

Sec 3 Research Module 2011

Writing a Literature Review

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20 January 2011

What is a literature review?

- **A summary (recap) of published information or current knowledge in a particular subject area**
- **A synthesis (re-organization, reshuffling) of information**
- **An evaluation of sources of information**

Process of writing a literature review

1. Searching for sources of information and evaluating information
2. Reading research papers and extracting relevant information from papers
3. Writing the literature review and citing references

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Finding and evaluating information

Sources of information for literature review

- **Journals (published & online)**
- **Books**
- **Internet**

Open access journals

<http://www.doaj.org/>

<http://bentham.org/open/index.htm>

Scientific journals - database sites

- **PubMed, US National Library of Medicine**
<http://www.ncbi.nlm.nih.gov>
- **Highwire Library of Sciences and Medicine**
<http://highwire.stanford.edu>
- **Elsevier – browse journals by subject**
<http://www.elsevier.com>
- **Scirus – browse journals and science websites**
<http://www.scirus.com>

Internet as a resource - search engines

Google®

<http://www.google.com.sg>

<http://scholar.google.com.sg>

Useful tips for using search engines

- **Choose appropriate keywords**
- **Boolean operators (AND, OR, NOT) to specify combinations of keywords**

Boolean commands

- **OR** – allows any of the specified search terms to be present
- **AND** – requires that all search terms be present
- **NOT** – requires that a particular search term not be present
- **“.....”** – exact phrase must be present

An example of a search using Google

	Number of matches
• Mangosteen	1 790 000
• <i>Garcinia mangostana</i>	81 100
• <i>Garcinia mangostana</i> AND antioxidants	22 700

Evaluating information - Published journals

- Information is reviewed by 2-3 referees
- Checked for accuracy and originality of work
- More likely to be accurate
- Renowned journals

Evaluating information - Published journals

Distinguishing between primary and secondary sources

- **Primary source** – those in which ideas and data are first communicated
(contains Introduction, Materials & Methods, Results & Discussion)
- **Secondary source** – those which quote and adapt information from primary sources
(reviews, books and magazine articles)

Evaluating information - websites

Most material on the Internet has not been subjected to review or vetting.

Information may be inaccurate or biased.

Evaluating information - websites

Author

- Is the author identified?
- Are author's credentials and qualifications given?
- Is an address given (postal and/or e-mail)?
- Sites hosted by universities or institutions of high credibility

Example of a popular website - Wikipedia

http://en.wikipedia.org/wiki/Main_Page

- **Edit page**
- **History – number of times page has been edited, by anonymous or non-anonymous people**
- **Discussion**
- **External links**

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Reading and extracting information

Extracting relevant information from a paper

First, read the Abstract

- Research topic of paper
- Summary of method used
- Results and brief explanation
- Application

Extracting relevant information from a paper

Followed by Introduction / Literature review

- Previous work done on research area with cross-references
- Aim of present study

Extracting relevant information from a paper

Then read the Results and Discussion

- **Raw data obtained**
- **Analysis of data**
- **Representation of data (graphs, photographs)**
- **Explanation of data obtained**

Extracting relevant information from a paper

And if you are interested in adapting part of the study for your project, read the Materials and Methods

- Check if equipment and other resources are available in the lab (ask your mentor)
- Check if project is workable within a time frame of 6 months
- Modify method used

three

Writing a literature review

Writing a literature review

- **At least 5 references (preferably from printed or online journals)**
- **Read through all 5 papers (it is not sufficient to write a literature review based on abstracts of papers)**
- **Identify the rationale, objective, brief methodology, results in the paper**
- **Summarize information in literature review**
- **Rephrase sentences, no copying & pasting**

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Citing information in text and in bibliography

Citing information in a bibliography

- **According to the American Psychological Association (APA) referencing system**

Citing information in a bibliography

Journal article

Smith, A.B. & Jones, C.D. (2006). Earth-shattering research from our laboratory. *Journal of Research*, 1, 1-10.

- Author(s) (surname first)
- Year of publication
- Title of paper
- Title of journal (italics)
- Volume of journal (italics)
- Pages
- Layout: hanging indent

Citing information in a bibliography

Electronic information (e.g. online journals & websites)

Smith, A.B. & Jones, C.D. (2006). Earth-shattering research from our laboratory. *Journal of Research*, 1, 1-10. Retrieved January 20, 2011 from http://www.____

- Author(s) (surname first)
- Year of publication
- Title of paper
- Title of journal (italics)
- Volume of journal (italics)
- Pages
- Date of retrieval (Month dd, yyyy)
- Web address

Citing information in a bibliography

Book

Smith, A.B. & Jones, C.D. (2006). *The Research Handbook*. New York: Success Publications.

- Author(s) (surname first)
- Year of publication
- Title of book (italics)
- Location: publisher

Citing information in a bibliography

Chapter in a book

Smith, A.B. & Jones, C.D. (2006). Earth-shattering research from our laboratory. In A.A. Black & B.B. White (Eds.), *The Research Handbook* (pp. 12-34). New York: Success Publications.

- Author(s) (surname first)
- Year of publication
- Title of chapter
- Editor(s) of book
- Title of book (italics)
- Pages of chapter (brackets)
- Location: publisher

Citing in-text references and references in the bibliography

- **Include in your bibliography ONLY those references that have been cited in your text.**
- **Make sure that you have read all the references cited.**

Citing in-text references

A type of bacterium so large that it can be seen without the aid of a microscope has been discovered (Smith & Jones, 2006).

or

Smith and Jones (2006) have discovered, in a piece of earth-shattering research, a type of bacterium so large that it can be seen without the aid of a microscope.

Citing reference in bibliography (if number of authors > 2)

Smith, A.B., Jones, C.D. & Perry, E.F. (2006). Earth-shattering research from our laboratory. *Journal of Research*, 1, 1-10.

Citing in-text references (if number of authors > 2)

A type of bacterium so large that it can be seen without the aid of a microscope has been discovered (Smith, Jones & Perry, 2006).

or

Smith, Jones and Perry (2006) have discovered, in a piece of earth-shattering research, a type of bacterium so large that it can be seen without the aid of a microscope.

Citing in-text references (if number of authors > 2)

When citing the reference the FIRST time in the text, list all authors.

Subsequently, use **Smith *et al.* (2006)**.

* ***et al.*** must be written in italics.

Avoid PLAGIARISM

Plagiarism is the unacknowledged use of another's work (ideas, writing, data, inventions) as if it were one's own.

A serious academic offence.

ACKNOWLEDGE ALL SOURCES OF INFORMATION WITH PROPER CITATION.

Paraphrase information from original source in your report.

**Does your research involve
any possible safety and ethical issues?**

Working with microorganisms?

Conducting surveys?

**GET APPROVAL FROM RELEVANT
AUTHORITIES PRIOR TO
EXPERIMENTATION.**

References

Reed, R., Holmes, D., Weyers, J. and Jones, A. (2003).
Practical Skills in Biomolecular Sciences (2nd ed.).
Pearson Education Limited.

American Psychological Association. (2003). *APA style*.
Retrieved January 14, 2007, from <http://www.apastyle.org>

Sec 3 SMTP (Science) Literature review task

- **Individual work**
- **10% of research grade**
- **500 words**
- **At least 5 references (3-4 reviewed research papers in published or online journals + 1-2 articles from credible websites)**
- **Resources – uploaded on <http://hssmtp.wiki.hci.edu.sg>**
- **Deadline: 2 March 2011**
- **Submit to CSE Science staff room (B202)**