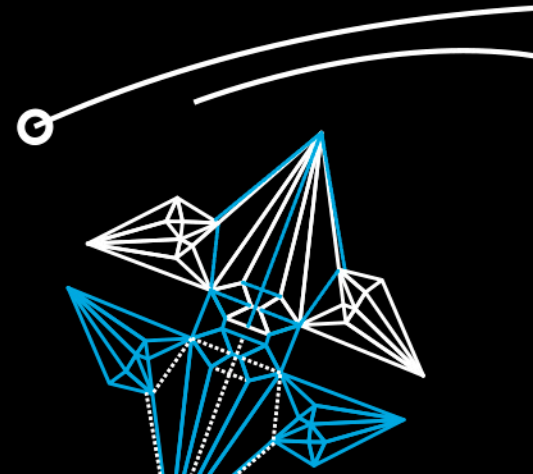
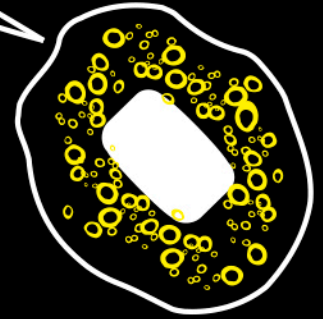


UNIVERSITY OF TWENTE.

# USING SCIENTIFIC LITERATURE IN TEACHER-LED RESEARCH

SUSAN'S TOP 10 TIPS



SUSAN MCKENNEY, NOVEMBER 14, 2024, ENSCHEDE, UNIVERSITY OF TWENTE



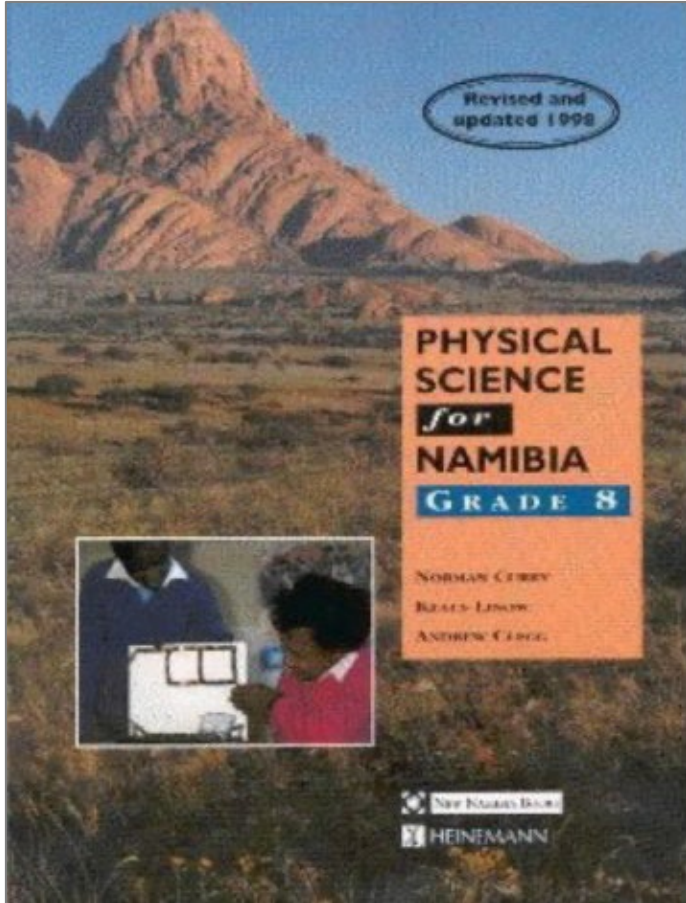
Revised and  
updated 1998

**PHYSICAL  
SCIENCE**  
*for*  
**NAMIBIA**  
**GRADE 8**

NORMAN CURRY  
REAGY-LINDSEY  
ANDREW CLEGG



 **NEW EDITION BOOK**  
 **HEINEMANN**



# OBJECTIVES

## WHAT WE HOPE TO GET OUT OF THIS SESSION

---

- Participants will be able to (better):
  - Understand (more about) 10 key tasks for making use of scientific literature
  - Know where to access tips and tools for each task
  - Organize their literature use processes accordingly
  
- Participants may also (better):
  - Appreciate literature use as a process, not an event
  - Value searching as strategic exploration
  - Recognize scholarship as (ongoing) conversation
  
- FYI
  - Today's session provides overview and resources; we do not have time to practice together
  - Slides, links, tools will be made available on Canvas
  - It helps to start practicing asap, while ideas are still fresh

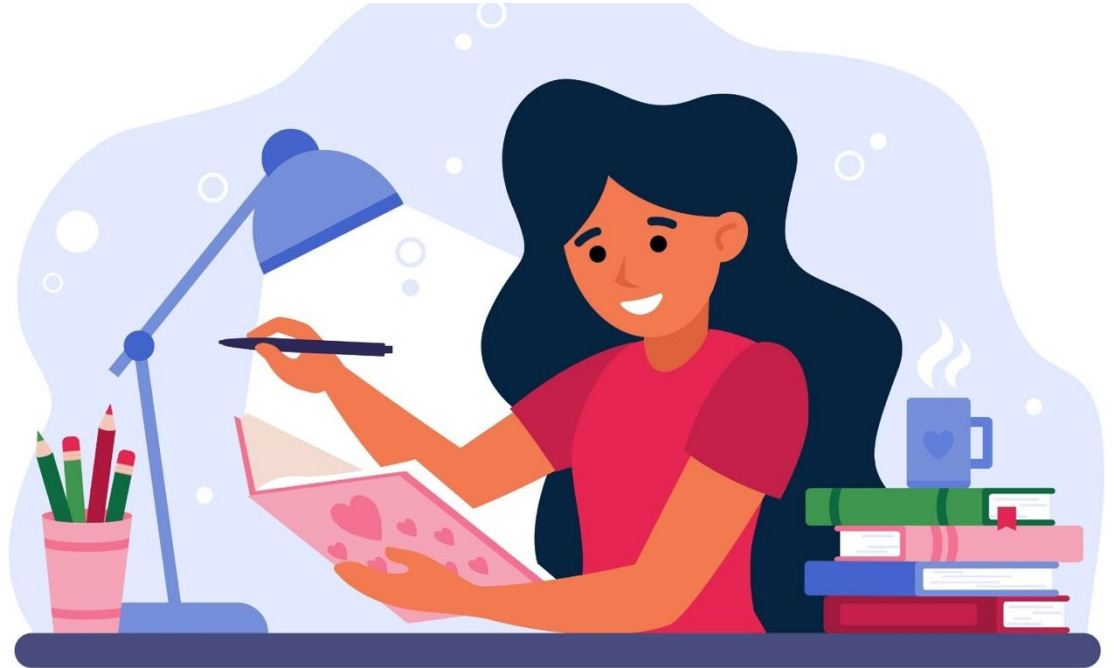
A black and white close-up photograph of a cat's face. The cat is wearing a pair of round, dark sunglasses. The cat's fur is short and appears to be a mix of dark and light tones. The background is a plain, light color. The overall mood is cool and determined.

**LET'S DO THIS!**

# MAKING USE OF SCIENTIFIC LITERATURE

TOP 10 TIPS (ROUGHLY IN THIS ORDER, BUT DEFINITELY NOT ALWAYS)

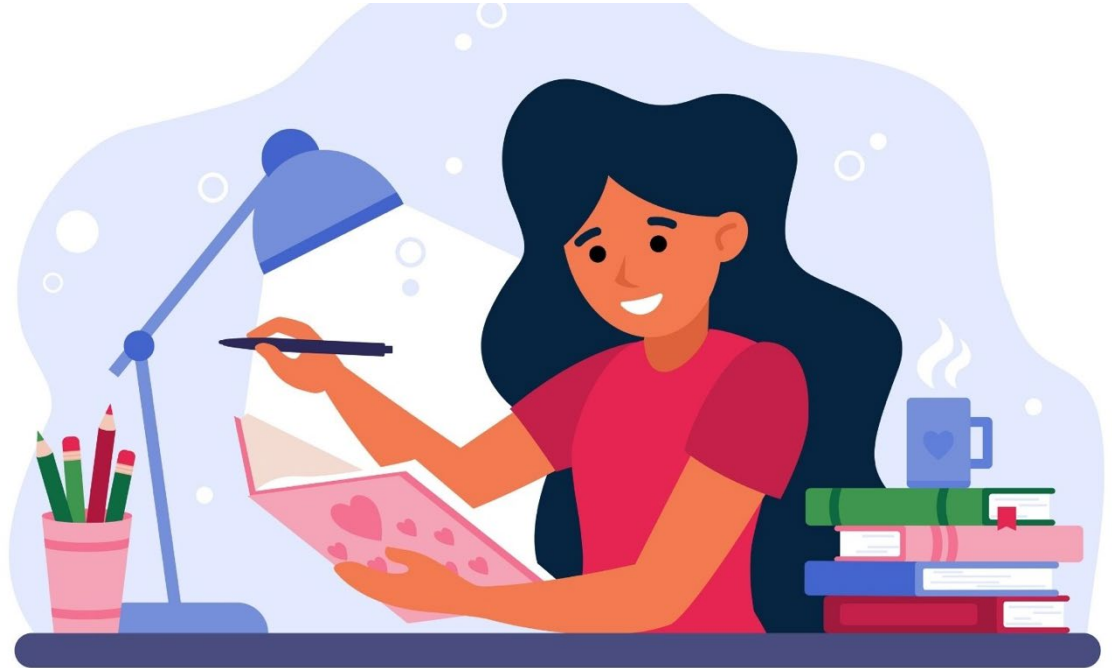
1. Articulate
2. Create
3. Conduct
4. Screen
5. Scan
6. Read
7. Analyze
8. Connect
9. Write
10. Cite



# MAKING USE OF SCIENTIFIC LITERATURE

TOP 10 TIPS (ROUGHLY IN THIS ORDER, BUT DEFINITELY NOT ALWAYS)


1. Articulate goals
2. Create plan
3. Conduct search
4. Screen hits
5. Scan texts
6. Read sources
7. Analyze notes
8. Connect ideas
9. Write text
10. Cite references



# 1. ARTICULATE ONE OR MORE GOALS

CLARIFY WHEN YOU WOULD BE HAPPY WITH THE RESULTS


- Decide
  - Why am I looking?
  - What am I looking for?
  - Whose information needs do I wish to satisfy?
- Consider
  - Using Wikipedia or well-curated websites to help
  - Get oriented to the topic of interest
- Draft questions to pose to the literature




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KEY POINTS

- Think about the why
- Determine the scope
- Formulate your question
- Think about information need



**B2-1: Focusing your research**

 University of Twente

# 2. CREATE A SEARCH PLAN

## THINK AND PLAN SYSTEMATICALLY

- Where
  - Google Scholar
  - Most relevant databases at utwente.nl/ub: [ERIC](#), [Web of Science](#), [Scopus](#), [PsycINFO](#)
  
- How
  - Keywords; this [ERIC thesaurus](#) can help with educational terms/synonyms
  - [Boolean operators](#)
  - Search using main ideas and expect to do some synthesizing yourself, e.g.
    - to learn about supporting 4VWO WI-B learners with autism, use results from both:
      - autism\* AND math\* AND (instruction or teaching OR education)
      - autism\* AND (secondary OR “high school” OR adolescent)

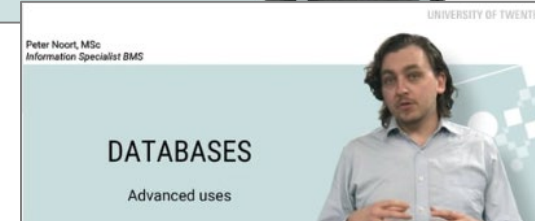
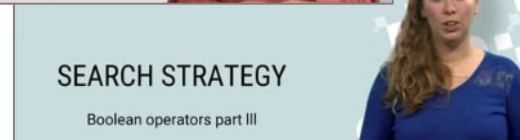
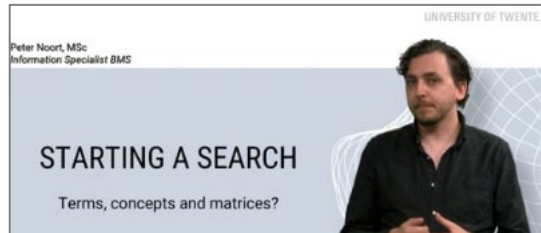
### Boolean operators: AND, OR, and NOT

- Always spell Boolean terms in capitals
- Use parentheses to determine the order in which they are used, e.g.
  - *(program OR application) AND (measure OR calculate)*
- Use Quotation marks to find an exact phrase, e.g.
  - *“air quality”*
- Use Truncation (\*) or Wildcards (? or #), e.g.
  - *process\** to find process, processes, processed, etc.
  - *wom#n* or *wom?n* finds both women and woman
- Select a specific index by using a prefix; with prefix ti= you find titles beginning with the search word, e.g.
  - *ti=nature*
  - *ti: air quality* searches for titles with the words air and quality
  - *au:smith ti:blend\** searches for authors Smith and titles with blend

# 2. CREATE A SEARCH PLAN

THINK AND PLAN SYSTEMATICALLY

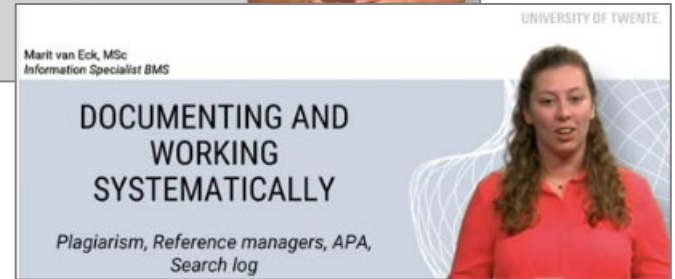
Also note the many videos available to help you with this part...



# 3. CONDUCT THE SEARCH(ES)


## ANTICIPATE WORKING IN CYCLES

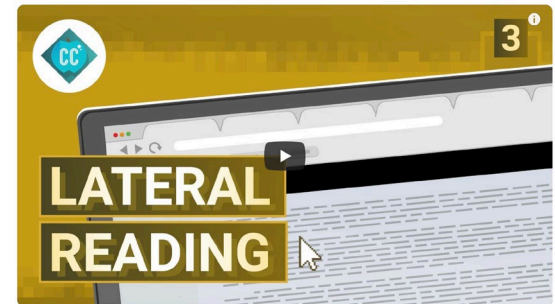
- Use [EduVPN](#) to get access off campus to non-subscription sources (e.g. e-books), use [library plug-in](#) for full collection
- Track progress and save work
- Take time to reflect on and note insights that the search brings



# 4. SCREEN THE HITS

## INCLUDE OR EXCLUDE

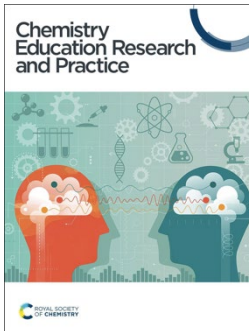
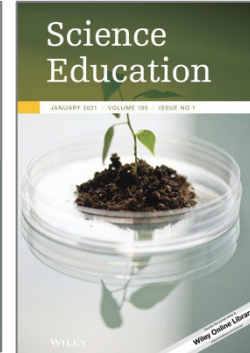
- Quality/credibility/reliability
  - Ask who wrote this? Why?  
=> Look for scientific sources
  - Try lateral reading to check: author, status of journal/publisher, ISBN, number of citations  
=> Clarivate indexing is a reasonable proxy for being peer reviewed  <https://mjl.clarivate.com>
- Relevance
  - Directly related, indirectly related, unrelated
  - Context applicable or too different to be useful (e.g. country, curriculum, grade level)
  - Suitability of article type in light of goals (article types include conceptual, empirical, meta-analysis, etc.)



# 5. ACQUIRE, SCAN, SNOWBALL

CURATE A SET OF SOURCES THAT ARE WORTH YOUR TIME

- Build the set
  - Acquire the sources
  - Scan the full texts
  - Snowball search based on authors, journals and/or shelves
  
- As you do
  - Continue to seek quality and relevance
  - Pull on threads, let AI help you with suggestions
  - Get to know high quality journals related to teaching STEM and your subject area
  - Stay open to surprises



# 6. READ AND TAKE NOTES FROM EACH SOURCE

## EXTRACT KEY INSIGHTS

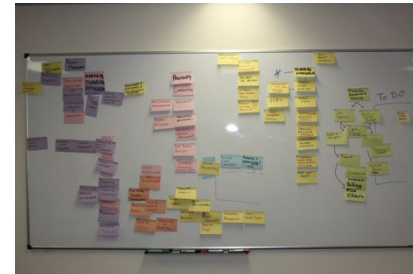
- Read
  - Set the scene: Find atmosphere, time, schedule that fosters focus
  - Prep the task: review your reading goal(s) and Preview the text
  - Be kind to yourself: Break up reading tasks, pace yourself
  - Check your understanding: Note questions to answer as you read; look up words you don't know
- Take notes
  - Highlight judiciously (be selective now)
  - Paraphrase specific, relevant points and mark where those are discussed
  - Connect to your own prior knowledge, experiences, ideas, wonderings
  - Summarize big ideas if that meets your goal(s)



# 7. ANALYZE NOTES, GROUP ACCORDINGLY

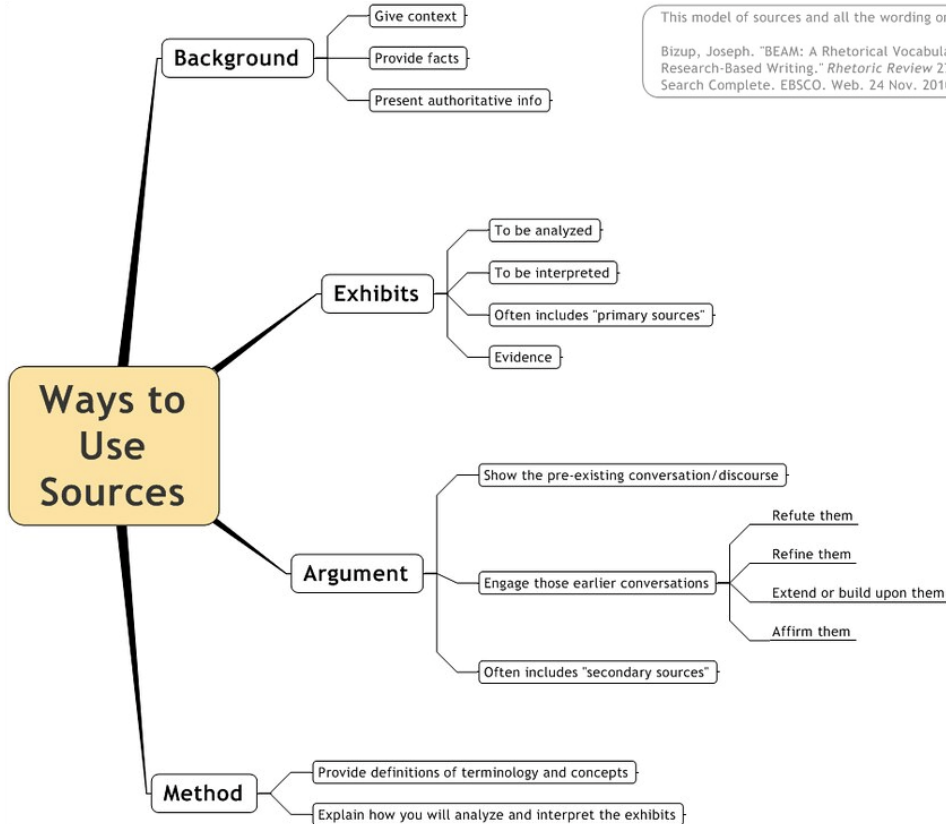
MAKE SENSE OF THE INFORMATION

- Sort and group
  - Deductively (top-down/search):  
Look for issues related related to a specific topic and cluster those together
  - Inductively (bottom-up/browse):  
Cluster similar issues and label the group with descriptive theme
- Visualize ideas within and/or across groups
  - Hierarchy, relationship, matrix/table, process, etc...



# 8. CONNECT THEMES TO PURPOSE(S)

ITS OK IF NOT ALL LITERATURE GETS USED



This model of sources and all the wording on this graphic comes from:  
 Bizup, Joseph. "BEAM: A Rhetorical Vocabulary for Teaching Research-Based Writing." *Rhetoric Review* 27.1 (2008): 72-86. Academic Search Complete. EBSCO. Web. 24 Nov. 2010.

| BEAM Method |            |                                                                                                                                       |
|-------------|------------|---------------------------------------------------------------------------------------------------------------------------------------|
| <b>B</b>    | Background | used for general information, facts, to provide context                                                                               |
| <b>E</b>    | Exhibit    | used as an example for explication, analysis, or interpretation                                                                       |
| <b>A</b>    | Argument   | used to engage in an existing argument by another writer and which You will affirm, dispute, refine, or extend the argument.          |
| <b>M</b>    | Method     | used as a template. For example, using a similar style or copying the research methods. May not be used until upper division courses. |

Alternative: Sort by location in document

- Introduction/problem statement  
Literature that sets the stage for a study
- Theoretical framework  
Literature about what will be studied/analyzed
- Methods  
Literature on how the study is conducted
- Discussion  
Any of the above plus other relevant/related issues, often to compare/contrast with findings

# 9. WRITE

## BOTH TO THINK AND TO COMMUNICATE

- Do
  - Use sources according to their purpose
  - Use sources to bolster your line of reasoning (e.g. provide evidence, examples, clarification or background information)
  - Assume that the reader is an academic, like your teachers
  - Expect to develop ideas through the process of writing
  
- Don't
  - Simply offer up a bunch of ideas like a tapas platter
  - Leave the reader guessing, "What is the point here?"
  - Assume that the reader knows the source
  - Expect perfection in a first draft

### VOORBEELD

#### Hoe helpt de literatuur met je eigen betoog?

- Bij IVD leren we de termen "instrumenteel begrip" en "relationeel begrip". Richard Skemp heeft in een heel interessant artikel die termen gedefinieerd en beschreven wat de voor- en nadelen ervan zijn en levert dus handvatten voor het maken van een afweging voor bepaalde keuzes in je didactische aanpak.
  
- Verwijzing A: "*We hebben gekozen voor een les die toewerkt naar relationeel begrip (Skemp, 1976).*"  
=> Dit is niet meer dan een verwijzing naar een plek waar we eventueel een argument voor deze keuze zou kunnen vinden.  
=> Het geeft echter niet aan dat de student daarover nagedacht heeft.  
=> De inhoud van de artikel wordt nu eigenlijk niet gebruikt.
  
- Verwijzing B: "*We hebben gekozen voor een les die toewerkt naar relationeel begrip, aangezien de concepten die we introduceren vaker terugkomen en het op die manier voor leerlingen makkelijker zal zijn om hun toepassing te generaliseren naar nieuwe situaties (Skemp, 1976).*"  
=> Dit is goed.

# 10. CITE

## MAKE YOUR READING/WRITING/REFERENCING TRANSPARENT

- Consider using [CiteWhileYouWrite \(CWYW\)](#) tools (e.g. EndNote, Mendeley, Zotero)
- Cite according to [APA 7](#)
  - Visit [Purdue's Online Writing Lab](#)
  - See also back of OvO book by Van der Donk & Van Lanen
- Include only the sources that are part of the written story (thus, sources only used for your own background reading should not need to be cited)

Citation Manager Comparison Table

|                                     | Zotero                                                                                                                                                         | Mendeley                                                                                          | EndNote                                                                           | EndNote Web                                                                          |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Access                              | Zotero software with browser add-on (Firefox and Chrome).                                                                                                      | Desktop software, but can sync with an online account which is editable                           | Desktop software with an online version (EndNote Web)                             | Web-based                                                                            |
| Where is my database stored?        | Local computer with web based syncing between computers.                                                                                                       | Local computer with web based syncing between computers                                           | Local Computer with cloud storage and syncing via EndNote Web                     | Web-based                                                                            |
| How does it work?                   | Detect citations that can be captured from databases or web pages. Search and import records using PMID, DOI, or ISBN. Extract citation information from PDFs. | Import from many popular databases. Extract citation information from PDFs.                       | Export from databases into EndNote. Can search catalogs from within EndNote.      | Browser bookmarklet can import from many databases. Can also import using text files |
| Ability to work offline             | Yes                                                                                                                                                            | Yes                                                                                               | Yes                                                                               | No                                                                                   |
| Cost                                | Free to anyone                                                                                                                                                 | Free. UChicago faculty, students, and staff can register through Web of Science for more features | \$80 via On the Hub website (students) Departments can purchase EndNote for \$75. | Free to UChicago faculty, students, and staff                                        |
| Word-processor compatibility        | MS Word, Google Docs, Open Office                                                                                                                              | MS Word, Open Office, LaTeX                                                                       | Microsoft Word, OpenOffice (EndNote X3+), Pages (X4+)                             | MS Word                                                                              |
| Import from Library databases       | Yes                                                                                                                                                            | Yes                                                                                               | Direct export from specific databases                                             | Yes                                                                                  |
| Import from Library Catalog         | As of summer 2022, no, but expected.                                                                                                                           | Yes                                                                                               | Yes                                                                               | Yes                                                                                  |
| Find It! Integration                | Yes, via Library Lookup feature                                                                                                                                | No                                                                                                | Yes, but must be configured                                                       | Yes                                                                                  |
| Import citation info from web pages | Yes, also archives the page and you can add annotations                                                                                                        | Yes, with a bookmark for a limited number of sites (mostly publishers or databases)               | No                                                                                | Yes, with bookmarklet                                                                |
| Manage large libraries              | Easy                                                                                                                                                           | Moderate to difficult                                                                             | Easy                                                                              | Moderate to difficult                                                                |
| Storage capacity                    | Unlimited local storage. Unlimited data syncing if you use your UChicago                                                                                       | Unlimited local storage and data syncing; 2GB personal and 100MB                                  | Unlimited local storage. Software purchase provides term access to                | Limited to 10,000 citations                                                          |

# LINKS

## TO VIDEOS OR TOOLS DESCRIBED DURING THIS PRESENTATION

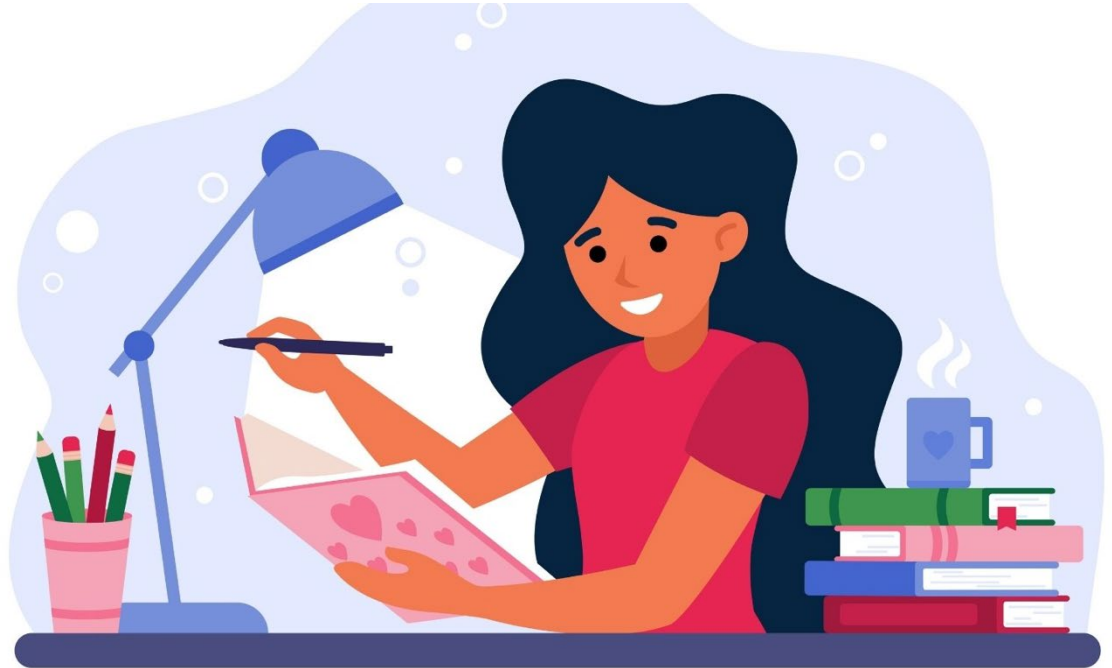
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- University of Twente micro-lectures series (some are dated):
  - Series 1: [Introductory lectures](#)
  - Series 2: [Intermediate lectures](#)
  - Series 3: [Advanced lectures](#)
  
- YouTube videos :
  - [The BEAM method](#) to determine the purpose for which (pieces of) information can be used(introduced by Bizup)
  - [Lateral reading](#) to determine the quality of non-academic sources (same basic strategy can be applied to scientific sources)
  
- Tools:
  - Access: [EduVPN](#) for non-subscription sources; [library plug-in](#) for full collection
  - Databases for education: [ERIC](#), [Web of Science](#), [Scopus](#), [PsycINFO](#)
  - [ERIC thesaurus](#)
  - [Boolean operator cheat sheet](#)
  - [Reference software comparison chart](#)
  - [APA7 examples](#); see also the [APA7 at Online Writing Lab \(OWL\) at Purdue](#)

# MAKING USE OF SCIENTIFIC LITERATURE

TOP 10 TIPS (ROUGHLY IN THIS ORDER, BUT DEFINITELY NOT ALWAYS)

1. Articulate goals
2. Create plan
3. Conduct search
4. Screen hits
5. Scan texts
6. Read sources
7. Analyze notes
8. Link ideas
9. Write text
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# REVISITING OBJECTIVES

WERE THEY REACHED? REMAINING QUESTIONS? OTHER THOUGHTS?

- Participants will be able to (better):
  - Understand (more about) 10 key tasks for making use of scientific literature
  - Know where to access tips and tools for each task
  - Organize their literature use processes accordingly
- Participants may also (better):
  - Appreciate literature use as a process, not an event
  - Value searching as strategic exploration
  - Recognize scholarship as (ongoing) conversation
- Contact
  - [susan.mckenney@utwente.nl](mailto:susan.mckenney@utwente.nl)
  - [www.educationaldesignresearch.org](http://www.educationaldesignresearch.org)



# VERVOLG

## HOE NU VERDER?

| Datum                         | Wat                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Vóór college 2</i>         | <ul style="list-style-type: none"><li>• Neem de studiewijzer op Canvas door</li><li>• Lees verder uit boek de rest van hst. 3 (na p. 94) en hst. 4 'richten'. Neem ook de slides nogmaals door.<ul style="list-style-type: none"><li>• Werk aan onderdeel 6 in het onderzoeksplan (Studiewijzer, bijlage III).</li><li>• Werk aan onderdeel 7 in bullets: enkele concepten voor 1<sup>e</sup> versie, gebruik Susan's collegedeel</li></ul></li><li>• Maak op Canvas een feedbackgroep (per vak <b>3-4 personen/groep</b>). Zie people=&gt;groups; jullie kunnen zelf inschrijven.</li><li>• Vooraf je onderzoeksplan tot dan toe (6 en 7 tot zo ver) inleveren in groep met wie je tijdens college hebt gepraat, <b>uiterlijk vrijdag 6 december om 18.00</b>.</li><li>• Neem de andere onderzoeksplannen door om tijdens het college feedback te kunnen geven.</li></ul> |
| <b>College 2: 12 december</b> | <ul style="list-style-type: none"><li>- <b>Feedback op onderzoeksplan tot dan toe in groepjes</b></li><li>- <b>Plannen, verzamelen, ethiek</b></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| College 3: 19 december        | Vervolg dataverzameling en ethiek                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| College 4: 6 februari 2025    | Pitch onderzoeksplan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |