vitae
realising the potential of researchers

The informed researcher

vitae
realising the potential of researchers

Because interacting with information is at the very heart of your research

About the authors

Moira Bent is Science Faculty Librarian at Newcastle University and a National Teaching Fellow. Her research interests are focused around information literacy, transition into HE and international student support. As well as publishing journal articles, she is co-author of "Providing Effective Library Services for Research" (Facet, 2007) and the SCONUL "Guidelines on Library Services for International Students" (2008). She is a member of the SCONUL Working Group on Information Literacy and the RIN Information Handling Working Group.

Pat Gannon-Leary is director of Bede Research and Consultancy. She worked in libraries in the UK and USA for over twenty years prior to taking up research posts in information science, learning and teaching. She is co-author of two books - Providing Effective Library Services for Research and Customer Care: a Training Manual for Library Staff - as well as an author of many articles in learned journals.

Stéphane Goldstein works for the Research Information Network, where his responsibilities have included taking forward the RIN-led programme of activities on information-handling and data management skills. He has played the leading role in setting up and developing of the Information Handling Working Group. He has managed research projects, facilitated events and supported policy work in the full range of RIN-led activities since 2005.

Tennie Videler is programme manager: researchers for Vitae. Before that she was a researcher in structural biology for nearly twenty years.

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Research Information Network

SCONUL
Society of College, National and University Libraries

Moira Bent Pat Gannon-Leary Stéphane Goldstein Tennie Videler

www.vitae.ac.uk/researcherbooklets

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Introduction

What is research about if not about finding, absorbing, creating and disseminating information?
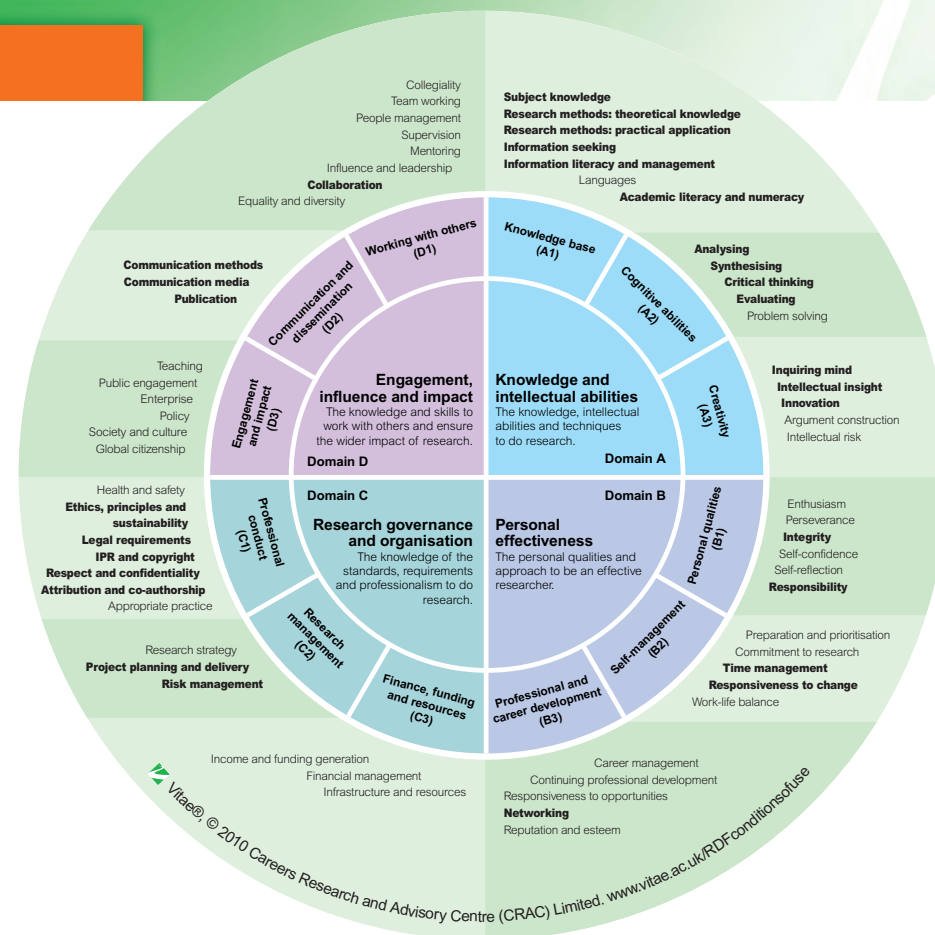
Interacting with information is at the very heart of your research. Informed researchers are both consumers and producers of information.

You may place different emphasis on the meaning of information at different stages of your research career. As a researcher you can be an inventor, an investigator, an interrogator, and an interpreter of information. You are also likely to be a disseminator, a publisher, an explainer and a curator of information. 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.

Being informed and informative are important aspects of being a researcher and information literacy aspects are embedded throughout the Vitae Researcher Development Framework (RDF). The Vitae RDF was developed by and for researchers to make the most of their strengths. You can use it to audit your skills, behaviours and attributes, to formulate a plan for your development or structure conversations with your supervisors or line manager. The Vitae RDF has been incorporated into a Professional Development Planner to enable you to identify the areas in the framework you want to develop further and to create an action plan. Information literacy has been mapped onto the RDF to create an 'Information literacy lens'.

You may recall the sketch about the 'five minute university', which teaches you in five minutes what an average graduate is purported to remember five years after graduating.

How do you prevent forgetting everything in this information-saturated world? Be clever in how you manage, store and disseminate information.

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Information literacy lens on the Researcher Development Framework.

SCONUL Seven Pillars of Information Literacy

The aspects specific to information literacy are summarised in the SCONUL Seven Pillars of Information Literacy.

Within each pillar, you can develop from 'novice' to 'expert' and can continue to develop within several pillars simultaneously and independently. There are a lot of synergies with the Vitae RDF.

Information literacy landscape

> " Information Literacy is evidenced through understanding the ways in which information and data is created and handled, developing skills in its management and use and modifying attitudes, habits and behaviours to appreciate the role of information literacy in research. "

Are you a well-informed researcher?

> **Where do I find the time for not reading so many books?**
> Karl Kraus, Austrian writer (1874 – 1936)

Here is a selection of common attributes that demonstrate your information literacy. Let's see how you rate yourself. Read the behaviour and associated examples and rate yourself

Score

1 **Poor**
2 **Fair**
3 **Good**
4 **Very Good**
5 **Excellent**

If you've rated yourself as 5 for everything: Congratulations! Please give this booklet to another researcher who can make use of it.

Anything less, read on...

Behaviour	Example	Rating	RDF sub domain	Pillar
I can use a range of data collection techniques	Developing qualitative and quantitative research methods. Differentiating between primary and secondary data		A1 Knowledge base	Scope
I can search for information effectively & efficiently	Familiarity with a broad range of search and retrieval tools relevant to own discipline (not just Google). Using advanced features of search engines & databases, combining words, limiting searches		A1 Knowledge base	Plan
I can gather new data when required	Designing & creating surveys, gathering experimental data (including controls), carrying out interviews		A1 Knowledge base	Gather
I choose sources appropriately and can list the best resources to use for my research	Making use of a wide range of different types of information such as books, journals, websites, video, statistics, grey literature, letters, diaries, manuscripts, maps, databases, newspapers or people		A2 Cognitive abilities	Scope
I understand how to interpret information retrieved from different sources	Understanding how search engines rank results, knowing how to select appropriate results from a database search, being able to sort results sensibly		A2 Cognitive abilities	Evaluate
I evaluate the quality of the information I find	Using appropriate criteria such as currency, bias, authority to assess information		A2 Cognitive abilities	Evaluate
I can understand the information and data I find, analysing & synthesising appropriately	Being able to summarise, reword, collate and analyse material		A2 Cognitive abilities	Manage
I know how to keep up to date with new information	Knowing how to use RSS feeds, Twitter, blogs etc to keep up to date		A3 Creativity	Gather
I analyse my information needs before I start looking for information each time	Defining keywords & phrases, using mind mapping techniques, talking to colleagues, finding background information		B2 Self-management C2 Research management	Identify
I recognise the legal & ethical implications of using other people's work	Understanding of copyright & plagiarism. Able to reference material correctly		C1 Professional conduct	Manage
I know how to look after the research data that I produce	Understanding how to organise, store and curate one's own research data so that it can be located, shared, linked to and if appropriate made available for re-use or enrichment in the longer term		C1 Professional conduct	Manage
I am involved in communication networks in my research area	Knowing appropriate mailing lists, conference networks		D1 Working with others	Gather
I am aware of the role of institutional and subject-based repositories	Understanding the rationale for making research outputs available in open access		D1 Working with others	Present
I understand the different types of publication & how to identify the best sources to read & in which to publish	Being able to explain the peer review process for journals. Know how to determine impact factors?		D2 Communication and dissemination	Present
I have a web profile	Using social media (blogs, microblogging, social sites etc) to create an online personal profile		D2 Communication and dissemination	Present
I understand how to disseminate the results of my research effectively	Knowing key journals & how to publish in them. Being able use alternative dissemination options		D2 Communication and dissemination	Present

* Adapted from "Being an Information Literate Researcher". © Moira Bent & Helen Blanchett, Newcastle University.

1. Where to start

Framing your research

New knowledge is constantly being produced and there is always more to learn. How do you develop a habit to constantly seek new information?

It is helpful to set your research question in context; set out your stall and justify your research at the start.

Think about

- What motivates you to start your research?
- Can you explain your research question in simple terms?
- Why is it relevant? What lack of knowledge does it seek to address? Where does it fit in the wider world of your discipline? Can you underpin your research with quality background information?
- What boundaries or limits can you define?
- What information, knowledge and skills do you have which equip you to undertake the research?

Improving further

- Your supervisors or principal investigators are key in ensuring that you have clearly defined your research question and placed it into context. Have you engaged them in this?
- Librarians are well placed to advise you on where to start on your adventure into the information maze. Have you met them yet?
- Find out who is the best person to get to know in your university library and tell them about your research, explain the context, describe your aims in information seeking
- Who else might assist you?

An informed researcher understands how information searching techniques and digital technologies contribute to research methodologies

2. Plans are worthless but planning is everything

Defining your information needs

Looking for the wrong kind of information, or looking in the wrong place can waste a lot of time. With a haphazard approach, you'll almost certainly find something, but what have you missed? Might it be the one thing which would have changed the course of your research if you'd found it? Devising a 'search strategy' will help to focus your search.

Think about

- **WHAT** are you looking for? Break down your research topic into keywords and phrases. Set some boundaries or limits to your search to avoid getting overwhelmed
- **WHAT KIND** of information do you need? You probably need secondary sources as well as collecting your own primary data

For secondary sources

- **WHEN** was it created? Defining a time period you want to search sets some limits. It also helps to identify the best places to look – if you need very up to date material, for example, it is pointless looking in a resource which is only updated once a year
- **WHERE** was it created? Be aware of the source of the information you gather and how that might affect your conclusions. Is your own research bounded geographically or culturally?
- **WHO** wrote/created it? Do you want to limit your search to academic authors/ creators? Might it be helpful to have a formal view or a popular view? You may need to look in different places to find this kind of data
- **HOW** will you find the information you are looking for? What searching strategies, techniques and tools do you propose to deploy?

For primary data

- What research methods are you planning to use?
- Who do you need to involve?
- What equipment might you need?

Don't be complacent
REFINE, RETHINK, REVISE (continuously)

Which of the following resources are appropriate to your topic?

- primary sources ■ journal articles
- government documents ■ books
- statistics ■ interviews/oral histories
- datasets ■ user-generated content

Rationalise why you might use one type of resource more often than another.

RDF: A1 – knowledge base

Knowledge base (A1)

Cognitive abilities (A2)

Creativity (A3)

Knowledge and intellectual abilities
The knowledge, intellectual abilities and techniques to do research.

Domain A

Seven Pillars: plan

An informed researcher is able to acquire, collate, organise, validate, share, store and curate information/data

3. Where do I fit in?
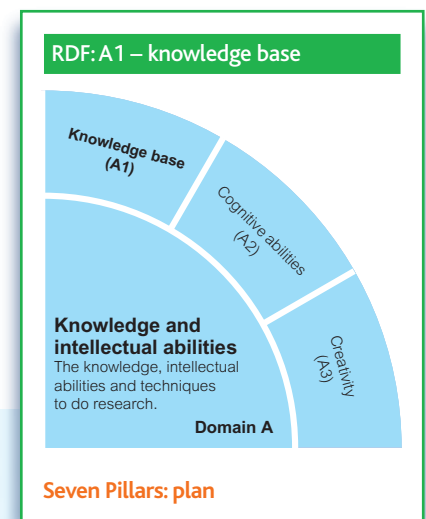
Putting information in context

> **Trying to find out everything relevant to one's topic of study that has been carried out to date, is for me the most fundamental part, as only then, you can build on any gaps or unanswered questions that may still remain.**
>
> (Postgraduate researcher in Health Psychology)

Think about

- What do you already know? Make some notes of your current knowledge on the subject. Until you articulate what you DO know it is not easy to identify your lack of knowledge
- What are the gaps in prior research? What are you planning to do that is new?
- What is the extent of available information in your chosen area of research? What are the types, characteristics and formats of this information? What information is missing?
- What kinds of information are best suited to help you? What form might it be in?
- Once you have discovered what you were looking for and satisfied your information need, what are you hoping to do with it? How might you make your research results available? Many people do not think about the 'output' when they are still considering the 'input', but a clear vision for what you want to achieve should really be part of your scoping exercise

Improving further

- How do you engage with your professional literature – do you browse a regular collection of journals? Do you follow blogs and electronic newsfeeds? Do you subscribe to table of content emails? Do you rely on attending conferences? Is your approach sufficient for your needs or do you need to branch out a little?
- Remember to discuss your plans with your supervisor or principal investigator at this stage; they can be particularly helpful in setting limits and relating the scope of your work to its disciplinary context
- Find out if there are courses you can attend to help you get the best from the library's resources, meet your specialist librarian and ask for their advice on sources for your specific needs. A little time now can save a lot of time later!
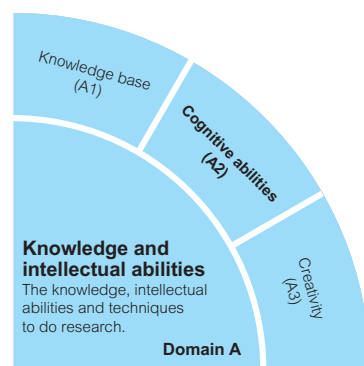
An informed researcher is able to incorporate new research findings into the context of existing knowledge, and see connections between sections of own data and relevant literature

An informed researcher understands that ideas and opportunities emerge from the seeking and investigating of information/data

RDF: A2 – Cognitive abilities

Knowledge base (A1)

Cognitive abilities (A2)

Creativity (A3)

Knowledge and intellectual abilities
The knowledge, intellectual abilities and techniques to do research.

Domain A

Seven Pillars: scoping

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4. Seek and you will find

Finding what you are looking for

Information is all around you and exists in many different forms, as words, data, images, physical items and more.

> **Distringit librorum multitudo (The abundance of books is distraction)**
>
> Lucius Annaeus Seneca (ca. 4 BC – 65 AD) was a Roman Stoic philosopher

How can you access this information?

- Don't rely solely on Google and other obvious searching tools
- The content of academic databases is often a protected resource. Your university library will provide a subscription resource for access to high quality information. Make sure you take advantage of this important resource
- What databases, electronic journal collections and other resources are available from the library for your discipline? Who is the best person in the library to help you to find and use resources effectively?
- What courses and workshops will help hone your skills and develop your awareness?
- What self help materials can you access? Workbooks, videos and screencasts from libraries and suppliers can help you use resources efficiently. Listen to podcasts by academics explaining why they choose to publish open access versions of their work

Apply your search strategy iteratively

Use your search strategy to exploit the key resources you identified. If the results are not what you expected, think why that might be. Translate your search strategy to work in different resources – be flexible and reflective, you may need to redefine and adjust your search depending on your results.

Keep a record of your search strategy along with your search results, so that it is easy to manipulate it. It can also be helpful in future as a justification for your literature review.

Constantly look for other resources, checking that you have used the most appropriate resource for your question. Many experienced researchers go back, out of habit, to a resource they are familiar with. They know how it works and don't have time to learn about a new interface. Understandable reasons, but it is vital, as an informed researcher, that you have the best information.

Think about

Your high five

Which are your 'High five', i.e. the top resources you would recommend?

Why not share this via your blog or Twitter? Pooling knowledge of resources can introduce you to other valuable sources.

An informed researcher is able to critically analyse, synthesise, validate and evaluate new and complex information/data from different sources

RDF: A2 – Cognitive abilities

Knowledge base (A1)

Cognitive abilities (A2)

Creativity (A3)

Knowledge and intellectual abilities
The knowledge, intellectual abilities and techniques to do research.

Domain A

Seven Pillars: gathering

5. Choosing wisely

Demonstrating judgment with information

Evaluation helps you to deal with information overload and ensures you are reading top quality information. You need your knowledge about your discipline and its research practices to evaluate your information. However, some aspects of evaluation are applicable across disciplines.
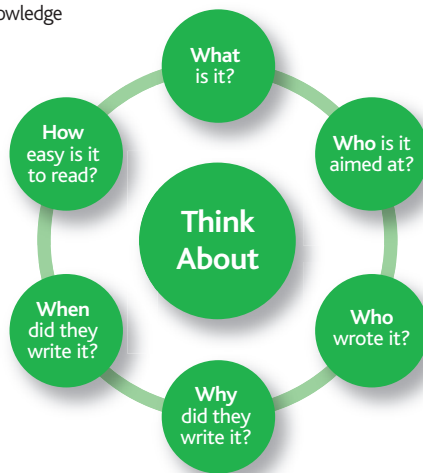
Think about

- **Authority.** Who wrote it? Is the author of the article an accepted expert in this field? Ascertain the credibility, expertise and reputation of the author.
- **Purpose.** What was the purpose of the publication, its intended audience and does it show any bias?
- **Currency.** When was the information first set out (and if appropriate, updated)? To what extent do you require up-to-date information?
- **Type of resource.** Whether the resource is a book, journal, website, video, statistics, grey literature, letter, diary, manuscript, map, newspaper or database, for example, can indicate its usefulness to you
- **Suitability.** Who was it written for? Does it meet your needs and is it understandable?
- **Content.** Once you have selected items to read, read them critically, deploying a range of criteria for evaluating the content
- **References and sources.** References can give an indication of whether the information is based on established research.

Improving further

Don't assume you automatically have all the skills you need. Ask your supervisor if they agree with your evaluation, check your university and library websites for links to more information on how to develop Evaluative skills.
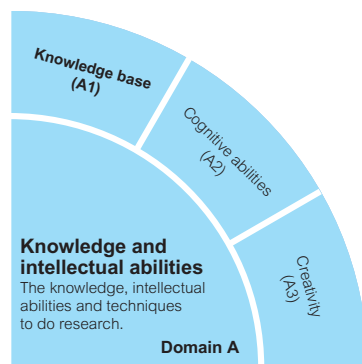
An informed researcher is able to assess and advise on the credibility, quality, integrity and authenticity of primary and secondary information/data

What is it?

How easy is it to read?

Who is it aimed at?

Think About

When did they write it?

Who wrote it?

Why did they write it?

> " The trouble with quotes from the internet is that you never know if they are genuine. "
>
> Abraham Lincoln,
> (1809 – 1865, president of the USA)

RDF: A1- Knowledge base

Knowledge base (A1)

Cognitive abilities (A2)

Creativity (A3)

Knowledge and intellectual abilities
The knowledge, intellectual abilities and techniques to do research.

Domain A

Seven Pillars: evaluate

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6. Be a pro

Behaving professionally

As an informed researcher you have a responsibility to act with professional integrity and to be honest in all aspects of research, particularly information and data handling and dissemination. Consider issues relating to copyright, intellectual property, attribution and avoidance of accusations of plagiarism.

Think about

Copyright and intellectual property

Who owns the copyright of articles that you have written? Most universities allow authors to retain their copyright, but if your work is published outside your institution you may not retain all your rights. You may be so excited to have had an article accepted in a prestigious journal that you happily sign the licence agreement and inadvertently give away your copyright.

Who owns the intellectual property (IP) attached to your research? Collaborative agreements with sponsoring industries may contain confidentiality clauses. If a third party owns the IP, do you know if there is a licence and, if so, what the terms of usage are?

Attribution and plagiarism

As a researcher, you want recognition for your work (and to be cited), so it's only fair that you accord the same recognition to others. You must be meticulous in acknowledging any words, concepts and ideas which you use, paying attention to referencing and citation, so that there is no possibility they might be mistakenly attributed to you. This is the core of academic integrity. Prominent researchers have lost their jobs because of plagiarism offences which took place in their past.

Beware of technology-assisted plagiarism, especially if you use online communities of practice or e-mail discussion lists for the exchange of ideas and information. Give credit whatever the format – including originators of ideas on Communities of Practice, interview transcriptions, images and diagrammatic representations from websites.

Consider the ethics procedures surrounding multiple authorship. Can you identify the contribution you have made to multiple author publications? Acknowledge all assistance provided during the preparation of theses or articles.

Improving further

Find out who has responsibility for copyright and IP issues at your university. JISC Legal is another national body that can assist; their website provides sound and reliable guidance not just for copyright and IT matters, but also for a range of other issues with legal implications such as data protection. The JISCiPAS website has good links to anti-plagiarism resources and your library staff can also help.

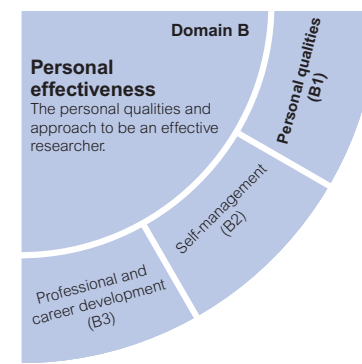**An informed researcher** understands the need for professional integrity and honesty with regards to information/data handling

RDF: B1 Personal qualities

Domain B

Personal qualities (B1)

Self-management (B2)

Professional and career development (B3)

Personal effectiveness
The personal qualities and approach to be an effective researcher.

Seven Pillars: management

7. It's who you know

Networking with your scholarly community

As you progress in your research career you are likely to build up personal networks of colleagues around the world.

> **I can usually get what I need from people I know. They will email things to me...I always try them first because it's quicker than searching in the library.**
>
> Senior researcher in biology

> **Possibly because I work more with colleagues now, I tend to engage in a conversation with someone to find something out before I go into a library – I share and borrow books from other people and exchange articles more as a result.**
>
> Senior researcher in marketing and management

Networks develop through work relationships, personal contacts and conference attendance, and through joining email discussion lists and web-based communities in your discipline. Colleagues and library staff may help you identify useful fora to join. You can also use social software to upload your papers and share them with other academics, as well as follow the work of others within your research area, via newsfeeds, for example. When you join a community, try to participate. Initiate a discussion if you have an issue of concern. Sharing ideas with others can be mutually beneficial and enhance relationships. Such communities of practice are particularly useful in areas where research is moving more rapidly than the conventions of academic publishing make allowances for.

An informed researcher is able to engage with and develop a personal profile in relevant scholarly communities deploying a range of electronic and virtual means
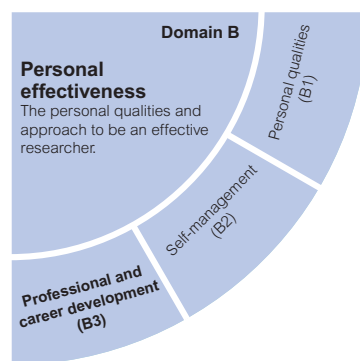
Think about

- What professional networks are you currently part of?
- Consider joining at least one new community and use it to promote your research.

Improving further

Ask colleagues about their networks. Check your library website. Look for online tutorials and screencasts and put aside some time to work through them.

RDF: B3 – Professional and career development

Domain B

Personal effectiveness
The personal qualities and approach to be an effective researcher.

Personal qualities (B1)

Self-management (B2)

Professional and career development (B3)

Seven Pillars: gathering

8. Get the best out of what you have

Managing information effectively

Keep a research log, blog or diary, making annotations and recording critical and reflective thoughts, documenting what you are doing, seeing, reading, hearing and learning whilst information gathering, including any frustrations and successes. This helps you consider your own information behaviour, highlighting the strategies you employ and can give you a sense of control over your information seeking and problem-solving processes.

Think about

- What tools you can use to help you manage information
- Mindmapping can be a useful technique for summarising progress
- Bibliographical management software ensures that you record details of everything you discover
- Take care when you are storing confidential research information on your home PC/laptop/notebook/tablet etc
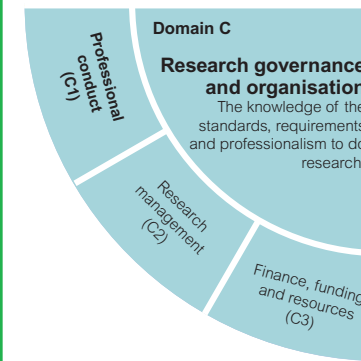
Improving further

- Ensure you leave sufficient time for searching, reading and evaluating the information you find
- Write a draft of your literature review early in the research process
- Try to build a regular 'writing hour' into your diary (and honour it)
- Keep annotated records of all the material you read
- Record where and when you sent articles and conference submissions, rejections and resubmissions with dates, contact names etc so you can keep track
- Create a folder for final copies of all your work for instant access to the right version
- Learn to use bibliographic management software right at the start of your research, check for local courses and online help

> **From some recent personal experience I would stress the importance of correct citation of works read. This has two requirements one is using a standard database such as Refworks or EndNote to record the information, because that should ensure that it is complete and consistent. The other is to cross-check anything from any source against the original to ensure that spellings, the form of words, and the pagination etc are correct. Readers of research outputs may wish to follow up earlier material, and shouldn't have their time wasted following incorrect references.**
>
> Researcher and journal editor

An informed researcher understands the need to manage, share and curate

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RDF: C1 – professional conduct

Domain C

Professional conduct (C1)

Research governance and organisation
The knowledge of the standards, requirements and professionalism to do research.

Research management (C2)

Finance, funding and resources (C3)

Seven Pillars: management

9. At your finger tips

Data management

Ensure you understand how to manage the data you are creating and organising. Your research data can be a vital resource in its own right in the future, both for yourself and for colleagues and other researchers.

On data management, the Digital Curation Centre is a good source of advice. The UK Data Archive, although focused on the social sciences, also provides useful guidance.

Think about

- How your data is organised, set out and annotated
- How to attach appropriate metadata so that it can easily be retrieved
- How it is stored and curated so that it can be shared, linked to and made available for re-use or enrichment
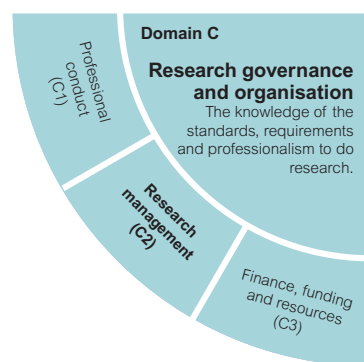
Improving further

Familiarise yourself with the guidance and requirements on data management from your institution and/or your funder, and also with legal requirements covering data protection and freedom of information.

> **Reading maketh a full man, conference a ready man, and writing an exact man.**
>
> Sir Francis Bacon (1561 - 1626)

An informed researcher is able to identify and communicate data management requirements to other stakeholders

RDF: C2 – research management

Domain C

Research governance and organisation
The knowledge of the standards, requirements and professionalism to do research.

Professional conduct (C1)

Research management (C2)

Finance, funding and resources (C3)

Seven Pillars: management

10. Tell all about it

Disseminating research

Research and discovery has no meaning unless it is communicated, so it is imperative that you have a strategy to disseminate your findings to your research community and beyond. Is your doctoral thesis sufficient? In some subject areas, publishing in appropriate journals is accepted practice, in others conference papers are more highly regarded and others may use less formal online channels including social media. In most (but not all) disciplines, however, journal articles are still the most popular tool, but they are not the only way of disseminating research results.

Think about

The best sources for dissemination in your discipline:

- Which one(s) you plan to aim for.
- Whatever outlet you choose, always bear your audience in mind as well as 'what is in it for me?'.

There is increasing emphasis on engaging the general public with your research. This can really clarify your thinking, renew enthusiasm and be good fun. The Vitae booklet 'the Engaging researcher' is a good starting point.

Improving further

- Whatever the method of dissemination, it is important to plan and keep track of the steps you are taking to present your findings
- Identify the publication schedule of any journals you are targeting and establish how long the peer review and/or editorial process usually takes, so that you know when it is most appropriate to submit your article
- Note the deadlines for written versions of any conference papers for which you have had an abstract accepted. Retain a prepublication, post refereed copy of all your writing as both a print and e-copy so that you can deposit it in your institutional repository

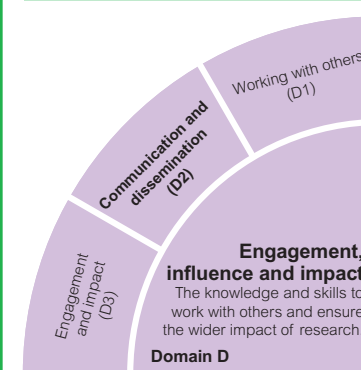[1] From Transliteracy Research group
http://nlabnetworks.typepad.com/transliteracy/

An informed researcher understands the requirements and implications of the publication process, including peer review

Are you transliterate?

It may no longer be sufficient for you to disseminate research via traditional communication routes. According to Prof. Sue Thomas: "Transliteracy is the ability to read, write and interact across a range of platforms, tools and media from signing and orality through handwriting, print, TV, radio and films, to digital social networks."[1]

With the current funding cycles it is increasingly important to make your research intelligible, but also more importantly, appealing to the lay public. Think outside the box, when you're considering how to disseminate your research. Maybe video your talk? Use comic-like visual narratives? Don't be afraid to share the broader context of your research in various media. It's a great way to test audience reactions.

RDF: D2 communication and dissemination

Communication and dissemination (D2)

Working with others (D1)

Engagement and impact (D3)

Engagement, influence and impact
The knowledge and skills to work with others and ensure the wider impact of research.

Domain D

Seven Pillars: present

Publishing journal papers

Traditional journals

To which journal should I submit my paper?

Think about:

- In which journals do other academics in your field publish?

- Which journal will be interested in your research? Of course, you want to submit your paper to a journal which will be read

- Which journals in your discipline have the highest impact on your community? Use databases such as the Journal Citation Reports to identify journals in a subject area which have been cited most frequently, the inference being that the more citations a journal receives, the wider the impact it is having

Open Access

Open Access (OA) means that scholarly literature is made freely available on the internet so that it can be read, downloaded, copied, distributed, printed, searched, text mined or used for any other lawful purpose, without financial, legal or technical barriers, subject to proper attribution of authorship. Many mainstream publishers now offer OA options alongside traditional.

Benefits of OA

For authors: publication in more places; possible increase of research impact; compliance with requirements from funders and institutions.

For researchers: access to material the library may not have, access to high quality peer reviewed material, access even if you are not attached to an organisation/university.
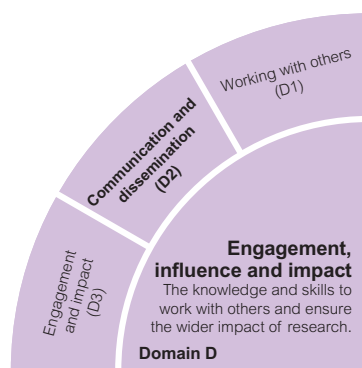
For research funders and academic institutions: increased impact for their research; adherence to principle that publicly funded research should be freely available; allowing access to cutting-edge research for developing countries.

Think about

- Do you know the OA journals and archives in your discipline?

- Do you know the policies of your favourite traditional journal publishers with respect to deposit in OA repositories? For instance, many publishers allow you to archive the post-refereed, pre-publication version (i.e. without the journal's design and layout)

- Does your institution have a digital repository? If so, do you know what form of publication it is able to accept? Do you know how to archive your papers in the repository?

- Is your research externally funded? Work funded by any of the UK Research Councils and organisations like the Wellcome Trust has to be made openly accessible as a mandatory part of the grant

> **RDF: D2 communication and dissemination**
>
> Working with others (D1)
>
> Communication and dissemination (D2)
>
> Engagement and impact (D3)
>
> **Engagement, influence and impact**
> The knowledge and skills to work with others and ensure the wider impact of research.
>
> **Domain D**
>
> **Seven Pillars: present**

An informed researcher understands scholarly communications in all their forms and the different means of disseminating research results, including open access

Measuring impact

The impact of a researcher or a piece of research on the research community can be measured in several different ways. For instance:

Impact factors tell us how much impact a specific **journal** has on the community, by analysing how many times articles published in that journal are cited by others.

Citation counting tells us how often a specific **article** was cited by others, but counts vary between different sources and depend on the depth of the indexing, the time period covered and the source of the data. Some resources provide extra information, such as a citation mapping tool, coverage of open access material, coverage of books and reports.

The H-index is one of the tools which measures the impact an individual **person** is having on the community. A scholar with an index of **h** has published **h** papers, each of which has been cited by others at least **h** times. The index varies depending on forms of author name, affiliation and is also affected by the characteristics of the database, so as with any metric, use with caution! Other similar metrics are constantly being developed, ask your librarian for advice.

Web page/blog hits are not a formally recognised tool for measuring impact, but as the use of social software in research increases, the number of visitors to your website and their location around the world or blog can give you an indication of your reach.

Measuring social impact: Gathering evidence of the impact of research outcomes on society is difficult and most easily achieved by case studies. These can articulate impact in terms of, for example, changed practices and processes, improved circumstances, new products, increased income.
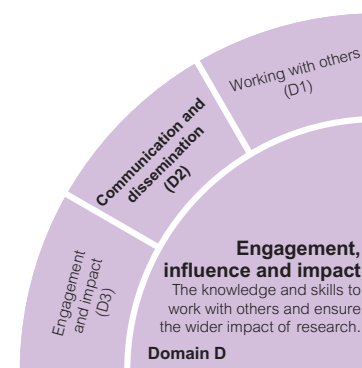

Improving further

Some database suppliers such as Web of Knowledge and Scopus, provide bibliometric analysis tools. Library staff will be able to advise you on their use.

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An informed researcher understands the importance of information/data sharing and accessibility to maximise opportunity for collaborative research, further subject and enhance own profile

Action planning and tips

Use the action planning grid to record your progress you have made implementing some of the practical tips from this booklet

Goal	By when?	Specific action to take	Evidence	Date accomplished

Top ten tips for being an informed researcher

1 Save time by scoping and planning an effective search strategy

2 Consult librarians and other information professionals to improve your information literacy

3 Use information resources critically and know which are most appropriate for you

4 Develop good information management techniques

5 Develop skills in drawing evidence from a variety of information sources together to create arguments

6 Start writing for publication now! Get involved in the scholarly communication world and think about your roles and responsibilities

7 As an information producer and an information consumer, be responsible about copyright and plagiarism

8 Sign non-exclusive copyright licences with your publisher, so that you still have the right to use your work and find out more about your Intellectual Property Rights

9 Consider publishing in high quality open access journals and digital repositories whenever possible

10 Learn how to evaluate and measure impact of publications