The SCONUL Seven Pillars of Information Literacy

A Research Lens
For Higher Education

SCONUL Working Group on Information Literacy
April 2011

Introduction

In 1999, The SCONUL Working Group on Information Literacy published "Information skills in higher education: a SCONUL position paper" (SCONUL 1999), introducing the Seven Pillars of Information Skills model. Since then, the model has been adopted by librarians and teachers around the world as a means of helping them to deliver information skills to their learners.

However, in 2011 we live in a very different information world and while the basic principles underpinning the original Seven Pillars model remain valid, it was felt that the model needed to be updated and expanded to reflect more clearly the range of different terminologies and concepts which we now understand as "Information Literacy".

In order for the model to be relevant to different user communities and ages, the new model is presented as a generic "core" model for Higher Education, to which a series of "lenses", representing the different groups of learners, can be applied. The Research Lens is the first of the lenses to be developed.

The Researcher Development Framework [RDF](Vitae, 2010) describes the knowledge, skills, behaviours and personal qualities of researchers at different stages of their careers and encourages them to aspire to excellence. The attributes and skills required to be information literate are explicitly highlighted in Domain A: Knowledge and intellectual abilities, but they can also be found each of the three remaining domains. This research lens uses some of the terminology from the RDF and the attributes in the Seven Pillars can easily be mapped across to the sub domains of the RDF (RIN, 2011)

At publication (April 2011), only the Core Model and the Research Lens are available. We hope that teachers and librarians representing other learner groups will participate in the development of other lenses.

Moira Bent & Ruth Stubbings

On behalf of the SCONUL Working Group on Information Literacy.

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http://www.sconul.ac.uk/groups/information_literacy/seven_pillars.html

The Seven Pillars of Information Literacy: a research lens

Information Literacy is an umbrella term which encompasses concepts such as digital, visual and media literacies, academic literacy, information handling, information skills, data curation and data management.

Definition

Information literate researchers will demonstrate an awareness of how they gather, use, manage, synthesise and create information and data in an ethical manner and will have the information skills to do so effectively.

In the 21st century, information literacy is a key attribute for everyone, irrespective of age or experience. Information Literacy is evidenced through understanding the ways in which information and data is created and handled, learning skills in its management and use and modifying learning attitudes, habits and behaviours to appreciate the role of information literacy in learning and research. In this context learning is understood as the constant search for meaning by the acquisition of information, reflection, engagement and active application in multiple contexts (NASPA, 2004)

Developing as an information literate researcher is a continuing, holistic process with often simultaneous activities or processes which can be encompassed within the **Seven Pillars of Information Literacy**. Within each "pillar" a researcher can develop from "novice" to "expert" as they progress through their research life, although, as the information world itself is constantly changing and developing, it is possible to move down a pillar as well as progress up it. The expectations of levels reached on each pillar may be different in different contexts and for different ages and levels of researcher and is also dependent on experience and information need. Any information literacy development must therefore also be considered in the context of the broad information landscape in which an individual operates and their personal information literacy landscape (Bent, 2008).

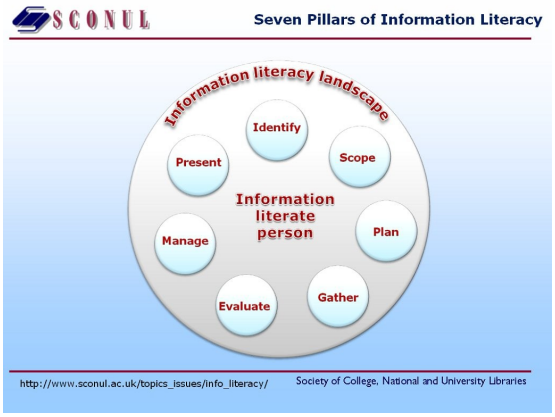
Research Lens

This lens defines **skills and competencies** (ability) and **attitudes and behaviours** (understanding) which might be attributed to researchers in UK Higher Education.

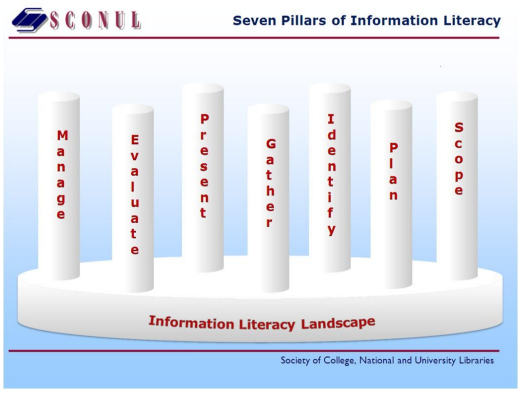
How to use this model

The model is conceived as a three dimensional circular "building", founded on an Information Landscape which comprises the information world as it appears to a researcher at that point in time. The picture is also coloured by a researcher's personal information literacy landscape, in other words, their aptitude, background and experiences, which will affect how they respond to any information literacy development.

The circular nature of the model demonstrates that becoming information literate is not a linear process; a researcher can be developing within several pillars simultaneously and independently, although in practice they are often closely linked.



Each pillar is further described by a series of statements relating to a set of skills/competencies and a set of attitudes/understandings. It is expected that as a researcher becomes more information literate they will demonstrate more of the attributes in each pillar and so move to the top of the pillar. The names of the pillars can be used to map across to other frameworks (for example, the Researcher Development Framework (Vitae, 2010)) or to describe part of the research process.



The core model describes a set of generic skills and understandings; for the research lens these attributes have been developed and expanded to include aspects of specific relevance to the research community. It is expected that researchers and supervisors will use and adapt it as appropriate to personal circumstances.

IDENTIFY

A researcher is able to identify a need for information to address the research question

The researcher understands:

- That new knowledge and data is constantly being produced and that there is always more to learn
- That being information literate involves developing a learning/research habit so new information is being actively sought all the time
- That ideas and opportunities are created by investigating/seeking information
- The scale of the world of published and unpublished information and data available
- That different disciplines place greater emphasis on different types of information and data
- A researcher's need for information will vary depending on the task at hand, the subject discipline and the stage of research

The researcher is able to:

- Identify a lack of knowledge in a subject area
- Identify a research topic / question and define it using simple terminology
- Articulate current knowledge on a topic
- Recognise a need for information and data to achieve a specific end and define limits to the information need
- Use background information to underpin the search
- Take personal responsibility for a research project
- Manage own time effectively to complete a research project

SCOPE

A researcher can assess their current knowledge and identify gaps

The researcher understands:

- What types of information are available (e.g. data, people, written sources)
- The characteristics of different types of information source (e.g. books, journals, data banks) and how they may be affected by format (digital, print)
- The processes for the dissemination of research outputs, including publication, in terms of how and why individuals make their research results known and the currency of information
- Issues of accessibility (e.g. free/subscribed; licence restrictions, electronic/print)
- What services are available to help and how to access them (eg different libraries, people, organizations, structures)

The researcher is able to:

- “Know what you don’t know” to identify any information gaps
- Identify which types of information (e.g. data, people, videos, published information) will best meet the need
- Identify the available search tools, such as general and subject specific resources at different levels
- Identify different data collection methods
- Identify different formats in which information may be provided (e.g. print, digital, multimedia)
- Demonstrate the ability to use new tools as they become available

PLAN

A researcher can construct strategies for locating information and data

The researcher understands:

- The range of searching techniques available for finding information. (e.g. discussing with peers, qualitative and quantitative research, browsing, data mining, active searching, serendipity)
- The differences between search tools (e.g. bibliographic databases, subject gateways, search engines) and the need to be familiar with a range of different retrieval tools, recognizing advantages and limitations
- Why complex search strategies can make a difference to the breadth and depth of information found
- The need to develop approaches to searching such that new tools are sought for each new question (not relying always on most familiar resources)
- The need to match data collection techniques to the circumstances
- The need to revise keywords and adapt search strategies according to the resources available and / or results found
- The value of controlled vocabularies and taxonomies in searching

The researcher is able to:

- Scope the research question clearly and in ap**p**ropriate language
- Define a search strategy by using appropriate keywords and concepts, defining and setting limits (e.g. date, location, type of information)
- Select the most appropriate search tools (people, search engines, databases etc.) and data collection techniques
- Identify controlled vocabularies and taxonomies to aid in searching
- Identify appropriate search techniques (eg from finding contents pages and indexes to complex data mining)
- Identify specialist search tools appropriate to each individual information need

GATHER

A researcher can locate and access the information and data they need

The researcher understands:

- How information and data is organised, digitally and in print sources (e.g. libraries)
- How libraries acquire and provide access to resources (e.g. print, multi-media, digital) including issues of authentication
- How digital technologies are providing collaborative tools to create and share information
- The issues involved in collecting new data
- The different elements of a citation and how this describes an information resource
- The use of abstracts
- The need to keep up to date with new information
- The relevance of Open Access resources
- The risks involved in operating in virtual environments (e.g. digital communication, visibility, confidentiality)
- The importance of appraising and evaluating search results

The researcher is able to:

- Use a range of different retrieval tools and resources effectively (e.g. databases, digital resources, other libraries)
- Construct complex searches for use across a range digital and print resources:
    - Translate the search strategy to work in different resources
    - Redefine a search strategy based on previous result sets
    - Sort and manipulate results sets
- Access full text information, both print and digital, read and download online material and data
- Use appropriate research techniques to collect new data
- Keep up to date with new information (e.g. email alerts, RSS feeds)
- Engage with their scholarly community via networking, virtual communities, email lists
- Use online and printed help and can find personal, expert help

EVALUATE

A researcher can review the research process and compare and evaluate information and data

The researcher understands:

- The information and data landscape of their discipline and how their research fits in
- Issues of quality, accuracy, relevance, bias, reputation and credibility relating to information and data sources
- The importance of consistency in data collection
- How the outputs of research are evaluated and disseminated, including the peer review process, publication, other forms of dissemination and research assessment
- The relevance of citation and bibliometrics to their research context

The researcher is able to:

- Distinguish between different information resources (e.g. web pages, scholarly, professional, trade & popular journals)
- Choose a range of materials on topics, using appropriate criteria
- Assess the quality, accuracy, relevance, bias, reputation and credibility of the information resources found
- Read critically, identifying key points and arguments
- Assess the credibility of the data gathered
- Relate the information found to the original search strategy and their own research and adapt the search strategy as appropriate
- Critically appraise and evaluate their own findings and those of others
- Use citation metrics as an evaluative technique (e.g. citation counting, journal impact factors, h-index)
- Edit/ peer review the work of colleagues

MANAGE

A researcher can organise information professionally and ethically

The researcher understands:

- Their responsibility to act with professional integrity and to be honest in all aspects of research, especially information handling and dissemination (e.g. copyright, plagiarism and IP issues)
- The need to adopt appropriate data handling and curation methods
- The role they play in helping others in information seeking and management
- The need to keep systematic records, for example of:
    - search strategies and resources searched
    - resources found & resources used
    - research data
- The importance of sharing research data ethically without breaching data protection and informed consent of individuals
- The relevance of Freedom of Information to research activities
- The need to curate and archive research data ethically
- The importance of metadata
- The role of professionals, such as data managers and librarians, who can advise, assist and support with all aspects of information management

The researcher is able to:

- Use appropriate bibliographical software to manage information
- Cite printed and electronic sources using suitable referencing styles
- Create appropriately formatted bibliographies
- Demonstrate awareness of issues relating to the rights of other researchers and research participants, including ethics, data protection, copyright, plagiarism and any other intellectual property issues
- Set and meet standards of conduct for academic integrity
- Identify data curation opportunities to ensure that research data is ethically stored for re-use in other projects
- Use appropriate data management software and techniques to manage and curate research data
- Make appropriate information available as required

PRESENT

A researcher can apply the knowledge gained: presenting the results of their research, synthesising new and old information and data to create new knowledge , disseminating it in a variety of ways

The researcher understands:

- The difference between summarising and synthesizing
- That different forms of writing/ presentation style can be used to present information to different communities
- That data can be presented in different ways
- Their personal responsibility to share and curate information and data
- Their personal responsibility to disseminate information & knowledge to their subject community and the wider world
- How their research outputs will be peer reviewed, evaluated and disseminated
- The processes of publication and academic exploitation of research results
- The concept of attribution, especially in relation to citation and co authorship
- That researchers can take an active part in the creation of information through traditional publishing and digital technologies (e.g. blogs, wikis)

The researcher is able to:

- Use the information and data found to address the research question
- Summarise documents and reports verbally and in writing
- Analyse and present data appropriately
- Incorporate new research findings into the context of existing knowledge/ See connections between sections of own data and the literature
- Synthesise and appraise new and complex information from different sources
- Communicate effectively using appropriate writing styles in a variety of formats (e.g. abstract, literature review, scientific report, journal article, poster, conference paper, visually, Web 2.0)
- Communicate effectively verbally (e.g. conference presentation, seminar)
- Select appropriate publications and dissemination outlets in which to publish research findings and data
- Use open access as well as traditional publishing routes
- Develop a personal profile in the scholarly community using appropriate personal and digital technologies (e.g. discussion lists, social networking sites, blogs, etc.)

Identify	Scope	Plan	Gather	Evaluate	Manage	Present
Understands:	**Understands:**	**Understands:**	**Understands:**	**Understands:**	**Understands:**	**Understands:**
▪ New knowledge & data is constantly being produced & that there is always more to ▪ Being information literate involves developing a learning / research habit so new information is being actively sought all the time ▪ Ideas and opportunities are created by investigating / seeking information ▪ Scale of the world of published and unpublished information and data ▪Different disciplines place greater emphasis ▪On different types of information & data ▪A researchers' need for information will vary depending on task at hand, subject discipline & stage of research	▪ What types of information are available ▪ The characteristics of the different types of information source & how they may be affected by format ▪ The processes for the dissemination of research outputs, including publication, in terms of how and why individuals make their research results known and the currency of information ▪ Issues of accessibility ▪What services are available to help & how to access them	•Range of searching techniques available •Differences between search tools •Why complex search strategies can make a difference to the breadth & depth of information found •Need to develop approaches to searching such that new tools are sought for each new question •The need to match data collection techniques to the circumstances •Need to revise keywords & adapt strategies •Value of controlled vocabularies & taxonomies in searching	•How information & data is organised •How libraries provide access to resources •How digital technologies are providing collaborative tools to create & share information •Issue involved in collecting new data •Different elements of a citation •Use of abstracts •Need to keep up to date •Difference between free & paid for resources •Risks involved in operating in a virtual world •Importance of appraising& evaluating search results	· The information and data landscape of their discipline and how their research fits in · Issues of quality, accuracy, relevance, bias, reputation and credibility relating to information and data sources · The importance of consistency in data collection · How the outputs of research are evaluated and disseminated, including the peer review process, publication, other forms of dissemination and research assessment · The relevance of citation and bibliometrics to their research context	•Their responsibility to be honest in all aspects of information handling & dissemination, e.g. copyright, plagiarism & intellectual property right issues •Need to adopt appropriate data handling methods •Role they play in helping others in information seeking & management •Need to keep systematic records •Importance of storing & sharing information & data ethically •The role of professionals, such as data managers and librarians, who can advise, assist and support with all aspects of information management	•Difference between summarising & synthesising •Different formats of writing / presentation styles •Data can be presented in different ways •Personal responsibility to store & share information & data •Personal responsibility to disseminate information & knowledge •How their research outputs will be peer reviewed, evaluated and disseminated •Processes of publication •Concept of attribution •Individual can take an active part in creation of information through traditional publishing & digital technologies
Is able to:	**Is able to:**	**Is able to:**	**Is able to:**	**Is able to:**	**Is able to:**	**Is able to:**
▪ Identify a lack of knowledge in a subject area ▪ Identify a research topic / question and define it using simple terminology ▪ Articulate current knowledge on a topic ▪ Recognise a need for information and data to achieve a specific end and define limits to the information need ▪ Use background information to underpin research ▪ Take personal responsibility for a research project ▪ Manage own time effectively to complete a research project	▪ "Know what you don't know" to identify any information gaps ▪ Identify which types of information will best meet the need ▪ Identify the available search tools, such as general and subject specific resources at different levels •Identify different data collection methods •Identify different formats in which information may be provided •Demonstrate the ability to use new tools as they become available	•Scope their search question clearly & in appropriate language •Define a search strategy by using appropriate keywords & concepts, defining & setting limits •Select the most appropriate search tools •Identify controlled vocabularies and taxonomies to aid in searching •Identify appropriate search techniques (e.g. from finding contents pages and indexes to complex data mining) •Identify specialist search tools appropriate to each individual information need	•Use a range of retrieval tools & resources effectively •Construct complex searches appropriate to different digital & print resources •Translate the search strategy to work in different resources •Redefine a search strategy based on previous result sets •Sort and manipulate results sets •Access full text information •Use appropriate search techniques to collect raw data •Keep up to date with new information •Engage with their community to share information •Identify when the	•Distinguish between different information resources •Choose suitable material on their search topic •Assess the quality, accuracy, relevance, bias, reputation & credibility of the resources found •Assess the credibility of the data gathered •Read critically, identifying key concepts & arguments •Relate the information found to the original search strategy •Critically appraise & evaluate own findings •Know when to stop •Use citation metrics as an evaluative technique (e.g. citation counting, journal impact factors,	•Use bibliographic software if appropriate to manage information •Cite printed & electronic resources using suitable referencing styles •Create appropriately formatted bibliographies •Demonstrate awareness of issues relating to the rights of others including ethics, data protection, copyright, plagiarism & other intellectual property issues •Set & meet standards of conduct for academic integrity •Identify data curation opportunities to ensure that research data is ethically stored for re-use in other projects •Use appropriate data	•Use the information & data found to address original question •Summarise documents and reports verbally & in writing •Incorporate new information into context of existing knowledge •Analyse & present data appropriately •Synthesise & appraise new & complex information from different sources •Communicate effectively using appropriate writing styles in a variety of formats •Communicate effectively verbally •Select appropriate publications & dissemination outlets in which to publish

Seven Pillars of Information Literacy: Research

Identify

Understands:

- New knowledge & data is constantly being produced & there is always more to learn
- Being information literate involves developing a learning/research habit so new information is being actively sought all the time
- Ideas &opportunities are created by investigating/seeking information
- Scale of the world of published & unpublished information & data
- Different disciplines place greater emphasis on different types of information & data
- A researchers' need for information will vary depending on the task at hand, subject discipline & stage of research

Is able to:

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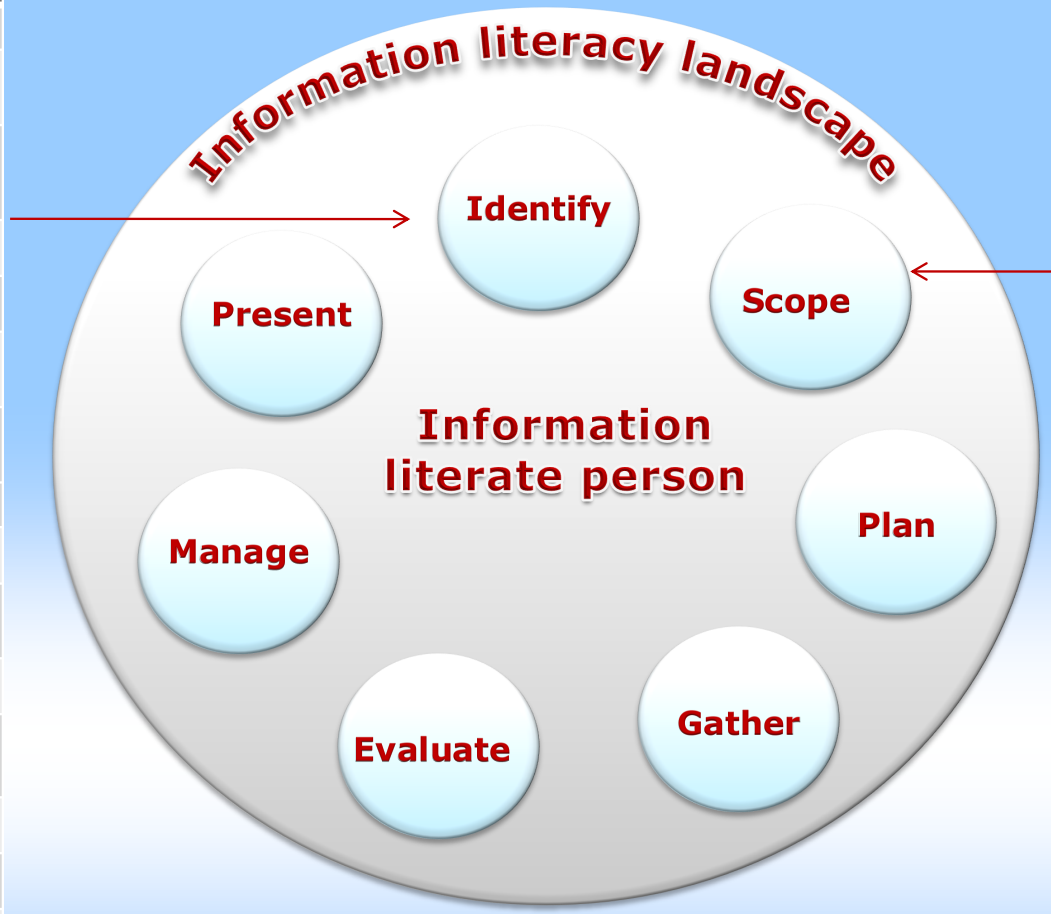
- Take personal responsibility for research project
- Manage time effectively to complete a research project



Scope

Understands:

- What types of information are available
- The characteristics of the different types of information source available to them and how the format can affect it
- The publication process in terms of why individuals publish and the currency of information
- Issues of accessibility
- What services are available to help and how to access them

Is able to:

- "Know what you don't know" to identify any information gaps
- Identify the types of information required to meet the need
- Identify the available search tools, such as general and subject specific resources at different levels
- Identify different formats in which information may be provided
- Demonstrate the ability to use new tools as they become available

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