ISTE Workshop
Introduction to Research Methodologies

Tips on Literature Review

Sahana Murthy
IIT Bombay

June 25 – July 4, 2012

Video: http://www.it.iitb.ac.in/nmeict/eVideos/IRM_Main/content/content.html, Session 12.
What is a literature review

• Summary of related work
• Descriptive and evaluative
• Analytical in nature
Why literature review

• Need to give credit to others’ work
• Giving credit is the “law”!

• Gives background information to your work
• Situate your work in the broader context
• Progress of scientific knowledge
  – Build new work on old work
  – Compare, extend, contrast …
When should I do the literature review

At the beginning, when you start looking for a problem
When should I do the literature review

At the beginning, when you start looking for a problem

In the middle, once your work is under way
When should I do the literature review

At the beginning, when you start looking for a problem

In the middle, once your work is under way

Towards the end, when you have your results
When should I do the literature review

At the beginning, when you start looking for a problem

In the middle, once your work is under way

Towards the end, when you have your results

Not a distinctive, standalone step in research. Iterative.
What type of papers should I look for?

- Engineering/ scientific research papers
- Published research papers in “established” journals, peer reviewed conferences
- Survey or review articles
- Chapter in an edited book on a research topic
- Avoid websites containing no source information
What type of papers should I look for?

• Engineering/ scientific research papers
• Published research papers in “established” journals, peer reviewed conferences
• Survey or review articles
• Chapter in an edited book on a research topic
• Avoid websites containing no source information

• Recent papers (last 5 years, 10 years)
• Classic or seminal (even if old)
Where should I look for papers?

- Databases and indexes
  - INSPEC
  - Web of Science
  - IEEE Xplore
  - Compendex
  - Scifinder
  - SCOPUS

  *Check your field*

- Journal webpages
- Conference webpages
- Authors’ webpages
- Library
Where should I look for papers?

What about Google?
Where should I look for papers?

What about Google?

Google Scholar search more appropriate than simple Google search.

Also try CiteSeer
What information should I track

BIBLIOGRAPHIC INFORMATION

• Title
• Authors
• Year of publication
• Source – journal / proceedings / book
  – Name
  – Page numbers
  – Publisher
• ISBN numbers of books
How should I select papers to read?

SOME TIPS

• Ask your guide

• Survey / review articles are a good starting point

• Try to identify seminal or key papers. For example, if several current papers on an article point to a previous article on a specific point.

• Locate follow-up work from key paper.

• Follow references from within the first interesting / relevant paper you read.
What to do if I find too few sources

• Discuss with expert, guide
• Look for related topics, synonyms
• Broaden scope of topic a little, then narrow back
• Look harder !

Do not be hasty in concluding that “No work has been done in this topic”
What to do if I find too many sources

Plan to scope or scale down your search

• Restrict by year (recent)
• Restrict by source (only two most well-known journals in field)
• Restrict by topic (further narrow topic)

Again, an expert’s help is valuable.
How to report literature search
According to Paper1, clickers were found to be improve student motivation and attendance.

In Paper2, authors used clickers in a CS programming class of 120 students. They found that student learning improved. The average final exam score was XX %.

Paper3 reported that students liked using clickers in class since it improved interactivity. This study was done in a health science class.
How NOT to write the Literature Review / Related Work section

According to Paper1, clickers were found to be improve student motivation and attendance.

In Paper2, authors used clickers in a CS programming class of 120 students. They found that student learning improved. The average final exam score was XX %.

Paper3 reported that students liked using clickers in class since it improved interactivity. This study was done in a health science class.
A literature review is not:

- a descriptive list of papers
- a summary of one paper after another

According to Paper1, clickers were found to be improve student motivation and attendance.

In Paper2, authors used clickers in a CS programming class of 120 students. They found that student learning improved. The average final exam score was XX %.

Paper3 reported that students liked using clickers in class since it improved interactivity. This study was done in a health science class.
How should I write the Literature Review / Related Work section

• Identify themes, factors, or variables relevant to your problem.

One way to organize - table classifying related work on the basis on various categories that you need to devise.

Example – litsurvey1.
How should I write the Literature Review / Related Work section

• Analyze on the basis of categories, strengths & weaknesses
How should I write the Literature Review / Related Work section

• Analyze on the basis of categories, strengths & weaknesses

1) Clickers in face to face classrooms are highly effective to improve attendance, more active participation in class, increased collaborative activities and better learning.

2) Work related to improving interactivity in distance education:
   • Video and audio conferencing with 2-way interactivity.
     Benefits – visual cues possible, feels like real interaction
     Drawbacks – Cumbersome to use, instructor cannot judge if students are following lecture
   • “A mouse on every desk” by Microsoft Research
     Benefits – highly interactive
     Drawbacks – expensive
How should I write the Literature Review / Related Work section

Provide **synthesis** of the reviewed literature.

– What are existing solutions?
– What are common features?
– How do they compare? Use pie-charts, bar charts, graphs etc. to represent your analysis.
How should I write the Literature Review / Related Work section

• Identify the gaps in existing work.

In most current solutions aimed at diminishing the physical gap between the instructor and the students in the virtual classroom, the instructor does not have sufficient means to gauge the comprehension level of the class in real-time.

No one has used clickers in distance education so far.
How should I write the Literature Review / Related Work section

• Identify the gaps in existing work.

*In most current solutions aimed at diminishing the physical gap between the instructor and the students in the virtual classroom, the instructor does not have sufficient means to gauge the comprehension level of the class in real-time.*

*No one has used clickers in distance education so far.*

Leads to ➔

clear need for your research / thesis
Points to note

Be aware of disciplinary conventions
Points to note

You have to write about what has already been written, BUT write something original.