

Project Skills

H3029

Contents of academic papers and
Literature Review

Objectives

- Your next deliverable for this course will be to carry out your first literature review (awarding 30% for this!).
- This lecture explains the contents usually found in a research paper (and also covers much of the sections you will need in your thesis)...this will aid in your academic writing and reading
- Each section title is explained and an overview of the expected contents in each section is explained
- This lecture can be used as a future writing reference also

The Title

- The Title is the label of your submission; the most-read element
- Should be brief: as few words as possible (<20), and informative:
 - Describe contents accurately
 - Describe subject specifically
 - Easy to understand
 - Suitable for indexing
 - Include key words for indexing
 - Make most important words stand out (order!)
 - Don't promise more than what is in the proposal
 - Cut unnecessary words (e.g. "some notes on")
 - Avoid abbreviations and jargon

Title should address

- What?
- Why/Objective?
- Where?
 - ✓ In selecting words for a Title be as general as permissible and as specific as necessary
 - ✓ Keywords should be different from title words
 - ✓ Keywords should be in alphabetical order

Abstract

- An **abstract** is a brief summary of a research article, thesis, review, conference proceeding or any in-depth analysis of a particular subject or discipline, and is often used to help the reader quickly ascertain the paper's purpose.
- When used, an abstract always appears at the **beginning** of a manuscript, acting as the point-of-entry for any given scientific paper or patent application.
- Abstracting and indexing services for various academic disciplines are aimed at compiling a body of literature for that particular subject.

Abstract

- Should be short (150-250 words)
- Should contain key words for indexing
- Should stand on its own
- No references, No abbreviation, No citation of tables or figures, No unsubstantiated conclusions
- Should have the following contents
 - Introduction/Background (the problems and its significance)
 - Objectives
 - Materials & Methodology (approach to finding a solution)
 - Expected output
 - Conclusions

Abstract contd...

- **Make a great first impression. Most applications require a brief abstract or summary of the project.**
- It is generally a good idea to **write the abstract or summary last, when you can review** the full proposal project description and pull out the most significant and winning arguments.
- Think of it as the introduction to your project, which offers reviewers their first impression of you and your proposed work.
- Your goal is to gain their attention and guarantee that they will read the full proposal with interest, and even enthusiasm.

Exercise

- Cassava is Africa's second most important food staple, after maize, in terms of calories consumed and is widely produced in Kenya, Nigeria, Ghana, Congo, Cote de'voire, Tanzania, and Uganda. The roots are used as a source of calories and the leaves are rich in proteins, vitamins and minerals. Cassava is a drought resistant crop surviving in most arid and semi arid areas. Despite its potential in reducing poverty, one of the Millenium development goals, cassava remains a marginalised crop in most African countries. Pests and diseases pose the greatest challenge to cassava farmers. In Africa, this crop has been affected by a number of viruses notably the African cassava mosaic bigemivirus. Several methods ranging from physical to chemical methods have been used to manage the viruses. However these methods have not been able to eradicate the persistent viral attacks. This project seeks to employ molecular techniques to develop a recombinant DNA vaccine against the African Cassava mosaic virus. Gene constructions containing African Cassava Mosaic virus gene will be made and transgenic cassava cell lines developed. The cells developed will then be observed for coat protein expression and resistance to the virus. It is expected that the antiviral obtained will be used to develop resistant cassava varieties which can be distributed to farmers at affordable prices. It is also expected that a live vaccine will be developed that can be incorporated in sprays and used to spray the cassava plants as it is the case with animal based vaccines that have been developed to counter most animal viruses. The project would be crucial in saving this important staple food. In so doing, cassava's untapped potential such as for pasture as well as an industrial material can be realised.

Exercise

- Construct a Title
- Identify 5 key words
- Identify weaknesses of the abstract

In Summary

Title **Effect of azolla on the mineralizaion of herbicides in a flooded rice soil of Nigeria**

Authors

M. Mouse, D. Duck and D. Pluto*

Afiliation

Walt Disney Institute, Duckhousen, Mickey Lane 13, FL, USA

Abstract

* Corresponding author (pluto@havard.edu)

Key words

Residual accumulation of herbicide residue threatens the sustainability of rice-wheat rotation systems in northern Nigeria. The incorporation of green manure into the soil may stimulate the co-mineralization of pesticides and their metabolites. A two year field experiment was conducted on the experimental station of the Nigeria Rice Research Institute to evaluate the effects of the application of *Azolla pinata* and *A. carolingiana* as green ...

Alachlor, Azolla pinnata, A. carolongiana, Inceptisol, Oryza sativa, Propanil

Introduction

- Bearing in mind that the **first impression** is the **last impression**, you need to present your introduction as clearly as possible—leaving no ambiguities.
- This is the **entrance** of your paper through which your reader will travel a journey of reading. If your introduction is attractive, your reader will delve into your words till the last full stop is reached.
- The introduction discusses the **meaningfulness/contribution** of the study with presentation of problem or issue as well as the argument advocating the need of study for researcher's chosen object. The statement of the issue gives a clear-cut insight into the intentions of the researcher. Thus the introduction presents a background and statement in context to the pertinent issue.

Introduction Contd...

- It may be easier to think of this section as a review of Relevant Literature. Cite previous projects and studies that are similar to what you are proposing. Show the funding agency that you know what you are proposing because you are familiar with what has preceded you.
- Position your project in relation to other efforts and show how your project:
 - ✓ will extend the work that has been previously done,
 - ✓ will avoid the mistakes and/or errors that have been previously made,
 - ✓ will serve to develop stronger collaboration between existing initiatives, or
 - ✓ is unique since it does not follow the same path as previously followed.

Introduction

- In the introduction you should:
 - define or identify the general topic, issue or area of concern
 - point out overall trends in what has already been published
 - Present the case for the new study with a sentence like “In this study.....”
- Essentials
 - Wide reading of subject area
 - Relevant current literature
 - Electronic resources available

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.

Summary vs. 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 literature.

Why Review?

- The format of a review of literature may vary from discipline to discipline and from assignment to assignment
- Generally, the purpose of a review is to analyze critically a segment of a published body of knowledge through summary, classification, and comparison of prior research studies, reviews of literature, and theoretical articles.

Good vs. Bad

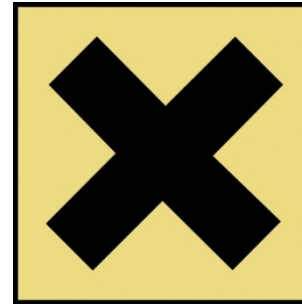
A 'good' literature review.....

- is a synthesis of available research
- is a critical evaluation
- has appropriate breadth and depth
- has clarity and conciseness
- uses rigorous and consistent methods



A 'poor' literature review is.....

-an annotated bibliography
- confined to description
- narrow and shallow
- confusing and longwinded
- constructed in an arbitrary way



Literature Review Purpose

- The purpose of a literature review is for you to take a critical look at the literature (facts and views) that already exists in the area you are researching.
- A literature review is not a shopping list of everything that exists, but a critical analysis that shows an evaluation of the existing literature and a relationship between the different works.
- It demonstrates the relevance of the research.

Characteristics of a Literature Review

- A literature review must do the following:
 1. Be organized around and related directly to the thesis or research question you are developing
 2. Synthesize results into a summary of what is and is not known
 3. Identify areas of controversy in the literature
 4. Formulate questions that need further research

Other Purposes

- Its purpose is to:
 - Place each work in the context of its contribution to the understanding of the subject under review
 - Describe the relationship of each work to the others under consideration
 - Identify new ways to interpret, and shed light on any gaps in previous research
 - Resolve conflicts amongst seemingly contradictory previous studies
 - Identify areas of prior scholarship to prevent duplication of effort
 - Point the way forward for further research
 - Place one's original work (in the case of theses or dissertations) in the context of existing literature

Literature Review Elements

- Literature reviews should comprise the following elements:
 - ✓ An overview of the subject, issue or theory under consideration, along with the objectives of the literature review
 - ✓ Division of works under review into categories (e.g. those in support of a particular position, those against, and those offering alternative theses entirely)
 - ✓ Explanation of how each work is similar to and how it varies from the others
 - ✓ Conclusions as to which pieces are best considered in their argument, are most convincing of their opinions, and make the greatest contribution to the understanding and development of their area of research

Considerations

- In assessing each piece, consideration should be given to:
 - 1. Provenance** —What are the author's credentials? Are the author's arguments supported by evidence (e.g. primary historical material, case studies, narratives, statistics, recent scientific findings)?
 - 2. Objectivity** —Is the author's perspective even-handed or harmful? Is contrary data considered or is certain pertinent information ignored to prove the author's point?
 - 3. Persuasiveness** —Which of the author's theses are most/least convincing?
 - 4. Value** —Are the author's arguments and conclusions convincing? Does the work ultimately contribute in any significant way to an understanding of the subject?

Questions a Literature Review Should Answer:

- **Asking questions such as the following will help you sift through your sources and organize your literature review.**
- Remember, the literature review organizes the previous research in the light of what you are planning to do in your own project.
- **What's been done in this topic area to date?**
- What are the significant discoveries, key concepts, arguments, and/or theories that scholars have put forward?
- **Which are the important works?**
- On which particular areas of the topic has previous research concentrated? Have there been developments over time? What methodologies have been used?
- **Are there any gaps in the research? Are there areas that haven't been looked at closely yet, but which should be? Are there new ways of looking at the topic?**
- Are there improved methodologies for researching this subject?
- **What future directions should research in this subject take?**
- How will your research build on or depart from current and previous research on the topic? What contribution will your research make to the field?
- **Length**
- The length of a literature review varies depending on its purpose and audience. In a thesis or dissertation, the review is usually a full chapter (at least 20 pages), but for an assignment it may only be a few pages.

Structure

There are several ways to organize and structure a literature review. Two common ways are chronologically and thematically.

1.Chronological: In a chronological review, you will group and discuss your sources in order of their appearance (usually publication), highlighting the changes in research in the field and your specific topic over time. This method is useful for papers focusing on research methodology, historiographical papers, and other writing where **time** becomes an important element. For example, a literature review on theories of mental illness might present how the understanding of mental illness has changed through the centuries, by giving a series of examples of key developments and ending with current theories and the direction your research will take.

2.Thematic: In a thematic review, you will group and discuss your sources in terms of the **themes** or **topics** they cover. This method is often a stronger one organizationally, and it can help you resist the urge to summarize your sources. By grouping themes or topics of research together, you will be able to demonstrate the types of topics that are important to your research. For example, if the topic of the literature review is changes in popular music, then there might be separate sections on research involving the production of music, research on the dissemination of music, research on the interpretation of music, and historical studies of popular music.

Why are you asked to write a literature review?

- You are asked to write literature reviews in some of your courses so that you can demonstrate to your lecturers that you are able to:
 - ✓ determine what has already been written on a topic
 - ✓ identify previous approaches to the topic
 - ✓ identify central issues in the field
 - ✓ integrate what previous researchers have found
 - ✓ identify important issues still unresolved.

What steps must you take in preparing to write a literature review?

- **What steps must you take in preparing to write a literature review?**
- There are a number of steps to undertake before you write the literature review. You need to:
 - ✓ formulate a problem in your field of study
 - ✓ familiarise yourself with a broad range of texts that deal with that problem
 - ✓ decide on the texts you wish to include in your review
 - ✓ decide on the most appropriate way to classify the texts
 - ✓ identify the key issues
 - ✓ critically analyse what you have read (you can write summaries to aid with this)
 - ✓ identify important issues that are still unresolved
 - ✓ write a draft of the review
 - ✓ read and think about what you have written and then rewrite.

How might you classify different writings on your topic?

- You may use the following sub-headings to classify what you have read, or you may narrow the focus of your review to deal with some of these categories only.
- Or there may be still other categories that are more appropriate for your research. For example:
 - ✓ research outcomes
 - ✓ research methods
 - ✓ theories
 - ✓ Applications
 - ✓ integration of the works of others
 - ✓ criticism of previous work
 - ✓ building of bridges between related topics
 - ✓ identification of central issue(s).

What makes a good literature review?

- A good literature review:
 - clearly delimits the subject matter to be reviewed
 - covers all important relevant literature
 - is up-to-date
 - provides an insightful analysis of the ideas and conclusions in the literature
 - points out similarities and differences, strengths and weaknesses in the literature
 - identifies gaps in the literature for future research
 - identifies the context for which the literature is important.

Citation Vs. Referencing

- A **citation** tells the readers where the information came from. In your writing, you cite or refer to the source of information.
- A **reference** gives the readers details about the source so that they have a good understanding of what kind of source it is and could find the source themselves if necessary. The references are typically listed at the end of the lab report.

The name-and-year system

Citations: When you cite the source of information in the report, you give the names of the authors and the date of publication.

- ✓ Jenkins and Busher (1979) report that beavers eat several kinds of herbaceous plants as well as the leaves, twigs, and bark of most species of woody plants that grow near water.
- ✓ Beavers have been shown to be discriminate eaters of hardwoods (Crawford, Hooper, and Harlow 1976).

References: The sources are listed at the end of the report in alphabetical order according to the last name of the first author, as in the following book and article.

- ✓ Crawford, H.S., R.G. Hooper, and R.F Harlow. 1976. Woody Plants Selected by Beavers in the Appalachian and Valley Province. Upper Darby, PA: U.S. Department of Agriculture.
- ✓ Jenkins, S.H., and P.E. Busher. 1979. *Castor canadensis*. Mammalian Species. 120:1-8.

The alphabet-number system.

Citations: When you cite the source of information in the report, you give a number in parentheses that corresponds to the number of the source in the alphabetical listing in the "References."

- ✓ Jenkins and Busher report that beavers eat several kinds of herbaceous plants as well as the leaves, twigs, and bark of most species of woody plants that grow near water (4).
- ✓ Beavers have been shown to be discriminate eaters of hardwoods (3).

References: The sources are listed in alphabetical order and numbered accordingly, as in the following book and article.

The Citation-Order System (typically used in engineering--IEEE documentation).

- **Citations:** When you cite the sources of information in the report, you give a number in brackets that corresponds to the number of the source listed in the order in which they appear in the report, the source listed first as [1], the next source [2], etc.
- ✓ Jenkins and Busher report that beavers eat several kinds of herbaceous plants as well as the leaves, twigs, and bark of most species of woody plants that grow near water [1].
- ✓ Beavers have been shown to be discriminate eaters of hardwoods [2].

[1] S.H. Jenkins and P.E. Busher, "Castor canadensis," *Mammalian Species*. Vol. 20, Jan. 1979.

[2] H.S. Crawford, R.G. Hooper, and R.F Harlow, *Woody Plants Selected by Beavers in the Appalachian and Valley Province*. Upper Darby, PA: U.S. Department of Agriculture, 1976.

Literature Review

- Your Literature Review will be due after Reading Week
- No late submissions
- 30% for Literature review
- Presentations will commence the following week
- Presentation skills and workload will be 10% overall.
- 5% for the presentation document and 5% for the actual presentation.
- Students will be given a maximum of 5 mins to present their findings of their literature review document.

What should I do before writing the literature review?

- **Consider organization**
 - You've got a focus, and you've narrowed it down to a thesis statement.
 - Now what is the most effective way of presenting the information?
 - What are the most important topics, subtopics, etc., that your review needs to include?
 - And in what order should you present them?
 - READ!: reading good published examples in your area of research is essential prior to writing your own review

What should I do before writing the literature review?

- Similar to primary research, development of the literature review requires four stages:
 - Problem formulation—which topic or field is being examined and what are its component issues?
 - Literature search—finding materials relevant to the subject being explored
 - Data evaluation—determining which literature makes a significant contribution to the understanding of the topic
 - Analysis and interpretation—discussing the findings and conclusions of pertinent literature

What should you write?

- Literature reviews should comprise the following elements:
 - An overview of the subject, issue or theory under consideration, along with the objectives of the literature review
 - Division of works under review into categories (e.g. those in support of a particular position, those against, and those offering alternative theses entirely)
 - Explanation of how each work is similar to and how it varies from the others
 - Conclusions as to which pieces are best considered in their argument, are most convincing of their opinions, and make the greatest contribution to the understanding

What should you write?

- **Layout**
 - Make your literature review have an academic and professional appearance. Here are some points to make the look of your report appealing to the reader
- **White space:** leave space between sections, especially from the abstract. This gives an uncluttered effect.
- **Headings/sub-headings:** these help to separate ideas.
- **Text boxes:** you can use these for quotations or paraphrasing to separate them from the rest of your text. It is also pleasing to the eye.

How should I write?

- **Graphics:** center your graphics, such as diagrams or tables, to have space around them. Try not to bury graphics in your text.
- **Pagination:** number pages or sections or both, but the important thing to do is to be consistent. The cover page normally is not numbered. The content page and abstract page usually have a separate numbering system to the body of your literature review.

Language

- **Language focus**
 - Create a balance between direct quotation (citation) and paraphrasing. Avoid too much direct quoting. The verb tense chosen depends on your emphasis:
 - When you are citing a specific author's findings, use the past tense: (found, demonstrated);
 - When you are writing about an accepted fact, use the present tense: (demonstrates, finds); and
 - When you are citing several authors or making a general statement, use the present perfect tense: (have shown, have found, little research has been done).
 - Take into account the academic writing style as discussed in last week's lecture

Final checklist

- Have I fulfilled the purpose of the literature review?
- Is it written at a level appropriate to its audience?
- Are its facts correct?
- Is all the information included relevant?
- Are the layout and presentation easy on the eye?
- Is the language clear, concise and academic?
- Does the abstract summarise the entire review?
- Does the introduction adequately introduce the topic?
- Is the body organised logically?
- Does the conclusion interpret, analyse and evaluate?
- Are the recommendations reasonable?
- Does the table of contents correspond with the actual contents? Are page numbers correct?
- Have I acknowledged all sources of information through correct referencing?
- Have I checked spelling, grammar and punctuation?
- Have I carefully proof-read the final draft?