National Assessment Program
Information and Communication Technology Literacy 2008
Years 6 and 10

An Assessment Domain for ICT Literacy

Introduction

The second national sample assessment of Information and Communication Technology (ICT) literacy at Year 6 and Year 10 will occur in 2008. The assessment happens every three years and the first occurred in 2005.

This document provides information about the ICT literacy assessment including:

- Education Ministers' decisions regarding ICT
- the definition of ICT literacy
- a description of the ICT literacy domain, strands and the progress map
- the types of items used in ICT literacy assessment
- how the results from the assessments will be reported.

Background

The *National Goals for Schooling in the Twenty-First Century* (National Goals), agreed to by all State, Territory and Australian Government Education Ministers in 1999, provide broad directions to guide schools and education authorities to develop in all Australian students the knowledge, understanding, skills and values they need for a productive and rewarding life in an educated, just and open society.

At the same time as endorsing the National Goals, Education Ministers established the Performance Measurement and Reporting Taskforce (PMRT) to monitor students' achievements in relation to the National Goals. This included developing key performance measures in eight priority areas, one of which was information and communication technologies. The National Goals specify that:

> *when students leave school they should be confident, creative and productive users of new technologies, particularly information and communication technologies, and understand the impact of those technologies on society.*

In requesting that ICT be measured, Ministers affirmed the importance of ICT knowledge and skills as an enabling technology to transform student learning, and enhance students' future economic and social participation and ability to access infrastructure, equipment and services delivered using ICT. This complements the directions of other groups, such as the Framework for the Future Steering Committee (2003), in valuing the centrality of ICT literate citizens to Australia's economic and social goals, to improving productivity and efficiency, and to building innovative capacity and competitiveness.

In July 2002, Ministers endorsed the first *Measurement Framework for National Key Performance Measures*. The Measurement Framework sets out the basis for reporting on

progress towards achievement of the National Goals and includes the key performance measures and the cycle of assessment for priority areas such as literacy, numeracy, science, civics and citizenship, and ICT. It was agreed that ICT be monitored from 2005 using a three-yearly sample assessment at Year 6 and Year 10.

For the first national sample assessment to monitor ICT, the PMRT decided to focus on students' general ICT skills and knowledge in a cross-curricular context (i.e. ICT literacy), rather than the more technical skills and knowledge developed through specialist ICT courses. The assessment included a short survey of students' access to ICT but did not seek to monitor students' attitudes to ICT. The PMRT also decided to maintain a 'futures perspective' to ensure that the currency of knowledge and skills assessed keeps pace with technological advances in ICT, and with the delivery of ICT changes in schools.

For the 2008 assessment, the PMRT is maintaining the focus on general skills, will maintain the 'futures perspective', and will include a similar survey of students' access to ICT.

ICT Literacy Domain Definition

The ICT literacy domain definition forms the basis for the development of the assessment framework. The decision to focus on ICT literacy as an essential skill across all learning areas, for all students, reflects the wide prevalence and use of ICT in society and the value of ICT literate citizens. As technologies change it is increasingly important that these skills are adaptive and transferable and are used as a tool to assist and transform learning in conjunction with other essential skills, such as literacy, numeracy and problem solving. This presence of other essential cognitive skills and understandings is evident in the progress map where the ICT skills and understandings are described.

For the purposes of this assessment domain, the PMRT has agreed to the following definition of ICT literacy:

> *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.*

This definition has been adopted after consideration of Australian and international definitions of ICT literacy, which included an extensive literature review and examination of national and international surveys, panels and frameworks. Influential in the development of this definition was the *Framework for ICT Literacy* (2002) developed by the International ICT Literacy Panel and the OECD's *PISA ICT Literacy Feasibility Study* (2003). This definition is also consistent with the *Learning for a Knowledge Society – an Education and Training Action Plan for the Information Economy* (supported by MCEETYA, March 2000).

In July 2001, MCEETYA determined that for the purpose of assessing students' ICT literacy skills, ICT would be defined as technologies used for accessing, gathering, manipulating, presenting and communicating information. However, for equity and pragmatic reasons, the first national sample assessment of ICT literacy in 2005 focused on the use of computer tools.

As indicated in the definition above, ICT literacy does not focus entirely on technical skills, but also involves assessment of information gathering, development of new understandings and communication.

The ICT literacy domain includes six processes:

- *Accessing information* — identifying the information needed 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 with others* — 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 using ICT responsibly by considering social, legal and ethical issues.

ICT Literacy Strands

The elements of the ICT literacy definition have been clustered into three strands — working with information, creating and sharing information and using ICT responsibly. These strands were developed to describe discrete constructs. Strands A and B are logical process groupings of ICT use, while Strand C focuses on understandings of responsible ICT use.

The three strands of the ICT literacy domain are described below:

Strand A: *Working with information*

This strand includes identifying the information needed; formulating and executing a strategy to find information; making judgements about the integrity of the source and content of the information; and organising and storing information for retrieval and reuse.

Strand B: *Creating and sharing information*

This strand includes adapting and authoring information; analysing and making choices about the nature of the information product; reframing and expanding existing information to develop new understandings; and collaborating and communicating with others.

Strand C: *Using ICT responsibly*

This strand includes understanding the capacity of ICT to impact on individuals and society, and the consequent responsibility to use and communicate information legally and ethically.

In developing the strand groupings, consideration was given to international and national developments, including an audit of State and Territory curriculum and assessment practices prepared through consultation with State and Territory curriculum officers.

Figure 1 below depicts the relationship between the three strands and the six ICT literacy processes. In essence the six processes are discernible across all the strands, however, their prominence may vary amongst the strands. The interrelationship between the processes and strands is also evident in the progress map (Appendix 1).

The organisation of the domain into three strands is intended to assist with the development of assessment tasks and the subsequent interpretation of student responses to the assessment tasks.

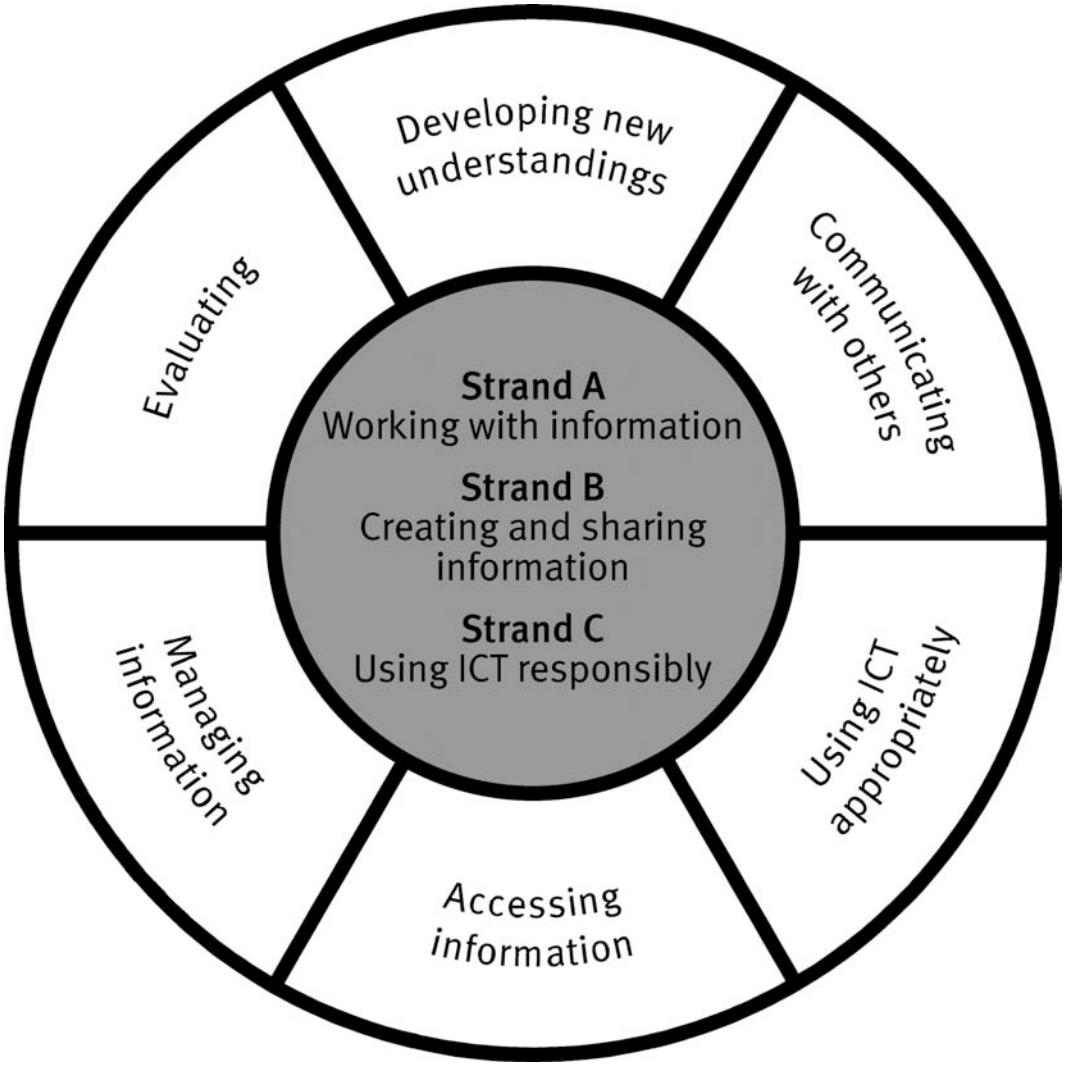


Figure 1: The ICT Literacy Domain Processes and Strands

When reporting on student attainment of ICT literacy a single measure is used. This reflects the decision endorsed by MCEETYA to keep the number of key performance measures to a minimum.

Application of ICT Literacy

The processes described in the ICT literacy definition are applied across all learning and real-life situations, are not restricted to using particular technologies, software and information products and are evident in a range of contexts and environments that a student may use. However, the second national sample assessment of ICT literacy in 2008 will, as with the 2005 assessment, focus on the use of computers.

When developing assessment tasks, evidence of ICT literacy may be drawn from and applied in the environments, information products, software and contexts indicated below. However, simulated environments will be necessary.

Environments	The possible range of environments is: • stand-alone • network • online

	For the 2008 national sample assessment the network and online environments will be simulated.
Information products	Information products include and combine elements of numerical data, text, images, sounds and video. Examples of information products include: • print-based forms, such as documents that may contain text, illustrations, graphs, etc. • digital forms, such as multimedia, presentations, web pages that may contain text, sound, video, etc. • graphical and symbolic forms, such as charts, graphs, maps, etc. • pictorial forms, such as photographs, drawings, etc.
Software	The range of software is: • Internet and sourcing applications, such as email, browsers, online services and e-commerce • word processor • spreadsheet • database • multimedia tools • file management tools The assessment tasks are constructed to provide equitable access for all students regardless of software platforms and brands that students have access to in their school.
Contexts	The range of contexts is: • personal • educational and vocational • societal

ICT Literacy Progress Map

The progress map for the ICT literacy domain is a hierarchy of what students typically know and can do. Students' skills and understanding are described in six bands of proficiency that are progressively more demanding (Appendix 1).

The progress map is not a curriculum. Rather it is a generalised developmental sequence that will enable information on the full range of student achievement to be collected and reported.

The progress map is described in terms of levels of increasing complexity and sophistication in using ICT. The progress map starts at level one. The descriptions at each level are cumulative, building on the preceding level descriptions of students' understanding and skills.

Development of the progress map is iterative. Further minor refinements may be made after each round of assessment.

The Assessment Tasks

The ICT literacy assessment consists of tasks that enable students to be mapped on to the levels described in the progress map. The tasks will be administered through a computer environment. Students will attempt a general skills module and several thematically linked assessment modules.

The assessment modules generally consist of a sequence of simulated tasks that lead to the construction of a final product (or artefact). The tasks utilise various 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 artefacts.

Some items, such as multiple choice, will be automatically scored, while items that produce responses stored as text as well as responses that produce artefacts will be hand-marked by trained markers.

Sample items are provided in Appendix 2. Examples of the type of assessment items, along with examples of the marking keys used to score students' responses in the 2005 assessment, will be posted on the MCEETYA website.

Reporting

Although three strands have been used to describe ICT literacy, when reporting the results of the national sample assessment a single measure of ICT literacy is used to summarise student performance. Student performance is described in terms of proficiency bands which are linked to the bands in the progress map. Furthermore, two of these bands are identified as proficient standards, one for Year 6 and a second for Year 10.

The Key Performance Measure for ICT literacy (consistent with the measures for literacy, numeracy, science etc.) is the percentage of students achieving at or above the proficient standard at Years 6 and 10. The standards, developed after the first national sample assessment of ICT literacy in 2005, capture levels of understanding and skills deemed to be 'proficient' by stakeholders.

Appendix 1: ICT Literacy Progress Map

ICT literacy is 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.

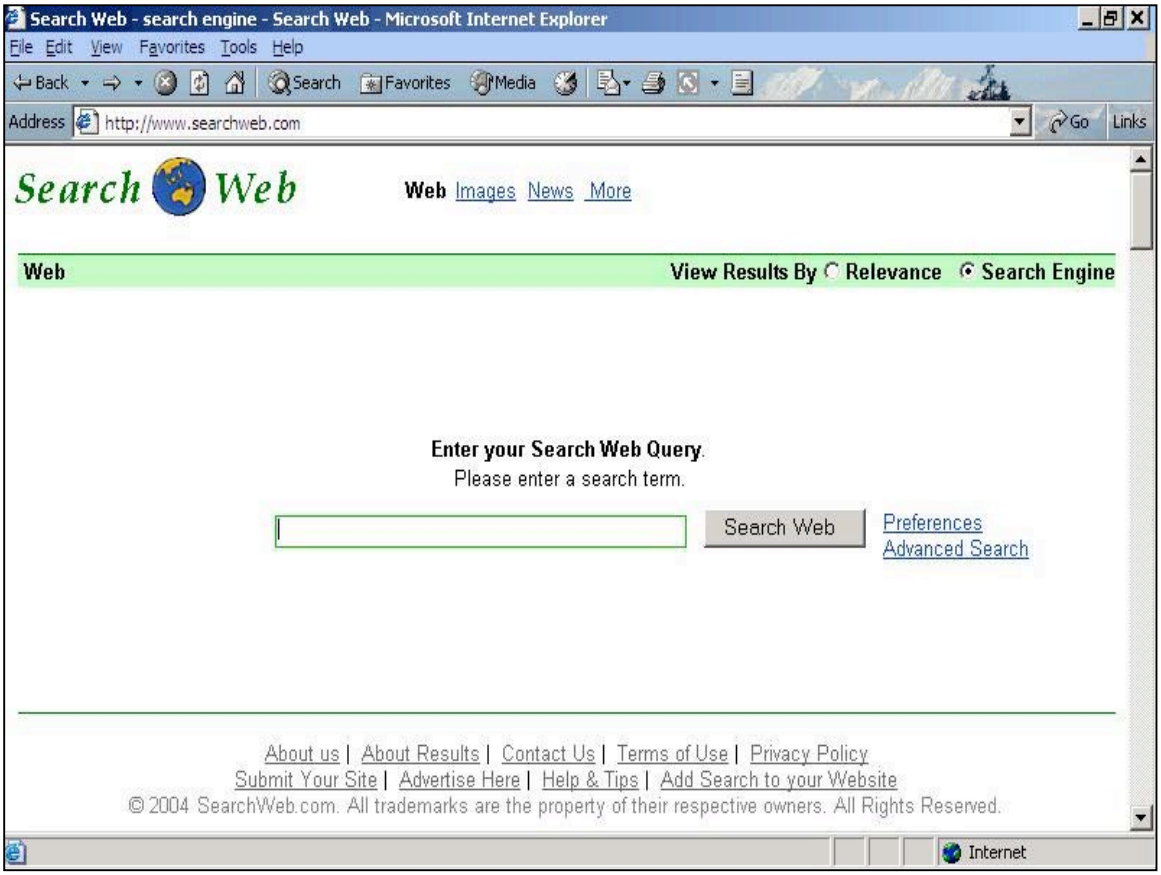
	Strand A: Working with Information	**Strand B: Creating and Sharing information**	**Strand C: Using ICT responsibly**
	This strand includes identifying the information needed; formulating and executing a strategy to find information; making judgements about the integrity of the source and content of the information; and organising and storing information for retrieval and reuse.	*This strand includes*: adapting and authoring information; analysing and making choices about the nature of the information product; reframing and expanding existing information to develop new understandings; and collaborating and communicating with others.	*This strand includes:* understanding the capacity of ICT to impact on individuals and society, and the consequent responsibility to use and communicate information legally and ethically.
6	Uses a range of specialised sourcing tools. Seeks confirmation of the integrity of information from credible, external sources. Uses tools, procedures and protocols to secure and retrieve information.	Uses specialised tools to control, expand and author information. Produces complex products. Critiques work and applies knowledge of conventions that shape interpretations when communicating across a range of environments and contexts.	Explains the impact and influence of ICT over time, recognising the benefits, constraints and influence of social, legal, economic and ethical issues on participation in society.
5	Searches for and reviews the information needed, redefining the search to limit or expand. Judges the quality of information for credibility, accuracy, reliability and comprehensiveness. Uses appropriate file formats and procedures to store, protect, retrieve and exchange information.	Uses tools to interrogate, reframe and adapt information. Uses a range of tools to create and enhance the design, style and meaning of information products to suit the purpose and audience.	Identifies the social, legal, economic and ethical consequences associated with using ICT across a range of environments and contexts.
4	Develops questions or keyword combinations and selects appropriate tools to locate information. Appraises located information for relevance, currency and usefulness. Uses tools to structure, group and reorganise information for retrieval.	Integrates and interprets information from multiple sources. Selects and combines software and tools to structure, link and present work. Communicates work for different purposes, environments and contexts.	Explains the need for laws, codes of conduct and procedures for ICT use in different contexts. Recognises the potential for misuse of ICT and that there are procedures to address this.
3	Identifies a search question, terms and suitable sources. Browses and retrieves information. Compares and contrasts information from similar sources. Organises and arranges relevant information and files.	Reorganises information from similar sources, using the main ideas. Selects software and tools to combine and transform text, images and other elements. Communicates work using different representations for particular contexts.	Recognises fair use, software restrictions and legal requirements. Identifies responsible use of ICT in particular contexts.
2	Identifies and uses keywords in a search to locate and retrieve information from various sources. Identifies and records relevant content.	Uses the functions within software to edit, format, adapt and generate work to achieve a specific purpose and when communicating with others.	Identifies codes of conduct and ergonomic practices for ICT. Recognises ICT terminology and use of computers in society.
1	Uses keywords provided to retrieve information from a single, specified source. Recognises information required. Opens software and saves files.	Identifies and uses some of the basic symbols and functions of software to record ideas.	Recognises and uses basic terminology and general procedures for ICT. Describes uses of ICT in everyday life.

Appendix 2: Sample Items

Sample Item 1

This item requires students to initiate a simulated Internet search for specific information on global warming. Student responses to this task would be scored by trained markers. Marks would be awarded according to increasing sophistication and complexity of responses.

Student achievement on this task is indicative of Strand A where students are required to search for information needed.



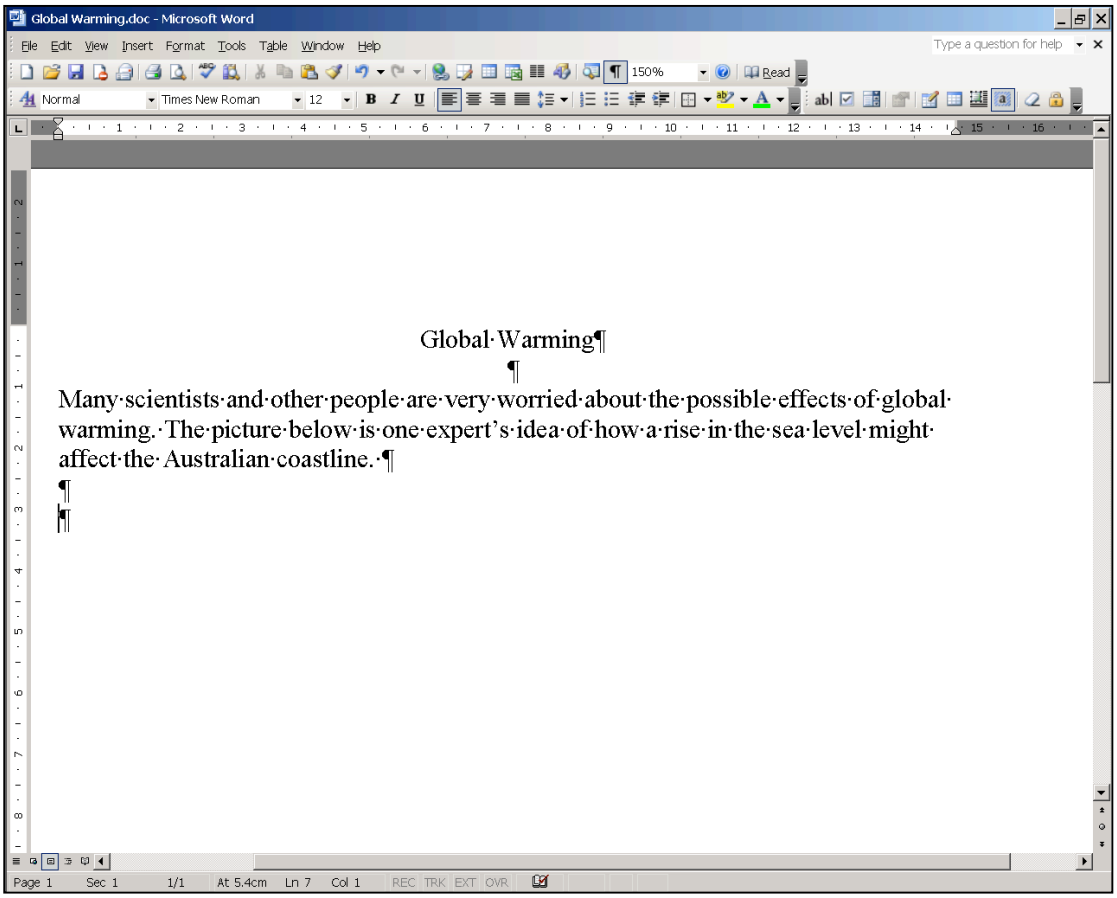
As part of a school project on global warming you want to compare Australia's energy use with that of other similar countries.

Use this search engine page to show how you would begin a search for some information on this topic.

Sample Item 2

This item requires students to execute software commands using the computer. Student responses to this task would be scored automatically. In cases where there is more than one way to complete an action (such as through menus, right mouse clicks and keyboard shortcuts), all possible ways of correctly completing the action are scored as correct.

Completion of the correct response (completing the commands to insert the correct picture) for this item is indicative of Strand B where students are required to use the functions within software for a variety of purposes.



You have saved a picture named 'Rising Sea Level' as a file.

Insert the picture.

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