بسم الله الرحمن الرحيم

UNIVERSITY OF MALAYA
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Conducting Research:
Literature Search to Writing Review Paper

Part 1:
Systematic Review

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www.researcherid.com/rid/C-2414-2009
http://scholar.google.com/citations

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19th December 2016

All of my presentations are available online at:
https://figshare.com/authors/Nader_Ale_Ebrahim/100797
Link to this presentation: https://dx.doi.org/10.6084/m9.figshare.1100235.v1 (Old version)

Conducting Research: Literature Search to Writing Review Paper

Part 1: Systematic Review

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www.researcherid.com/rid/C-2414-2009
http://scholar.google.com/citations

Read more: Ale Ebrahim, N. (2013). Introduction to the Research Tools mind map. *Research World*, *10*, Article A10.4. Retrieved from https://ssrn.com/abstract=2280007

Abstract

Abstract: "Research Tools" can be defined as vehicles that broadly facilitate research and related activities. "Research Tools" enable researchers to collect, organize, analyze, visualize and publicized research outputs. Dr. Nader has collected over 700 tools that enable students to follow the correct path in research and to ultimately produce high-quality research outputs with more accuracy and efficiency. It is assembled as an interactive Web-based mind map, titled "Research Tools", which is updated periodically. "Research Tools" consists of a hierarchical set of nodes. It has four main nodes: (1) Searching the literature, (2) Writing a paper, (3) Targeting suitable journals, and (4) Enhancing visibility and impact of the research. In this workshop some tools as an example from the part 1 (Searching the literature) will be described. The e-skills learned from the workshop are useful across various research disciplines and research institutions.

Keywords: Literature Review, Improve citation, Research impact, Open access, h-index, Research Visibility

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Top 10 authors with the highest profile view counts on ResearchGate

Table 11. Top 10 authors with the highest profile view counts on ResearchGate (9th of November, 2015), compared to the same indicator on the 10th of September, 2015.

AUTHOR NAME	SEPTEMBER 10th (2015) PROFILE VIEWS	NOVEMBER 9th (2015) PROFILE VIEW	MISMATCH (%)
Nader Ale Ebrahim	19,821	13,281	67.00
Chaomei Chen	7,760	3,937	50.73
Loet Leydesdorff	4,227	1,758	41.59
Bakthavachalam Elango	2,883	1,756	60.91
Zaida Chinchilla	5,840	1,569	26.87
Mike Thelwall	4,297	1,568	36.49
Lutz Bornmann	3,129	1,439	45.99
Wolfgang Glänzel	3,012	1,301	43.19
Kevin Boyack	3,256	1,135	34.86
Peter Ingwersen	2,335	1,025	43.90

Source: Martín-Martín, A., Orduna-Malea, E., Ayllón, J. M., & López-Cózar, E. D. (2016). The counting house, measuring those who count: Presence of Bibliometrics, Scientometrics, Informetrics, Webometrics and Altmetrics in Google Scholar Citations, ResearcherID, ResearchGate, Mendeley, & Twitter. *EC3 Reseach Group: Evaluación de la Ciencia y de la Comunicación Científica Universidad de Granada and Universidad Politécnica de Valencia (Spain), In Progress,*. doi:10.13140/RG.2.1.4814.4402

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November 2016 Top 100 Technology Experts to Follow on Twitter

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Source: http://www.evancarmichael.com/library/evan-carmichael2/November-2016-Top-100-Technology-Experts-to-Follow-on-Twitter.html

WORKSHOP SERIES TOPICS

SESSION	DATE	TIME	TOPIC
1	7 September 2016	2.00 – 4.30 p.m.	Citations and its impact to university ranking
2.1	22 September 2016	10.00 a.m. – 12.00	Research Outreach: Wider Visibility to Increase Citation*
2.2		2.00 – 5.00 p.m.	Plain Language Summary: The Common Language of Research & Innovation *
3	28 September 2016	2.00 – 4.30 p.m.	Analysis of bibliometrics information for select the best field of study
4	5 October 2016	2.00 – 4.30 p.m.	A new system for measuring research impact
5	12 October 2016	2.00 – 4.30 p.m.	How to select a brand name for your research interest?
6	19 October 2016	2.00 – 4.30 p.m.	Optimize articles for search engine to improve research visibility
7	26 October 2016	2.00 – 4.30 p.m.	Prepare a pre/post print of your documents for advertisement
8	2 November 2016	2.00 – 4.30 p.m.	Create a publication database for enhancing research visibility
9	9 November 2016	2.00 – 4.30 p.m.	Create a google scholar profile to boost research visibility
10	16 November 2016	2.00 – 4.30 p.m.	Create and maintain an up-to-date researcherid profile
11	23 November 2016	2.00 – 4.30 p.m.	Online repository: improving the research visibility and impact
12	30 November 2016	2.00 – 4.30 p.m.	Kudos: promote your published research reach and impact
13	7 December 2016	2.00 – 4.30 p.m.	Journal selection procedure: select the best journal to ensure the highest citation
14	14 December 2016	2.00 – 4.30 p.m.	Establish your expertise with a science blog
15	21 December 2016	9.00 – 11.30 a.m.	Promote your research work on LinkedIn
16	4 January 2017	9.00 – 11.30 a.m.	Make your data discoverable on a data repository
17	11 January 2017	9.00 – 11.30 a.m.	Microblogging for enhancing the research accessibility
18	18 January 2017	9.00 – 11.30 a.m.	Make an audio slides for your research
19	25 January 2017	2.00 – 4.30 p.m.	Academic social networking (ResearchGate & Academia) and the re-search impact
22	1 March 2017	2.00 – 4.30 p.m.	"Document publishing tools" for research visibility improvement
23	8 March 2017	2.00 – 4.30 p.m.	Publication's e-mail marketing procedure
24	15 March 2017	2.00 – 4.30 p.m.	The use of reference management tools to improve citation
25	22 March 2017	2.00 – 4.30 p.m.	Contribute to Wikipedia: an approach to increase research visibility on the web

http://umconference.um.edu.my/ws

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Outline

No.	Topic
Day 1:	
1	What is a literature review
2	Some questions that the review of literature can answer
3	Systematic Review
4	Checklist for reading a review paper
5	Narrow the area of research
6	Review biases
7	Identifying a Research Problem
8	Developing a search strategy, Finding keyword
9	Introduce “Research Tools” Box
10	Selecting keywords
11	Finding proper articles

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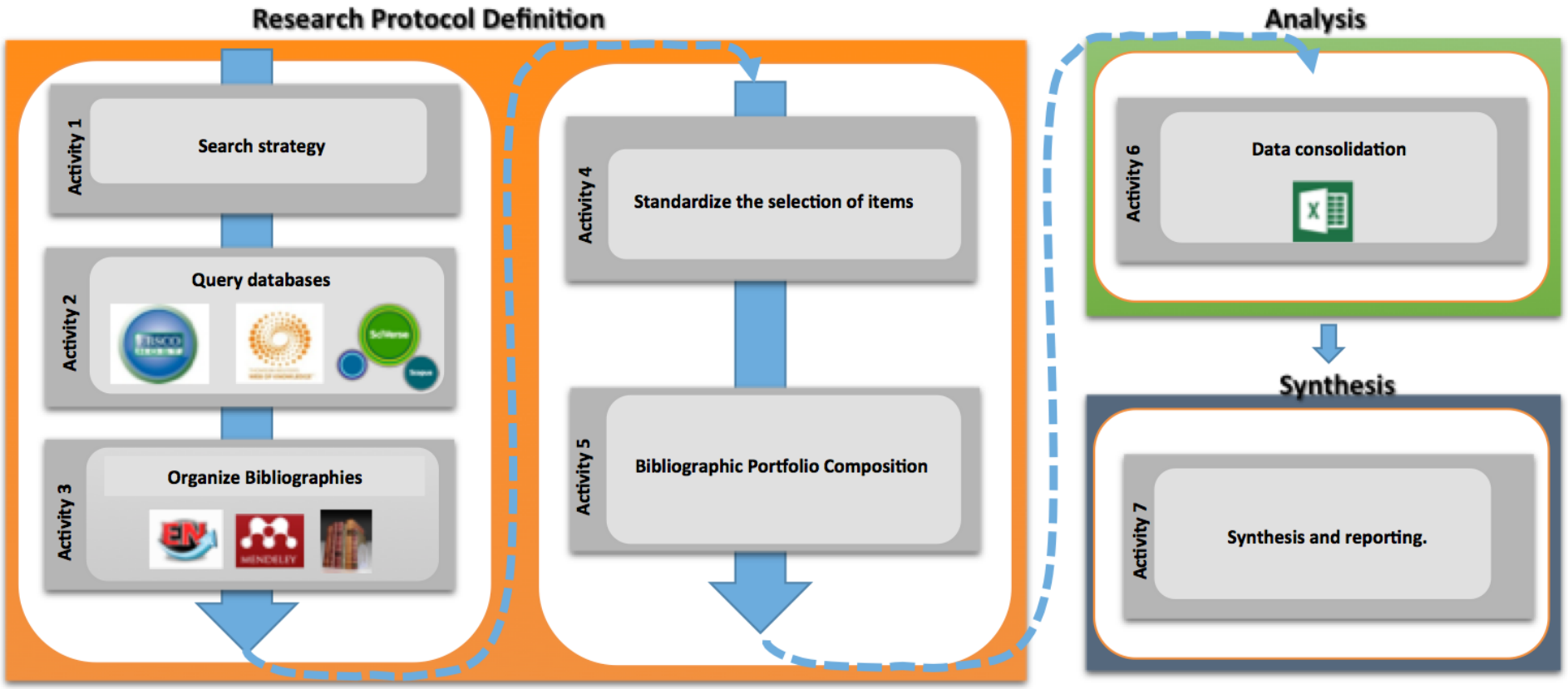
Systematic Review and Bibliometrics: A Step-by-step Guide



Source: Ferenhof, H. A., & Fernandes, R. F. (2016). *Systematic Review and Bibliometrics: A Step-by-step Guide*. Retrieved from http://diva-portal.org/smash/get/diva2:768099/FULLTEXT01

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Problem statements

The search can be time consuming and sometimes tedious task. How can make it easier? How do deal with situations such as:

- “I just join as a new postgraduate student and I am not sure how to do a literature search”
- “I have been in research for some time now but I spend a lot of time to get the articles I want”
- “I am sure I have downloaded the article but I am not able to find it”
- “I wanted to write a new paper, how can I manage the references in the shortest possible time?”
- “I have many references, some of my old papers, and some of my current research. Sometimes, they are so many that I can’t recall where I have kept them in my folders!”
- ……..
- “I have written an article and I am not able to find a proper Journal”
- "I want to increase the citation of my papers, how do I do?"

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What is a literature review

A literature review discusses published information in a particular subject area, and sometimes information in a particular subject area within a certain time period.

A literature review can be just a simple summary of the sources, but it usually has an organizational pattern and combines both summary and synthesis. A summary is a recap of the important information of the source, but a synthesis is a re-organization, or a reshuffling, of that information. It might give a **new interpretation of old material** or **combine new with old interpretations**. Or it might **trace the intellectual progression of the field**, including major debates. And depending on the situation, the literature review may **evaluate the sources and advise the reader** on the most pertinent or relevant

Source: http://writingcenter.unc.edu/handouts/literature-reviews/

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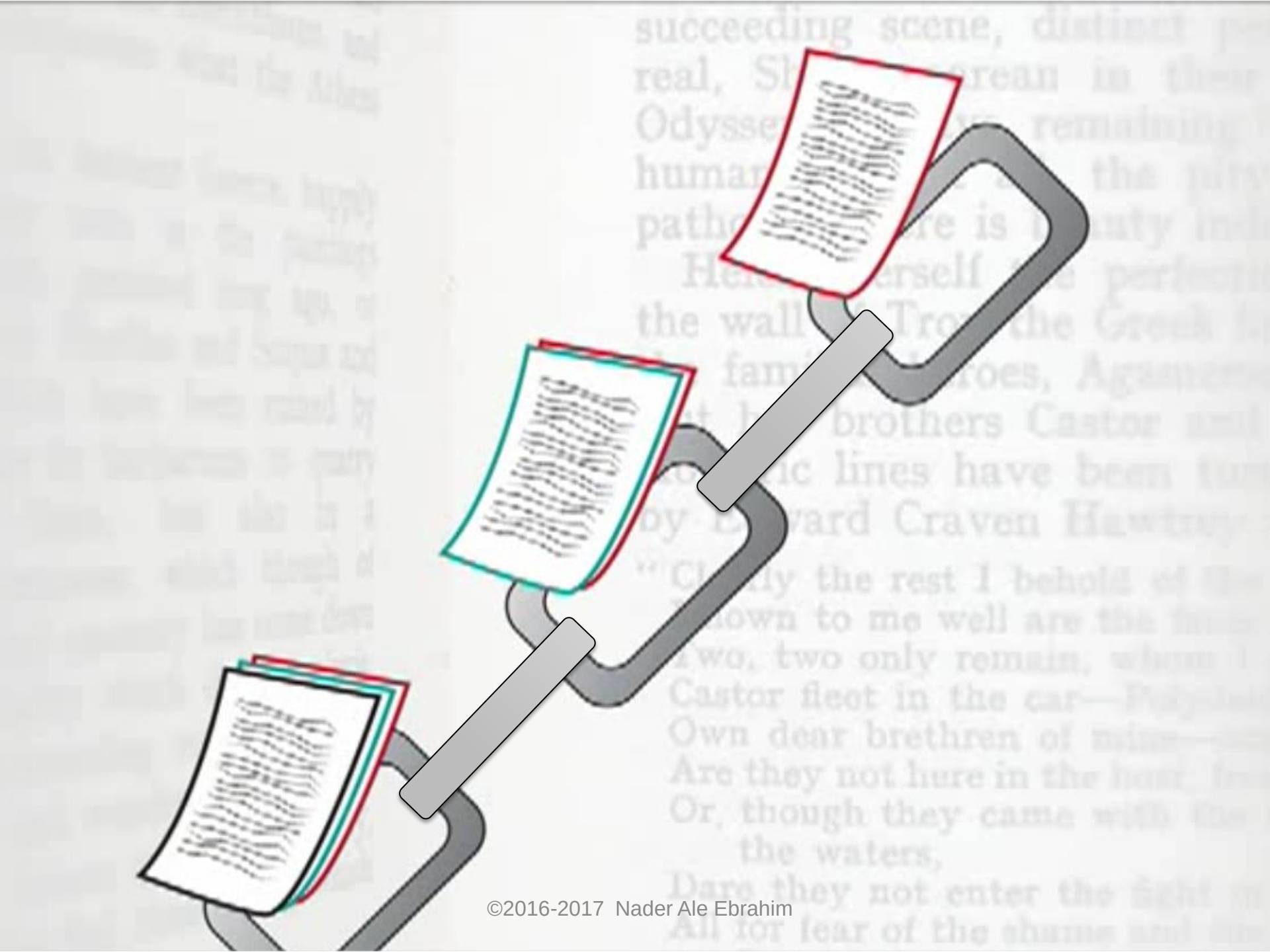

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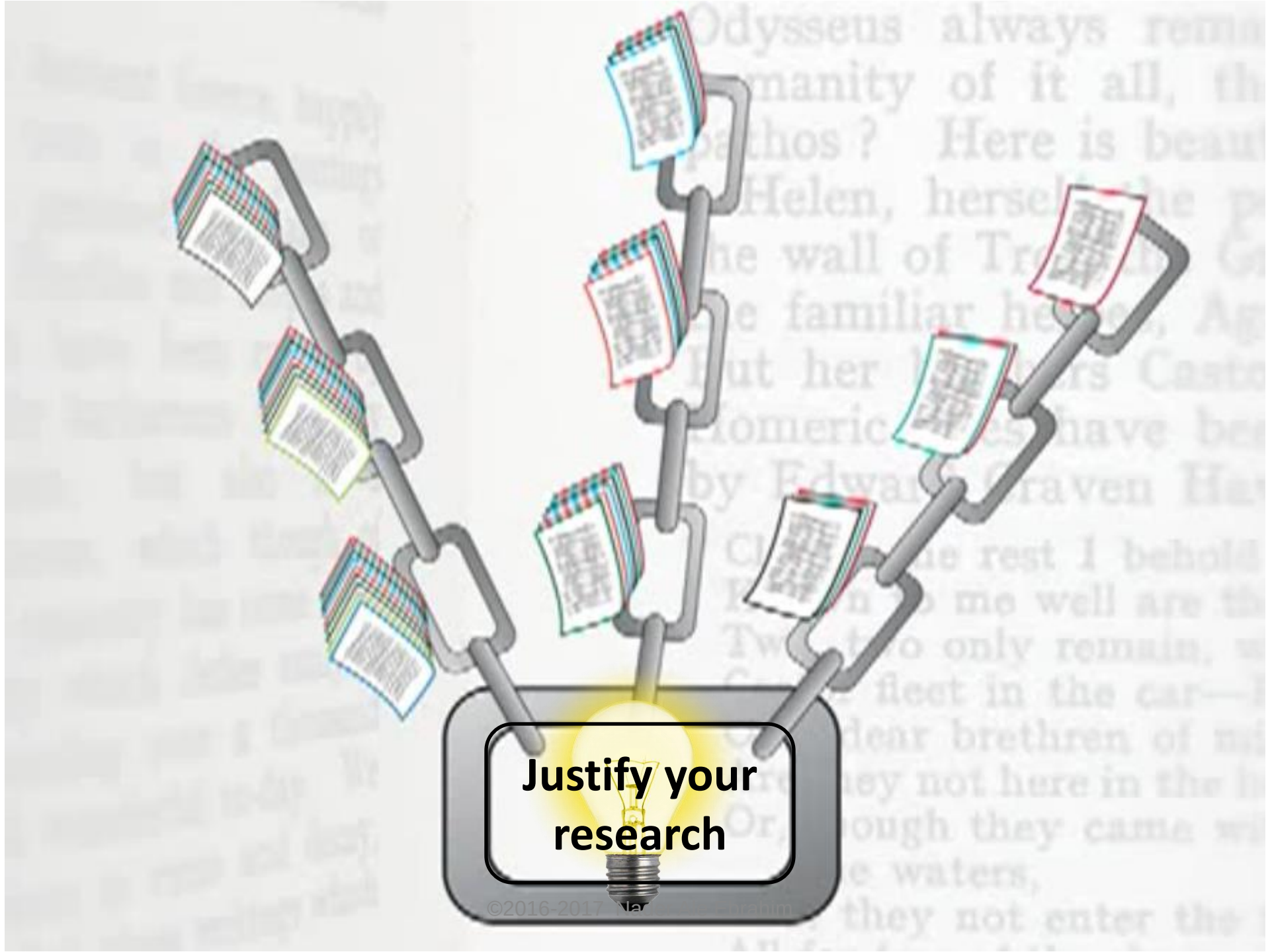
Justify your research

The literature review

In your literature review, you should:

- **clarify your understanding of the field**
- explain the rationale for your research
- place your research within a broader context
- **evaluate the results of previous research**
- **define key concepts and ideas**
- **identify research in related areas that are generalisable or transferable to your topic**
- **identify relevant methodological issues.**

UNE. 2009. The literature review [Online]. University of New England. Available: http://www.une.edu.au/library/eskillsplus/literature/litreview.php [Accessed 25 January 2010].

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The literature review

A literature review ensures that you are at least familiar with the body of research in your field before starting your own investigations. Writing a literature review also provides practice in critical thinking. Once you have applied critical thinking skills to the findings of past researchers, you are in a better position to apply these same skills to your own work.

UNE. 2009. The literature review [Online]. University of New England. Available: http://www.une.edu.au/library/eskillsplus/literature/litreview.php [Accessed 25 January 2010].

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Source: https://storify.com/rasmimddesa/critical-thinking-in-education

Critical reading

Critical reading is the process of reading that goes beyond just understanding a text. Critical reading involves:

- Carefully considering and evaluating the reading
- Identifying the reading's strengths and implications
- Identifying the reading's weaknesses and flaws
- Looking at the 'big picture' and deciding how the reading fits into the greater academic context (the understandings presented in other books and articles on this topic)

Source: http://owll.massey.ac.nz/study-skills/critical-reading.php

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Critical reading

Critical reading often involves asking questions about the reading. In particular, you are examining the strengths and weaknesses of the reading's argument. To do this, you need to consider:

- the reading's background
- its purpose and overall conclusion (claim)
- the evidence used in the reading
- the logical connections between the claim and the evidence
- the reading's balance
- its limitations
- how it relates to other sources and research
- if the reading is based on research, how this research was conducted

Source: http://owll.massey.ac.nz/study-skills/critical-reading.php

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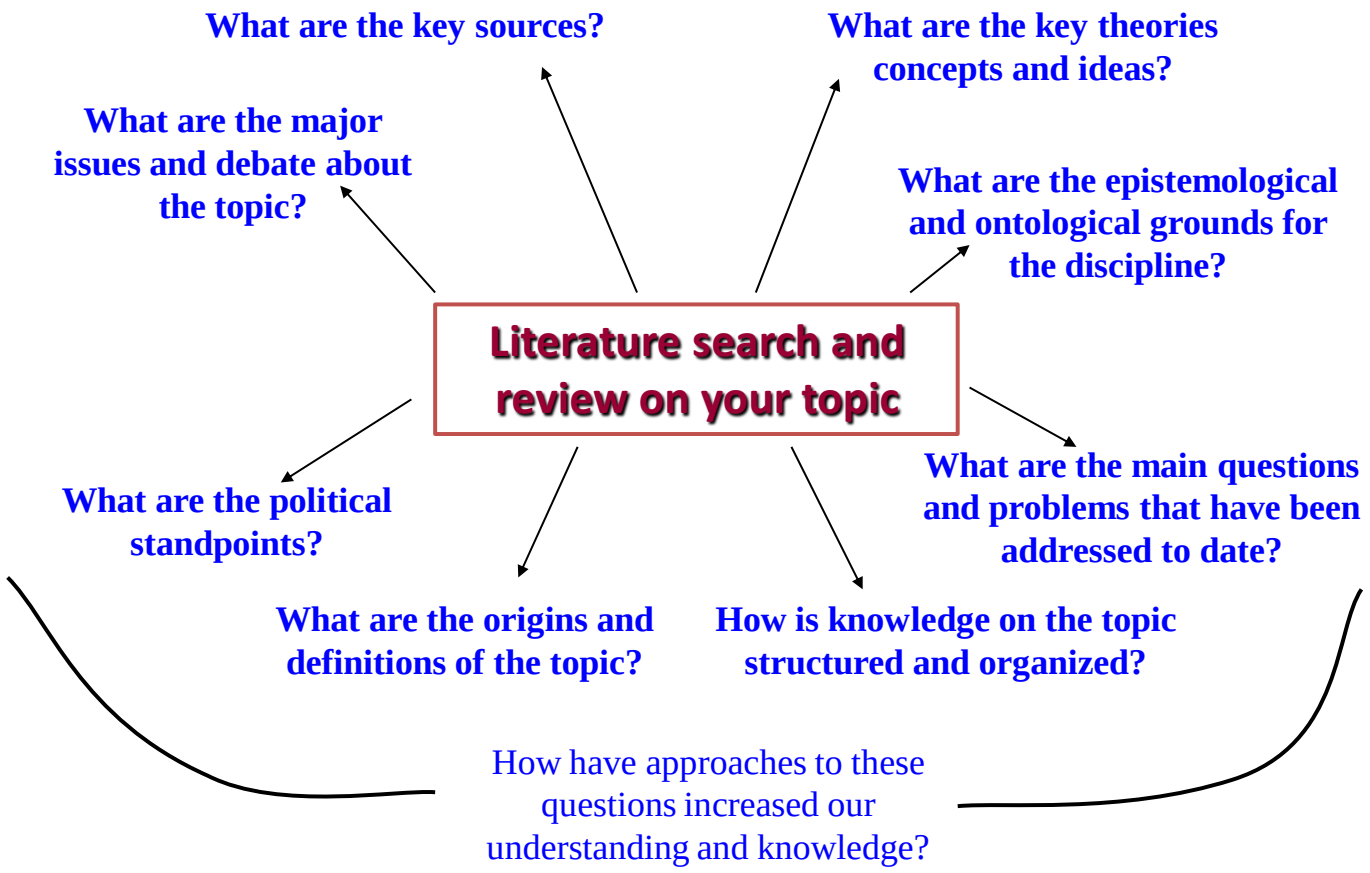
Some questions that the review of literature can answer



Source: http://www.languages.ait.ac.th/EL21LIT.HTML

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Systematic Review 1/2

- A systematic literature review is a means of identifying, evaluating and interpreting all available research relevant to a particular research question, or topic area, or phenomenon of interest. Individual studies contributing to a systematic review are called *primary studies; a systematic review is a form a secondary study.*

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Systematic Review 2/2

- A **systematic review** is a literature review focused on a research question that tries to identify, appraise, select and synthesize all high quality research evidence relevant to that question.

Source: http://en.wikipedia.org/wiki/Systematic_review

- A Guide to Writing the Dissertation Literature Review

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Reasons for Performing Systematic Reviews

- **To summarise** the existing evidence concerning a treatment or technology e.g. to summarise the empirical evidence of the benefits and limitations of a specific agile method.
- **To identify any gaps** in current research in order to suggest areas for further investigation.
- **To provide a framework/background** in order to appropriately position new research activities.

However, systematic reviews can also be undertaken to examine the extent to which empirical evidence supports/contradicts theoretical hypotheses, or even to assist the generation of new hypotheses

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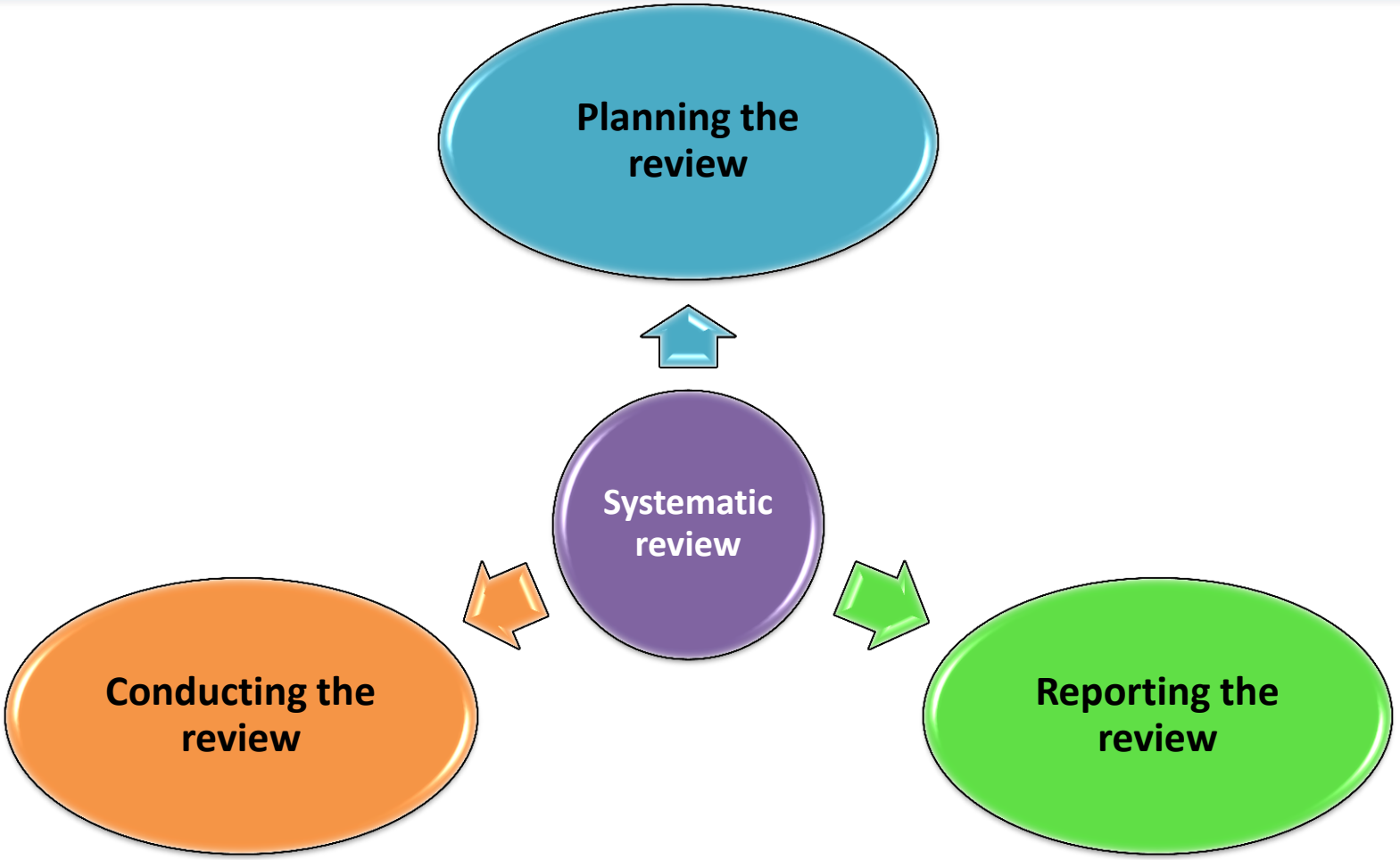
The Systematic Review Process



Source: Adapted from Systematic Review

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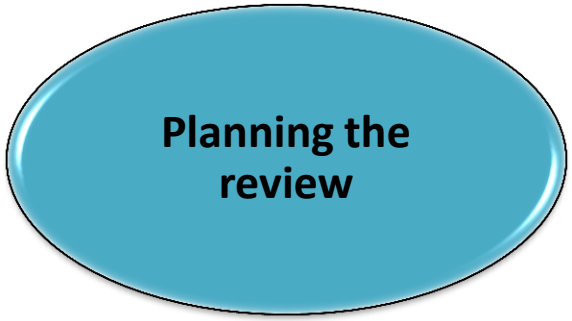
Planning the review

1. Identification of the need for a review
2. Development of a review protocol. (The most important activity during protocol is to formulate the research question.)



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Conducting the review

1. Identification of research
2. Selection of primary studies
3. Study quality assessment
4. Data extraction & monitoring
5. Data synthesis.

Conducting the review

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Reporting the review

Reporting the review is a single stage phase.

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Checklist for reading a review paper

- What are the review's objectives?
- What sources were searched to identify primary studies? Were there any restrictions?
- What were the inclusion/exclusion criteria and how were they applied?
- What criteria were used to assess the quality of primary studies and how were they applied?
- How were the data extracted from the primary studies?
- How were the data synthesised? How were differences between studies investigated? How were the data combined? Was it reasonable to combine the studies? Do the conclusions flow from the evidence?

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Checklist for reading a review paper-From a more general viewpoint

- Can you find an important question, which the review addressed?
- Was a thorough search done of the appropriate databases and were other potentially important sources explored?
- Was methodological quality assessed and the trials weighted accordingly?
- How sensitive are the results to the way that the review has been done?
- Have numerical results been interpreted with common sense and due regard to the broader aspects of the problem?

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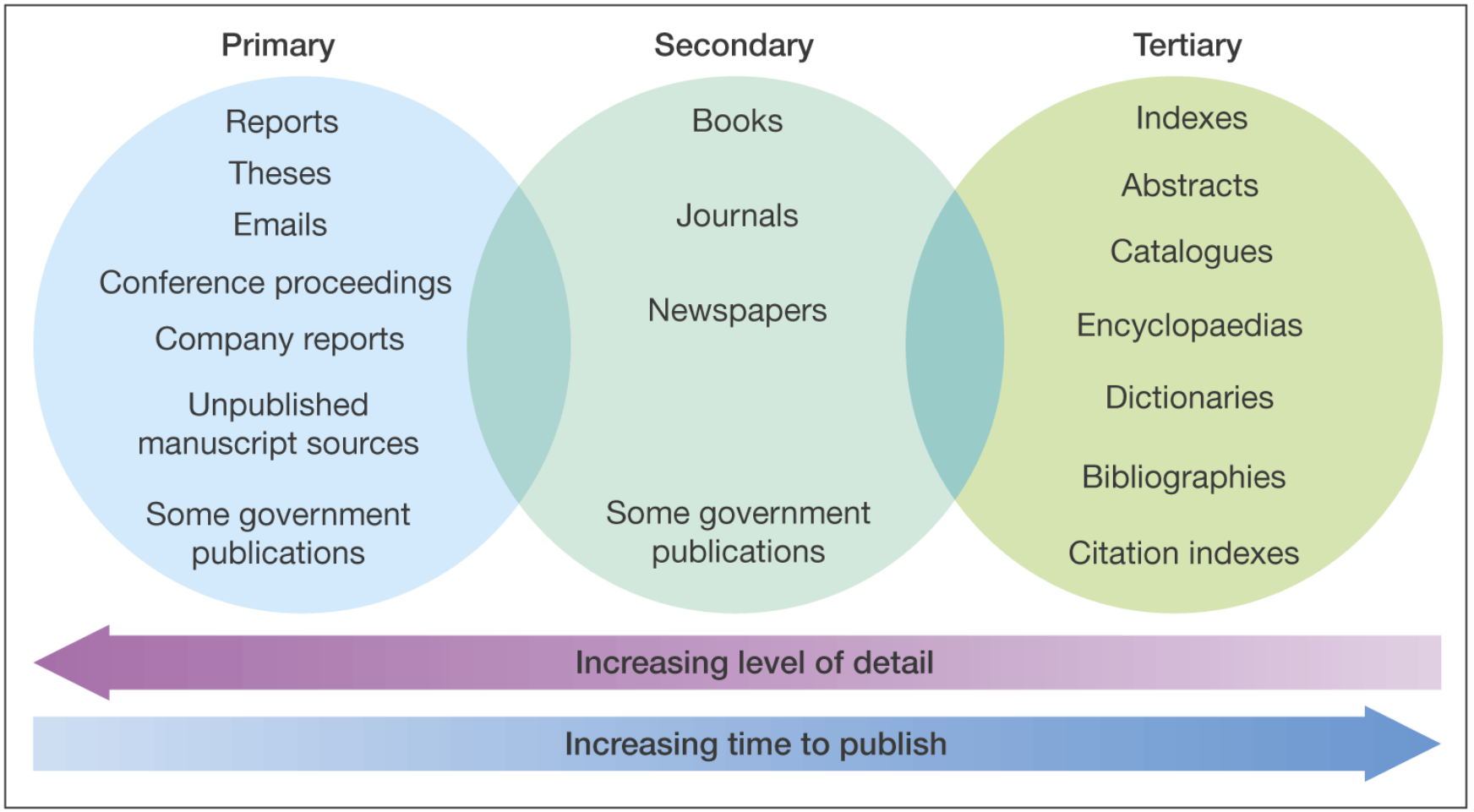

Literature sources available

Source: Research methods for business students / Mark Saunders, Philip Lewis, Adrian Thornhill. —5th ed.

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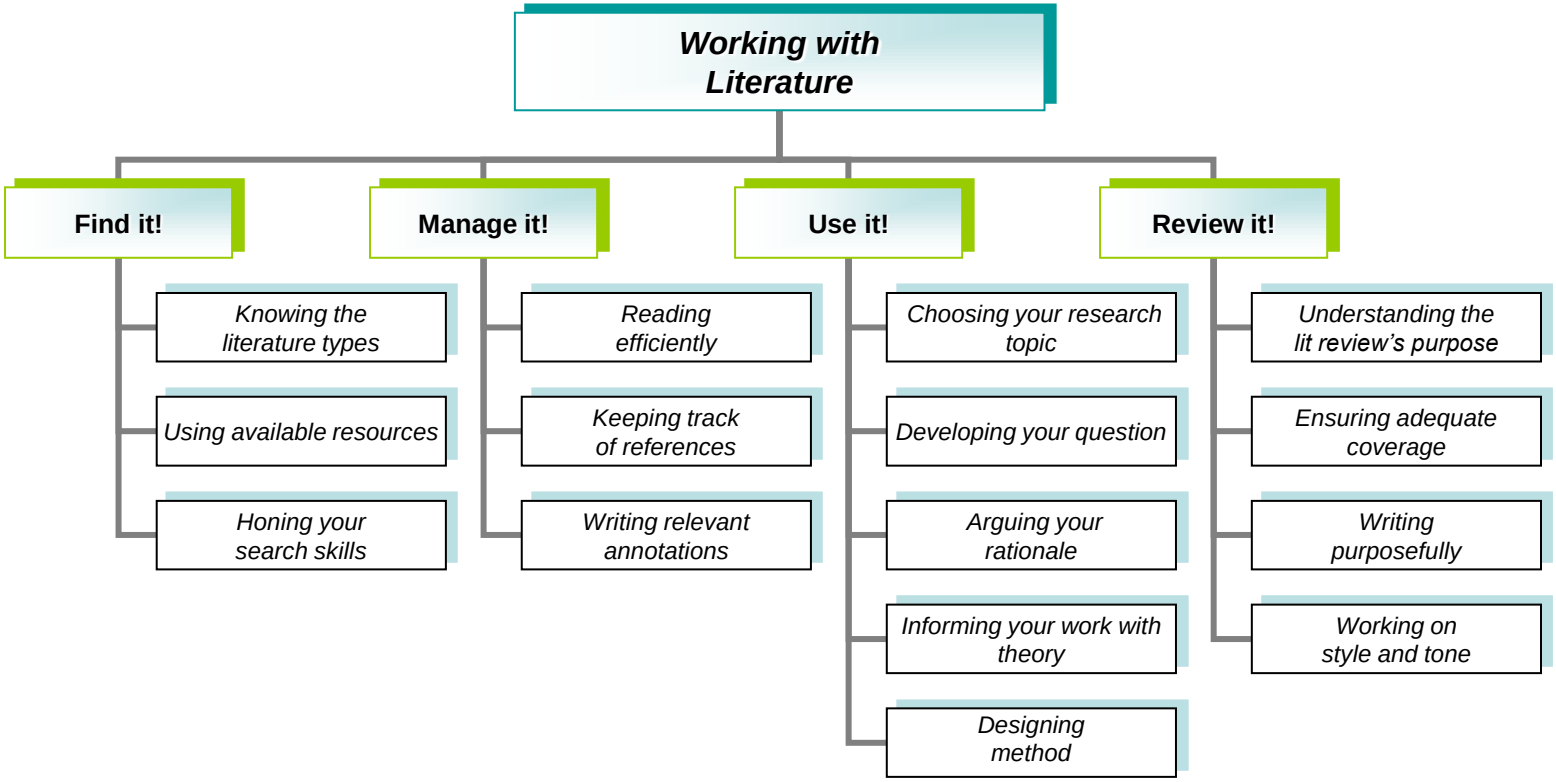
Working with literature



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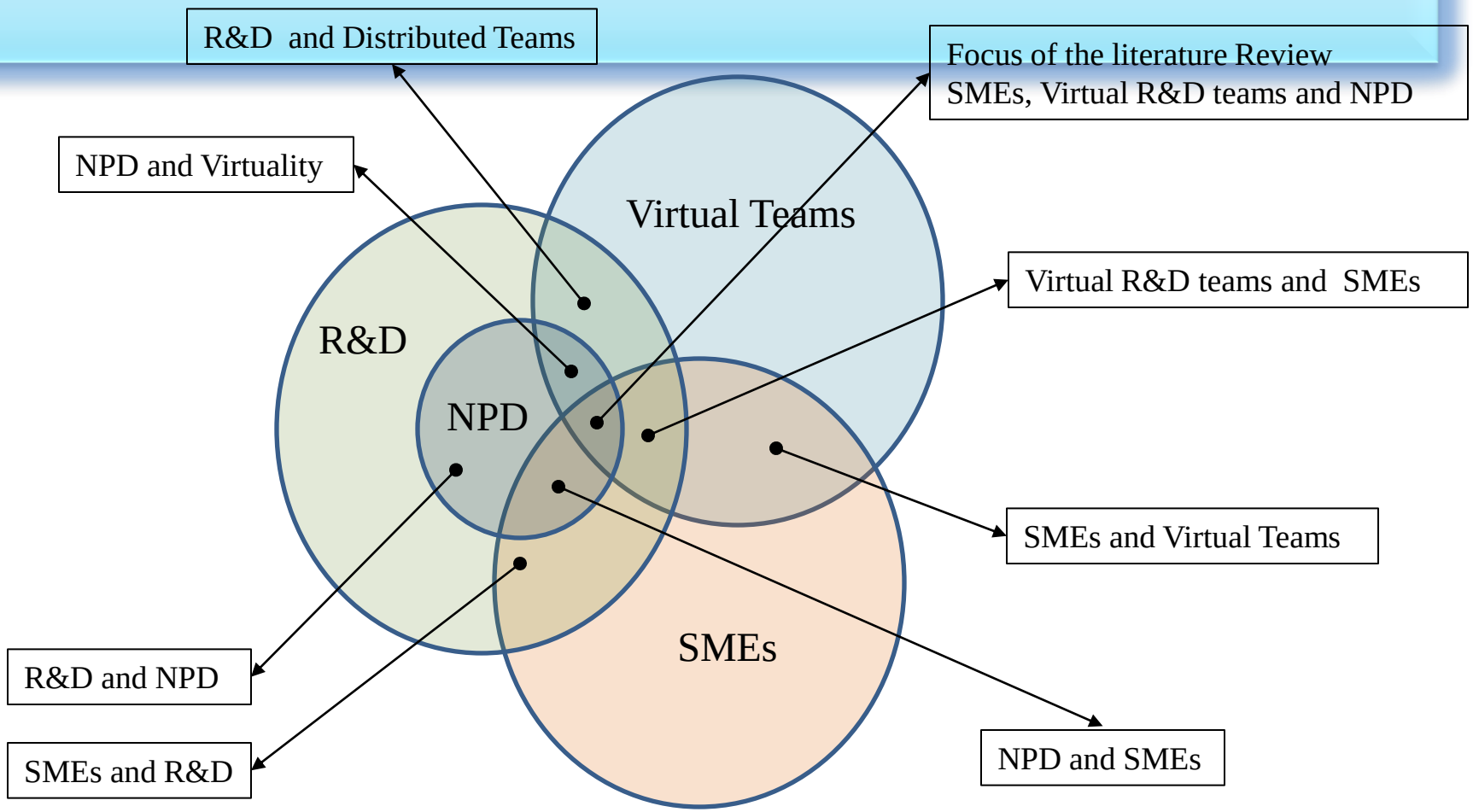
Narrow the area of research



Ale Ebrahim, N., Ahmed, S., & Taha, Z. (2009). Virtual R & D teams in small and medium enterprises: A literature review. [Review]. Scientific Research and Essay, 4(13), 1575–1590.

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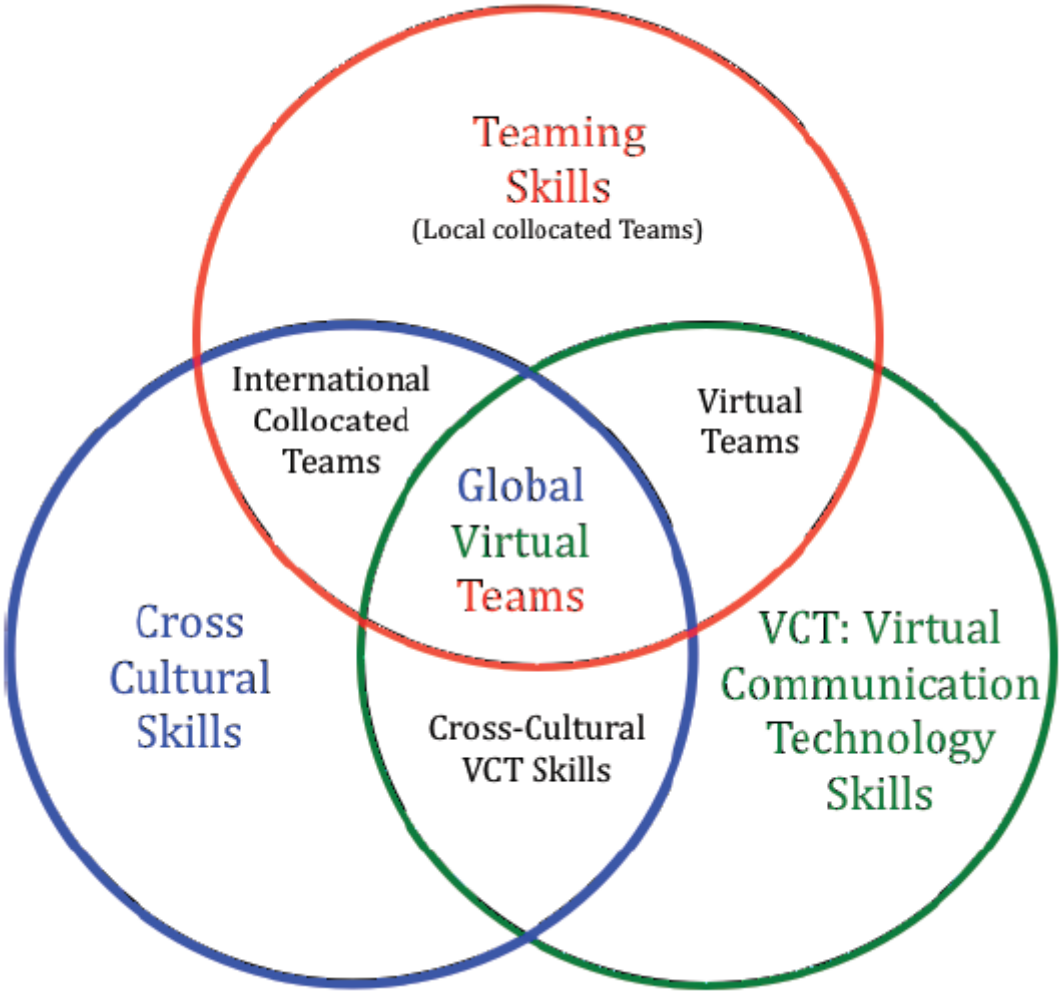

The interactions between teaming, cross-cultural and virtual communication skills to create new engineering interactions.

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Figure from: http://memeburn.com/2012/06/do-links-from-social-media-sites-really-hold-any-seo-value/

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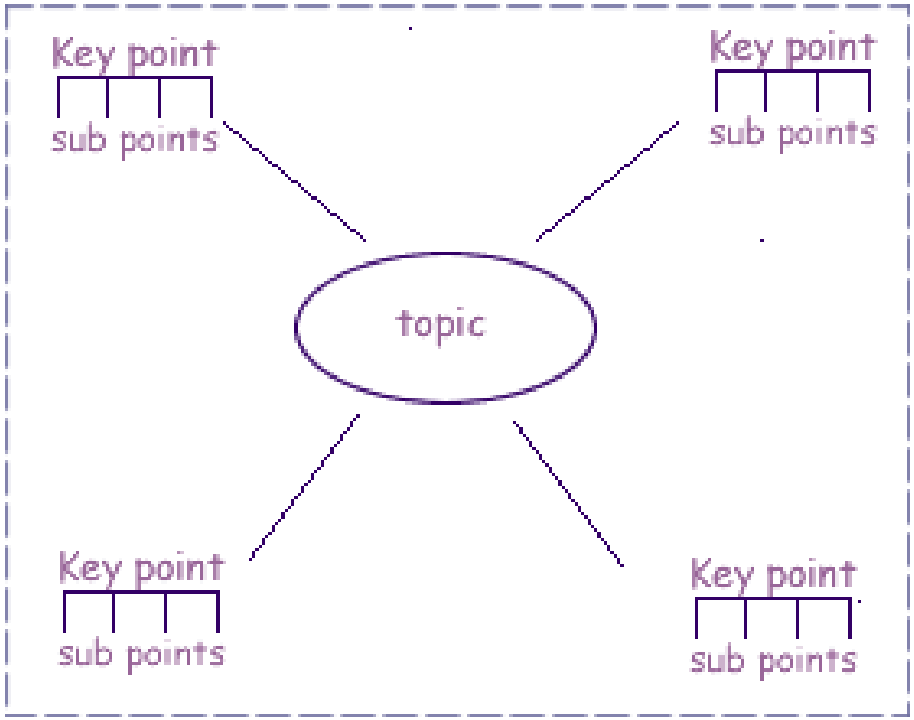
Structure & planning your writing - MindMaps

MindMaps are a visual map to link and organise key concepts of your research. They also show links and relationships between ideas. Sometimes it is a good idea to number key ideas in the order that you are going to place them in your literature review.

Example



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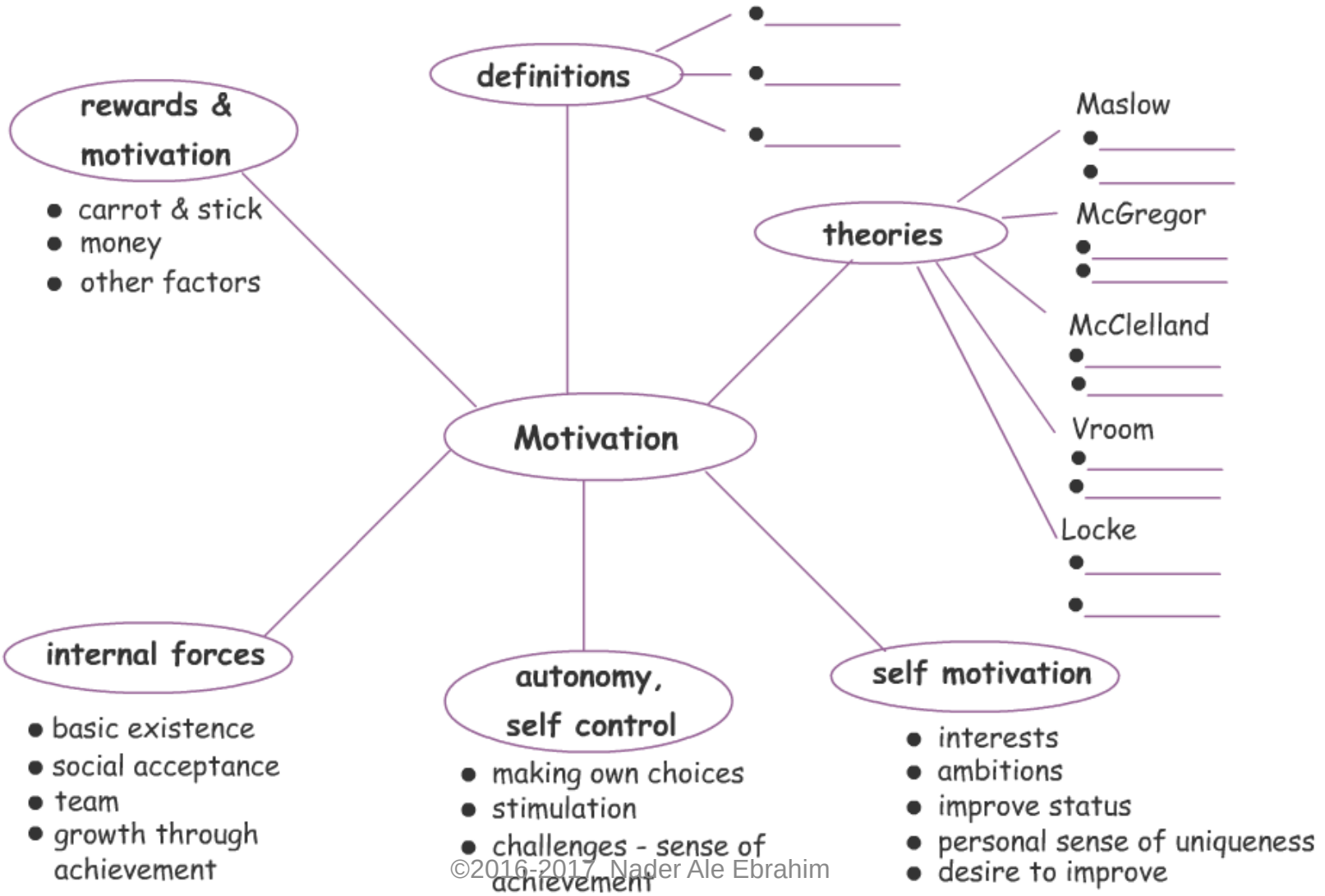
Example of a MindMap



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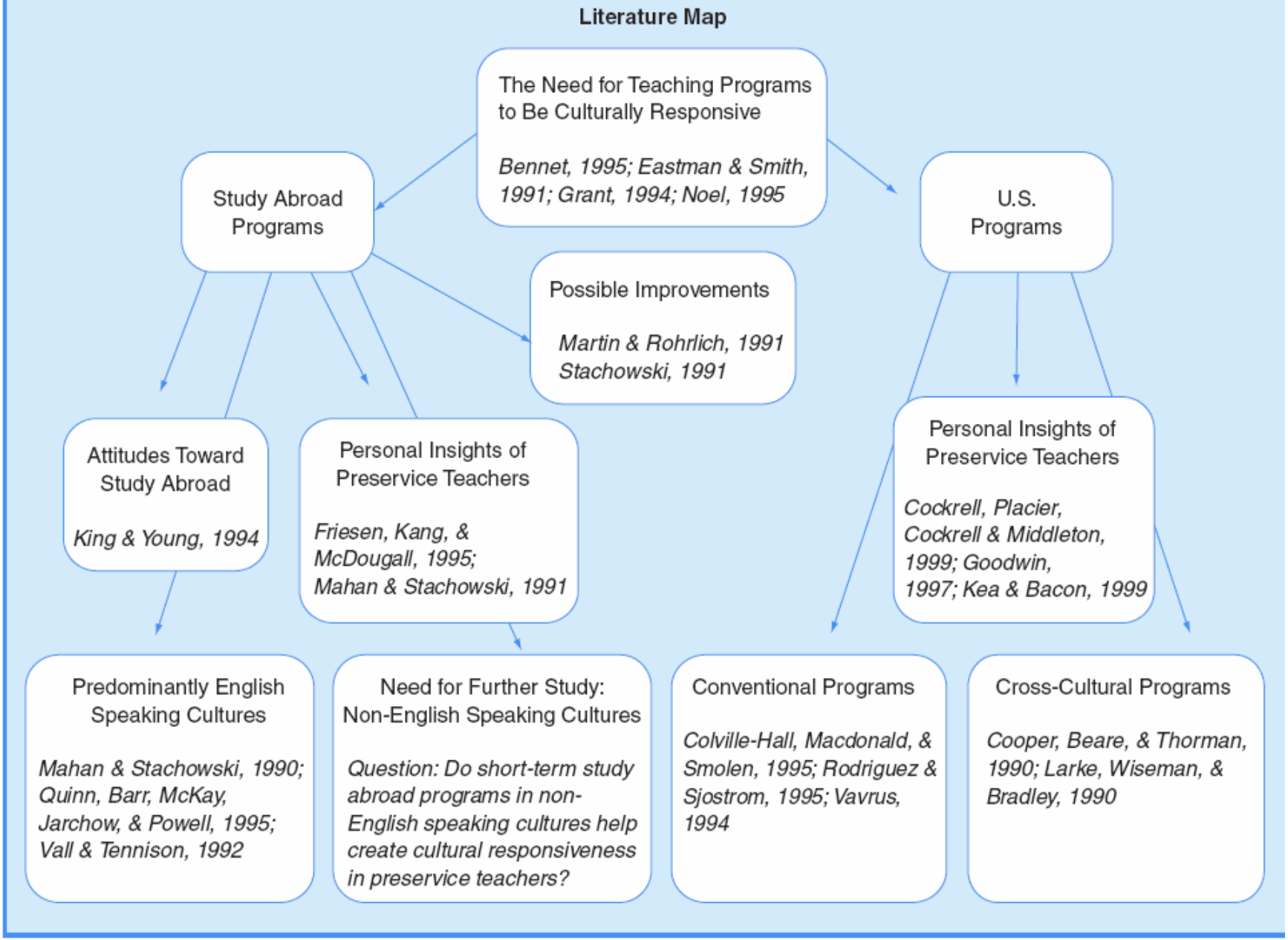
A Literature Map, Hierarchical Design



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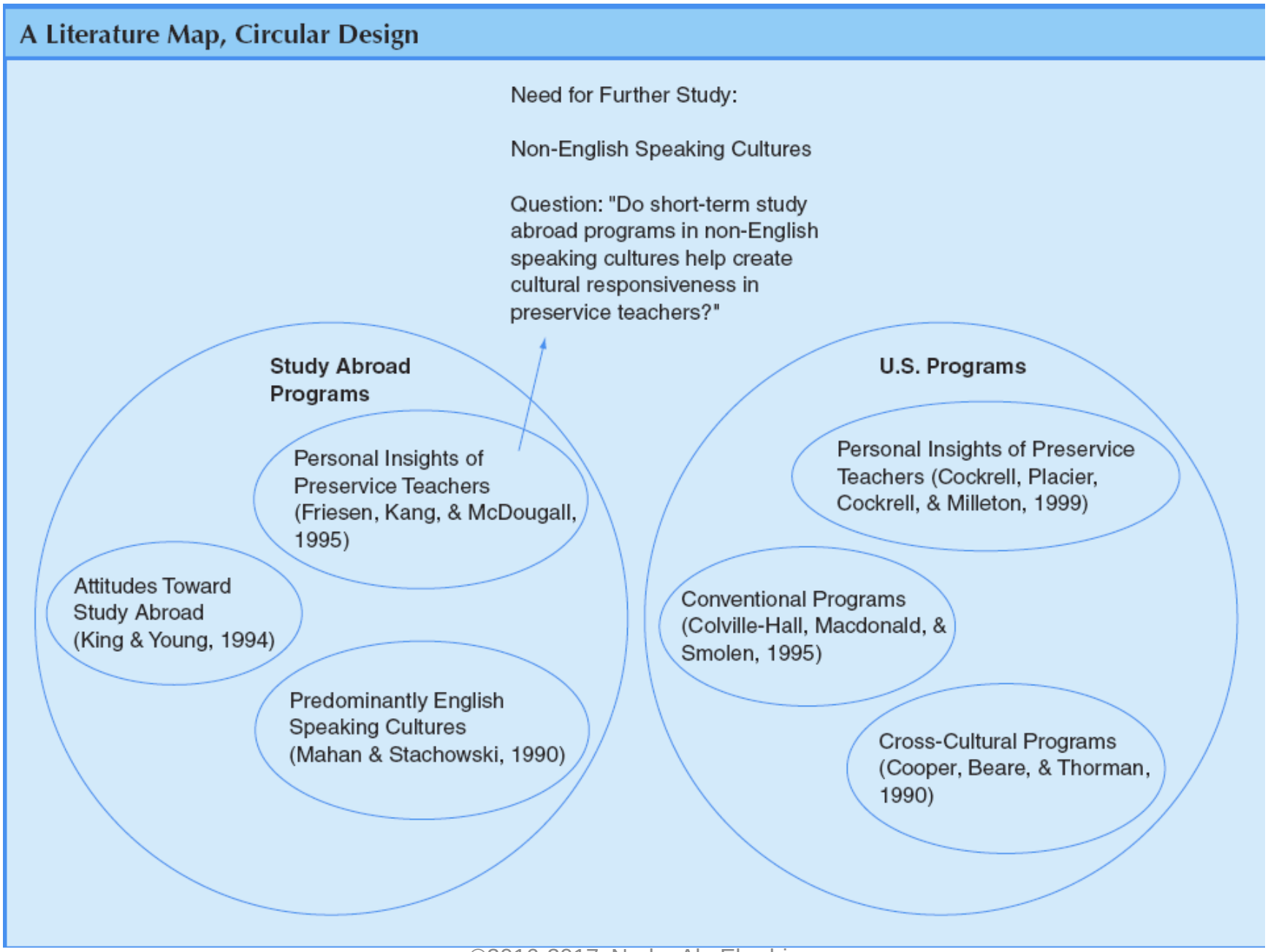
Source: Creswell, J. W. (2012). *Educational research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research (4th ed. ed.). Boston: Pearson Education, Inc.*

A Literature Map, Circular Design



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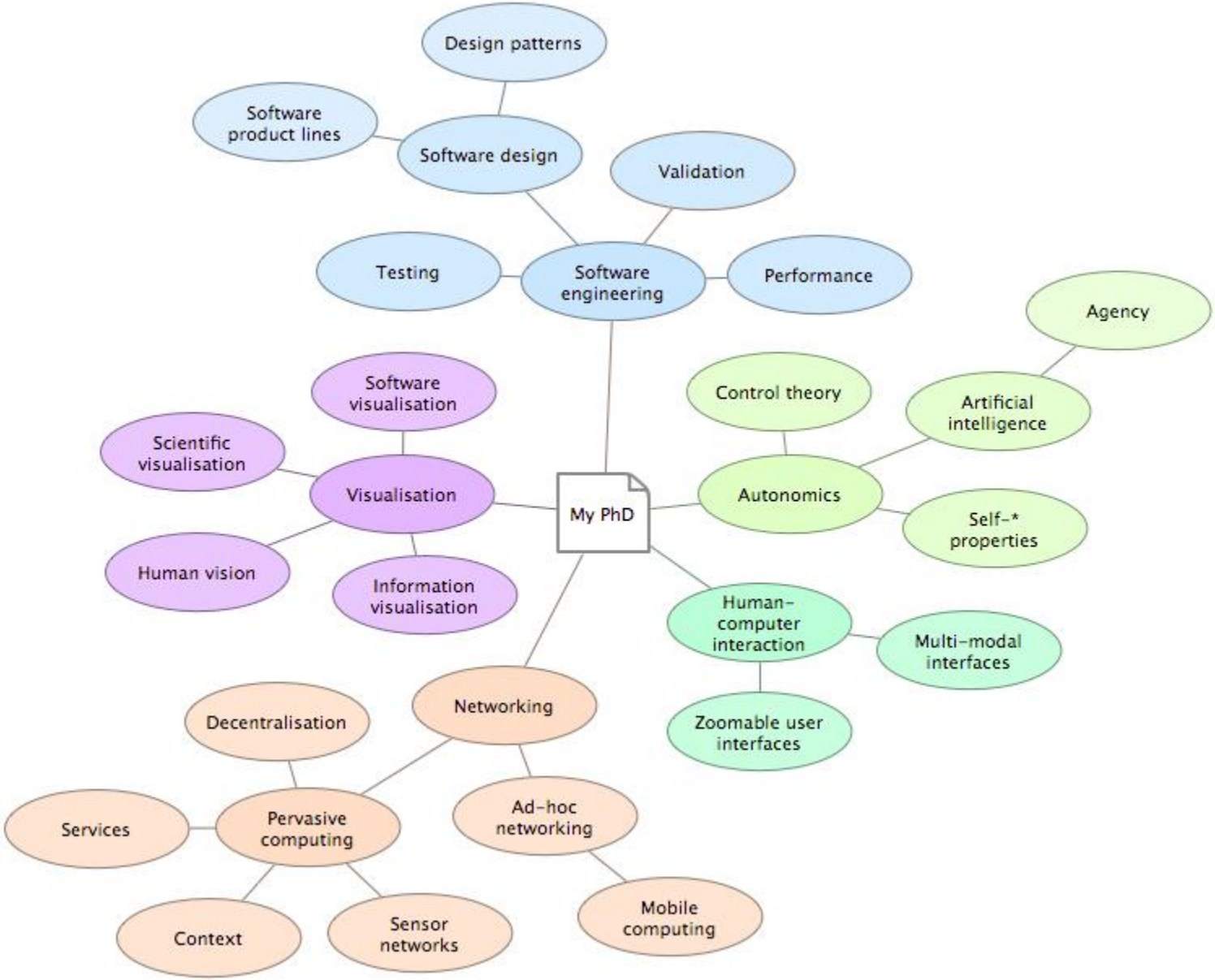
Source: Creswell, J. W. (2012). *Educational research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research (4th ed. ed.). Boston: Pearson Education, Inc.*



Source: Ross' PhD Literature Review Mind Map

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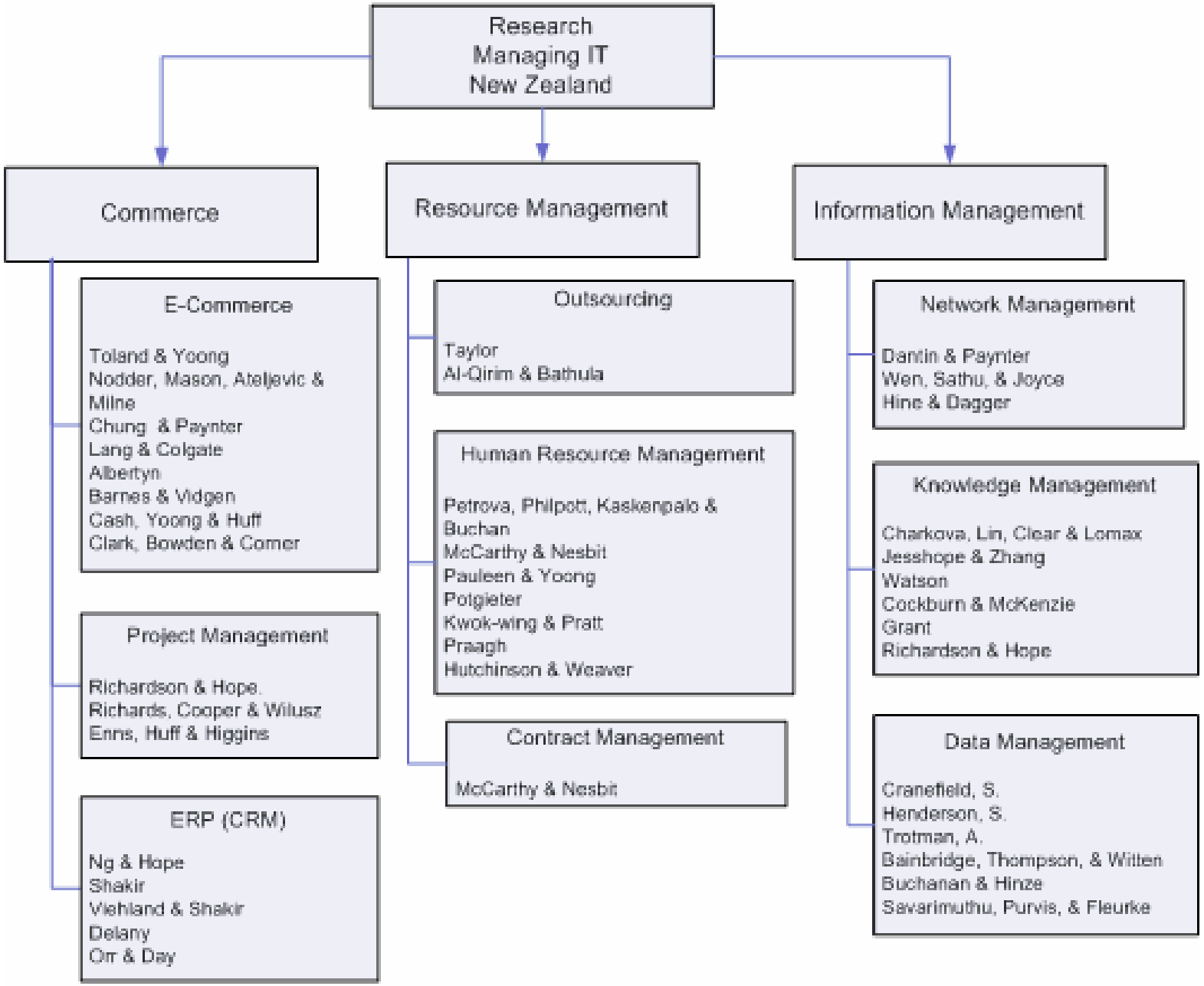

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Source: http://www.wordsinspace.net/course_material/MatternLiteratureReviewTips.pdf

Review biases

- Read outdated version of a paper/book
- Reading but not writing
- Read unlinked papers (detect as much of the relevant literature as possible)
- Read before planning (defining a review protocol that specifies the research question being addressed)
- Start reading with few resources
- Language bias
- Publication bias
- Read everything
- Not keeping bibliographical information

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Identifying a Research Problem

Researchers begin a study by identifying a research problem that they need to address. They write about this "problem" in the opening passages of their study and, in effect, give you as a reader the rationale for why the study is important and why you need to read their study.

Reference: Creswell, J. W. (2012). *Educational research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research (4th ed. ed.). Boston: Pearson Education, Inc.*

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Reviewing the Literature

With so much information available, searching and locating good literature on your topic can be challenging. Five steps will provide a sense of how researchers proceed in reviewing the literature are:

1. ***Identify key terms to use in your search for literature.***
2. ***Locate literature about a topic by consulting several types of materials and databases,* including those available at an academic library and on the Internet.**
3. ***Critically evaluate and select the literature for your review.***
4. ***Organize the literature you have selected by abstracting or taking notes on the* literature and developing a visual diagram of it.**
5. ***Write a literature review that reports summaries of the literature for inclusion in your* research report.**

Reference: Creswell, J. W. (2012). *Educational research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research (4th ed. ed.). Boston: Pearson Education, Inc.*

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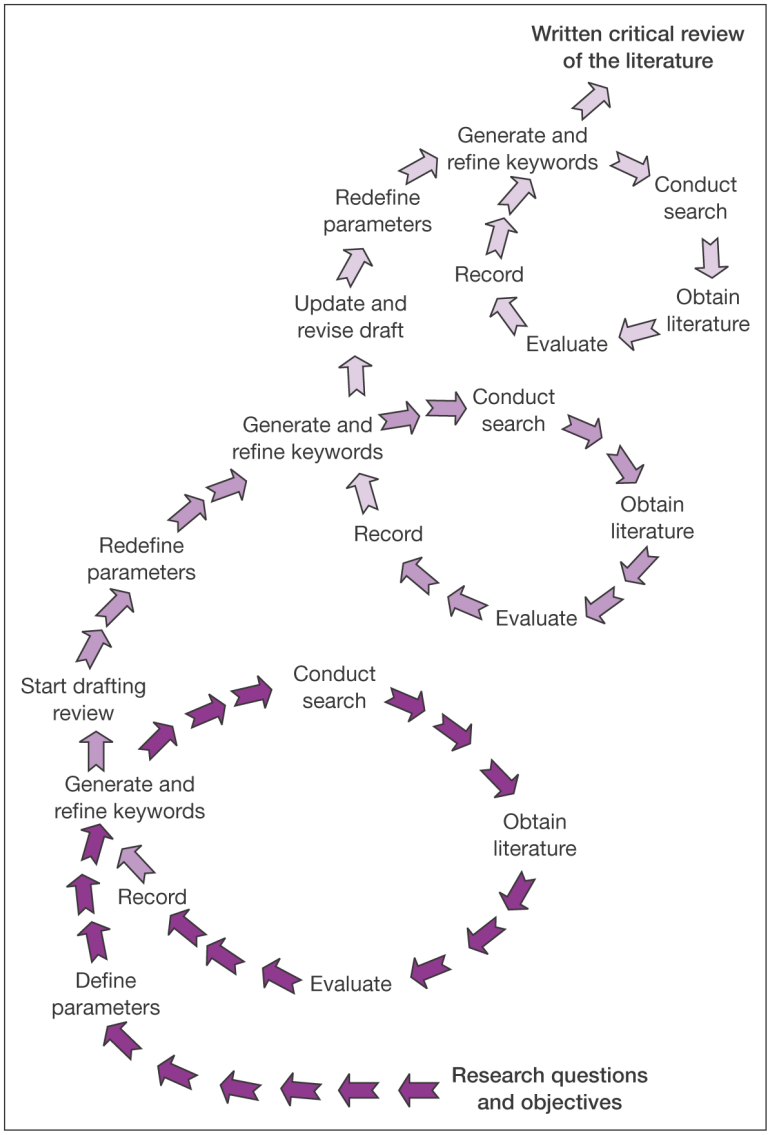
Developing a search strategy, Finding keyword



The literature review process

Source: © Mark Saunders, Philip Lewis, Adrian Thornhill and Martin Jenkins 2003
Research methods for business students / Mark Saunders, Philip Lewis, Adrian Thornhill. —5th ed.

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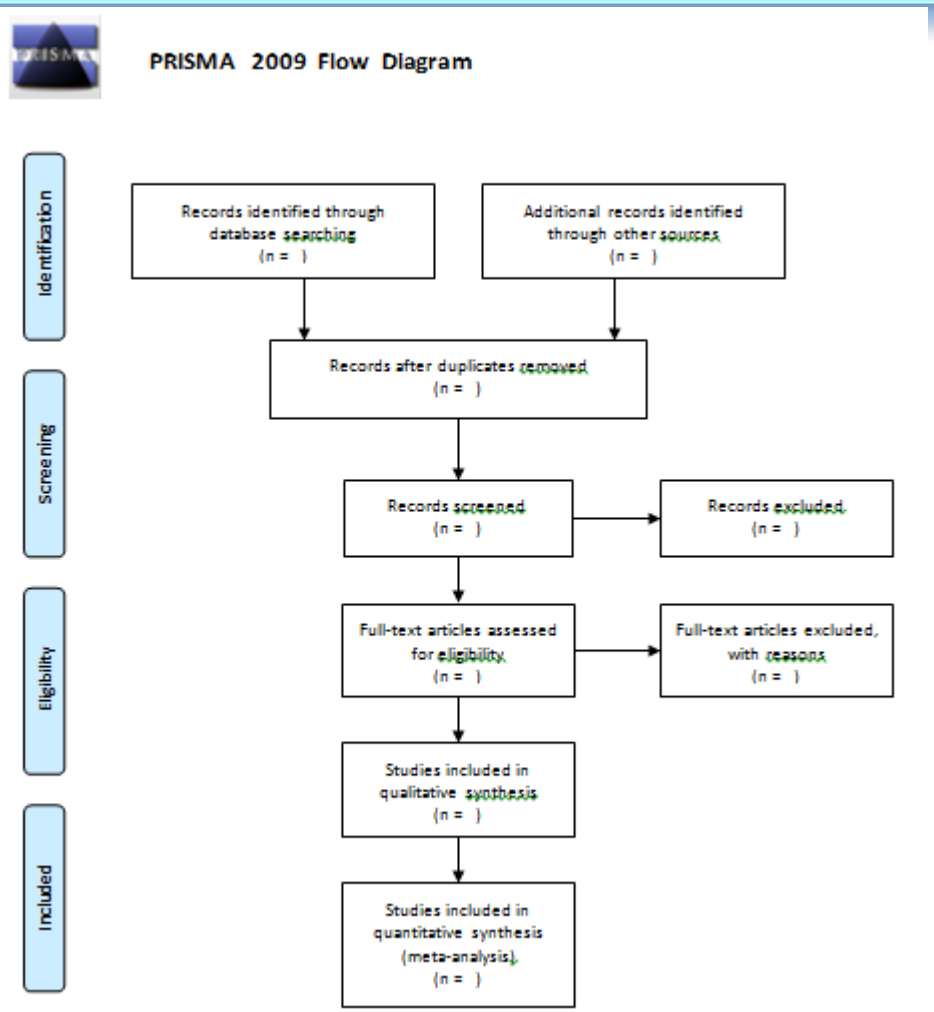
Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)



From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). *P*referred *R*eporting *I*tems for *S*ystematic Reviews and *M*eta-*A*nalyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

For more information, visit www.prisma-statement.org.

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Effective searching

» Developing a search strategy

- » Searching the library catalogue
- » Finding journal articles and papers
- » Searching the Internet
- » Other sources

Source: http://learnline.cdu.edu.au/myresearch/plan/searchstrategy.html

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Developing a search strategy

- » Defining the topic
  » Considering the scope of your topic
  » Identifying the main or important aspects
  » Compiling a list of keywords
  » Developing your search strategy
- It is important to develop a search strategy to, not only, find the information you need but to also clarify your topic.

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How to Find and Develop a Viable Research Topic?

Step One: Identify a Topic.

Step Two: Test Your Topic.

Test the main concepts or keywords in your topic **by looking them up** in the appropriate background sources or **by using them as search terms.**

If you are finding too much information and too many sources, narrow your topic by using the **and** operator

Finding too little information may indicate that you need to broaden your topic.

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Improving Readership of Your Articles

Appearing at the top of the list of search results, and having a useful description of your work, greatly improve the likelihood that a reader will find and download your document.

- Abstracts should include **keywords** that potential readers are likely to use in searches. It is especially valuable to modify and reuse words that appear in the document's title and full text to improve the article's rank when readers search for those words.

- The **first sentence of the abstract** is all that is likely to be displayed in the search page results, so make your first sentence one that will encourage readers to click the link.

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Research Tools Mind Map

Keywords

Selecting keywords lead to get more citation.

ISI Web of KNOWLEDGE
Transforming Research

Design Studies

KEYWORDS LIST

Choose up to five keywords for your paper from this list. You may substitute one keyword of your own choice not on this list.

aesthetics
architectural design
artificial evolution
automotive design
built environment
case based reasoning
case study/studies
collaborative design
environmental impact
epistemology
evaluation
expert systems
facility programming
generic design
graphic design

Google Trends

MASTER KEYWORDS LIST
Journal of International Business Studies

Medical Subject Headings
MeSH

MeSH (Medical Subject Headings)

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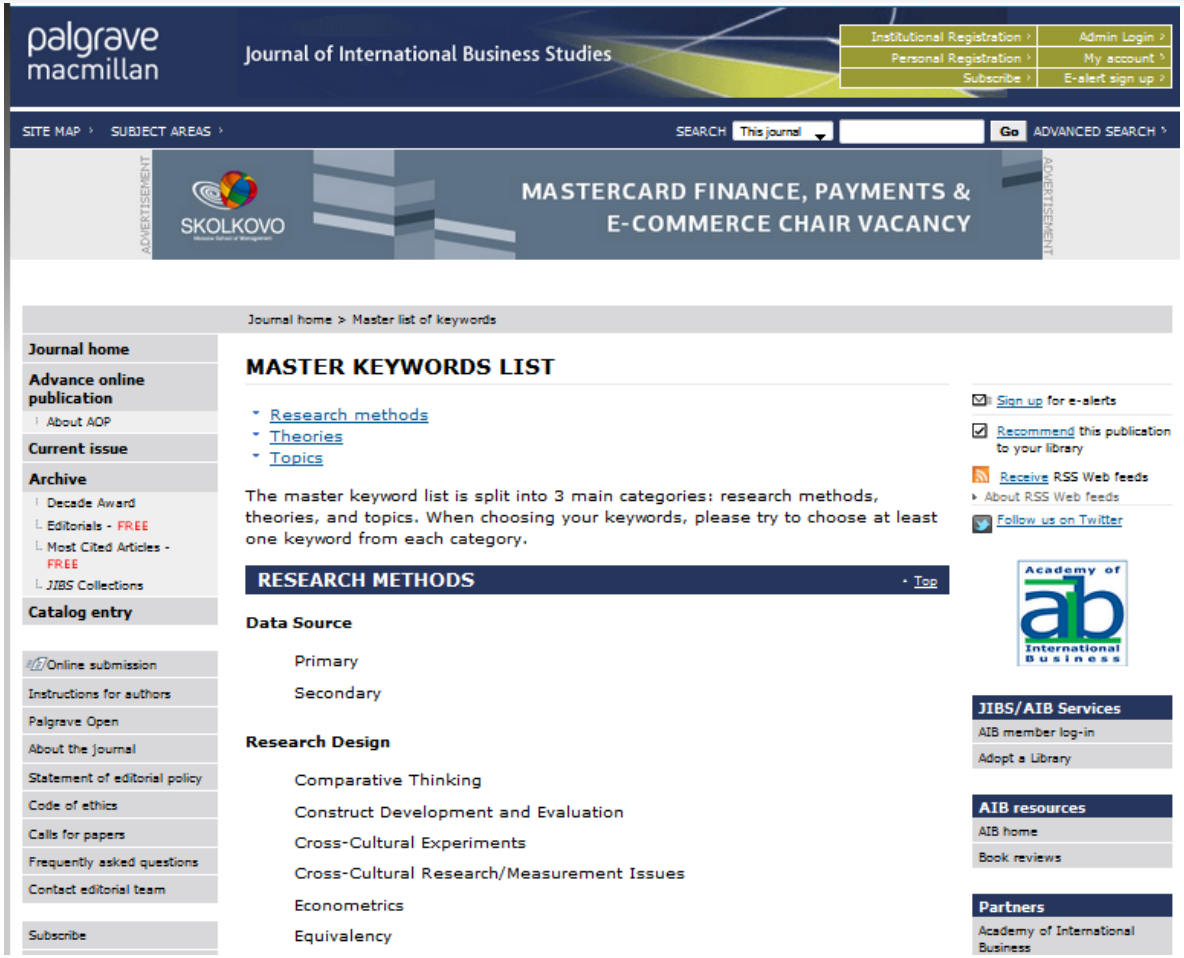
Master Keywords List



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MeSH Tree Structures for "Genes"

MeSH Tree Structures

- Genetic Phenomena [G05]
  - Genetic Structures [G05.360]
    - Genome [G05.360.340]
      - Genome Components [G05.360.340.024]
        - Attachment Sites, Microbiological [G05.360.340.024.079]
        - CpG Islands [G05.360.340.024.159]
        - DNA Sequence, Unstable [G05.360.340.024.189] +
        - DNA, Intergenic [G05.360.340.024.220] +
        - ▶ Genes [G05.360.340.024.340]
          - Alleles [G05.360.340.024.340.030]
          - Gene Components [G05.360.340.024.340.137] +
          - Genes, cdc [G05.360.340.024.340.220]
          - Genes, Chloroplast [G05.360.340.024.340.225]
          - Genes, Developmental [G05.360.340.024.340.230] +
          - Genes, Dominant [G05.360.340.024.340.240]
          - Genes, Duplicate [G05.360.340.024.340.250]
          - Genes, Essential [G05.360.340.024.340.270]
          - Genes, Helminth [G05.360.340.024.340.310]
          - Genes, Immediate-Early [G05.360.340.024.340.330]
          - Genes, Immunoglobulin [G05.360.340.024.340.335] +
          - Genes, Insect [G05.360.340.024.340.340]

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Foundations of searching

- Virtual AND (Team* OR group OR “Virtual R&D Teams”) NOT (Management OR Manager)
- The toolset?
  1. “phrase searching”
  2. truncat*
  3. OR
  4. AND, NOT
  5. (brackets OR parentheses)

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Truncation

Symbol	Retrieves
*	Zero or more characters *carbon* *carbon, hydrocarbon, polycarbonate*
$	Zero or one character colo$r *color, colour*
?	One character only en?oblast *entoblast, endoblast*

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Keywords Plus

- KeyWords Plus® are index terms created by Thomson Reuters from significant, frequently occurring words in the titles of an article's cited references.

Source: http://images.webofknowledge.com/WOK46/help/WOS/h_fullrec.html

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Keywords and Keywords Plus®

Authors sometimes provide a list of keywords or terms that they feel best represent the content of their paper. These keywords are contained in the ISI record (1991 data forward, depending on the database) for each article and are searchable. In addition, ISI generates KeyWords Plus for many articles. **KeyWords Plus** are words or phrases that frequently appear in the titles of an article's references, but do not necessarily appear in the title of the article itself. KeyWords Plus may be present for articles that have no author keywords, or may include important terms not listed among the title, abstract, or author keywords.

Source: http://wos.isitrial.com/help/helpdefs.html

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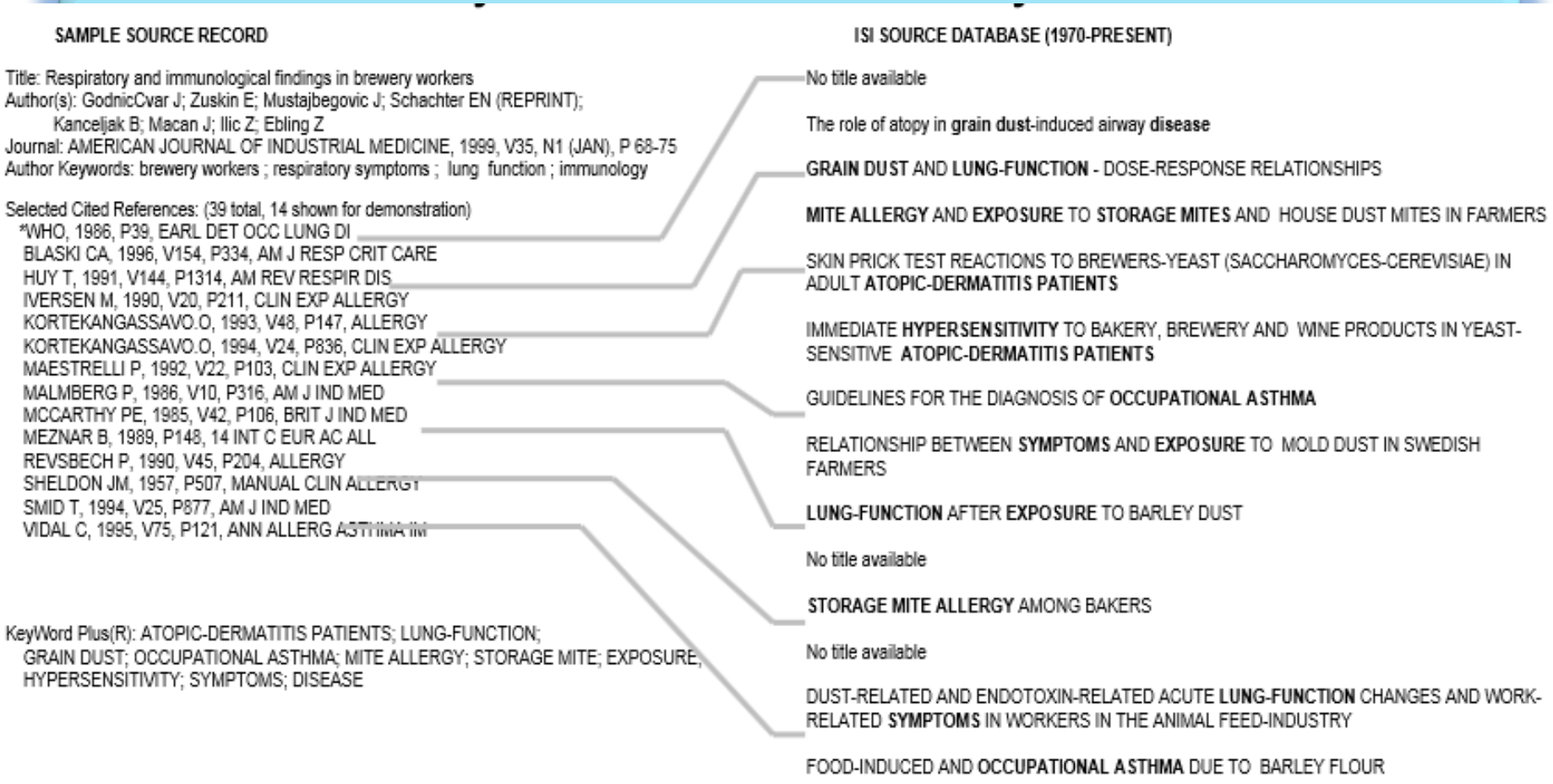
KeyWords Plus® Creation Cycle



Source: http://www.lib.vt.edu/help/handouts/databases/wos-workbook-8.pd

KeyWords Plus- Example

- New Product Development in Virtual Environment (ISI Indexed)
- Author Keywords: New product Development; Virtual teams; Concurrent Collaboration; Review paper
- KeyWords Plus: DEVELOPMENT TEAMS; PERFORMANCE; TECHNOLOGY; KNOWLEDGE; COMMUNICATION; PERSPECTIVE; INTEGRATION; INNOVATION; NETWORK; WORKING

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Key Words Selection

Results: 26
(from Web of Science Core Collection)
You searched for:
TITLE: ("Envelope Design")
Timespan: All years. **Indexes:** SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH.

Results: 477
(from Web of Science Core Collection)
You searched for:
TITLE: (("efficiency envelope*") OR (envelope NEAR/5 building) OR (envelope NEAR/5 energy) OR ("envelope* energy* saving*") OR ("Envelope* System*") OR ("thermal* envelope*") OR ("Envelope* Design*"))
Timespan: All years. **Indexes:** SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH.

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Key Words Selection

TABLE 1: Search phrases used

Field	Search Strings
general/other	brain surgery – neurosurgery – hydrocephalus – peripheral nerve surgery
vascular	aneurysm surgery – arteriovenous malformation* – carotid endarterectomy – cavernous malformation – extracranial intracranial bypass – intracranial aneurysm* – [intracranial or intracerebral] and [hematoma or hemorrhage] – subarachnoid hemorrhage – vasospasm
tumor	brain tumor surgery – meningioma – glioblastoma* – glioma – meningioma – radiosurgery – radiotherapy
trauma	brain injury – coma – head injury – brain damage – spinal injury
functional	deep brain stimulation – epilepsy surgery – Parkinson's surgery – spinal cord stimulation – trigeminal neuralgia – stereotactic – stereotaxic – stereotaxy
spine	spine fusion – spine fixation – spine surgery – spinal surgery – spinal fusion – spinal fixation – [cervical or thoracic or lumbar] and [disc* or disk*]

* The asterisk was included in the search string as a wild card character. For example, the search "disc*" would return results for "disc" or "discs" or "discectomy."

Source: Ponce, F. A., & Lozano, A. M. (2014). Highly cited works in neurosurgery. Part II: the citation classics A review (vol 112, pg 233, 2010). Journal Of Neurosurgery 120(5), 1252-1257. doi: 10.3171/2014.2.JNS14358a

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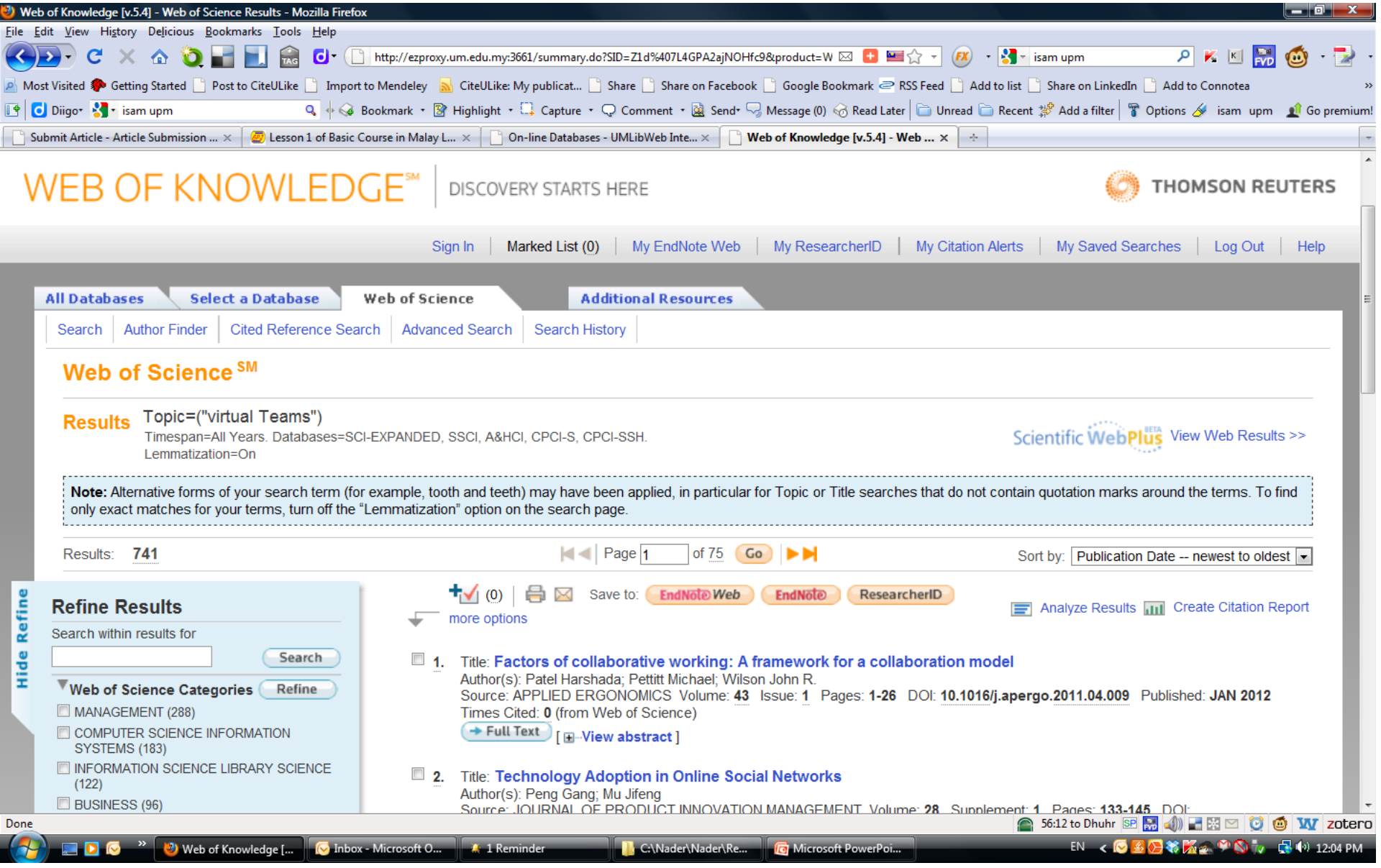

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All Databases | Select a Database | Web of Science | Additional Resources

Search | Author Finder | Cited Reference Search | Advanced Search | Search History

Web of Science SM

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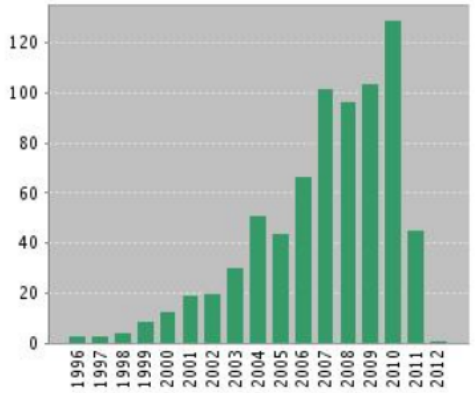
Citation Report

Topic=("virtual Teams")

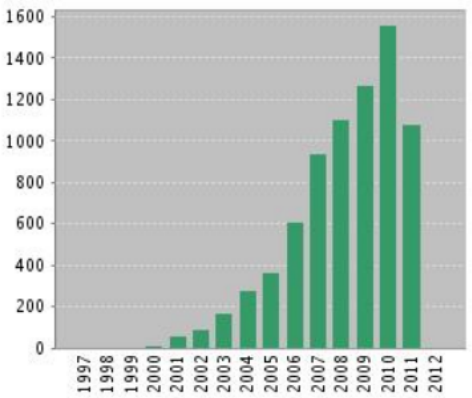
Timespan=All Years. Databases=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH.

This report reflects citations to source items indexed within Web of Science. Perform a Cited Reference Search to include citations to items not indexed within Web of Science.

Published Items in Each Year



Citations in Each Year



Results found:	741
Sum of the Times Cited [?] :	7561
Sum of Times Cited without self-citations [?] :	4771
Citing Articles[?] :	3928
View Citing Articles	
View without self-citations	
Average Citations per Item [?] :	10.20
h-index [?] :	42

Results: 741 | Page 1 of 75 Go | Sort by: Times Cited -- highest to lowest

	2008	2009	2010	2011	2012	Total	Average

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Task for first session

1. **Draw the literature map**
2. **Read:**
   - https://www.dlsweb.rmit.edu.au/lsu/content/2_AssessmentTasks/assess_tuts/lit_review_LL/reading.html
   - Cottrell, S. (2005). *Critical thinking skills - Developing Effective Analysis and Argument*. Basingstoke: Palgrave Macmillan.
   - Chapter 3 of "Creswell, J. W. (2012). *Educational research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research (4th ed.). Boston: Pearson Education, Inc"*
   - Chapter 3 of "Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research methods for business students* (5th ed.). Edinburgh Gate, Harlow, Essex CM20 2JE, England: Pearson Education Limited."
3. **Search for:**
   - The research keyword/s within Keywords Plus®
   - The relevant article
4. **Make a Bibliometrics database based on the research keywords**
5. **Find some good literature review papers in your field of study**

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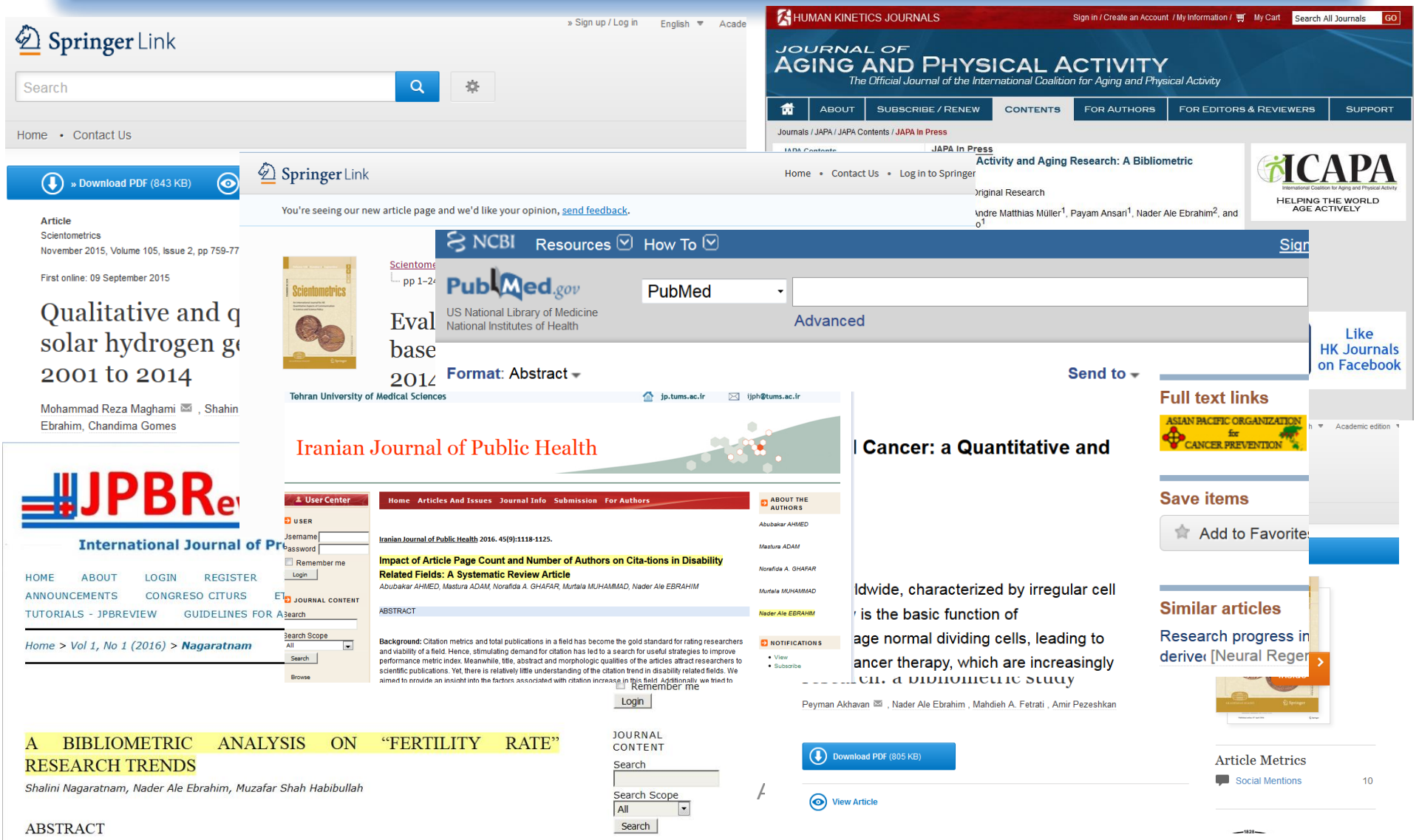
My recent publications



Questions?

E-mail: aleebrahim@um.edu.my

Twitter: @aleebrahim

www.researcherid.com/rid/C-2414-2009
http://scholar.google.com/citations

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Research Management & Innovation Complex
University of Malaya, Kuala Lumpur, Malaysia
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My recent presentations:

1. Ale Ebrahim, N. (2016). *Improve Research Visibility by Establishing an Academic Blog*. Paper presented at the 4th SERIES OF INTRODUCTORY WORKSHOP ON: Strategies to Enhance Research Visibility, Impact & Citations, Centre for Research Services, Institute of Research Management and Services (IPPP)", University of Malaya. https://dx.doi.org/10.6084/m9.figshare.4315169.v3
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