BT 623 Research Methodology

Literature Search

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RECAP

- Research is the systematic collection, analysis and interpretation of data to answer a certain question or solve a problem.
- It requires clear objectives and a plan (it is not aimlessly looking for something in order to come across a solution).

- Crucial to follow cascading scientific steps when conducting one's research which demands a clear statement of the problem.

- It builds on existing data, using both positive and negative findings.

- New data should be *systematically* collected and analyzed to answer the original research objectives.

IDENTIFYING THE RESEARCH PROBLEM

- The foundation of the research process
- It all begins with a question

Finding a Research Question

- From where ???????
  - Curiosity
  - Information Gaps
  - Controversy
  - Replication
  - Literature Review
  - Other People
  - …???

THE RESEARCH PROBLEM

- Broadly speaking, any question that you want answered and any assumption or assertion that you want to challenge or investigate can become a research problem or a research topic for your study.

THE RESEARCH PROBLEM

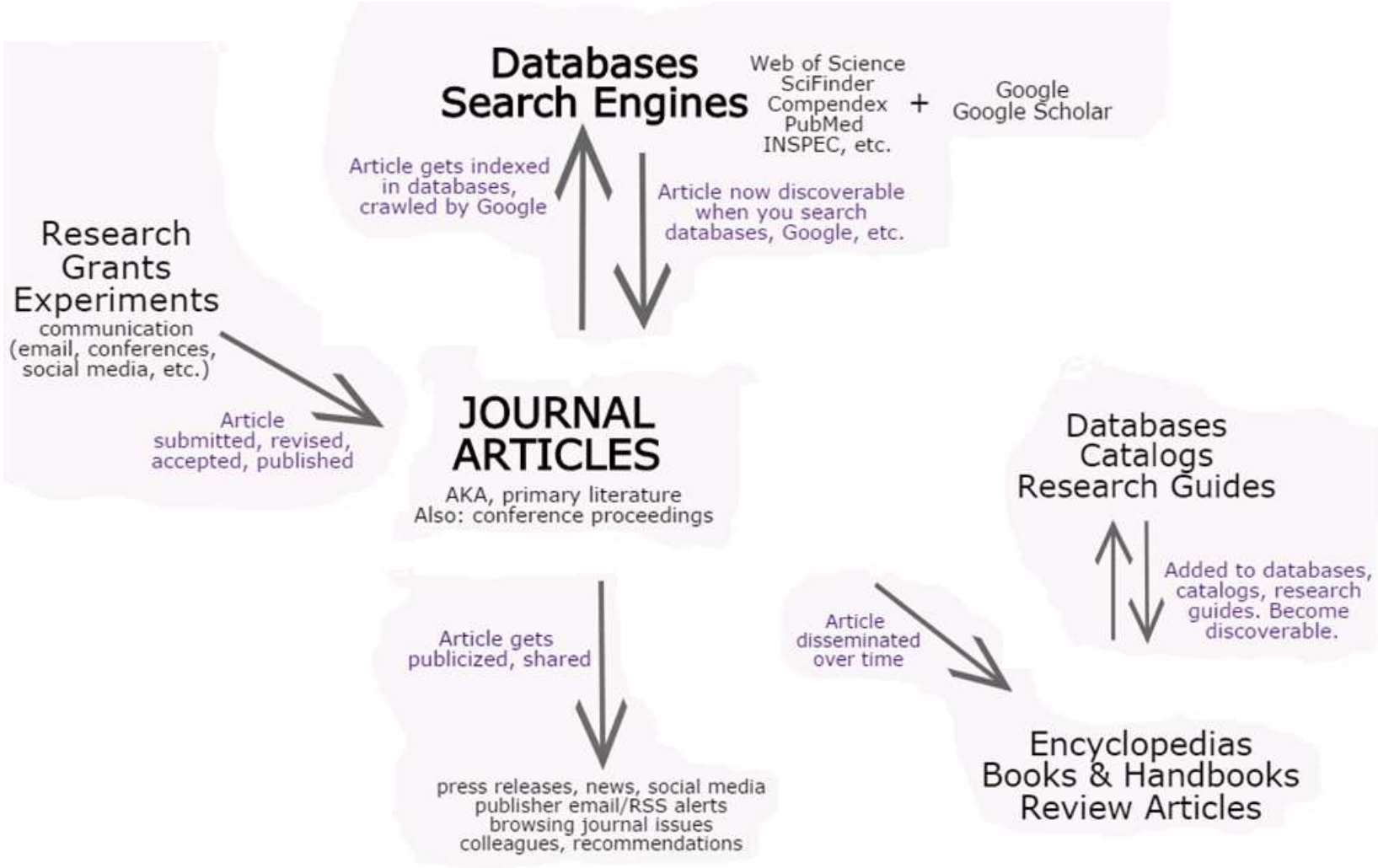
- “Potential research questions may occur to us on a regular basis, but the process of formulating them in a meaningful way is not at all an easy task”

(Powers, Meenaghan and Twoomey 1985: 38)

- ‘First identifying and then specifying a research problem might seem like research tasks that ought to be easy and quickly accomplished. However, such is often not the case’

(Yegidis & Weinback 1991: 35)

Flow of Scientific Information



THE RESEARCH PROCESS

- *involves selection of methods and procedures appropriate for your research journey*

THE RESEARCH PROCESS			
Phase	**PHASE I**	**PHASE II**	**PHASE III**
Main task	***DECIDING*** ↓ **WHAT** (*research questions to answer?*)	***PLANNING*** ↓ **HOW** (*to gather evidence to answer the research questions*)	***UNDERTAKING*** ↓ **COLLECTING** (*the required information*)

LITERATURE REVIEW

"…a literature review surveys scientific articles, books, medical journals, dissertations and other sources […] relevant to a particular issue, area of research, or theory, providing a description, summary, and critical evaluation of each work."


SO MANY
BOOKS;
SO LITTLE
TIME.

SPECIFIC PURPOSES, FUNCTIONS AND BENEFITS OF A LITERATURE REVIEW

A. ***Prevents duplication of what has already been done*** (Some duplication or confirmation of research is necessary, but excessive duplication is wasteful)

B. ***Help to identify new areas where research is needed*** (and how new research can contribute)

C. ***Provides ideas and direction for:***

1. How to handle problems encountered
2. Techniques
3. Sources of data
4. Novel approaches for the research

D. ***Helps develop insights on design of your own study by showing what has (and has not) been previously successful***

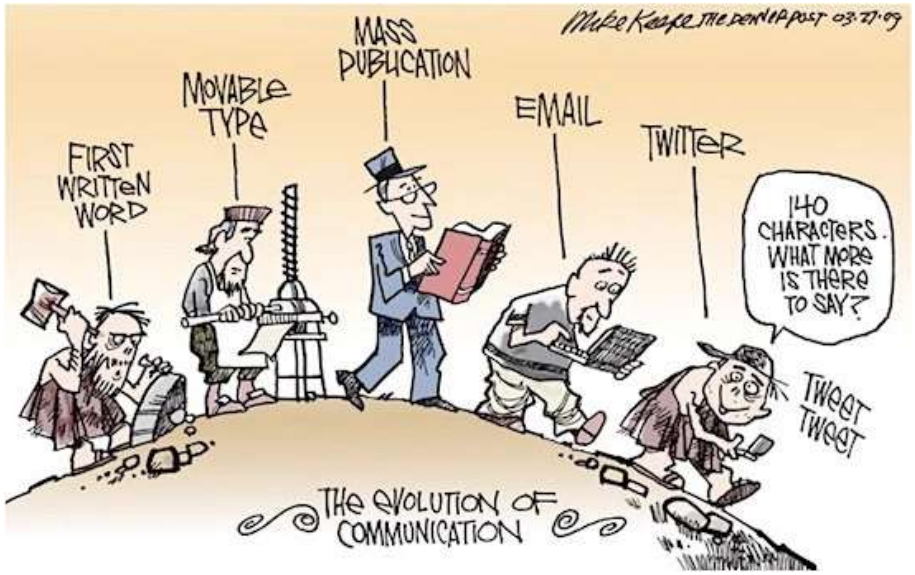
E. ***May reveal conceptual insights into the problem and/or suggest possible hypotheses for your own study***

A formal (written) literature review may not be necessary for all studies.

But research should never be undertaken without a literature review. To do so risks in ***unneeded duplication, repeating mistakes and inefficient research***

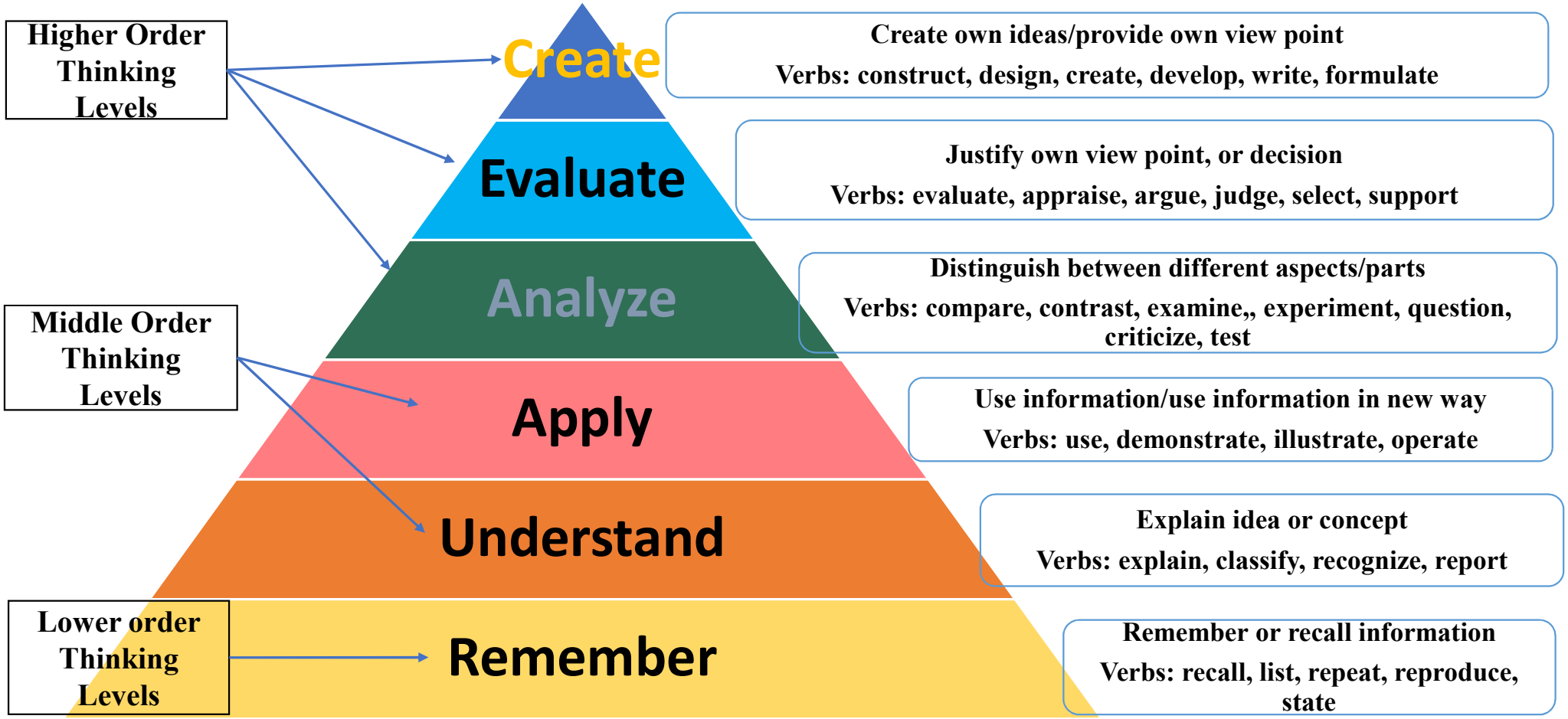
Continuous process in the journey

- Not something you do now and forget about
- Your field is constantly evolving and changing



Literature Review: Evolving Scenerio

Why is it so important to write critically?
Bloom's Taxomony: Cognitive Domain (1956) as revised by Anderson & Krathwohl (2001)



TYPES OF LITERATURE REVIEW

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Table 1 Main review types characterized by methods used

		Methods used (SALSA)			
Label	Description	Search	Appraisal	Synthesis	Analysis
Critical review	Aims to demonstrate writer has extensively researched literature and critically evaluated its quality. Goes beyond mere description to include degree of analysis and conceptual innovation. Typically results in hypothesis or model	Seeks to identify most significant items in the field	No formal quality assessment. Attempts to evaluate according to contribution	Typically narrative, perhaps conceptual or chronological	Significant component: seeks to identify conceptual contribution to embody existing or derive new theory
Literature review	Generic term: published materials that provide examination of recent or current literature. Can cover wide range of subjects at various levels of completeness and comprehensiveness. May include research findings	May or may not include comprehensive searching	May or may not include quality assessment	Typically narrative	Analysis may be chronological, conceptual, thematic, etc.
Mapping review/ systematic map	Map out and categorize existing literature from which to commission further reviews and/or primary research by identifying gaps in research literature	Completeness of searching determined by time/scope constraints	No formal quality assessment	May be graphical and tabular	Characterizes quantity and quality of literature, perhaps by study design and other key features. May identify need for primary or secondary research
Meta-analysis	Technique that statistically combines the results of quantitative studies to provide a more precise effect of the results	Aims for exhaustive, comprehensive searching. May use funnel plot to assess completeness	Quality assessment may determine inclusion/ exclusion and/or sensitivity analyses	Graphical and tabular with narrative commentary	Numerical analysis of measures of effect assuming absence of heterogeneity
Mixed studies review/mixed methods review	Refers to any combination of methods where one significant component is a literature review (usually systematic). Within a review context it refers to a combination of review approaches for example combining quantitative with qualitative research or outcome with process studies	Requires either very sensitive search to retrieve all studies or separately conceived quantitative and qualitative strategies	Requires either a generic appraisal instrument or separate appraisal processes with corresponding checklists	Typically both components will be presented as narrative and in tables. May also employ graphical means of integrating quantitative and qualitative studies	Analysis may characterise both literatures and look for correlations between characteristics or use gap analysis to identify aspects absent in one literature but missing in the other
Overview	Generic term: summary of the [medical] literature that attempts to survey the literature and describe its characteristics	May or may not include comprehensive searching (depends whether systematic overview or not)	May or may not include quality assessment (depends whether systematic overview or not)	Synthesis depends on whether systematic or not. Typically narrative but may include tabular features	Analysis may be chronological, conceptual, thematic, etc.
Qualitative systematic review/qualitative evidence synthesis	Method for integrating or comparing the findings from qualitative studies. It looks for 'themes' or 'constructs' that lie in or across individual qualitative studies	May employ selective or purposive sampling	Quality assessment typically used to mediate messages not for inclusion/exclusion	Qualitative, narrative synthesis	Thematic analysis, may include conceptual models

 Health Information and Libraries Journal, **26**, pp.91–108

TYPES OF LITERATURE REVIEW

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Table 1 *Continued*

Label	Description	Methods used (SALSA)			
		Search	Appraisal	Synthesis	Analysis
Rapid review	Assessment of what is already known about a policy or practice issue, by using systematic review methods to search and critically appraise existing research	Completeness of searching determined by time constraints	Time-limited formal quality assessment	Typically narrative and tabular	Quantities of literature and overall quality/direction of effect of literature
Scoping review	Preliminary assessment of potential size and scope of available research literature. Aims to identify nature and extent of research evidence (usually including ongoing research)	Completeness of searching determined by time/scope constraints. May include research in progress	No formal quality assessment	Typically tabular with some narrative commentary	Characterizes quantity and quality of literature, perhaps by study design and other key features. Attempts to specify a viable review
State-of-the-art review	Tend to address more current matters in contrast to other combined retrospective and current approaches. May offer new perspectives on issue or point out area for further research	Aims for comprehensive searching of current literature	No formal quality assessment	Typically narrative, may have tabular accompaniment	Current state of knowledge and priorities for future investigation and research
Systematic review	Seeks to systematically search for, appraise and synthesis research evidence, often adhering to guidelines on the conduct of a review	Aims for exhaustive, comprehensive searching	Quality assessment may determine inclusion/exclusion	Typically narrative with tabular accompaniment	What is known; recommendations for practice. What remains unknown; uncertainty around findings, recommendations for future research
Systematic search and review	Combines strengths of critical review with a comprehensive search process. Typically addresses broad questions to produce 'best evidence synthesis'	Aims for exhaustive, comprehensive searching	May or may not include quality assessment	Minimal narrative, tabular summary of studies	What is known; recommendations for practice. Limitations
Systematized review	Attempt to include elements of systematic review process while stopping short of systematic review. Typically conducted as postgraduate student assignment	May or may not include comprehensive searching	May or may not include quality assessment	Typically narrative with tabular accompaniment	What is known; uncertainty around findings; limitations of methodology
Umbrella review	Specifically refers to review compiling evidence from multiple reviews into one accessible and usable document. Focuses on broad condition or problem for which there are competing interventions and highlights reviews that address these interventions and their results	Identification of component reviews, but no search for primary studies	Quality assessment of studies within component reviews and/or of reviews themselves	Graphical and tabular with narrative commentary	What is known; recommendations for practice. What remains unknown; recommendations for future research

LITERATURE REVIEW AS A PROCESS

STEPS

Four steps involved in conducting a literature review:

- Searching for the existing literature in your area of study.
- Reviewing the selected literature.
- Developing a theoretical framework.
- Developing a conceptual framework.

The skills required for these tasks are different. Developing theoretical and conceptual frameworks is more difficult than the other tasks.

SEARCHING FOR THE EXISTING LITERATURE

- First Step is to have at least some idea of the broad subject area and of the problem you wish to investigate, in order to set parameters for your search.

- Next, compile a bibliography for this broad area.

- Three main sources that you can use to prepare a bibliography:

  (a) books;

  (b) journals;

  (c) the Internet.

BOOKS

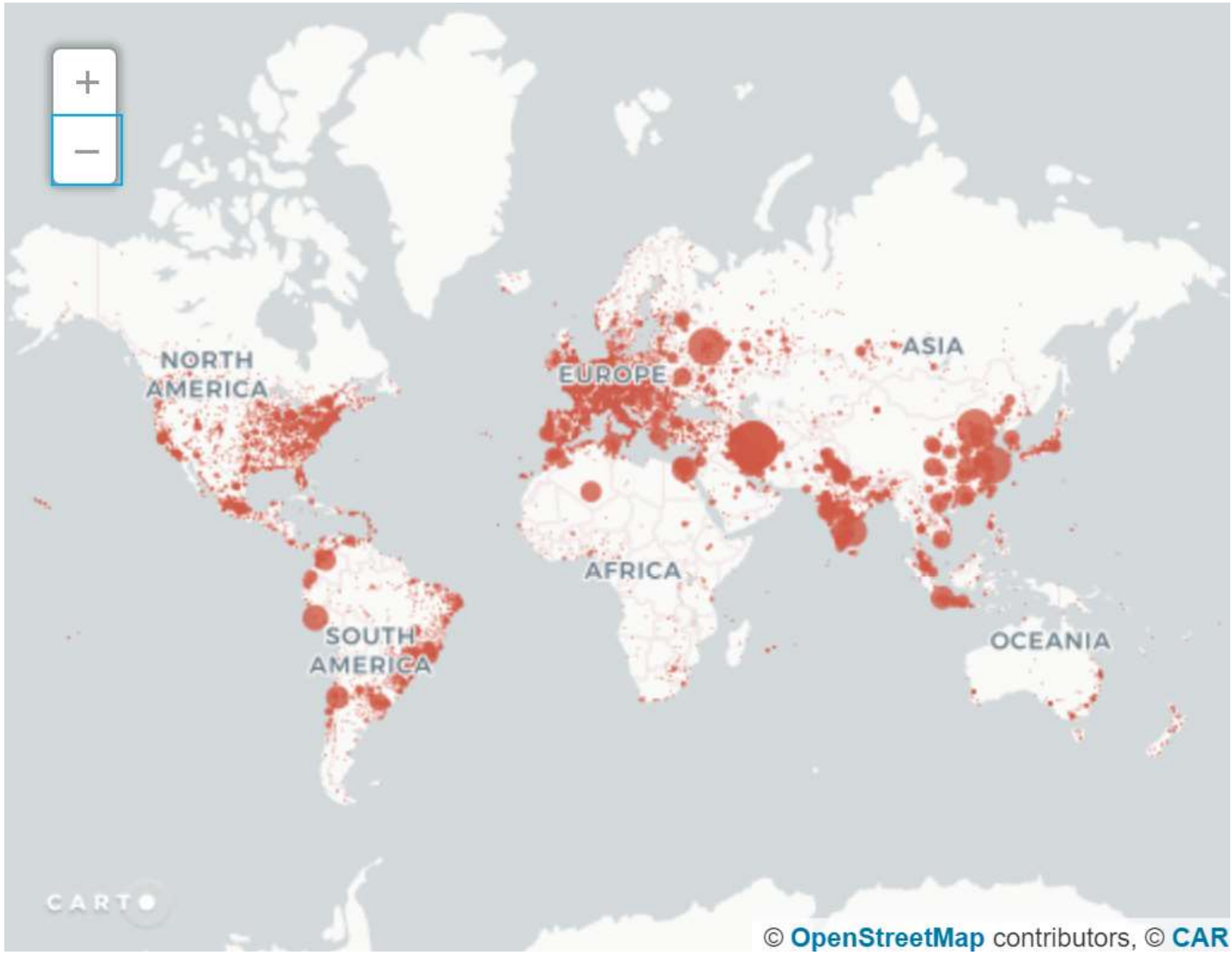
- Though books are a central part of any bibliography, they have their disadvantages as well as advantages.
- The main advantage is that the material published in books is usually important and of good quality, and the findings are ‘integrated with other research to form a coherent body of knowledge’.
- The main disadvantage is that the material is not completely up to date, as it can take a few years between the completion of a work and its publication in the form of a book.

JOURNALS

- Journals provide you with the most up-to-date information, even though there is often a gap of two to three years between the completion of a research project and its publication in a journal.
- You should select as many journals as you possibly can, though the number of journals available depends upon the field of study – certain fields have more journals than others.
- As with books, you need to prepare a list of the journals you want to examine for identifying the literature relevant to your study. This can be done in a number of ways.

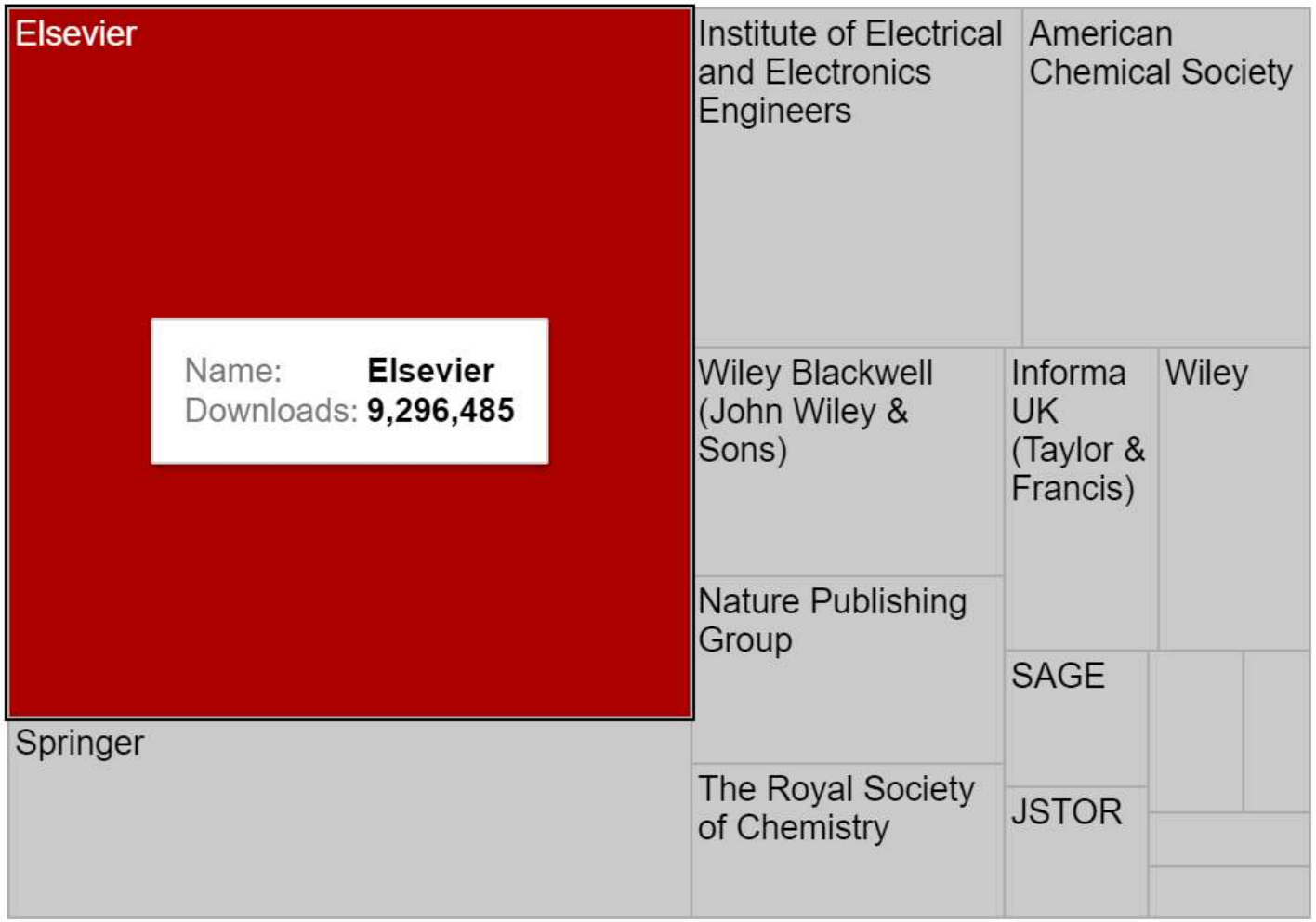
INTERNET

- An Internet search basically identifies all material in the database of a search engine that contains the keywords you specify, either individually or in combination.
- It is important that you choose words or combinations of words that other people are likely to use.
- Most search facilities use Boolean logic, which allows three types of basic search “AND”, “OR” and “NOT”.’
- With practice you will become more efficient and effective in using keywords in combination with AND, OR and NOT, and so learn to narrow your search to help you identify the most relevant references.



"Journal paywalls are an example of something that works in the reverse direction, making communication less open and efficient."

-Alexandra Elbakyan, Sci-Hub founder.


Elsevier
Name: Elsevier
Downloads: 9,296,485
Springer
Institute of Electrical and Electronics Engineers
American Chemical Society
Wiley Blackwell (John Wiley & Sons)
Informa UK (Taylor & Francis)
Wiley
Nature Publishing Group
SAGE
The Royal Society of Chemistry
JSTOR

CONFERENCE PROCEEDINGS

- These can be useful in providing the latest research, or research that has not been published.

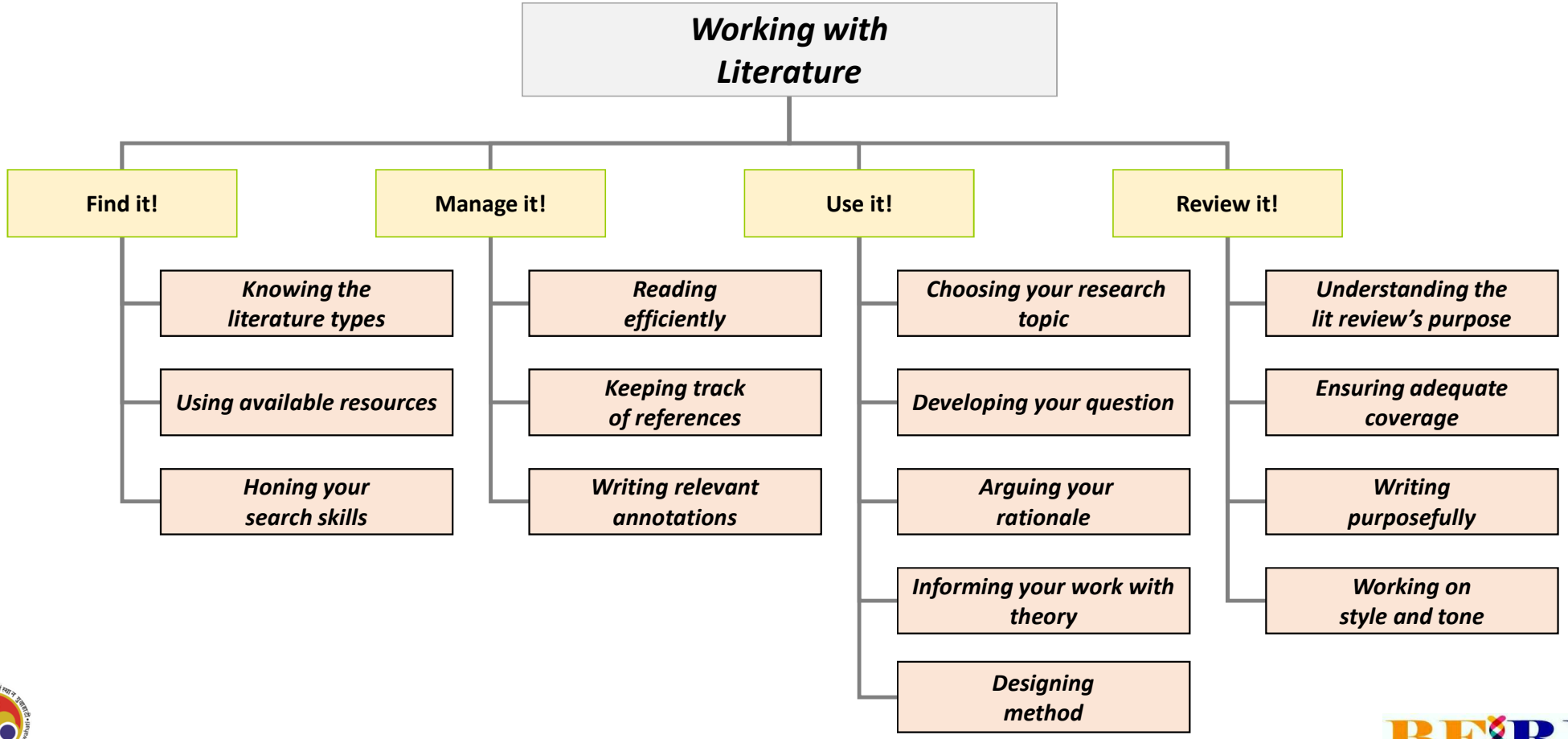
- They are also helpful in providing information about people in different research areas, and so can be helpful in tracking down other work by the same researchers.

GOVERNMENT / CORPORATE REPORTS

- Many government departments and corporations commission carry out research.

- Their published findings can provide a useful source of information, depending on your field of study.

WORKING WITH LITERATURE



REVIEWING THE SELECTED LITERATURE

- Start reading them critically to pull together themes and issues that are of relevance to your study.
- Unless you have a theoretical framework of themes in mind to start with, use separate sheets of paper for each theme or issue you identify as you go through selected books and articles.
- Note whether the knowledge relevant to your theoretical framework has been confirmed beyond doubt.

- Note the theories put forward, the criticisms of these and their basis, the methodologies adopted (study design, sample size and its characteristics, measurement procedures, etc.) and the criticisms of them.
- Examine to what extent the findings can be generalised to other situations.
- Notice where there are significant differences of opinion among researchers and give your opinion about the validity of these differences.
- Ascertain the areas in which little or nothing is known – the gaps that exist in the body of knowledge.

Where is the wisdom we have lost in knowledge?
Where is the knowledge we have lost in information?

~ T.S. Eliot

THANK YOU