**Literature Review Guidance and Formatting**

**EM495/6**

**Background:**

The point of a literature review is to summarize and evaluate the wider scientific literature in order to both provide direct relationships between different studies and to provide context to your own work. Eventually, you will be able to use the literature review as the basis for the introduction of your research report.

“Literature” can be any of the following components:

1. Journal Articles
2. Conference Proceedings
3. Government Reports
4. Theses and Dissertations

The above sources are listed in the order that you should prioritize your use of sources when considering what constitutes important research. You should rarely use theses and dissertations except in cases where the project is directly correlated to the bulk of research in these documents. However, theses and dissertations are typically an excellent resource for students to use when details in other documents are left out or are unclear.

**Questions the literature review should answer:**

1. What do we already know about the subject?
2. What are the current theories?
3. What are the relationships between the different theories/concepts in this area?
4. What deficiencies exist in the discussions of current research projects?
5. What needs further examination because of insufficient evidence?
6. How will your work build on the work of others (or diverge from it) in order to provide sufficient evidence to address one or more of these insufficiencies?

**Useful tips:**

1. You cannot read everything – try to read the most relevant work in the field. Some suggested tips are included in the final report format and you should get some useful tips from meeting with the library’s department representative.
2. Do not lose track of your references – you should keep your references organized. Some reference services, like RefWorks and Mendeley (free!), also exist to help you keep track of important work.
3. Do not organize the review chronologically – you should organize papers by “groups” of ideas.

Sections:

1. Abstract

* Includes a breakdown of relevant directions taken in an area of literature and the major result(s) from each category.
* Below is an example of an Abstract for a literature review[[1]](#footnote-1):

*Nanoparticles are expected to significantly enhance future thermal energy generation systems, thermal energy storage materials, thermal interface materials and electronic devices. However, very few of these technologies are able to take full advantage of the unique thermal properties of nanoparticles, primarily due to the unusual transport phenomena that occur at their interfaces. To this end, a wealth of recent research has focused on the characterization and control of heat flow at different types of nanoparticle interfaces. The goal of this review is to provide critical insight into the mechanisms that govern thermal transport at three different types of nanoparticle interfaces, including: nanoparticle–substrate, nanoparticle–matrix and nanoparticle–nanoparticle interfaces. As part of this effort, we quantify the magnitude of heat flow at each type of interface using a collection of data that is available in the literature. This data is used to determine which physical mechanisms govern thermal transport at each different type of interface. Recent progress in the development of state-of-the-art thermal characterization techniques is also examined within the context of each type of nanoparticle interface. Finally, methods to control heat flow at different nanoparticle interfaces are discussed and future research needs are projected.*

* The above abstract does not include *context* for the literature review (i.e. what gaps still exist and where your research comes in to fill those gaps). That information will be put into the abstract of your final report. (Note: the abstract for your final report should only reference *your work* and will therefore not be the same as the abstract you use for your literature review).

1. Introduction
   * Identify the topic and provide context for reviewing the literature (i.e. Why are you reviewing this literature? Are you identifying a problem that persists in a certain subject area? Trying to give a broader picture of a relatively new research area? State this up front).
   * Explain the criteria you use in analyzing and comparing the literature and explain the organization of the literature review. If certain aspects of the literature are not included, state why.
2. Body

* You should first do a cursory review of the literature in your area and try to group the literature thematically. Some examples include:
  + different theoretical approaches
  + specific concepts or issues
  + different methodologies employed
  + level of support or otherwise that they lend to one’s own hypothesis/theory.
* The above methods are better than trying to organize the main body chronologically.
* For example, one might organize a review on the **critics and proponents viewpoints on standardized testing in schools[[2]](#footnote-2)** according to the following themes or issues:

**Critics and Proponents of Standardized Tests**

* Testing of students with disabilities
* Testing of minority students
* Testing of students from different social backgrounds
* Gender differences in testing
* Case for bias
* Case against bias
  + In the above case, you would have separate sections for each of the hollow bullet points, and you would ordinarily group individual sources into one of those sections.
  + Note: Because this work will not be published and sold publically, feel free to include images from other works that help make a point.
  + After you’ve decided on the major categorical groupings, one tool that might help to assess the research within the context of a literature review is a “Synthesis Matrix”[[3]](#footnote-3)
    - [“Writing a Literature Review and Using a Synthesis Matrix”](http://guides.library.vcu.edu/ld.php?content_id=1720465)
    - [“Using a Matrix to Organize Research”](http://www2.smumn.edu/deptpages/tcwritingcenter/forms_of_writing/LitRevMatrix_TC.pdf)
    - [Matrix Template](http://guides.library.vcu.edu/ld.php?content_id=1720879)

1. Conclusions
   * Re-state the purpose of the review article and detail its major findings.

1. Warzoha, R.J. and Fleischer, A.S., 2014. Heat flow at nanoparticle interfaces. *Nano Energy*, *6*, pp.137-158. [↑](#footnote-ref-1)
2. http://libguides.bc.edu/litreview/phase5 [↑](#footnote-ref-2)
3. http://guides.library.vcu.edu/ld.php?content\_id=1720465 [↑](#footnote-ref-3)