Information Literacy Standards*

Council of Australian University Librarians

The first edition of these standards derives from the US *Information literacy standards for higher education* approved by the Association of College and Research Libraries in January 2000, and subsequently endorsed by the American Association for Higher Education and US accreditation bodies.

The US standards were reviewed at a national workshop initiated and conducted 22-23 September 2000 by the University of South Australia for the Council of Australian University Librarians (CAUL). The 62 participants were representative of Australian and New Zealand universities, the schools sector, the Technical and Further Education sector, the Council of Australian State Libraries and the Australian Library and Information Association. In reviewing the standards, consideration was given to the implications of Australian research, theory elaboration and practice which may not have been available or accessed when the US standards were developed. The relational model of information literacy[1] was considered in this context.

Permission to use and vary the US standards[2] has been granted by the Association of College and Research Libraries. The major difference between the US and Australian versions is the addition of two standards. The new standard four addresses the ability to control and manipulate information. Standard seven represents information literacy as the intellectual framework which provides the potential for lifelong learning.

At its Canberra meeting 27-28 October 2000 the Council of Australian University Librarians approved the revision of the US standards as *Information literacy standards.* The intended primary application is to higher education, but they may be applied to other educational sectors.

Endorsement and promulgation of the standards by policy makers, educational institutions, professional and educational associations is encouraged. They may be freely used and adapted for a specific context, subject to acknowledgment of their US and Australian provenance. *Information literacy standards* is a 'living'

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*Council of Australian University Librarians. (2001). **Information literacy standards**. Canberra: Council of Australian University Librarians.

document. It will alter to reflect the prevailing information and education environment. Suggestions for changes for the 2003 second edition are invited, using the form at the end of this publication.

Information literacy defined

Information literacy is an understanding and set of abilities enabling individuals to 'recognise when information is needed and have the capacity to locate, evaluate, and use effectively the needed information'.[3] An information literate person is able to

- recognise a need for information
- determine the extent of information needed
- access the needed information efficiently
- evaluate the information and its sources
- incorporate selected information into their knowledge base
- use information effectively to accomplish a purpose
- understand economic, legal, social and cultural issues in the use of information
- access and use information ethically and legally
- classify, store, manipulate and redraft information collected or generated
- recognise information literacy as a prerequisite for lifelong learning

Information literacy - the need

Information literacy is required because of proliferating information access and resources. Individuals are faced with diverse, abundant information choices—in their studies, in the workplace, and in their lives. Information is available through community resources, special interest organisations, manufacturers and service providers, media, libraries, and the internet. Increasingly, information comes unfiltered. This raises questions about authenticity, validity, and reliability. In addition, information is available through multiple media, including graphical, aural, and textual. These pose special challenges in evaluating, understanding and using information in an ethical and legal manner. The uncertain quality and expanding quantity of information also pose large challenges for society. Sheer abundance of information and technology will not in itself create more informed citizens without a complementary understanding and capacity to use information effectively.

Information literacy and lifelong learning

Information literacy is a prerequisite for lifelong learning and is common to all disciplines, to all learning environments, and to all levels of education. It enables learners to engage critically with content and extend their investigations, become more self directed, and assume greater control over their own learning.

A 1999 report of the US National Research Council[4] promotes the concept of 'fluency' with *information technology* and delineates several distinctions useful in understanding relationships within information literacy, computer literacy, and broader technological competence. The report notes that 'computer literacy' is concerned with rote learning of specific hardware and software applications, while 'fluency with technology' focuses on understanding the underlying concepts of technology and applying problem solving and critical thinking to using technology. It also discusses differences between information technology fluency and information literacy as it is understood in K-12 and higher education. Among these are information literacy's focus on content, communication, analysis, information searching, and evaluation; whereas information technology 'fluency' focuses on a deep understanding of technology and graduated, increasingly skilled, use.

With digitisation of scholarly publications and the growth in online delivery, 'fluency' with information technology requires more intellectual abilities than the rote learning of software and hardware associated with 'computer literacy'. The focus is still, however, on the technology itself. Information literacy, on the other hand, is an intellectual framework for recognising the need for, understanding, finding, evaluating, and using information—activities which may be supported in part by fluency with information technology, in part by sound investigative methods, but most importantly, through critical discernment and reasoning. Information literacy initiates, sustains, and extends lifelong learning through abilities that may use technologies but are ultimately independent of them.

Information literacy and higher education

Developing lifelong learners is central to the mission of higher and other educational institutions, and is increasingly reflected in descriptions of graduate qualities. Information literacy extends learning beyond formal classroom settings and supports individuals in self directed learning in all arenas of life.

By ensuring that individuals can think critically, and by helping them construct a framework for learning how to learn, educational institutions provide the foundation for continued growth throughout their careers, as well as in their roles as informed citizens and members of communities.

Information resources are increasingly available online. Flexible delivery, online or print based, requires the development of the information literacy of the learner.

Incorporating information literacy across curricula, and in all programs and services, requires the collaborative efforts of academics, staff developers, learning advisers, librarians and administrators.

- Through course materials, lectures and by leading face to face or online discussions, academics establish the context for learning. They also inspire students to explore the unknown, offer guidance on how best to fulfil information needs, and monitor student progress.

- Librarians coordinate the evaluation and selection of intellectual resources for programs and services; organise, and maintain collections and points of access to information; and provide advice and coaching to students and academic staff who seek information.

- Learning advisers develop generic and course specific materials to support student learning and provide a range of services related to transition to university, and academic literacy—reading, writing, listening and speaking in a university setting, time and task management, and learning in an online environment.
- Administrators and staff developers facilitate opportunities for collaboration and staff development among academics, learning advisers, librarians, and other professionals who provide students with opportunities to develop their information literacy according to their developmental level, mode of study and information needs.

Information literacy and pedagogy

The 1994 Australian National Board of Employment, Education and Training report *Developing lifelong learners through undergraduate education* notes that 'learning to learn' is a major concern of all educational sectors and that

> It involves the higher order skills of analysis, synthesis and evaluation, the ability to think critically, to construct meaning and reconstruct understanding in the light of new learning experiences. Courses where reflective practice is central inevitably help students develop into independent learners much more readily than those whose focus is on the acquisition of a large body of knowledge.[5]

Information literacy development multiplies the opportunities for self directed learning, as students become engaged in using a wide variety of information sources to expand their knowledge, ask informed questions, and sharpen their critical thinking for still further self directed learning. Achieving information literacy fluency requires an understanding that such development is not extraneous to the curriculum but is woven into its content, structure, and sequence. Information literacy is a validated construct[6] which can be incorporated in the instructional design of programs. This curricular integration also affords many possibilities for furthering the influence and impact of student centred teaching methods such as problem based learning, evidence based

learning, and inquiry learning. Guided by academics and others in problem based approaches, students reason about course content at a deeper level than is possible through the exclusive use of lectures, textbooks and collections of readings. To take fullest advantage of problem based learning, students must often use thinking skills requiring them to become effective users of information sources in many locations and formats, thereby increasing their responsibility for their own learning.

Students have many information options available to obtain the information they seek for their research. One is an information retrieval system, such as may be found in a library or online databases from any location. Another option is to select an investigative method for observing phenomena directly. In many professions, practitioners depend upon physical examination to gain information about particular phenomena. Practitioners may also utilise technologies such as statistical software or simulators to create artificial conditions in which to observe and analyse the interaction of phenomena. As students progress through their undergraduate years and graduate programs, they need to have repeated opportunities for seeking, evaluating, managing, and applying, information gathered from multiple sources and obtained from discipline specific research methods.

Use of the standards

These standards provide a framework for embedding information literacy in the design and teaching of educational programs, and for assessing the information literate individual. They extend the information literacy progress of educators, teacher librarians and librarians, in the school and Technological and Further Education sectors. This provides higher education with an opportunity to articulate the standards with those of the other education sectors so that a continuum of expectation can be developed for students at all levels. The standards outline the process by which academics, librarians, and others, pinpoint specific indicators which identify a student as information literate.

Students also will find the standards useful, because they provide a framework for their interaction with information in their environment. This will help to develop their awareness of the need for a metacognitive approach to learning, making them conscious of the explicit actions required for recognition of need, gathering, analysing, and using information. All students are expected to demonstrate all of the standards, but not everyone will demonstrate them to the same level or at the same time

Some disciplines may place greater emphasis on the mastery of specifics of the standards at certain points in the process. Certain specifics would therefore receive greater weight than others in any rubric for curriculum design. Many of

the specifics are likely to be performed recursively, in that the reflective and evaluative aspects included within each standard will require
the students to return to an earlier point in the process, revise the information seeking approach, and repeat the steps. The standards are not intended to represent a linear approach to information literacy.

To implement them fully, an institution should first review its mission and educational goals to determine how information literacy would improve learning and enhance the institution's effectiveness. To foster acceptance of the concept, staff development is important for academics and librarians in particular.

Information literacy and assessment

The seven standards describe outcomes and examples for assessing student progress towards becoming information literate. The outcomes serve as guidelines for academics, librarians, and others in developing local methods for measuring student learning within an institution's unique mission. The standards focus upon the needs of students in higher education at all levels. Information literacy manifests itself in the specific understanding of the knowledge creation, scholarly activity, and publication processes found within different disciplines. Academics, instructional designers and librarians should therefore work together to develop assessment instruments and strategies in the context of particular disciplines.

In implementing these standards, recognition is needed that different levels of thinking skills are associated with various learning outcomes. Different instruments or methods are essential to assess those outcomes. For example, both 'higher order' and 'lower order' thinking skills, based on Bloom's *Taxonomy of educational objectives*,[7] are evident throughout the standards. Assessment methods appropriate to the thinking skills associated with each outcome should be identified as an integral part of the institution's implementation plan.

The following outcomes illustrate 'higher order' and 'lower order' thinking skills

> *'Lower order' thinking skills*
> Outcome 2.2.2 Identifies keywords, synonyms, and related terms for the information needed
>
> **'Higher order' thinking skills**
> Outcome 5.2.2 Extends initial synthesis, when possible, at a higher level of abstraction to construct new hypotheses that may require additional information

Academics, librarians, and others will find that discussing assessment methods collaboratively is very productive in planning a systematic approach to integrating contextualised information literacy experience into curricula. Assessment strategies should reach all students, pinpoint areas for further development, and consolidate learning goals already achieved. They also should make explicit to the institution's constituencies how information literacy contributes to improved learning outcomes and helps to produce graduates with the capacity for lifelong learning.

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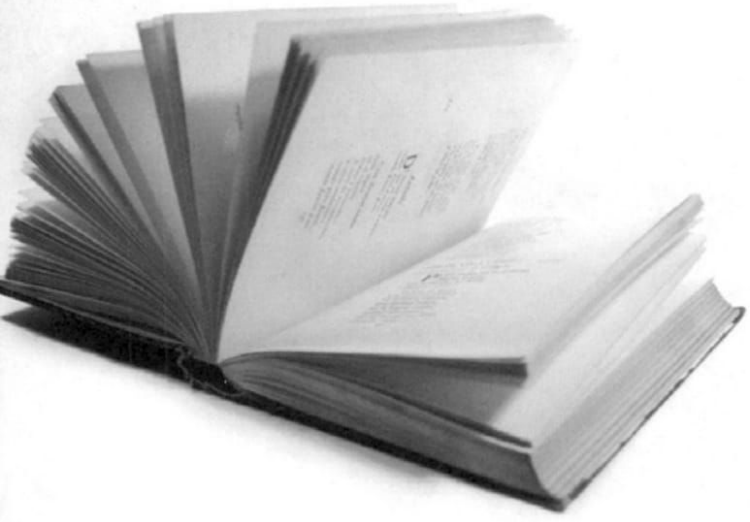

Standards and Outcomes

Standard One

The information literate person recognises the need for information and determines the nature and extent of the information needed

Outcomes

1.1 ***The information literate person defines and articulates the need for information***

Examples

1.1.1 Confers with others, including peers and experts, and participates in face to face and electronic discussions with peers to identify a research topic, or other information need

1.1.2 Explores general information sources to increase familiarity with the topic

1.1.3 Identifies key concepts and terms by mapping the information need and from that formulates and focuses questions

1.1.4 Defines or modifies the information need to achieve a manageable focus

1.1.5 Recognises that information can be combined with original thought, experimentation, and/or analysis to produce new information

1.1.6 Identifies their existing knowledge framework

1.2 ***The information literate person understands the purpose, scope and appropriateness of a variety of information sources***

Examples

1.2.1 Understands the formal and informal processes of information production and knows how information is organised and disseminated

1.2.2 Recognises that knowledge can be organised into disciplines that influence the way information is produced, organised and accessed within and across disciplines

1.2.3 Differentiates between, and values the variety of potential sources of information eg people, agencies, multimedia, database, website, dataset, audiovisual, book

1.2.4 Identifies the intended purpose and audience of potential resources eg popular vs scholarly, current vs historical

1.2.5 Differentiates between primary and secondary sources, recognising how their use and importance vary with each discipline

1.2.6 Realises that information may need to be constructed with raw data from primary sources

1.3 ***The information literate person consciously considers the costs and benefits of acquiring the needed information***

Examples

1.3.1 Determines the availability of needed information and makes decisions on broadening the information seeking process beyond immediate resources eg using resources at other locations; obtaining images, videos, text, or sound; document delivery

1.3.2 Considers the feasibility of learning a new skill(s) to gather needed information and understands its context, possibly beyond a single discipline or knowledge framework

1.3.3 Defines a realistic overall plan and timeline to acquire the needed information

1.4 ***The information literate person re-evaluates the nature and extent of the information need***

Examples

1.4.1 Reviews the initial information need to clarify, revise, or refine the question

1.4.2 Uses and can articulate the criteria used to make information decisions and choices

Standard Two

The information literate person accesses needed information effectively and efficiently

Outcomes

2.1 ***The information literate person selects the most appropriate investigative methods or information access tools for finding the needed information***

Examples

2.1.1 Identifies appropriate investigative methods eg laboratory experiment, simulation, fieldwork

2.1.2 Investigates benefits and applicability of various investigative methods

2.1.3 Investigates the scope, content, and organisation of information access tools

2.1.4 Selects efficient and effective approaches for accessing the information needed for the investigative method or information access tools
2.1.5 Consults with information professionals to help identify information access tools

2.2 ***The information literate person constructs and implements effectively designed search strategies***

Examples

2.2.1 Develops a research plan appropriate to the investigative method
2.2.2 Identifies keywords, synonyms and related terms for the information needed
2.2.3 Selects appropriate controlled vocabulary or classification specific to the discipline or information access tools
2.2.4 Constructs a search strategy using appropriate commands for the information access tool selected eg Boolean operators, truncation, and proximity operators for databases/search engines; internal organisers such as indexes for books
2.2.5 Implements the search strategy in various information access tools with appropriate command languages, protocols and search parameters
2.2.6 Implements the search using investigative methodology appropriate to the discipline

2.3 ***The information literate person retrieves information using a variety of methods***

Examples

2.3.1 Uses various information access tools to retrieve information in a variety of formats
2.3.2 Uses various classification schemes and other systems eg call number systems or indexes, to locate information resources within a library or to identify specific sites for physical exploration
2.3.3 Uses specialised online or in person services to retrieve information needed eg document delivery, professional associations, institutional research offices, community resources, experts and practitioners
2.3.4 Uses surveys, letters, interviews, and other forms of inquiry to retrieve primary information

Standard Three

The information literate person evaluates information and its sources critically and incorporates selected information into their knowledge base and value system

Outcomes

3.1 ***The information literate person assesses the utility of the information accessed***

Examples

3.1.1 Assesses the quantity, quality, and relevance of the search results to determine whether alternative information access tools or investigative methods should be utilised

3.1.2 Identifies gaps in the information retrieved and determines if the search strategy should be revised

3.1.3 Repeats the search using the revised strategy as necessary

3.2 ***The information literate person summarises the main ideas extracted from the information gathered***

Examples

3.2.1 Reads the text and selects main ideas

3.2.2 Restates textual concepts in own words and selects data accurately

3.2.3 Identifies verbatim material that can then be appropriately quoted

3.3 ***The information literate person articulates and applies initial criteria for evaluating both the information and its sources***

Examples

3.3.1 Examines and compares information from various sources to evaluate reliability, validity, accuracy, authority, timeliness, and point of view or bias

3.3.2 Analyses the structure and logic of supporting arguments or methods

3.3.3 Recognises and questions prejudice, deception, or manipulation

3.3.4 Recognises the cultural, physical, or other context within which the information was created and understands the impact of context on interpreting the information

3.3.5 Recognises and understands own biases and cultural context

3.4 ***The information literate person validates understanding and interpretation of the information through discourse with other individuals, subject area experts, and/or practitioners***

Examples

3.4.1 Participates in peer group and other discussions

3.4.2 Participates in electronic communication forums designed to encourage discourse on the topic eg email, bulletin boards, chat rooms

3.4.3 Seeks expert opinion through a variety of mechanisms eg interviews, email, listservs

3.5 ***The information literate person determines whether the initial query should be revised***

Examples

3.5.1 Determines if original information need has been satisfied or if additional information is needed

3.5.2 Reviews search strategy and incorporates additional concepts as necessary

3.5.3 Reviews information access tools used and expands to include others as needed

Standard Four

The information literate person classifies, stores, manipulates and redrafts information collected or generated

Outcomes

4.1 ***The information literate person extracts, records, and manages the information and its sources***

Examples

4.1.1 Selects the most appropriate technology for extracting the needed information eg copy/paste software functions, photocopier, scanner, audiovisual equipment, or exploratory instruments

4.1.2 Creates a system for organising and managing the information eg card files, *Endnote*

4.1.3 Differentiates between the types of sources cited and understands the elements and correct citation style for a wide range of resources

4.1.4 Records all pertinent citation information for future reference

4.1.5 Manipulates digital text, images, and data transferring them from their original locations and formats to a new context

4.2 ***The information literate person preserves the integrity of information resources, equipment, systems and facilities***

Examples

4.2.1 Respects the access rights of all users and does not damage information resources

4.2.2 References correctly the information resources that have been used

4.2.3 Takes precautions against spreading computer viruses

4.3 ***The information literate person legally obtains, stores, and disseminates text, data, images, or sounds***

Examples

4.3.1 Observes the requirements of moral rights and similar legislation

4.3.2 Complies with stated wishes of the owner of intellectual property

4.3.3 Understands copyright and privacy laws and respects the intellectual property of others

4.3.4 Acquires, publishes and disseminates information in ways which do not breach copyright laws or privacy principles.

4.3.5 Understands fair dealing in respect of the acquisition and dissemination of educational and research materials

Standard Five

The information literate person expands, reframes or creates new knowledge by integrating prior knowledge and new understandings individually or as a member of a group

Outcomes

5.1 ***The information literate person applies prior and new information to the planning and creation of a particular product***

Examples

5.1.1 Understands that information and knowledge in any discipline is in part a social construction and is subject to change as a result of ongoing dialogue and research

5.1.2 Organises the content in a manner that supports the purposes and format of the product eg outlines, drafts, storyboards

5.1.3 Articulates knowledge and skills transferred from prior experiences to planning and creating the product

5.1.4 Integrates the prior and new information, including words and ideas, in a manner that supports the purposes of the product

5.2 ***The information literate person synthesises main ideas to construct new concepts***

Examples

5.2.1 Recognises interrelationships among concepts and combines them into potentially useful primary statements with supporting evidence

5.2.2 Extends initial synthesis, when possible, at a higher level of abstraction to construct new hypotheses that may require additional information

5.2.3 Utilises information technology applications eg spreadsheets, databases, multimedia, and audiovisual equipment, for studying the interaction of ideas and other phenomena

5.3 ***The information literate person compares new understandings with prior knowledge to determine the value added, contradictions, or other unique characteristics of the information***

Examples

5.3.1 Determines whether information satisfies the research or other information need

5.3.2 Uses consciously selected criteria to determine whether the information contradicts or verifies information used from other sources

5.3.3 Draws conclusions based upon information gathered

5.3.4 Tests theories with discipline appropriate techniques eg simulators, experiments

5.3.5 Determines probable accuracy by questioning the source of the data, the limitations of the information gathering tools or strategies, and the reasonableness of the conclusions with previous information or knowledge

5.3.6 Selects information that provides evidence for the topic

5.4 ***The information literate person revises the development process for the product***

Examples

5.4.1 Maintains a record of activities related to the information seeking, evaluating, and communicating process

5.4.2 Reflects on past successes, failures and alternative strategies

5.5 ***The information literate person communicates the product effectively to others***

Examples

5.5.1 Chooses a communication medium and format that best supports the purposes of the product and the intended audience

5.5.2 Uses a range of appropriate information technology applications in creating the product

5.5.3 Incorporates principles of design and communication appropriate to the environment
5.5.4 Communicates clearly and in a style to support the purposes of the intended audience

Standard Six

The information literate person understands cultural, economic, legal, and social issues surrounding the use of information and accesses and uses information ethically, legally and respectfully

Outcomes

6.1 ***The information literate person understands cultural, ethical, legal and socioeconomic issues surrounding information and information technology***

Examples

6.1.1 Identifies and can articulate issues related to privacy and security in both the print and electronic environments
6.1.2 Identifies and can articulate issues related to free vs fee based access to information
6.1.3 Identifies and can discuss issues related to censorship and freedom of speech
6.1.4 Demonstrates an understanding of intellectual property, copyright and fair use of copyrighted material
6.1.5 Recognises the 'information divide' as a contributing factor to socioeconomic divisions

6.2 ***The information literate person follows laws, regulations, institutional policies, and etiquette related to the access and use of information resources***

Examples

6.2.1 Obtains, stores, and disseminates text, data, images, or sounds in a legal manner
6.2.2 Complies with institutional policies on access to information resources
6.2.3 Demonstrates an understanding of what constitutes plagiarism and does not represent work or ideas attributable to others as their own
6.2.4 Demonstrates an understanding of institutional policies related to ethical research
6.2.5 Participates in electronic discussions following accepted practices eg Netiquette

6.3 ***The information literate person acknowledges the use of information sources in communicating the product***

Examples

6.3.1 Selects an appropriate citation style and uses it consistently to cite sources used

6.3.2 Acknowledges sources in accordance with copyright legislation

6.3.3 Understands and respects indigenous and multicultural perspectives of using information

Standard Seven

The information literate person recognises that lifelong learning and participative citizenship requires information literacy

Outcomes

7.1 ***The information literate person appreciates that information literacy requires an ongoing involvement with learning and information technologies so that independent lifelong learning is possible***

Examples

7.1.1 Uses diverse sources of information to inform decisions

7.1.3 Seeks to maintain current awareness in areas of interest and/ or expertise by monitoring information sources

7.1.4 Derives satisfaction and personal fulfilment from locating and using information

7.1.5 Keeps up to date with information sources, information technologies, information access tools and investigative methods

7.1.6 Recognises that the information search process is evolutionary and nonlinear

7.2 ***The information literate person determines whether new information has implications for democratic institutions and the individual's value system and takes steps to reconcile differences***

Examples

7.2.1 Identifies whether there are differing values that underpin new information or whether information has implications for personal values and beliefs

7.2.2 Applies reasoning to determine whether to incorporate or reject viewpoints encountered

7.2.3 Maintains an internally coherent set of values informed by knowledge and experience