding that digital systems operate at different levels of abstraction, wherein each level represents a different model of the same information with varying amounts of detail, and that higher levels build on lower levels. At the declarative level, a student may, for example, describe the way digital systems use binary data to represent numbers, characters, pixels, audio and video.

This aspect also includes an understanding that software programs comprise algorithms that perform operations on data and can interoperate with other programs to form complex software systems, such as operating systems and networks.

At a procedural level, a person may, for example, monitor a digital system in operation, monitor outcomes from that system, and draw conclusions about the causal relationship between inferred algorithmic rules and the outcomes. These procedural skills are based on a conceptual understanding of fundamental computing operations, such as iteration, looping and conditions, and arithmetic, comparison and logical operators.

Strand 2: Investigating and planning solutions with ICT

This strand includes accessing and evaluating digital information, and acquiring, validating and representing data for the purpose of formulating problems and planning solutions.

Aspect 2.1 Accessing and evaluating information

This aspect includes identifying information requirements, locating information and sources, and evaluating the relevance, reliability and veracity of sources. Also included in this aspect is an understanding of how digital information is authored, invented, created, published, distributed, recommended and consumed, and the application of knowledge and understanding of digital systems to evaluate the usefulness, relevance and credibility of digital information.

Following are examples of tasks that demonstrate a person's ability to access and evaluate information:

- selecting the most relevant search engine result for a particular topic
- differentiating between sponsored and non-sponsored content in search engine results or social media
- adjusting the parameters of an advanced search to narrow the search results according to specific criteria
- recognising and explaining characteristics of digital information (such as biased product recommendations motivated by financial incentives from affiliate programs) that detract from its credibility
- recognising that published content may be motivated by purposes other than the sharing of knowledge
- using strategies to confirm the veracity of information (such as cross-checking information from multiple sources).

Aspect 2.2 Collecting and representing data

This aspect includes applying protocols for collecting, validating, organising and storing data in digital systems for use with algorithms and software. It also includes, for example:

- using software to represent digitally stored data in a variety of forms (such as in tables, flow charts or graphs)
- using simulations of complex systems to produce data that can show patterns or characteristics of the system's behaviours that are otherwise hidden when viewed from an abstract level.

At the declarative level, a student may, for example, define data types such as number, date and time, text and Boolean, and the relative advantages and disadvantages of qualitative and quantitative data for a particular problem-solving context. They can interpret conventional charts and graphs and describe the content, such as specifying the rate of change in temperature over time or increased volume at a time interval in a waveform representing sound. At the procedural level, a student may, for example, use software to modify tabular data and configure software to represent tabular data, such as correctly assigning numbers and dates to a vertical and horizontal axis of a line chart.

Aspect 2.3 Formulating problems and planning solutions

This aspect includes the decomposition of problems into smaller parts, planning how components of a solution can work together as a whole, planning the process of developing a solution (including information or resources required to implement a solution) and establishing criteria for evaluating the performance, quality or completeness of a solution. Problem contexts can include the need to produce information products or computer-based automations. The formulation of a problem in these contexts typically involves consideration of how the needs of an audience or user may inform the medium, format, presentation and complexity of a solution.

The following examples are tasks that demonstrate a person's ability to formulate problems and plan solutions:

- breaking down a complex problem into smaller, more manageable parts
- identifying relevant aspects of solutions to similar problems
- identifying the relative merits of alternative solutions
- explaining why one communication medium is more appropriate than another for a particular purpose (such as a presentation or a webpage)
- creating a flow chart to represent relationships between components of a system or steps in a process
- identifying steps in a process that can be programmatically automated
- critiquing a user interface with consideration to the user experience.

Strand 3: Implementing and evaluating digital solutions

This strand includes the use of digital tools for producing information products that suit an audience, context and medium. It also includes the development of digital solutions, such as algorithms, programs, user interface designs and systems that meet defined requirements.

Aspect 3.1 Communicating with digital information products

This aspect includes the production of digital information products that have a communicative purpose and can be presented in a variety of forms, such as emails, instant messages, documents, presentations, websites, videos and animations. It also includes the processes of synthesising, adapting, applying, designing, inventing and authoring. This aspect includes the evaluation of information products to ensure that the communicative purpose is enhanced by the digital medium.

The following examples are tasks that demonstrate a student's ability to produce digital information products:

- changing the size and formatting of a heading in a document to create structural hierarchy
- using bullet points to make a list easier to read
- resizing and positioning an image on a canvas, relative to another element, to create a conceptual relationship
- changing colours of bars in a bar chart to match the corresponding labels in a legend
- designing and writing a presentation that integrates text, data and images from multiple sources
- assembling multiple video clips into a single timeline to communicate a coherent message.

Aspect 3.2 Developing algorithms, programs and interfaces

This aspect includes the development of computer algorithms, programs and user interfaces (digital solutions) that solve a particular problem or optimise an existing solution. The formulation of a problem may be expressed as a set of functional requirements for a software application or design specifications for an improved user experience and can be operationalised in a variety of forms such as algorithms (executed as computer code functions), interactive user interfaces, software applications and software systems. This aspect includes the evaluation of digital solutions to ensure that the stated objectives of the requirements are met and that the needs of a user are satisfied.

The following examples are tasks that demonstrate a student's ability to develop digital solutions:

- naming a variable and assigning it a value
- specifying valid syntax to query records in a database
- creating an expression using relational (for example, < and >) or logical (for example, AND, OR and NOT) operators to return a value
- creating an algorithm that uses a repeat loop with a stopping condition
- arranging the location of buttons on a user interface according to design conventions
- integrating a variable in an interface (for example, a variable that represents the name of a contact in a contacts application).

Strand 4: Applying safe and ethical protocols and practices when using ICT

The strand includes a range of practices when using ICT in a broad range of contexts from sharing and producing information to employing protection mechanisms for digitally stored private information. It also includes protocols for testing and validating the safety of digital solutions and an evaluation of the social impact of those solutions.

Aspect 4.1 Safe and responsible information consumption with ICT

This aspect addresses ICT and information use by students as individual consumers. It focuses on protection of personal safety (including data security) and responsible individual use.

The following examples reflect content and contexts relating to safe and responsible consumption of digital information and personal ICT use:

- secure password selection and use, and benefits of 2-factor authentication
- protection of personal data
- "phishing" – stealing personal information via fake communication from a trusted party
- "catfishing" – fraudulent social media posting using a fake profile
- fraudulent social media posting, which may involve using generative ("AI") tools
- algorithm bias.

The following examples reflect tasks that provide evidence of a person's ability to safely and responsibly consume information with ICT:

- identifying characteristics that influence the strength of passwords
- using multiple layers of security such as multifactor authentication
- explaining the consequence(s) of making one's own personal information publicly available
- explaining the techniques used in a phishing scam
- describing strategies for verifying the identity of a stranger's online persona
- identifying characteristics of bots used to disseminate information
- recognising that decisions or recommendations made by algorithms may require additional personal evaluation.

Aspect 4.2 Responsible digital solution and information production with ICT

This aspect includes the social, legal and ethical issues relating to the production, distribution and communication of digital information and the design of digital solutions.

The following examples reflect content and contexts relating to the responsible design of digital solutions and information production with ICT:

- cyberbullying
- “deepfakes”
- protecting the personal information of others
- preventing malicious software distribution (viruses, malware, ransomware, etc.)
- attribution and copyright.

The following examples reflect tasks that provide evidence of a student’s ability to produce and use ICT responsibly:

- describing protocols for appropriate behaviour on a social media platform
- seeking permission to post a photo of someone online or use their likeness in a digital information product
- using encryption to store a user’s password or other sensitive information
- testing a software application for bugs
- integrating human verification systems
- suggesting ways to collect more data to minimise bias used by an algorithm.

3 Contextual Framework

3.1 Overview

The principal aims of NAP–ICT Literacy are to assess the ICT literacy of Australian students in Year 6 and Year 10, and report on student attainment of key performance measures (KPMs) for this domain. In addition to reporting the proportions of Year 6 and Year 10 students who attain the proficient standards in ICT literacy, the assessment program also generates data that describe the variation in ICT literacy among Year 6 and Year 10 students. Contextual information collected during NAP–ICT Literacy is used to better understand the factors associated with variations among students in ICT literacy. This section documents the contextual data that are collected as part of NAP–ICT Literacy and briefly outlines findings from educational research about the relationship of contexts reflected in these data to ICT literacy.

Each cycle of NAP–ICT Literacy has collected information about student year level (Year 6 or Year 10), the state and territory in which a student attends school, and the geographic location of the school attended by a student. In addition, it has collected details for each student relating to their socio-economic background (parental education and occupation), sex (now the category "gender"), Indigenous status and language background. In NAP–ICT Literacy 2005 and 2008, these student background data were collected as part of the student questionnaire. Since the third cycle of 2011, these student background data have been collected from schools and school systems.

The NAP–ICT Literacy student questionnaire collects data on other contextual information related to ICT literacy: access to ICT resources, experience of using ICT, use of ICT outside of school and at school, and attitudes to ICT. Students also indicate their use of software applications for a variety of purposes and their experience of classroom activities associated with ICT. This questionnaire is periodically revised to reflect changes in language, technology and usage patterns, providing valuable context for interpreting the assessment results. Through this approach, the NAP–ICT Literacy offers comprehensive insights into Australian students' ICT skills, their application in various contexts, and the evolving landscape of digital literacy.

3.2 Classifying contextual influences on ICT literacy

Contextual influences may operate as group influences (system, school or community factors) or as an individual influence (as a home or individual factor) (see Fraillon et al. 2019a). These are referred to as levels of influence because influences closer to the individual are nested within influences that affect groups of individuals. In addition, contextual influences at each of these levels can be thought of in terms of whether they operate prior to ICT learning (antecedents) or at the same time as ICT learning (processes).

Group contextual influences

Group contextual influences can refer to characteristics of education systems, schools or communities. Year level (Year 6 or 10) is considered to be a group contextual influence because the AC: ICT Capability (ACARA 2012a) and the AC: Digital Technologies (ACARA 2015a) define relevant teaching and learning for students at each year level. This does not preclude considering year level as an individual characteristic for some analyses.

Differences among education systems in the emphasis placed on, and the resources provided for, ICT learning can influence the development of ICT literacy, and this is an important contextual influence in international studies (Fraillon et al. 2019b). However, for NAP–ICT Literacy in Australia, such differences would be limited because the Australian Curriculum specifies common elements concerned with ICT Capability and Digital Technologies, and data about resources and implementation are not gathered as part of NAP–ICT Literacy.

School resources and practices can influence ICT learning in terms of what is taught and how it is taught (as processes). In NAP–ICT Literacy, some of this information is collected as individual student influences (discussed in the following section) with respect to students' reported experience of learning about ICT in their school.

Community characteristics such as geographic location can influence the development of ICT literacy through differential access to internet facilities and other ICT resources. School geographic location is included in NAP–ICT Literacy (as metropolitan, regional or remote) (ACARA 2023).

Individual contextual influences

Individual contextual influences can be enduring background characteristics of students, or developed characteristics that emerge as part of their development or concurrent ICT-related activities.

In NAP–ICT Literacy, background characteristics such as gender, socio-economic background, Indigenous status and language background are included as part of the context for the development of ICT literacy (as antecedents) because they are considered to be associated with opportunities to use ICT in homes and other immediate out-of-school contexts.

Developed characteristics are also associated with individuals but change as individuals grow and become more directly associated with ICT. Most studies of ICT literacy include student experience of ICT (years for which they have been using ICT) and familiarity with ICT (the frequency with which they use ICT at home) as contextual factors that shape the ICT literacy of students (Fraillon et al. 2019b).

Student attitudes to the use of ICT are also often considered to be developed characteristics associated with ICT learning.

Concurrent ICT-related activities refer to the extent to which students experience ICT at school or out of school. These activities include ICT literacy learning during class and using ICT for study tasks. These are processes that directly influence ICT literacy learning but they are constrained by antecedent factors and factors found at higher levels. These process factors can be influenced by the level of (existing) ICT literacy. For example, the level and scope of classroom exercises using ICT generally depend on the existing ICT literacy of the students.

A framework of contextual influences on ICT literacy

Table 3.1 represents the relationships among the contextual influences on ICT literacy in a diagrammatic form. The diagram follows the convention of representing causality from left to right with the outcome (ICT literacy) shown on the right-hand side. Individual contextual influences are shown in blue. Each of these contextual influences (including interactions among these influences) potentially can influence any influence shown to its right in Table 3.1. Of course, each contextual influence may also influence ICT literacy directly as well as indirectly through other contextual influences. Group contextual influences are shown at the top as overarching influences on ICT literacy and as moderating influences on the relationship between individual characteristics and ICT literacy.

The framework also indicates that analyses might investigate the relationship between a concurrent ICT literacy-related activity and a background characteristic (for example, socio-economic status) or a developed characteristic (for example, ICT experience), or the mediating influence of the developed characteristic on the relationship between the ICT activity and the background characteristic.

Table 3.1: Framework of contextual influences on ICT literacy

Contextual influences on ICT Literacy	
Group contextual influences	
Year level curriculum	
Geographic location	
School characteristics	
Individual contextual influences	
Background	• Gender • Socio-economic status • Indigenous status • Language background • Immigrant status • ICT resources outside school
Developed characteristics	• ICT experience • ICT familiarity • ICT attitudes • ICT self-efficacy
Concurrent activities	• ICT study utilities • ICT entertainment • ICT communication • ICT technological tasks • Learning ICT at school

In NAP–ICT Literacy, each of the contextual influences shown in Table 3.1 are measured, analysed and reported as variables. Some contextual influences, such as language background, may be ascribed to a single variable. Some contextual influences, such as ICT self-efficacy, are measured and reported using 2 types of variables: those variables representing student responses to each question in a set, and scale variables derived from the student responses to the questions in a set as a whole.

3.3 The NAP–ICT Literacy student questionnaire

The NAP–ICT Literacy student questionnaire serves to collect data relevant to the contextual framework.

In NAP–ICT Literacy, student background data are collected from schools and school systems. These data are student year level (Year 6 or Year 10); the state and territory in which they attend school; the geographic location of the school; students' gender, Indigenous status, language background, and the occupation and highest level of education of students' parents.

The NAP–ICT Literacy student questionnaire collects data on other contextual information related to ICT literacy: access to ICT resources, experience of using ICT, use of ICT outside of school and at school, and attitudes to ICT.

In order for the questionnaire to remain relevant and reflect changes in ICT use over time, the student questionnaire has been revised across subsequent NAP–ICT Literacy cycles in consultation with the NAP–ICT Literacy Working Group and ACARA curriculum specialists. The questionnaire has evolved to collect information on the following topics:

- how long students have been using digital devices
- what digital devices students use at school and outside of school
- whether students use portable digital devices at school and how they are provided
- how often students use digital devices at school and outside of school
- students' attitudes about the importance of ICT use
- students' confidence to complete tasks using digital devices
- how often students use a range of digital devices for study at school and outside of school
- how often students use entertainment applications on digital devices at school and outside of school
- how often students use communication applications on digital devices at school and outside of school
- how often students complete technological tasks on digital devices at school and outside of school
- students' reported experience of learning about digital devices at school
- students' participation in ICT-related learning activities at school
- how often students use digital devices for school-related purposes.

3.4 Contextual variables

The NAP–ICT Literacy student questionnaire primarily collects data on contextual variables pertaining to the level of the individual student, including his or her home context. However, it is recognised that some group contextual variables have the potential to affect student ICT learning.

This section includes a summary of key contextual variables included in NAP–ICT Literacy, an indication of the data used to generate measures of those variables and a synopsis of research results concerning relationships between those variables and ICT literacy.

Group contexts

Year level

In every cycle of NAP–ICT Literacy since 2005, students in Year 10 have recorded higher average ICT literacy scores than students in Year 6, with the difference ranging from 107 to 151 scale points (89 scale points in 2022), which is equivalent to between 1 and 1.5 standard deviations (ACARA 2023). Similar findings regarding differences in ICT literacy have been reported for students in the first and third years of secondary school in Korea (Kim and Lee 2013). There do not appear to be any other large-scale assessments of ICT literacy that have measured the construct at more than one year level.

Geographic location

In NAP–ICT Literacy, geographic location is collected from system records and refers to whether a student attended school in a metropolitan, regional or remote area based on the Australian Statistical Geography Standard (ASGS) Remoteness Structure. In NAP–ICT Literacy 2022, the (weighted) sample figures for Year 6 were 70% metropolitan, 28% regional and 2% remote (ACARA 2023). The corresponding weighted percentages for Year 10 were similar at 75%, 24% and 1%, respectively. Among Year 6 students, average NAP–ICT Literacy scores were higher for students at metropolitan schools than for those at regional schools (a difference of 30 scale points, down from 41 in 2017) and those from remote schools (the difference between regional and remote schools was 82 scale points, up substantially from 45 scale points in 2017) (ACARA 2023). For Year 10 students, the difference between metropolitan and regional schools was larger than in 2017 (51 scale points compared with 24 scale points) and there was no significant difference between regional and remote schools[3].

System differences

NAP–ICT Literacy does not gather data about characteristics of the educational jurisdictions in Australia. However, international studies have indicated that computer and information literacy, which is an equivalent construct to ICT literacy (see De Bortoli et al. 2014), varies across countries, is positively associated with the ICT Development Index and is negatively associated with the average ratio of students to computers in schools (Fraillon et al. 2014). Aesaert et al. (2015) point out that national ICT policies influence school and classroom practice through the curriculum, professional development for teachers and the provision of resources.

Background characteristics

Socio-economic background

Student socio-economic background in NAP–ICT Literacy is based on data about parental occupation and education[4] collected from schools and school systems (since 2011). In NAP–ICT Literacy 2022, student achievement in ICT literacy was significantly and substantially higher for students with parents in higher-ranked occupation groups across both Year 6 and Year 10 (ACARA 2023). Students with parents who were classified as senior managers and professionals (Year 6 at 31%, Year 10 at 32%) had NAP–ICT Literacy scale scores that were substantially greater (approximately 50 and 70 score points, respectively) than those with parents in the category of machine operators, labourers, hospitality and related staff (Year 6 at 12%, Year 10 at 11%).

A similar pattern had been observed for previous cycles. Similarly, students who had a parent with a bachelor's degree or above (45% of Year 6 and 43% of Year 10), on average, scored more than 100 scale score points (almost one proficiency level) higher than students whose parent completed Year 10 or Year 9 as their highest education (ACARA 2023). This pattern is similar to that found in international studies of computer and information literacy (Fraillon et al. 2019b). Large-scale assessment studies in other countries have also found that higher socio-economic status is consistently associated with higher levels of computer literacy (Claro et al. 2012; Kim et al. 2014; Hatlevik et al. 2015). Aesaert et al. (2015) argue that parental attitudes to and practices with information technology should be considered as part of home environments.

Gender

Data collection in NAP–ICT Literacy adheres to the specifications outlined in the ACARA Data Standards Manual: Student Background Characteristics (ACARA 2022). According to the manual, "Gender is a social and cultural concept. It is about social and cultural differences in identity, expression and experience as a male, female or non-binary person. Non-binary is an umbrella term describing gender identities that are not exclusively male or female" (ACARA 2022:13). Prior to 2021,

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[3] The lack of a significant difference between regional and remote students is largely a consequence of the small number of remote schools.

[4] Parent occupations are classified as: senior managers and professionals; other managers and associate professionals; tradespeople and skilled office, sales and service staff; machine operators, labourers, hospitality and related staff; and not in paid work for 12 months. Parental educational attainments are classified as Year 9 or equivalent or below; Year 10 or equivalent; Year 11 or equivalent; Year 12 or equivalent; certificates I–IV (including trade certificates); advanced diploma/diploma; and bachelor's degree or above.

the “sex” characteristic was reported as “female” or “male”. In 2022, NAP–ICT Literacy included an additional category in which the gender of a student may be reported as “other”. In 2025, the categories will again be “female”, “male” and “other”. As per previous cycles, these data will be collected from central or school records.

Across all cycles of NAP–ICT Literacy from 2005 to 2022, female students have recorded higher average ICT literacy scores than male students in both Year 6 and Year 10 (ACARA 2023). The difference in achievement of female and male students has remained similar across all cycles and has been similar for Year 6 and Year 10 students (approximately 18 scale points, which is equivalent to one-fifth of a standard deviation and considered to be a small effect). This result of a difference between female and male students of about one-fifth of a standard deviation has been consistently found in international studies of computer and information literacy (Gebhardt et al. 2019; Fraillon et al. 2019b).

Other national and cross-national assessments of similar constructs to ICT literacy have also found similar results. The ICT content area of the assessment of technological and engineering literacy in the National Assessment of Educational Progress in the United States (NCES 2016), the Republic of Korea’s national assessment of ICT literacy (Kim and Lee 2013; Kim et al. 2014) and a study of upper primary school students in the Netherlands (Aesaert et al 2015) all found differences between male and female students of about one-fifth of a standard deviation. However, the result is not universal and no significant differences between male and female students were reported in Chile (Claro et al. 2012) and in the senior years in Norway (Hatlevik and Christophersen 2013). More detailed analyses have suggested that female students perform relatively better on tasks that involve communication and design, and that male students perform relatively better on technical tasks (Gebhardt et al. 2019; Punter et al. 2017). This finding is consistent with the results from International Computer and Information Literacy Study (ICILS) 2018, where female students had higher average scores than male students on computer and information literacy but there were no significant differences on computational thinking (Fraillon et al. 2019b).

Indigenous status

Indigenous status in NAP–ICT Literacy is based on data collected from schools and school systems. Across all cycles of NAP–ICT Literacy, the average ICT literacy achievement was substantially higher for non-Indigenous students (92% and 95% of participants for Year 6 and Yer 10, respectively) than Indigenous students (5% and 4% of participants, respectively) at both Year 6 and Year 10. In the 2023 cycle, the difference was about 100 scale score points for Year 6, approximately one standard deviation, and a smaller, but still substantial 85 scale score points for Year 10 (ACARA 2023).

Language background

Language background in NAP–ICT Literacy is based on data collected from schools and school systems. Year 6 students who speak a language other than English at home (26%) significantly outperformed students who speak only English at home (70%). There was no difference in achievement by language spoken at home for Year 10 students (ACARA 2023). ICILS 2018 reported that students whose main language at home was the language of the test had higher ICIL scores than other students (Fraillon et al. 2019b).

ICT resources outside school

Information about access to digital devices outside school is based on the student questionnaire. In the questionnaire for NAP–ICT Literacy 2025, students are asked to indicate what type of digital tools (for example, desktop or laptop computer, tablet or smartphone) they use outside school (as well as in school). In NAP–ICT Literacy 2022, about half of Year 6 students and three-quarters of Year 10 students used a desktop or laptop computer outside school and over half of students in Year 6 used a tablet device outside of school, more than twice the rate reported by Year 10 students (ACARA 2023). Past cycles of NAP–ICT Literacy have indicated that greater access to ICT resources (for example, home internet connection, the number of computers at home) have been consistently associated with higher levels of ICT literacy (ACARA 2018). Similar results have been found in international studies of computer and information literacy (Fraillon et al. 2019b) and large-scale assessments of related constructs in other countries (Claro et al. 2012; Kim et al. 2014; Hatlevik et al. 2015).

Developed characteristics

Student experience of digital devices

As part of the student questionnaire, NAP–ICT Literacy 2025 will ask students to indicate how long they have been using computers (desktop or laptop) and tablet devices. Over previous NAP–ICT Literacy cycles, student responses to a 5-category scale have been reported in terms of a dichotomy: "at least 5 years' experience" or "less than 5 years' experience". The percentages of Year 6 students with 5 or more years' experience of using digital devices has generally grown, from 54% in 2005 to 64% in 2017 (62% in 2022). The corresponding growth for Year 10 students has been from 64% to 79% (73% in 2022) (ACARA 2018). In NAP–ICT Literacy 2023, students with at least 5 years' experience using digital devices recorded higher average ICT literacy scores than students with less experience at both Year 6 and Year 10 (ACARA 2023). The difference for Year 10 students (79 points) was greater than the difference for Year 6 students (39 points), but both are moderate size differences. In ICILS 2018, students' experience with ICT for 5 or more years was consistently and positively associated with computer and information literacy in all countries, with an average net effect of 9 scale points (one-tenth of a standard deviation) (Fraillon et al. 2019b).

Frequency of use of digital devices

The student questionnaire for NAP–ICT Literacy 2025 will ask students how frequently, at school and outside of school, they use a digital tool (desktop computer, laptop computer or tablet device). Five response options range from several times a day to once a week or less. In NAP–ICT Literacy 2022, daily use of a digital tool at school was reported by 2 in 5 Year 6 students and two-thirds of Year 10 students. The corresponding figures for daily use outside school were approximate one in 2 for both Year 6 and Year 10 students (ACARA 2023). Year 10 students who reported using digital devices once a day or more achieved significantly higher ICT literacy scale scores (by 65 scale points) than those who reported using digital devices less than once a day. There was a more modest difference among Year 6 students (18 scale score points). ICILS 2018 reported that Year 8 students' daily use of ICT was consistently and positively associated with computer and information literacy, with an average net effect of 24 scale points (one-quarter of a standard deviation) (Fraillon et al. 2019b).

Attitudes to ICT

The student questionnaire for NAP–ICT Literacy 2025 will ask students to indicate their agreement (from "strongly disagree" to "strongly agree") with a set of items concerned with their enjoyment of ICT (such as "using digital tools because they help me improve the quality of my work", "using digital tools because they make work easier", "enjoy using digital tools because they help me to work with others", "using digital tools because I prefer to work alone", "enjoy using digital tools because they help me communicate with my friends", "using digital tools to find new ways to do things" and "very important to me to work with a digital tool". Historically, correlation between students' ratings of the importance of ICT devices and achievement was significant but weak (0.12) for Year 6 students and tending towards moderate for Year 10 students (0.22). Greater interest in and enjoyment of ICT use has been associated with higher CIL scores in a majority of countries (Fraillon et al. 2014).

ICT self-efficacy

In order to measure student self-efficacy, NAP–ICT Literacy 2025 asks students how well they can do a series of tasks on a digital tool (edit digital photographs or other graphic images, create a database, enter data in a spreadsheet, use spreadsheet software to plot a graph, download music from the internet, create a multimedia presentation, use a website editor to create or edit websites, upload files [images, audio/video and text] to a website, post a comment on social media, use a collaborative workspace). Across NAP–ICT Literacy cycles, ICT self-efficacy (how well students felt they could accomplish a range of ICT tasks) is typically higher in Year 10 than Year 6 and higher for males than females. Students above the proficient standard had significantly higher levels of self-efficacy than students below the proficient standard. The gap was slightly larger for Year 10 students (4.3 scale points) than Year 6 students (3.6 scale points) overall, but this was mostly attributable to Year 10 male students above the proficient standard outperforming their counterparts below the proficient standard by 5.0 scale points (ACARA 2023). In international studies, it appears that ICT literacy is positively associated with ICT self-efficacy related to basic tasks, but not self-efficacy related to specialised tasks (Fraillon et al. 2019b; Rohatgi et al. 2016).

Concurrent activities

ICT applications

NAP–ICT Literacy 2025 asks students to indicate the frequency with which they use various types of ICT applications in and out of school: study utilities, entertainment, communications and technological tasks. The response categories are: “at least once every day”, “almost every day”, “a few times each week”, “between once a week and once a month”, “less than once a month” and “never”. These are reported as frequently (“almost every day or more”), occasionally (“between a few times a week and once a month”) or rarely (“less than once a month or never”). To compare the use of types of applications by different sub-groups of students, scales (based on a mean of 50 and a standard deviation of 10 for Year 6 students) are derived using item response theory, for each of the 4 application use types:

- Study utilities include searching the internet for information for study or school work; using word processing software or apps to write documents; using spreadsheets to draw a graph or perform calculations; using mathematics, language or other learning programs on a computer; entering data in a spreadsheet; creating presentations for school projects; watching online videos to support learning; organising school work using a learning management system; and recording reflections on learning (for example, through a blog).
- Entertainment applications include watching videos for entertainment; playing video games; using software to create sounds/music, movies, animations or artwork; listening to music or other audio for entertainment; listening to podcasts, audiobooks or internet radio for entertainment; and searching for online information about things of interest.
- Communication activities include emailing, chatting, writing or replying to blogs or forum threads; using voice or video chat to communicate with people online; and creating content with others on social media.
- Technological tasks include writing code, programs or macros; creating programs with a visual coding tool; publishing media on a website; creating or editing a website using a website editor; using drawing, painting or graphics programs; configuring application settings; combining music, video or images to create digital content; posting content on social media; and using a collaborative workspace.

In terms of study utilities, NAP–ICT Literacy has historically found that more frequent use of productivity applications (such as word processing and spreadsheet applications) was positively associated with achievement, whereas more frequent use of specialist applications (such as concept mapping or simulations and modelling applications) was negatively associated with achievement (ACARA 2018).

Average scores on use of study utilities on digital tools (previously called ICT devices or digital devices) for students above and below the proficient standard showed non-significant or weak correlations but were greater when used outside of school than in school (ACARA 2023).

Learning about ICT at school

In the recent cycles of NAP–ICT Literacy, students were asked to indicate whether they had learnt about a range of aspects of ICT at school: the need to provide references to content from webpages included in schoolwork, the need to know whether they have copyright permission to share music or video, problems of using software to copy or download files for free, checking the origins of a message before opening attachments, changing your password for internet services regularly, reporting spam to an authority, reading licence or usage agreements before clicking “I agree” to install new software, how to decide where to look for information about an unfamiliar topic, how to look for different types of digital information on a topic, cyberbullying, responsible use of social media, how to protect personal safety when communicating with strangers online, security risks when using the internet, judging the relevance of information to include in school work and judging whether information on the internet can be trusted. Students responded “yes” or “no” to each of the items and percentages indicating “yes” were reported. In addition, responses to the items were used to derive a scale on students’ attribution of ICT learning to school.

In NAP–ICT Literacy 2022, students reported that they were more likely than not to have learnt at school about how to look for different types of digital information on a topic, how to decide where to look for information about an unfamiliar topic and the need to provide references to content from webpages. Topics less frequently learnt included opening email attachments from safe sources and security risks when using the internet (for example, viruses, malware, phishing) (ACARA 2023). A significant but weak association was found between attributing ICT learning to school teaching and achievement at Year 6, and for males at Year 10 (ACARA 2023). A similar result was found in ICILS 2018 with a small but significant association between computer and information literacy scores and attributing ICT learning to school teaching in 10 out of 14 countries (Fraillon et al. 2019b).

NAP–ICT Literacy 2025 includes variables associated with students’ reported experience of learning about tasks associated with the AC: ICT Capability and the AC: Digital Technologies.

4 Assessment Structure and Reporting

4.1 Overview

The structure of the NAP–ICT Literacy assessment has been consistent since its first cycle in 2005, featuring computer-based test modules that simulate real-world ICT usage within both academic and personal contexts. These modules are designed to be completed within 20 minutes and consist of a series of tasks that escalate to a more complex task. Students execute all the tasks using specially developed software that adheres to common user interface and user experience design principles. To maintain the assessment's relevance and measure trends over time, modules are regularly updated, with some released as exemplars and others retained for future assessments.

4.2 NAP–ICT Literacy participants and instruments

Participants and sampling

NAP–ICT Literacy is completed by representative, randomly selected samples of Australian school students in Year 6 and Year 10. From 2025, the assessment will be conducted in May, a shift forward of 5 months from previous cycles. The sampling involves 2 stages. The first stage of sampling involves selecting schools within explicit strata formed by state or territory and school sector[5]. Within each explicit stratum, the school type (primary, secondary, combined), school NAPLAN performance quintile, geographic location, a school measure of socio-economic status[6] and school size are all used for implicit stratification[7]. A school's probability of selection is proportional to the number of students enrolled in the relevant year level (either Year 6 or Year 10), which means that schools with larger numbers of students at the relevant year level are more likely to be selected for participation.

The second stage of sampling involves the drawing of a random sample of 20 students from the target year level in each sampled school. Where fewer than 20 eligible students are enrolled in the target year level (that is, in small schools), all students are selected to participate.

While the exact number of schools sampled has varied across cycles of NAP–ICT Literacy, it has been typically in the vicinity of 330 schools at Year 6 and 310 schools at Year 10, corresponding to slightly more than 6,000 students at each year level (noting that not all sampled schools have 20 students at the target year level).

Assessment instrument

The assessment design for NAP–ICT Literacy was established as part of the first cycle in 2005 and has been used in all cycles thereafter. The assessment instrument comprises computer-based test modules, each of which can be completed in a maximum of 20 minutes (controlled by the testing software). Each module follows a linear narrative sequence designed to reflect students' typical real-world use of ICT. The modules include a range of school-based and out-of-school-based themes. In almost all cases, the modules comprise a sequence of 8–10 tasks culminating in a large task. All tasks are completed using purpose-built software applications that make use of the conventions of user interface design.

[5] Explicit stratification means that separate school samples are drawn for each sector within each jurisdiction.
[6] A measure of school socio-economic status known as the Socio-Economic Indexes For Areas – Index of Education and Occupation (SEIFA – IEO).
[7] Implicit stratification means that within the sampling frame, schools are grouped and sorted by implicit stratification variables so that adjacent schools are similar to each other.

Following completion of each NAP–ICT Literacy cycle, some assessment modules are released on the National Assessment Program website as exemplar materials that illustrate and explicate the assessment content and information about how the assessment tasks are scored. These can be accessed at: https://www.nap.edu.au/nap-sample-assessments/the-tests

The remaining assessment modules are held secure for use in the subsequent assessment cycle so that student achievement in the subsequent cycle can be reported on the NAP–ICT Literacy proficiency scale. This enables trends in student achievement to be reported across cycles.

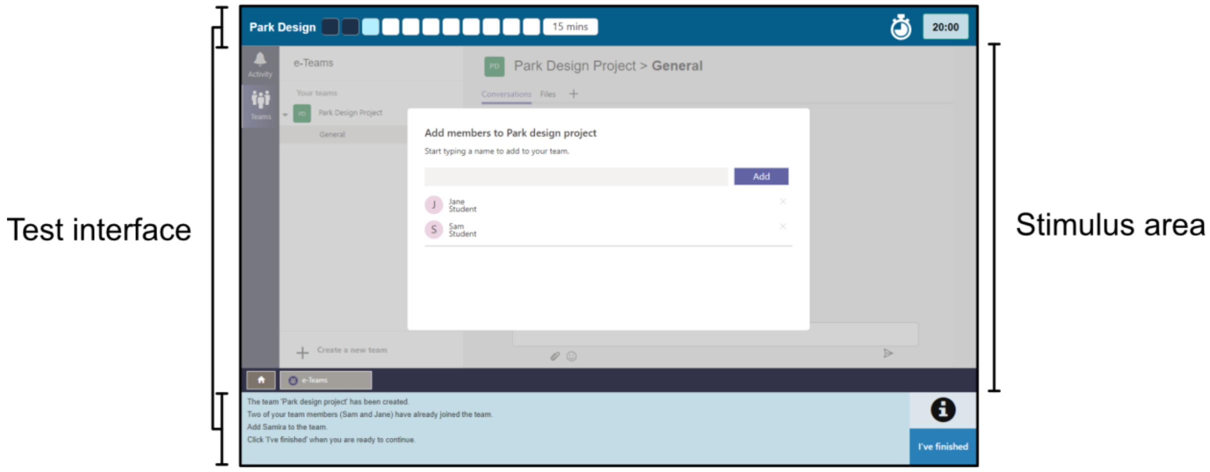
New assessment modules are developed for inclusion in each new assessment cycle. In addition to replacing the assessment modules that have been released, development of new modules for each cycle allows for the NAP–ICT Literacy content to remain up to date and reflect changes in software environments and use over time. As part of each new assessment cycle, analyses are conducted to check that the new modules measure the same dimension (ICT literacy) as the established or continuing modules. For NAP–ICT Literacy 2025, 8 new modules have been developed and one trend module has been updated. Three of the new modules focus on tasks associated with the AC: ICT Capability and 5 focus on tasks associated with the AC: Digital Technologies.

Each student completes 4 NAP–ICT Literacy assessment modules. As there are more than 4 assessment modules in the total instrument, the modules are allocated across students using a fully balanced design in which each module is presented an equal number of times in each of the 4 possible positions in the assessment. The individual sequences of modules are randomly assigned to students.

The NAP–ICT Literacy assessment is computer-based and provides students with an authentic representation of a typical computer environment, limited by some functional restrictions to ensure that the test-taking experience is consistent across students. The authenticity of the environment is achieved by using purpose-built applications that adhere to standard interface design and user experience conventions. The NAP–ICT Literacy assessment is accessible online via a web browser.

Students are presented with a variety of assessment tasks grouped and presented in modules that follow a linear narrative sequence and are designed to reflect students' typical real-world use of digital tools. The modules include a variety of task types including multiple-choice and short text response questions, skill execution tasks, and information literacy and communication tasks. Students complete tasks using a range of software applications, including productivity and communications applications (such as collaborative workspaces, design tools, and word processing and presentation software applications). Students also engage with web-based information resources. The web content is developed for exclusive use in the NAP–ICT Literacy assessment. Students can only access the web content developed for the assessment with a simulated web browser that accesses and displays websites in a closed web environment. The assessment platform allows students to navigate the test content and respond to the assessment tasks. The on-screen test environment includes 2 functional areas that are independently interactive: the test interface and the stimulus area (see Figure 4.1).

Figure 4.1: Test environment composed of the test interface and the stimulus area



4.3 Test interface

In order to provide a consistent testing experience for all students, the screen layout and test environment are predefined and uniform. The screen layout includes an outer static border that houses test information for students, such as the name of the module they are completing, the time remaining and their progress through the tasks in that module. At the bottom of the screen, there is a section containing the task instructions or questions for students to complete. A large central space (stimulus) in the screen contains the dynamic information or software that students use to answer questions and complete tasks. The stimulus contains either non-interactive content, such as the text of an email from a collaborator on a task, or interactive content, such as electronic documents or live software applications. The test interface includes navigation controls that allow students to move between tasks. An information button allows students to access general test-taking information and task-specific information, such as scoring criteria or detailed task instructions.

Students are not able to exit the test environment during the test, nor are they able to progress beyond the end of each individual module without the assistance of the test administrator.

4.4 Test instrument design

NAP–ICT Literacy consists of test modules made up of individual tasks. Each student completes 4 modules and is allocated up to 20 minutes to complete each module. This time is controlled automatically by the online testing system. In each cycle since the inaugural assessment in 2005, the test instrument has included a selection of modules from previous assessment cycles and some newly developed modules for the current cycle. This combination of previously used and newly developed modules allows for student achievement to be measured and reported against the NAP–ICT Literacy achievement scale established in 2005. It also allows for the NAP–ICT Literacy assessment content to remain up to date with changes in ICT technology and ICT use over time.

In NAP–ICT Literacy 2025, the test instrument is comprised of 4 secure “trend” modules carried over from previous cycles of NAP–ICT Literacy and up to 8 newly developed modules, which are validated for use in the main study.

The content of the 4 secure modules was developed with reference to the NAP–ICT Literacy construct used from 2005 to 2022. The content of the new modules represents the revised NAP–ICT Literacy 2025 construct. Data collected from all modules in the NAP–ICT Literacy 2025 are used as the basis for reporting test results on the NAP–ICT Literacy achievement scale established in 2005. All students complete 4 of the available modules in a balanced rotation. The rotated module design for the modules enables the instrument to contain and consequently report on achievement against a larger amount of content than any single student could reasonably complete in 80 minutes.

4.5 Test modules

Each module has a single unifying theme. The modules begin with a number of simulated performance tasks, multiple-choice and short constructed-response questions. They conclude with a single integrated task, usually incorporating at least one simulated software application, in which students produce a final digital solution. The digital solutions may be in the form of an information product (such as a presentation, a poster or an animated video) or a programmatic solution to a problem (such as an algorithm, a visual coding-based program or simulation results).

Initial tasks

Typically, the initial tasks require students to manage files, perform simple software functions (such as inserting pictures into files), search for information, collect and collate information, evaluate and analyse information, and perform some simple reshaping of information (such as drawing a chart to represent numerical data).

Within each module, the questions and tasks follow a narrative sequence in which information is typically collected and developed in preparation for the final task. As a consequence of this, many later tasks in each module contain information that could be used to answer or complete earlier tasks.

For example, consider a module in which students are presented with a simple report on web traffic, which shows the number of visits to a small set of webpages for 2 different time periods. Students are first required to use the information in the report to identify the webpage that has had a large reduction in visits across the 2 time periods. In the next task, students are asked to locate and examine the previously identified webpage to explain the reduction in visits. In this second task, the webpage that needs to be reviewed (that is, the one with a reduction in visits) is identified for the students so that they can evaluate its contents. This allows students who had not correctly identified the site from the website traffic report still to analyse the content of the site to explain why the traffic may have been reduced. However, it also provides students with the correct answer to the previous task. To prevent students from returning to earlier tasks to correct errors they later realise they have made, students have to complete all tasks and questions in each module in the narrative sequence provided to them in the module. Students are not able to move back to previous tasks once they have completed them.

Digital solution tasks

The information product tasks are specified for students in terms of the software tools and format to be used (and consequently the format of the product), the communicative purpose and the target audience of the information product. Students are also provided with information about the criteria that will be used to assess each large task. The programmatic problem-solving tasks provide students with a visual coding interface or simulation software with adjustable parameters. The modules are designed to reflect students' typical real-world use of ICT and digital systems. Modules include a range of school-based and out-of-school-based themes that are driven by plausible narratives.

Module themes

The module themes are selected to be engaging and relevant to students. The tasks are developed with a view to preventing prior content knowledge relating to a module theme from advantaging subgroups of students. This is achieved in 2 main ways. First, any contextual, subject-based information students need to manage the tasks is provided to students within the tasks. Second, any content presented to students (such as scientific or technical information) is not more complex than the level of knowledge and understanding reasonably expected of students 2 year levels below the year of the students completing the tasks.

Response formats

The tasks include a broad range of response formats including:

- multiple-choice
- drag-and-drop (matching information)
- simple software commands (such as saving a file to a location)
- short constructed text responses
- construction of information products
- development of algorithms
- simulation experiments.

Some tasks are automatically scored, while other tasks that produce responses stored as text, including the information products, are marked by trained markers. Sample tasks are provided in section 4.6: Types of assessment tasks. Example test modules from previous NAP–ICT Literacy assessment cycles can be downloaded from the National Assessment Program website at: https://www.nap.edu.au/nap-sample-assessments/the-tests

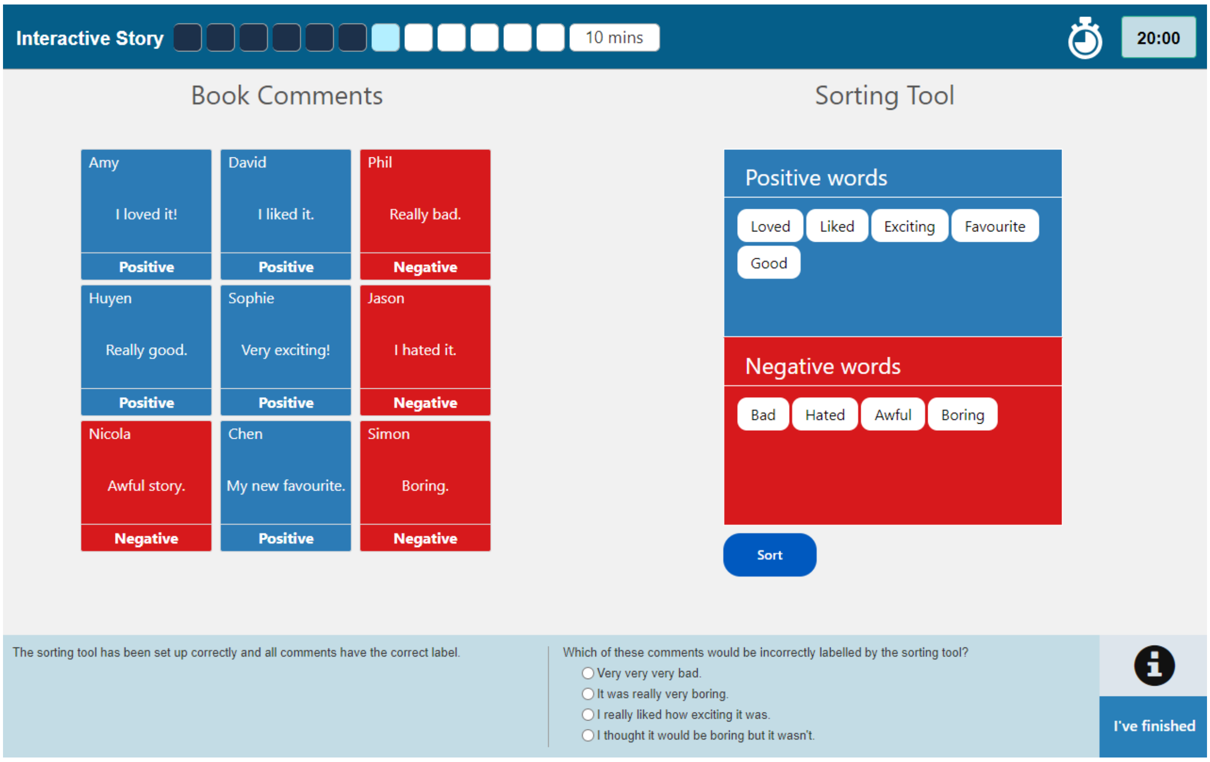
4.6 Types of assessment tasks

Following are descriptions of the different types of assessment tasks used in the NAP–ICT Literacy assessment. The classification of the task types draws on that used to describe the assessment content in the ICILS (see Fraillon et al. 2019a).

Task type 1: Information-based response tasks

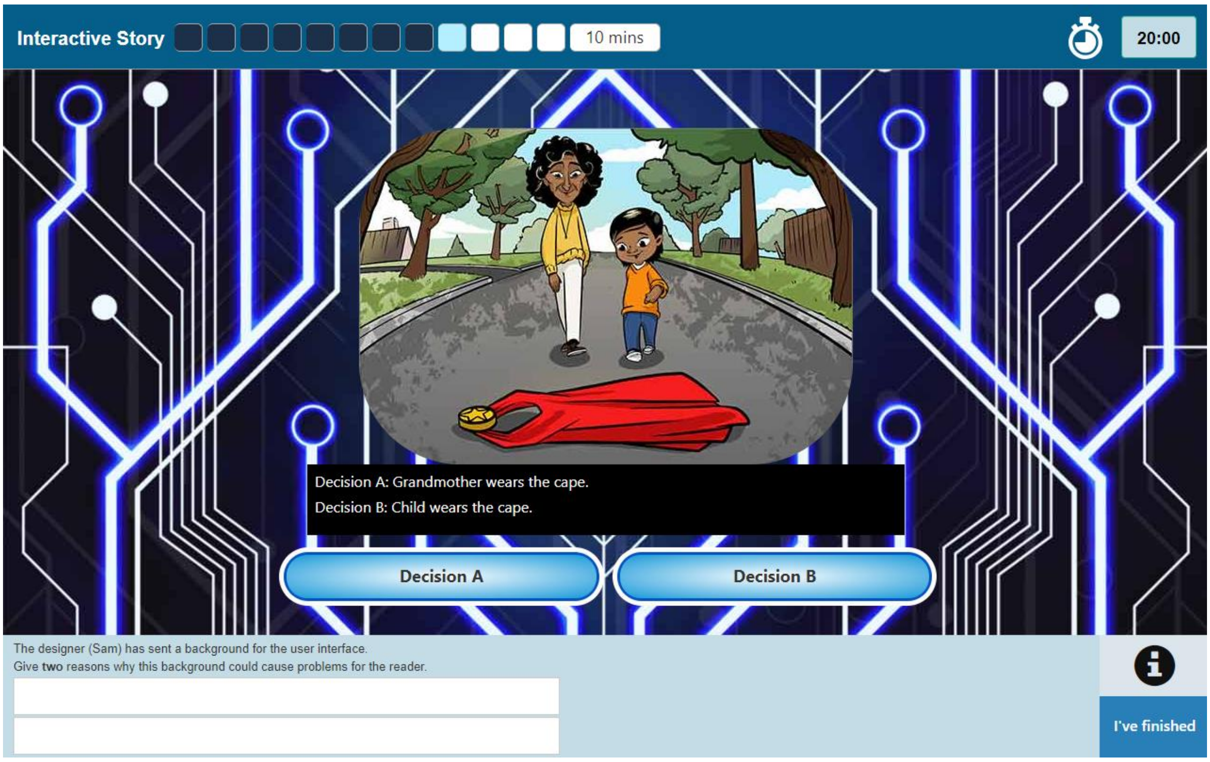
Information-based response tasks use multiple-choice, short constructed text response and drag-and-drop formats. The stimulus is typically a non-interactive representation of an electronic information source, computer-based scenario or digital system. These tasks are used to assess student knowledge and understanding of specific ICT literacy concepts. The tasks allow students to provide analysis of information (such as to make a judgement about the apparent trustworthiness of information on a webpage), evaluate a scenario (such as identifying the advantages of a software program's features) or demonstrate an understanding of the algorithmic rules that underpin a digital system. This knowledge and understanding of ICT literacy concepts are captured independently of students using anything beyond the most basic skills required to record a response. All multiple-choice and drag-and-drop tasks are automatically scored. Students' short constructed responses arestored as text for later marking by trained markers.

Figure 4.2: Example task 1 (a typical multiple-choice task)



Illustrating an information-based response task, example task 1 (Figure 4.2) presents students with a question about how comments are labelled by an algorithm. The stimulus shows a stylised view of a range of comments and how they have been labelled. The task relates to Aspect 3.2: Developing algorithms, programs and interfaces.

Figure 4.3: Example task 2 (a typical short constructed text response)



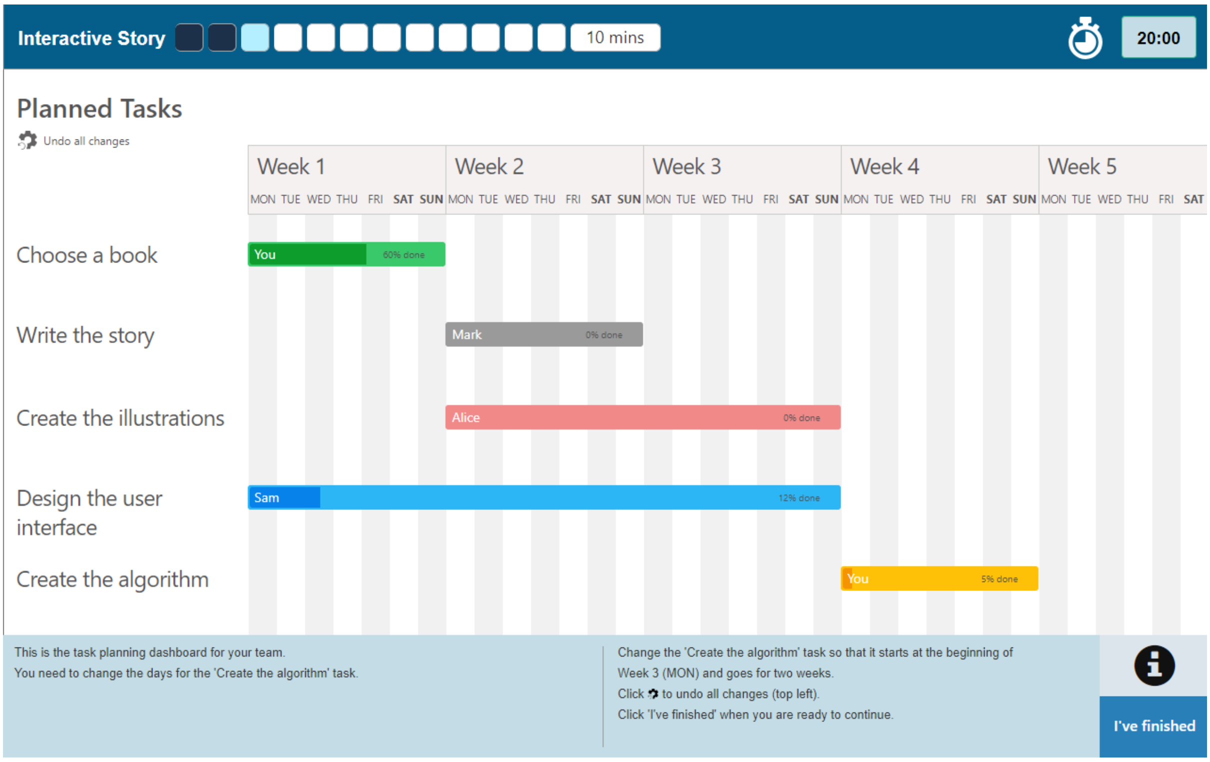
The stimulus material in example task 2 (Figure 4.3) presents students with a user interface with a visually complex background. Students are asked for 2 reasons why the background could cause problems for the user. This task relates to Aspect 3.1: Communicating with digital information products.

Task type 2: Skills tasks

The NAP–ICT Literacy assessment includes both linear and nonlinear skills tasks (Fraillon et al. 2019a). Linear skills tasks "can only be completed correctly if the commands are executed in a necessary prescribed sequence" (Fraillon et al. 2019a:48). In NAP–ICT Literacy, linear skills tasks are designed to capture data on whether students are able to complete a task at that point in time without support or assistance. These simulated software application tasks can be considered as assessing whether students "know" the function they are being asked to execute. The skills tasks consist of software simulations that automatically capture and score student responses.

The tasks simulate normal functionality up until the point at which a student executes a function or sequence of commands. At this point, students are presented with a screen stating that "Your response has been recorded", along with the option for students to "Try again" once or go to the next task. For example, if a student is asked to cut a section of selected text, when the student executes a command, the "Your response has been recorded" screen appears rather than the text disappearing from the screen where they have executed the command. In normal circumstances, the student would know whether or not they have executed the cut command accurately by seeing the selected text disappear from the screen. As such, students would be able to use a trial-and-error approach to executing the desired skill. Because the linear skills tasks are designed to capture point-in-time knowledge, the simulations do not provide students with any feedback about their success. Students can select "Try again" once with each skills task (in case they are not sure whether they executed the function correctly). After a second attempt, they are required to move to the next task. Students receive full credit on skills tasks for correctly executing them by any conventional method (typically by using keyboard shortcuts, icons/buttons or drop-down menus).

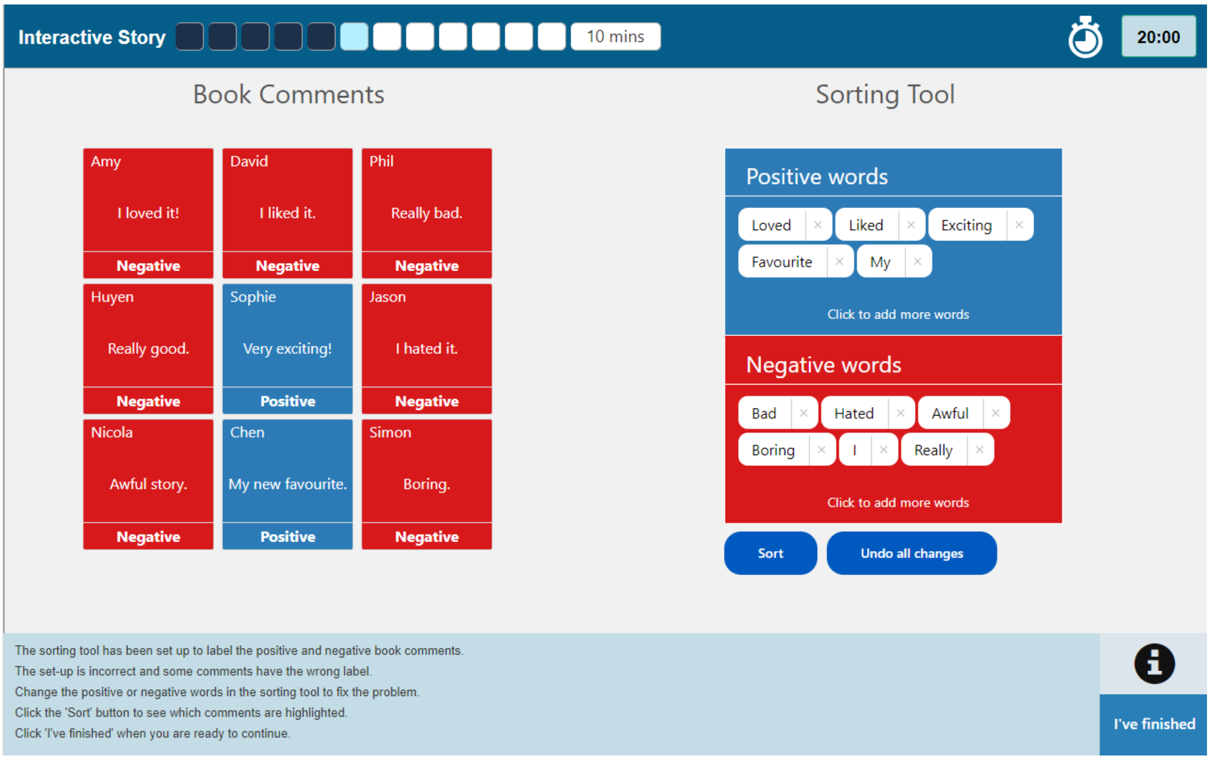
Figure 4.4: Example task 3 (linear skills task)



Example task 3 (Figure 4.4) provides an example of a linear skills task that requires students to modify a planning dashboard (Gantt chart). Students must drag the “create the algorithm” task so that it meets defined criteria. Example task 3 relates to Aspect 1.1: Managing information and operating ICT.

In nonlinear skills tasks, students are required to “execute a software command (or reach a desired outcome) by executing subcommands in a number of different sequences” (Fraillon et al. 2019a:48). In NAP–ICT Literacy, like linear skills tasks, nonlinear skills tasks present simulated software applications. However, unlike linear skills tasks, they do not have any endpoints that display the action recorded message. Instead, students must evaluate the quality and completeness of their actions before progressing to the next task.

Figure 4.5: Example task 4 (nonlinear skills task)



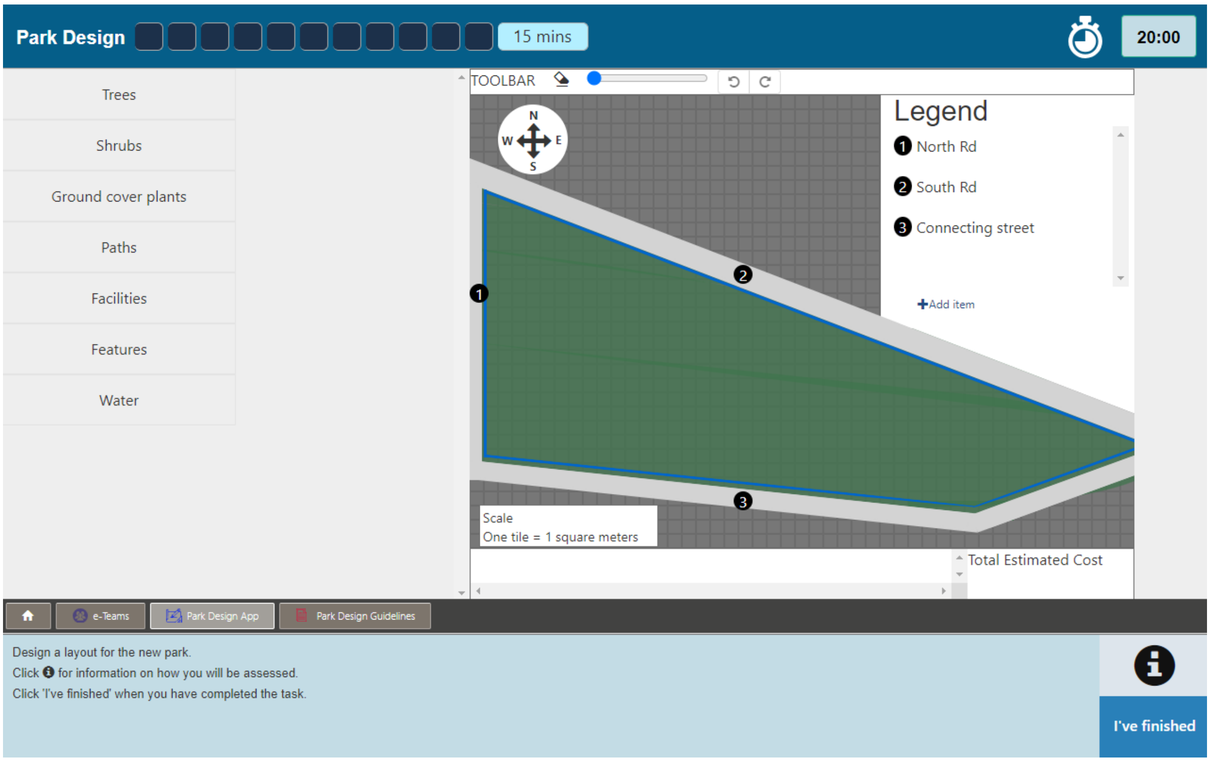
Example task 4 (Figure 4.5) illustrates a nonlinear skills task. This task is an extension of example task 1, involving an algorithm to categorise comments as “positive” or “negative”. The task requires students to classify key words as either positive or negative by curating the sorting tool. Students can drag words between positive and negative within the sorting tool, add new words to the sorting tool, test the result of their decisions, and reset the sorting tool to the original state. Student responses are scored automatically, with the highest level of credit given to students who configure the sorting tool so that all book comments are categorised correctly. Partial credit is awarded if a small number of books are incorrectly categorised.

Nonlinear skills tasks may also be presented as configuration tasks in which students alter settings that affect the operation of a given application. Examples of these tasks that students may complete are: personalising the look and feel of an application, granting a user access to a collaborative workspace or file, modifying the margin properties of a document page and configuring parameters that define how a simulation is conducted.

Task type 3: Authoring tasks

Authoring tasks require students to “modify and create information products using authentic computer software applications” (Fraillon et al. 2019a:49). In NAP–ICT Literacy, authoring tasks are larger communication tasks that are completed using “live” software applications, such as word processors, presentation software and spreadsheets; simple web-based databases and survey design software; and some adapted graphics and multimedia applications. Unlike the skills tasks, the authoring tasks avail students of the full set of real-time feedback and functionality of the live software applications. When completing the authoring tasks, students typically need to select, assimilate and synthesise the information they have been working with in the lead-up tasks and reframe the information to fulfil a specified communicative purpose. The audience- and software-related communicative context are specified to the students as part of the communicative purpose of an authoring task. Students are free to manage their own time during each module. However, they are advised to allow half of the time allocated in each module to complete the larger authoring tasks.

Figure 4.6: Example task 5 (authoring task)



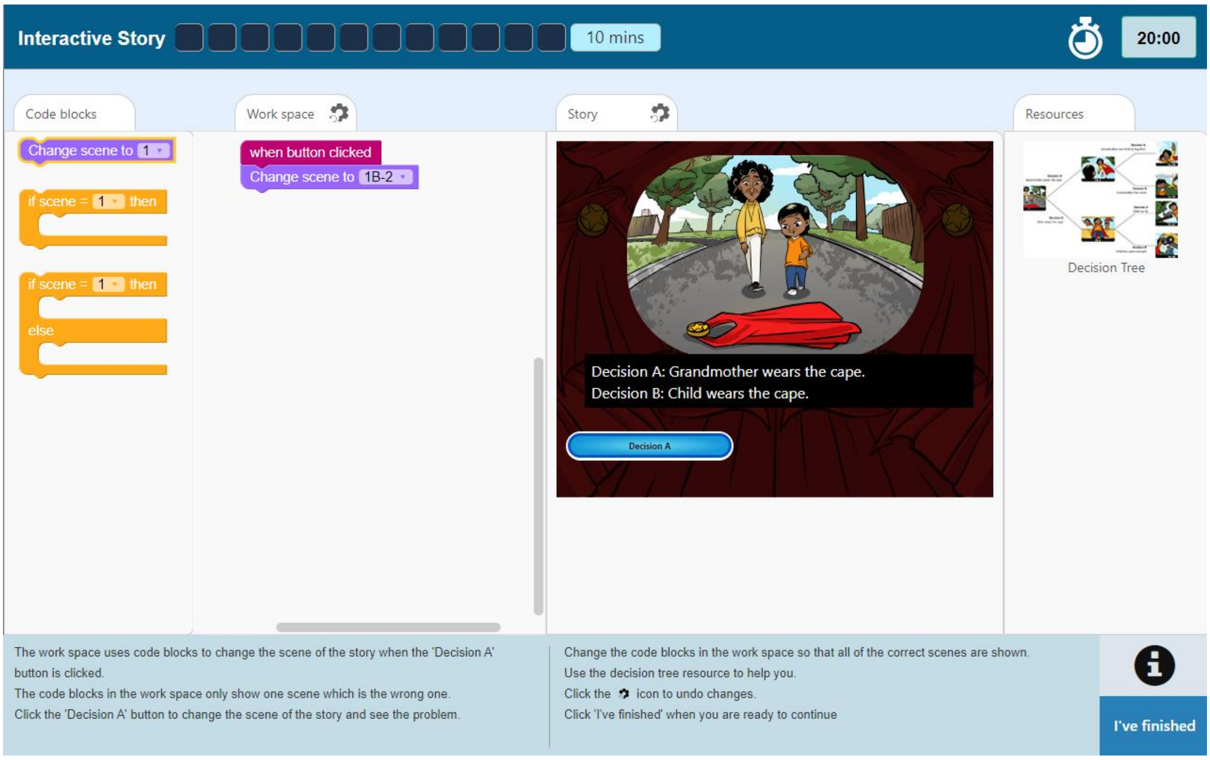
Example task 5 (Figure 4.6) illustrates an authoring task that requires students to use a digital tool to lay out various design features, while following several design requirements. The task requires students to navigate between the design guidelines document and the design application. In this type of task, the information products (such as documents, spreadsheets, presentations, graphics or multimedia) are saved and scored by trained markers using criterion-based scoring rubrics. While the exact criteria within each rubric vary depending on the task requirements, for most authoring tasks, the criteria relate to the way in which students have used the available information and software features to complete the tasks. Criteria relating to students’ use of information typically refer to the relevance of the information students have selected from the sources, the organisation of information in the information product, and the appropriateness with which students have adapted the source to suit the target audience and purpose. Criteria relating to students’ use of the software features (such as formatting, colour, layout and resizing) have a strong focus on the intended communicative purpose of the information product. In most cases, the scoring hierarchy within each criterion relates to the use of software features and to the degree with which the feature has been used in a way that supports or enhances the communicative intent of the information product.

Task type 4: Visual coding tasks

The visual coding tasks in NAP–ICT Literacy use a specialised user interface modelled on popular visual coding applications. Fundamental to these environments is the use of drag-and-drop code blocks to specify commands and a visual representation of the result of implementing a given set of commands. The represented context for a visual coding task could be simple line graphics, a series of on/off switches, an avatar that moves across a grid or a user interface with buttons and elements controlled by the use of the buttons. The interface includes a space containing the code blocks that can include action statements (for example, “change background”), conditionals (for example, “if-do”, “if-else”), comparison operators (for example, “greater than”, “equal to”) and logical operators (for example, “AND”, “OR” and “NOT”).

This interface is shown in Example task 6 (Figure 4.7), a task for which the paths in an interactive story are controlled by nested if-else statements to respond correctly to user decisions. The interface also includes a workspace where the code blocks can be placed, ordered and reordered or removed from the workspace. Code blocks in the workspace can be executed, which can affect various elements presented in a visually represented context. Students are given an objective that relates to the state of the visually represented context. They can work iteratively by adding, removing and reordering code blocks to the workspace and executing the algorithm to see and evaluate the results.

Figure 4.7: Example task 6 (visual coding task)



4.7 Mapping test items to the NAP–ICT Literacy construct

Each individual task in NAP–ICT Literacy is mapped to the strands and aspects of the NAP–ICT Literacy construct. The estimated allocation of items (as a percentage of all items) to each aspect of the NAP–ICT Literacy 2025 test instrument is shown below (Table 4.1). The final number of items and score points will vary based on the results of the field trial (a test of the performance of modules and items occurring prior to the main study).

Table 4.1: Mapping of NAP–ICT Literacy assessment items to the NAP–ICT Literacy construct

ICT Literacy strand/aspect	% Total (items)
Strand 1: Understanding ICT and digital systems	
Aspect 1.1: Managing information and operating ICT	10 – 20
Aspect 1.2: Understanding digital systems	10 – 20
Total (strand 1)	**20 – 40**
Strand 2: Investigating and planning solutions with ICT	
Aspect 2.1: Accessing and evaluating information	15 –25
Aspect 2.2: Collecting and representing data	5 – 15
Aspect 2.3: Formulating problems and planning solutions	5 – 15
Total (strand 2)	**25 – 55**
Strand 3: Implementing and evaluating digital solutions	
Aspect 3.1: Communicating with digital information products	5 – 15
Aspect 3.2: Developing algorithms, programs and interfaces	5 – 15
Total (strand 3)	**10 – 30**
Strand 4: Applying safe and ethical protocols and practices when using ICT	
Aspect 4.1: Safe and responsible information consumption with ICT	5 – 15
Aspect 4.2: Responsible digital solution and information production with ICT	5 – 15
Total (strand 4)	**10 – 30**

4.8 Learning progression described in NAP–ICT Literacy

The NAP–ICT Literacy scale was established based on the test contents and psychometric data collected during the inaugural NAP–ICT Literacy assessment in 2005. The scale comprises 6 proficiency levels that are used to describe the achievement of students in both Year 6 and Year 10. The scale descriptors have been reviewed following each subsequent cycle of NAP–ICT Literacy to ensure the accurate reflection of the NAP–ICT Literacy test contents. The descriptors will again be reviewed following NAP–ICT Literacy 2025 to integrate and represent the new assessment content developed with respect to the revised NAP–ICT Literacy construct.

The NAP–ICT Literacy scale describes achievement from the performance of very basic skills through to high-level information literacy evidenced in sophisticated receptive and productive communication of digital information. The described NAP–ICT Literacy scale for 2022 has been included as Appendix 1.

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Appendix 1

The proficiency level descriptors in Table A1 are those produced following the completion of the 2022 assessment and contain some terminology that will be changed following the 2025 assessment. For clarity, the 2025 proficiency level descriptors will replace the phrase “digital technologies” to distinguish between “digital tools” (i.e. hardware and software) and the subject “Digital Technologies”.

Table A1: NAP–ICT Literacy 2022 proficiency level descriptors with examples

Proficiency level	Proficiency level description	Examples of student achievement at this level
Level 6	Students working at level 6 create information products that show evidence of technical proficiency, careful planning and review, and digital technologies skills. They use software features to organise information and to synthesise and represent data as integrated complete information products, and to develop algorithms and apply computational thinking. They design information products consistent with the conventions of specific communication modes and audiences. They use available software features to enhance the communicative effect of their work.	• Create an information product in which the flow of information is clear, logical and integrated to make the product unified and complete. • Select appropriate key points and data from available resources and use their own words to include and explicate them in an information product. • Use graphics and text software editing features, such as font formats, colour, animations and page transitions, in ways that enhance the structure and communicative purpose of an information product. • Include relevant tables and charts to enhance an information product and support these representations of data with text that clearly explains their purpose and contents. • Apply computational thinking and algorithm development to solve complex problems in various contexts. • Design and create digital solutions using various software tools, programming languages and platforms, focusing on user experience and interface design.
Level 5	Students working at level 5 evaluate the credibility of information from electronic sources and select the most relevant information to use for a specific communicative purpose. They create information products that show evidence of planning and technical competence, and digital technologies understanding. They use software features to reshape and present information graphically, consistent with presentation conventions. They design information	• Create an information product in which the information flow is clear and logical, and the tone and style are consistent and appropriate for a specified audience. • Use video/animation editing techniques to control the timing of events and transitions to create a sense of continuity. • Select and include information from electronic resources in an information product to suit an explicit communicative purpose. • Use graphics and text software editing features such as font formats, colour and animations consistently within an information product to suit a specified audience. • Create tables and charts that accurately represent data and include them in an information product with text that refers to their contents.

Proficiency level	Proficiency level description	Examples of student achievement at this level
	products that combine different elements. They accurately represent their source data and apply computational thinking to develop digital solutions. They use available software features to enhance the appearance of their information products and user interfaces. They employ file management practices to support workflow management when creating information products. They can explain how components of a digital system are connected to transmit data and interpret the data outputs.	• Apply specialised software and file management functions, such as using the history function on a web browser to return to a previously visited page or moving and organising image files into a dedicated folder for the purpose of importing the images into an application. • Explain the advantages and disadvantages of different file formats (e.g. PDF or DOCX). • Demonstrate an understanding of basic programming concepts and apply them to develop digital solutions in various contexts. • Design and implement simple digital solutions such as designing user interfaces, using a variety of software tools and platforms that ensure the solution is easy to navigate and interpret for the user. • Explain how data is transferred between components of a digital system to perform a given function, e.g. how wi-fi can be used to communicate with a device.
Level 4	Students working at level 4 generate simple general search questions and select the best information source to meet a specific purpose. They retrieve information and interpret data reports from given electronic sources to answer specific, concrete questions. They can implement solutions to collect information from users. They assemble information in a simple linear and logical order to create information products. They use conventionally recognised software commands to edit and reformat information products, and begin to explore digital technologies concepts. They recognise common examples in which ICT misuse may occur and suggest ways of avoiding them.	• Create an information product in which the flow of information is clear and the tone is controlled to suit a specified audience. • Generate searches that target relevant resources, apply search engine filtering parameters to improve search results and then select relevant sections of these resources to include, with some modification and supporting text, in an information product. • Use simple web forms to collect information from users. • Apply graphics and text software editing features, such as font formats, colour and image placement, consistently across a simple information product. • Apply specialised file management and software functions, such as sorting files by type and date, locating an appropriate folder location for software installation or enabling a specified hidden toolbar in a word processor. • Explain basic digital technologies concepts, such as simple programming and algorithm design, in the context of problem-solving tasks. • Begin to develop digital solutions using a variety of software tools and platforms, with guidance and support.

Proficiency level	Proficiency level description	Examples of student achievement at this level
Level 3	Students working at level 3 generate simple general search questions and select the best information source to meet a specific purpose. They retrieve information and interpret data reports from given electronic sources to answer specific, concrete questions. They can use simple digital forms and identify mistakes in software tools used to collect information from users. They assemble information in a simple linear and logical order to create information products. They use conventionally recognised software commands to edit and reformat information products and begin to explore basic digital technologies concepts. They can correctly connect components of a simple digital system. They can use a range of communication tools for participating in collaborative online environments. They recognise common examples in which ICT misuse may occur and suggest ways of avoiding them.	• Create an information product that follows a prescribed explicit structure. • Identify the difference between paid and nonpaid search engine generated results when conducting research. • Select clear, simple, relevant information from given information sources and include it in an information product. • Collect information from users. • Make recommendations to improve the navigability of a website. • Identify a potential problem with a website based on a web traffic report. • Use design software editing features to manipulate aspects such as colour, image size and placement in simple information products. • Identify problems with the features employed in a user interface. • Apply software and file management functions using common conventions such as left aligning selected text, adding questions to an online survey, or creating and naming a new file on the desktop. • Recognise the potential for ICT misuse, such as plagiarism, computer viruses and deliberate identity concealment, and suggest measures to protect against them. • Develop an understanding of foundational digital technologies concepts, such as basic programming structures and digital systems, in a guided setting. • Create simple digital solutions with support, using a limited range of software communication tools (e.g. interactive charts and presentations) and platforms. • Identify how components of a simple digital systems are connected.
Level 2	Students working at level 2 locate simple, explicit information from within a given electronic source. They add content to and make simple changes to existing information products when instructed. They edit information products to create products that show limited consistency of design and information management. They recognise and identify basic ICT electronic security and	• Locate explicit relevant information or links to information from within a webpage. • Use metadata, such as date, to help identify and select relevant files. • Make changes to some presentation elements in an information product. • Apply simple software and file management functions, such as copying and pasting information from one column of a spreadsheet to another column, adding a webpage to a list of favourites (bookmarks) in a web browser or opening an email attachment.

Proficiency level	Proficiency level description	Examples of student achievement at this level
	health and safety usage issues and practices, and gain exposure to basic digital technologies concepts. They can interpret data represented in a range of communication tools for participating in collaborative online environments. They examine the main components of familiar digital systems and identify their functions.	• Recognise common computer-use conventions and practices, such as the use of the ".edu" suffix in the URL of a school's website, the need to keep antivirus software up to date and the need to maintain good posture when using a computer. • Explain the purpose of specific school ICT use and social media use policies. • Identify basic digital technologies concepts, such as simple programming structures and digital systems, in a guided setting. • Explore simple digital solutions with support, using a limited range of software communication tools (e.g. interactive charts and presentations) and platforms. • Examine components of familiar digital systems and their function (e.g. microphones, wi-fi devices, sensors).
Level 1	Students working at level 1 perform basic tasks using computers and software. They implement the most commonly used file management and software commands when instructed. They recognise the most commonly used ICT terminology and functions, and gain initial exposure to basic digital technologies concepts.	• Apply graphics editing software functions, such as adding and moving predefined shapes, and adjusting property sliders to control the basic appearance of an image. • Apply basic file and computer management functions, such as opening, and dragging and dropping files on the desktop. • Apply generic software commands, such as the "save as" and "paste" functions, clicking on a hyperlink to go to a webpage or selecting all the text on a page. Recognise basic computer-use conventions, such as identifying the main parts of a computer and that the "shut-down" command is a safe way to turn off a computer. • Become familiar with simple digital technologies concepts, such as basic programming structures and digital systems, in a highly guided setting (e.g. decision trees). • Participate in guided activities to explore simple digital solutions, using a limited range of software tools and platforms.

Appendix 2

Development of the NAP–ICT Literacy Assessment Framework (2005–2022)

In preparation for the first cycle of NAP–ICT Literacy in 2005, an expert committee was convened to create an assessment domain for ICT literacy that could be used to frame development of NAP–ICT Literacy (MCEETYA 2007). The assessment domain included a definition of ICT literacy as well as an elaboration of the definition through a set of 6 ICT literacy processes that can be demonstrated across 3 strands. Together, the definition and its elaboration have articulated the achievement construct measured and reported on in NAP–ICT Literacy from 2005 to 2017.

The definition of ICT literacy underpinning NAP–ICT Literacy 2005–2017 was:

> The ability of individuals to use ICT appropriately to access, manage and evaluate information, develop new understandings, and communicate with others in order to participate effectively in society.

The 6 ICT literacy processes underpinning NAP–ICT Literacy 2005–2017 are listed in Table A2 below.

Table A2: ICT literacy processes described for NAP–ICT Literacy 2005–2017

Process	Description
Accessing information	identifying information requirements and knowing how to find and retrieve information
Managing information	organising and storing information for retrieval and reuse
Evaluating	reflecting on the processes used to design and construct ICT solutions and making judgements regarding the integrity, relevance and usefulness of information
Developing new understandings	creating information and knowledge by synthesising, adapting, applying, designing, inventing or authoring
Communicating	exchanging information by sharing knowledge and creating information products to suit the audience, the context and the medium
Using ICT appropriately	making critical, reflective and strategic ICT decisions, and considering social, legal and ethical issues

Furthermore, the NAP–ICT Literacy assessment domain organised content according to 3 strands:

- working with information
- creating and sharing information
- using ICT responsibly.

The 3 ICT literacy strands were regarded as establishing contexts in which ICT literacy could be expressed through the application of the 6 processes, although it was accepted that the prominence of the 6 processes could vary across the strands.

Mapping NAP–ICT Literacy (2005–2017) to the Australian Curriculum

NAP–ICT Literacy 2008

- The NAP–ICT Literacy 2008 public report included detail of the relationship between NAP–ICT Literacy and the Statements of Learning for ICT (MCEEDYA 2009).

NAP–ICT Literacy 2011

- The NAP–ICT Literacy 2011 public report (released in 2012) included a mapping of the processes in the ICT Literacy assessment domain and the organising elements in each of the AC: ICT Capability and the Statements of Learning for ICT (see ACARA 2012b).

NAP–ICT Literacy 2014

- The NAP–ICT Literacy assessment domain was revised and published as the NAP–ICT Literacy 2014 Assessment Framework. This assessment framework included explicit information about the relationship between the measurement of ICT literacy in NAP–ICT Literacy and the AC: ICT Capability and the Statements of Learning for ICT.
- The NAP–ICT Literacy 2014 public report included a summary of the relationship between NAP–ICT Literacy and the AC: ICT Capability and the Statements of Learning for ICT (ACARA 2015b).
- Reports provided to schools that participated in the assessment included a mapping of each assessment item to the AC: ICT Capability in addition to the NAP–ICT Literacy Assessment Framework.

NAP–ICT Literacy 2017

- The NAP–ICT Literacy 2014 Assessment Framework was revised to include a mapping of the ICT literacy processes used in NAP–ICT Literacy to each of the AC: ICT Capability and the AC: Digital Technologies. The framework included extensive detail about how the mapping exercise was completed and provided details of the degree of correspondence between the NAP–ICT Literacy 2017 assessment and the AC: Digital Technologies.
- The NAP–ICT Literacy 2017 public report (ACARA 2018) included a summary of the relationship between NAP–ICT Literacy and the AC: ICT Capability and the AC: Digital Technologies.
- Reports provided to schools that participated in the assessment included a mapping of each assessment item to the AC: ICT Capability, NAP–ICT Literacy Assessment Framework and, where applicable, to the AC: Digital Technologies.

Revising the ICT literacy construct for use in NAP–ICT Literacy

In response to the evolution of NAP–ICT Literacy from 2005 to 2017, ongoing developments in technology and the implementation of the AC: ICT Capability and the AC: Digital Technologies, ACARA made the decision to review the construct assessed in NAP–ICT Literacy.

In 2018, as part a component of this review, ACARA hosted a forum where members of state and territory school sectors came together to consider the scope of the NAP–ICT Literacy 2021 assessment and possible future directions. The forum provided an opportunity to reflect on how the elements and sub-elements of a range of general capabilities, including ICT Capability, Critical and Creative Thinking, Numeracy, and Personal and Social Capability, relate to the Digital Technologies curriculum, and whether this had implications for revising the NAP–ICT Literacy 2021 Assessment Framework and assessment content.

In 2019, ACARA established a working group comprising ICT and Digital Technologies education experts from all Australian states and territories, with the primary focus of reviewing feedback and recommendations from the 2018 forum, formulating the revised assessment framework, and reviewing the development of the NAP–ICT Literacy 2022 test and questionnaire instruments.

The revised definition of ICT literacy for NAP–ICT Literacy 2022 was developed in response to the feedback and recommendations of the NAP–ICT Literacy Working Group and in consultation with ACARA curriculum specialists. The revised definition strongly referenced and extended the previous definition. It continued to present the use of ICT as a medium for demonstrating information literacy competencies and further included reference to the concepts of computational thinking, design thinking and systems thinking, which underpin the content associated with the AC: Digital Technologies.