Digital literacy training

Advanced digital research

2018
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Research based learning environment

Research skillset

This enables you to undertake the following with increasing proficiency and autonomy.

<table>
<thead>
<tr>
<th>Embark &amp; clarify</th>
<th>Respond to or initiate research and clarify or determine what knowledge is required, heeding ethical, cultural, social and team (ECST) considerations.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Find &amp; generate</td>
<td>Find and generate needed information/data using appropriate methodology.</td>
</tr>
<tr>
<td>Evaluate &amp; reflect</td>
<td>Determine and critique the degree of credibility of selected sources, information, and data. Metacognitively reflect on processes used.</td>
</tr>
<tr>
<td>Organise &amp; manage</td>
<td>Organise information and data to reveal patterns and themes, as well as manage teams and research processes.</td>
</tr>
<tr>
<td>Analyse &amp; synthesise</td>
<td>Analyse information/data critically, and synthesise new knowledge to produce coherent individual/team understandings.</td>
</tr>
<tr>
<td>Communicate &amp; apply:</td>
<td>Discuss, listen, write, present and perform the processes, understandings and applications of the research, and respond to feedback, accounting for ethical, cultural, social and team (ECST) issues.</td>
</tr>
</tbody>
</table>

Information literacy

Developing your research capabilities includes understanding information literacy, which can be described as:

"...the set of integrated abilities encompassing the reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and participating ethically in communities of learning."  

Throughout your research, you will be building and refining the set of abilities that enable you to not only find and access information, but also to understand:

- how information is produced (created and published or disseminated)
- how that information is valued (by the creator and by publishers, the scholarly community and the community at large)
- the role of that information in the creation of new knowledge (disciplinary context, cross disciplinary application, reproducibility of findings)
- how to use, store and share that information in ethically, culturally and socially appropriate ways (Copyright, reference management, resource sharing)

**TIP:** Self-assess your current skills, use the Vitae The Informed Researcher Quiz handout

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1 rsd.edu.au
Planning for your original research

Literature review

- Original researchers' question-formation processes are rarely linear or stepwise – i.e. cyclical, serendipitous and messy!

- A technique that is often to illustrate the complex nature of articulating the information need in original research is the gap analysis. In the context of original research planning, gap analysis refers to examining the existing research and literature to identify gaps in the existing knowledge.

- By identifying gaps, you will determine niches that need original research performed AND gain the necessary information to justify why your research is needed (to fill the gap).

- Your job is to systematically check out existing research and literature (including all kinds of scholarly outputs – traditional and non-traditional) to identify the gap.

- In order to paint an indirect picture and determine what will be needed to create your original research plan for your final, empirical investigation.\(^\text{3}\)

**TIP:** The ANU Academic Skills and Learning Centre provides comprehensive support for literature review writing (ql.anu.edu.au/zybv) including workshops and one-to-one consultations.

Information landscape

You may be far enough into your discipline that you have a well-defined picture of the appropriate sources for your field (their formats, creators, purposes, and audiences) and a solid knowledge of how your discipline’s epistemological foundations affect what gets into those sources.\(^\text{4}\)

Or, you may possess only a basic recognition of the disciplinary sources' existence at this point in time. If you are a new researcher, or are an established researcher who is moving into new disciplines or branches of research, you will likely need to assess what you know about types of sources of information in your areas of research.

An important part of the ‘identifying types and formats’ part of information planning is learning to separate the information needs of the literature review from those of the original research.

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\(^\text{4}\) Ibid.
As an original researcher, you need to learn how to plan out what you will need to know from other researcher's findings, and how to use the results of that literature review to feed into your own original research planning.\textsuperscript{5}

Key questions

1. What are the core information sources in your discipline?
   - Which are the seminal works? How have these sources formed the body of knowledge? How do these works fit into the narrative of the disciplinary foundations? What are the key theories and central debates? Which scholars have proposed or are proposing new ideas or debunking major arguments in the field?

2. What are the information needs for your literature review?

3. What are the resource types you will need/create for your original research process?

\begin{tabular}{ |p{1\textwidth}|}
  \hline
  \textbf{TIP:} Book a one-to-one consult with your subject librarian (ql.anu.edu.au/0rbi). Embed your subject librarian into your research process from the start and establish a partnership which will support you throughout your time at ANU. \\
  \hline
\end{tabular}

\textsuperscript{5} Ibid.
Search

Planning your search

Regardless of whether you are undertaking original research or synthesizing existing research, allow yourself time to plan your search strategy.

- Identify search terms – what are my key concepts, keywords and how will I combine my search terms?
- Which search tools are most appropriate for the type of information/subject content I am seeking?
- Keep a record of searches - notate each database or search tool used, along with the search terms and search strings, and the results obtained.

Search tools

Reference materials
Useful for background reading, identifying different interpretations or developmental milestones in theories, terminology or becoming familiar with a discipline and the relevant body of literature. Useful when brainstorming a concept, topic or identifying keywords. Access ANU e-reference materials (ql.anu.edu.au/t5mc) or search the Library Catalogue.

ANU Library Catalogue
The Library catalogue is your gateway to all kinds of materials, including electronic and physical items. Catalogues are useful when you have done some brainstorming around topics and want to do a subject search
The ANU Library catalogue and website is covered in our Library research workshops.

SuperSearch
Explored in Digital research, SuperSearch is an excellent way to get a quick sense of what is available to you across the ANU collections and scope the literature. It provides numerous ways refine your searches and, for original researchers, to gain clarity around subtopics as you begin to define your research question.
SuperSearch is covered in our Digital research workshops.

Google Scholar
In addition to the scholarly and peer reviewed materials found through SuperSearch and ANU Databases, using Google Scholar enables you to locate complementary content such as NGO reports, government reports, published (or non-published) statistics.
Despite the bad rap it gets sometimes, Google can still be useful within the academic environment. It is useful if you’re trying to find the latest discussion on a hot topic.
Google Scholar is covered in our Internet Research workshops.
Advanced digital research

**ANU Databases**

Databases contain rich sources of discipline-based, multidisciplinary and scholarly information for your research, including scholarly and peer-reviewed journals. Database content is not limited to journals; you can also locate primary sources (e.g. legislation, letters and diaries or statistics) as well as books, conference papers and other types of information. ANU staff and students are able to access these resources on or off campus.

An introduction to ANU library databases is covered in our [Digital research workshops](#).

**TIP:** Use your UniID and ISIS login to access database passwords via the Library website (ql.anu.edu.au/iv9w)

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**When should you use subject databases?**

- When you need to find published sources, especially journal articles, on a particular topic.
- When you commence the ‘scoping exercise’ for your research project – anywhere from an essay to a PhD thesis – and need to determine the current state of research in your subject area.
- When you start work on your literature review
- Although literature searching can be done using internet resources such as Google Scholar, subject databases contain sophisticated search interfaces that allow you to perform highly refined and specialised searches. Subject databases are your best means of accessing reliable, authoritative literature on a given topic.

**Use multiple databases**

All databases have their strengths and unique content, so it’s important to use a number of databases. This enables you to be confident that you’ve got a good coverage of the literature on your topic.

Searching across multiple databases:

- Use a thesaurus to identify alternate terms
- Re-jig your search queries by trying different combinations of terms
- Look for suggested terms - some databases such as ProQuest suggest keywords and phrases
- Look for author keywords in the article's bibliographic details
- Use the help function in a database to see which subjects and search operators are used
- Ask a library staff member to give you a hand in selecting your search terms or another database

**Tip:** Subject headings, keywords, terminology and search operators (*, ?, $) used in one database may differ from another. An effective search query in one database might not yield many results in another. This might be because there’s genuinely not much content related to your topic, or you might need to revisit your search terms.
Selected databases
The following database examples show refining options, how to sort results, how to access the article, times cited and how to save to the EndNote reference manager.

**ProQuest**

**Web of Science**

**JSTOR**

**Scopus**

TIP: Get a headstart on managing your references and information - register for an EndNote workshop

**Alerts**
Now that you have practiced some searches and found the names of relevant journals, you may wish to create alerts. Alerts keep you up-to-date with new research in your field and can be received via email or RSS feed. See the [ANU Library’s guide](#) for information on setting up alerts.
Evaluate

As well as verifying of the scholarly credibility of the information you have found (see ANU Library’s Evaluating sources guide), critical analysis of how that information fits within the existing disciplinary knowledge and academic debate in your field is a crucial part of your research process.

You might consider the following actions as part of your evaluation and analysis:

**Information landscape**

What types of information have you discovered in your searching? Are these reflective of the breadth of scholarly output in the discipline/s you are exploring for your literature review or assessment piece?

Along with reviewing the literature published via traditional scholarly communications channels (monographs and journals), have you considered the conversations taking place across, and content available from, more informal channels and media?

These include:

- social media eg. Twitter, LinkedIn
- blogs and vlogs
- content in academic sharing platforms eg. ResearchGate, Mendeley, Figshare?
- content in open access repositories such as ANU Open Research (openresearch.anu.edu.au)
- conference posters

**Research impact**

Another aspect of evaluating the information you find – articles, blog posts, reports, white papers datasets, primary sources etc. - is to consider how and by whom they are being used. What scholarly or community impact are those research outputs having?

- **Citation counts**
  
  This is where your citation alert comes in – see Alerts
  
  Highly cited articles are often identified in the databases with an icon (eg. a trophy in Web of Science)
  
  Databases such as Web of Science enable you to investigate who has cited/is citing the articles you are reading and their areas of expertise. Data citation counts are also important!

- **Impact factor**
  
  In which journals are the publications you’ve identified found? Are they top-tier journals? Are they considered high-impact journals?
  
  Tool such as JCR/InCites (ql.anu.edu.au/4fn9) can help you place the journal publication within the rankings by discipline.
  
  Conversely, you may want to start by identifying the highly ranked journals (or highly cited) journals in your field and then seach within for relevant content/authors/funders, organisational collaborations etc.

- **Altmetrics**

  - Find out more about Altmetrics at https://www.altmetric.com/
  
  - Two ANU examples with high Altmetrics scores can be found within this 2017 Top 100 listing (ql.anu.edu.au/neds)
Reflective practice

- Reflect on the effectiveness of your search strategies and the resulting information you’ve found. Review your search strategy documentation to help you chart unanswered questions or further areas for investigation.

- If you benefit from thinking aloud (yes, it’s a genuine learning style!) talk yourself, a colleague, or your friendly subject librarian through your strategy to gain fresh insight into what you may be missing.

- Check out the ANU E-Portfolio, Mahara

- It’s useful to begin categorizing the information you find thematically, chronologically or geographically. This allows you to reflect upon everything you’ve gathered through different lenses, make different thematic connections and identify areas to broaden or deepen your searches. You can use your reference management software such as EndNote or Mendeley, an Excel spreadsheet or other options such as Evernote to group and classify your materials.
Exploring methodologies

Finding best-fit methodologies for your research is all part of the process.

Suggested ways to get to grips with this aspect of your investigation include:

- Consult theses which have applied the method/s you wish to consider
- Review the literature for case studies, advantages and disadvantages of potential methods
- Talk to colleagues and your supervisor.

Sage Research Methods

SAGE Research Methods can help you at every step of your research project. Sage Research Methods (SRM) contains over 700 full text SRM books; hundreds of research articles from Sage journals, and dozens of Sage reference works including handbooks, dictionaries and encyclopedias.

It has peer reviewed instructional information on a range of research approaches including basic and advanced statistics, quantitative and qualitative methods, literature review, research design and writing about research. SRM supports research and the teaching of research methods not only in the social sciences, but also in scientific and medical disciplines.

On the Library home page select the letter S underneath the E-resources & databases heading, then select the link to Sage Research Methods

There are a number of ways to find and access content in SRM. The four options corresponding to numbers 1-4 are briefly explained below.

1. **Browse** enables you to explore content by **Topic, Discipline** or **Content type**. This is a good way to undertake some topical or disciplinary background reading and to become familiar with the variety of materials available in SRM. Content types include SAGE’s classic Little Green (quantitative research) and Little Blue (qualitative research) books, videos, and research methods cases. (ql.anu.edu.au/zyts).
**TIP:** Note the locked icon alongside Datasets. The ANU Library does not subscribe to this component of SRM, so access to the datasets is unavailable. However, abstracts can be viewed and basic metadata about datasets can be downloaded as a PDF. Contact your Library subject specialist (anulib.anu.edu.au/about/contacts-feedback) for assistance with identifying datasets in your field of research.

2. **Research tools** assist your discovery of information about research methods, definitions of key terms, lists of methods and statistics resources created by other users. Other tools available will guide you through planning for each stage of your research project and aid your selection of appropriate statistical methods.
One of these tools, the **Methods Map** is a unique visualisation of the taxonomy of 1400+ research methods related terms.

In this example, we have searched for the phrase **Research design**.

3. Select **Advanced Search** to create structured, specific searches. Enter search terms or phrases into the fields at the top, and select specific content types (e.g. books, journal articles, videos), publishing information, publication date, and relevant disciplines.

4. Use the **I want** option to dive straight into content and explanatory materials based on your current research methodology question eg. Learn about qualitative/quantitative methods, Watch methods come alive.

**TIP**: SAGE has produced an excellent range of [short videos](ql.anu.edu.au/4il0) on how to get the most out of the SAGE Research Methods database.
Further resources

ArticleReach

ArticleReach is a service providing access to journal articles not held in the ANU Library. It is freely available to staff and students of the ANU. The service is a collaborative document sharing service, delivered by the ANU Library in partnership with a number of other university libraries in Australia and overseas. Any Find it at ANU connection page will have a link to ArticleReach.


Before you start you will need:

- A current ANU library record with a Library Barcode (E123456F), as displayed on your student card
- Access to My Library Record at library.anu.edu.au/patroninfo

BONUS+

BONUS+ is a free service that enables ANU postgraduate students and staff to borrow selected library material from a consortia of participating Australian and New Zealand university libraries and pick it up from one of our branches.

Search the ANU Library catalogue. If the book is not held by the ANU Library or our copy is unavailable, the BONUS+ logo will display. Select the logo; access this service with your UniID and password. Further information is available at anulib.anu.edu.au/bonus.

TIP: Get a headstart – begin to think about managing your research data. Check out the ANU Library’s Research Data Management guide (libguides.anu.edu.au/datamanagement)

References


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Other resources

Training notes
To access the Information Literacy Program’s training notes, visit the Research & learn webpage (anulib.anu.edu.au/research-learn) and select the skill area followed by the relevant course. You can register for a workshop and find other information.

Research & learn how-to guides
Explore and learn with the ANU Library’s how to guides (ql.anu.edu.au/howto). Topics covered are:

- Citations & abstracts
- Data Management
- E-books
- EndNote
- Finding books and more
- Finding journal articles and more
- Finding theses
- Increasing your research impact
- NVivo
- ORCID (Open Researcher and Contributor ID)
- Topic analysis
- Using Google scholar from off-campus

Subject guides
Find subject-specific guides (ql.anu.edu.au/subjectguides) and resources on broad range of disciplines. Such as:

- History, indigenous studies, linguistics and philosophy
- Criminal, human rights and taxation law
- Biochemistry and molecular biology, neurosciences and psychology
- Asia Pacific, Southeast Asia and East Asian studies
- Engineering
- Astronomy and astrophysics, earth sciences, mathematical sciences and natural hazards

Online learning
Online learning is available through ANU Pulse (ql.anu.edu.au/pulse), which can be accessed from both on and off campus by all ANU staff and students.

IT skills development modules available in ANU Pulse
- Microsoft Office (Access, Excel, OneNote, Outlook, PowerPoint, Project, Visio, Word)
- Microsoft Office (Mac)
- Adobe suite (Illustrator, Photoshop)
- Type IT

Training calendar
Select Events » near the bottom of the Library homepage to access our events calendar with upcoming training opportunities displayed day by day (ql.anu.edu.au/cal).

Feedback
Please provide feedback about today’s workshop via an online feedback form (ql.anu.edu.au/survey)