https://goo.gl/jwozYQ

Literature Review Clinic
Graduate Research and Innovation Center (GRIC)
University of Puerto Rico, Mayagüez Campus

My professor says I have to write a literature review...

...where do I START!?!?!?!
Being able to review relevant literature in your field is a key academic skill you must master in graduate school.

In this clinic, we will discuss the objectives and guidelines for writing awesome Literature Reviews.

My professor says I have to write a literature review, what do I do?

✅ Your goal as a researcher is to determine the current state of knowledge about a topic.

✅ Ask yourself: “What is known and what is not known about this topic?”
So, I read some articles and just summarize them, right?

No, a literature review is NOT just a summary!
So, what is a literature review?

- A literature review is a synthesis of different sources published by accredited scientists on a specific topic.
- It is usually organized into subtopics.
- It demonstrates your understanding of the current state of knowledge in your discipline.

What are the objectives of a literature review?

- To show that you have a thorough understanding of your research topic
- To provide a coherent account of the most relevant work
- To give a historical description of the topic’s development
- To provide an account of available techniques and/or materials being used
- To show weaknesses of other works and/or techniques
- To demonstrate that your work will make an original contribution
What makes a good literature review?

A good literature review:

• Shows the issues that have been dealt with in the past, those that are currently being addressed and those that need to be addressed in the future.

• Shows correlations, contradictions, ambiguities, knowledge gaps or even conflicts between competing research groups.

• Gives an analysis and commentary that makes it clear you understand the issue.

• Shows that you are imposing your view on the issue.

What makes a good literature review?

A poor literature review is just an account of who did what and when it was done, without comment on relevance and quality.

If you do this, you are preparing an annotated bibliography, not a lit review!
What are the **general guidelines** for preparing a literature review?

**Step 1:** Consult a librarian about searching techniques

- Know the relevant searching strategies and keywords for your topic
- Attend seminar on searching techniques

**Step 2:** Use bibliographic data management software

- Know which software is available: EndNote, RefWorks, Zotero, Mendeley, etc.
- Learn how to use it to effectively search, record and create a customized “List of References”
What are the **general guidelines** for preparing a literature review?

**Step 3:** Search for **tertiary**, **secondary** and **primary** sources.

- Do not dismiss *fringe* papers!
- Learn to use Google Scholar

### Tertiary Sources
- Summaries or condensed versions of materials
- Usually with references to primary or secondary sources
- Good place to look up facts or get a general overview of a subject

**Examples:**
- Textbooks
- Dictionaries
- Encyclopedias
- Handbooks

### Secondary Sources
- Summarizes and synthesizes primary sources
- Usually broader and less current than primary sources

**Examples:**
- Literature review articles
- Research Reviews

### Primary Sources
- Original research and/or new scientific discoveries
- Immediate results of research activities, including analysis of field or laboratory data

**Examples:**
- Original research published in peer-reviewed journals
- Theses or dissertations
- Technical reports

**REFERENCES**


Google Scholar Example

I have sparse data points and want to estimate data between points

I will need an appropriate numerical method for this

- How do I find my sources??
  - Go to Google scholar - pay attention to the number of citations and read the abstracts while you search
  - Search for numerical methods (most are books – tertiary)
  - Search for interpolation methods (most are reviews –secondary)
  - Search for biharmonic spline interpolation (most are primary sources)

Why is it an important topic, what is known about it, and how does it fit into a broader view of the research area?

What is ambiguous, in dispute, unknown and why?

Why do these gaps in knowledge need to be filled?

Which gaps do you propose to fill in your research? Why? How do you propose to do it?

What are the general guidelines for preparing a literature review?

Step 4: Select the information you need from the primary sources (KEY papers) and ask yourself:

- Why is it an important topic, what is known about it, and how does it fit into a broader view of the research area?
  - What is ambiguous, in dispute, unknown and why?
  - Why do these gaps in knowledge need to be filled?
- Which gaps do you propose to fill in your research? Why? How do you propose to do it?
What are the general guidelines for preparing a literature review?

Step 5: Choose preliminary topic headings

These depend on your field and particular research, and can be based on:
- location (country, region),
- perspective (negative, positive, neutral),
- discipline,
- methodology (techniques),
- current trends,
- chronological time, etc.

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Example #1: Choosing Subtopics

From University of West Florida

https://goo.gl/7DWqE9
What are the general guidelines for preparing a literature review?

Step 6: Sort information into the subtopic headings

- After summarizing and evaluating your sources, arrange them in a synthesis or evidence matrix
- It can help you record the main points of each source and document how sources relate to each other
- It can allow you to start thinking about how you weave them together to create a narrative, a research story
- Create a folder for each topic and file the material you have found into each one including: papers, abstracts or even your own comments

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Example #2: Synthesis Matrix

By Andres Calle Hoyos

https://goo.gl/wfAUYw
What are the general guidelines for preparing a literature review?

Step 7: Re-read papers to reassess your understanding of the topic

• Think of it as an iterative process. Your perspectives might change while your understanding of the topic increases.

• Make sure you maintain good communication with your advisor throughout the process!

Step 8: Write up the literature review as a final stage

• Do not start writing until assembling all the available information
  • A review written too early will likely need a lot of rewriting
  • Connect all the material for each topic together
  • Revise the possible subheadings
  • Go from general information to subtopics that are specific to your research

• Write the text to link these ideas together (citation patterns, paraphrasing and transitions)
What are the **general guidelines** for preparing a literature review?

Recap

- **Step 1:** Consult a librarian about searching techniques
- **Step 2:** Use bibliographic data management software
- **Step 3:** Search for tertiary, secondary and primary sources
- **Step 4:** Select the information you need from sources
- **Step 5:** Choose preliminary topic headings
- **Step 6:** Sort information into the subtopic headings
- **Step 7:** Re-read papers to reassess your understanding of the topic
- **Step 8:** Write up the literature review as a final stage

What possible **subtopics** would you use to sort these references out?

1. **Snyder and Bonzi (1989)**
   Patterns of self-citation in six disciplines were examined. 9% of all citations were self-citations: 15% in the physical sciences, 6% in the social sciences, and 3% in the humanities.

2. **Bonzi and Snyder (1991)**
   A study of 51 authors in the natural sciences revealed only a few differences in motivation between citing oneself and citing others.

3. **Phelan (1999)**
   A study of the citing practices of 56 highly cited authors in the field of Education was conducted. Only 2 of the 56 did not cite themselves over a 12-year period. At the other extreme, 154 out of 280 citations (55%) received by one author were the outcome of self-citations.

4. **White (2001)**
   The most important citer motivation is to project one’s own writing (and reading) by linking earlier work to later work. In this sense, a certain amount of self-citation is both natural and inevitable.

5. **Hyland (2003)**
   Self-citations may arise from three kinds of motivation: (1) a natural result of the cumulative nature of an individual’s research; (2) a need for personal gratification; and (3) its value as a rhetorical device to increase an author’s visibility and reputation.

6. **Medoff (2006)**
   This study of 400 Economics articles showed that an author’s self-citations did not have a statistically significant effect on that article’s total number of citations.

7. **Falagas and Kavvadia (2006)**
   Seventeen percent of references in Clinical Science were self-citations, a figure that rose slightly to 20% in Basic Science.

8. **Fowler and Askes (2007)**
   A macro study of more than a half million citations to articles by Norwegian scientists in the 1981-2000 period was undertaken. The average citation rate was 11%, although there were wide individual variations. They then showed that the more authors cite themselves the more likely they are to be cited by others.

What possible subtopics would you use to sort these references out?

<table>
<thead>
<tr>
<th>Possible subtopics</th>
<th>References (comments)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Historical account of self-citations (chronological order)</td>
<td>References 1-8 ???</td>
</tr>
<tr>
<td>self-cite percentages</td>
<td>References 1, 7 and part of 8</td>
</tr>
<tr>
<td>motivations for self-citing</td>
<td>References 4 and 5</td>
</tr>
<tr>
<td>effects of self-citation</td>
<td>References 2, 6 and 8</td>
</tr>
<tr>
<td>sample size of study</td>
<td>References 8, 6, 3 and 2</td>
</tr>
</tbody>
</table>


Putting it all Together

Beyond Content: Advice on citation patterns and paraphrasing
What *citation patterns* should I use?

- **Integral citations**
  - Using the authors’ names as a grammatical part of the citing sentence.
  - e.g. According to James…; Kim found that…; Mitchell and Kim examined…
  - Mostly used in the Arts.

- **Non-integral citations**
  - Citing takes place outside the sentence, either in parenthesis or represented by a number or footnote.
  - e.g. Research has shown that the drug has potentially lethal side effects (Kim, 2010);
    Numerous studies have reported an increase in fatalities [2], and [3].
  - Mostly used in the sciences and engineering.

- **Within-sentence quotations**
  - According to Kim (1999: 10), "The World Trade Organization still has many obstacles to overcome, particularly with regard to decision-making processes."

- **Block and indented quotations** (for quotations of more than 40 words)
  - As Kim (1999: 55) has indicated:
    Although the WTO is a major improvement over the old GATT system, it is still a young organization and leaves much to be desired. Mostly, the organization lacks both the competence and the resources to deal with new trade areas such as investment and information; its formal and binding structure as well as rigid decision-making process hinders and even sometimes blocks any harmonization effort in new trade-related areas.

Telling a Research Story: Writing a Literature Review – Christine Feek John Swales
What *citation patterns* should I use?

- **Paraphrase / Summary**
  - According to Kim (1999: 10), the World Trade Organization needs to improve the processes by which decisions are made.

- **Generalization (combining several sources)**
  - The ways in which decisions are made within the World Trade Organization are typically inefficient (Mitchell 1997; Kim 1998; Kim 1999; Kirgis 1999).

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What *citation patterns* should I use?

- You need to consider whether to directly quote from your source, paraphrase or summarize.
- It might depend on your specific field and style guide used.

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Quotation</th>
<th>Block Quotation</th>
<th>Summary/Paraphrase</th>
<th>Generalization</th>
<th>Other</th>
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</thead>
<tbody>
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<td>0</td>
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<tr>
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<tr>
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<td>55</td>
<td>20</td>
<td>3**</td>
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<tr>
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<td></td>
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<tr>
<td>Philosophy</td>
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<td>1</td>
<td>89</td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>

* Referral citations that instruct the reader to see another source
** Hybrid citations (short quoted phrases and original words from author)
Which transition words to use?

- Signaling (transition) words and phrases are useful to:
  - connect ideas,
  - show a logical relationship between ideas,
  - guide the reader in the direction that the writer wants them to go

<table>
<thead>
<tr>
<th>However</th>
<th>First, second, etc...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thus</td>
<td>Also</td>
</tr>
<tr>
<td>For example</td>
<td>In addition</td>
</tr>
<tr>
<td>Finally</td>
<td>Therefore</td>
</tr>
<tr>
<td>On the other hand</td>
<td>Then</td>
</tr>
<tr>
<td>Nevertheless</td>
<td>For instance</td>
</tr>
<tr>
<td>Furthermore</td>
<td>Moreover</td>
</tr>
<tr>
<td>In particular</td>
<td>But</td>
</tr>
<tr>
<td>In fact</td>
<td>Yet</td>
</tr>
</tbody>
</table>

What type of citation is used? Can you make it better?

- The Origins of the First Scientific Articles

Banks (2011) describes the founding of the first scientific journals in London and Paris in the 1660s. Obviously, the first scientific articles had no direct models to build on, and several scholars have discussed possible influences. Ard (1983) and Valle (2000) suggest that the first articles developed from the scholarly letters that scientists were accustomed to sending to each other. Sutherland (1986) showed that early articles were also influenced by the newspaper reports of the time. Paradis (1987) described the influence of the philosophical essay. Shapin (1984) claimed that the scientific books of Robert Boyle were another model. Bazerman (1988, 1997) argued that discussions among the scientists themselves made their own contribution to the emergence of the scientific article. Finally, Gross (1990, 2008) ascribes their origins to inventories of nature and natural products.

Any Questions???
Thank You!

References

HOMEWORK?!?

Links to examples of good LRs. Check them out!

- [http://libguides.uwf.edu/c.php?g=215199&p=1420828](http://libguides.uwf.edu/c.php?g=215199&p=1420828)

Check online (or with a librarian) which is the most appropriate manual of style for your particular discipline (e.g. APA, MLA, Chicago, AQS, etc.)