Literature review, research question & plagiarism

Dr. Luca Longo

School of Computer Science, Technological University Dublin

ADAPT, The global centre of excellence for digital content and media innovation

AIRC, The Applied Intelligence Research Center

D-Real, SFI center for research training in digitally-enhanced reality

CeADAR, EI Ireland's centre for applied Artificial Intelligence

ML-Labs, SFI center for research training in machine learning

✉ **luca.longo@tudublin.ie**

http://www.lucalongo.eu/

What is a literature review? - 1 of 2

- It is an in-depth and **critical evaluation of research** already done on a specific topic
- It provides **background** for the problem or puts the problem into historical perspective
- It allows the demonstration of your ability to identify **relevant information** and to give a summary of existing knowledge.

What is a literature review? - 2 of 2

- It will also identify the **gaps** in the research that your project will address and it will produce a **rationale** for your own research informing your research question.
- It describes the **pros and cons** of particular studies and may suggest areas for **future research**
- It informs the reader about the **current concepts** and **state of research** on the topic and any **controversies**

What is NOT a literature review?

- a review describing and evaluating a specific book, poem, play
- a list of all previous research, but rather an assessment of the research
- an exhaustive, alphabetical list of every work consulted in your research
- a list cited references
- an annotated bibliography listing references and adding brief notes about the value of each source

What is the specific thesis, problem, or research question that my literature review helps to define?

Tips for writing a literature review - typology

- What **type** of literature review am I conducting?
- Am I looking at **issues** of theory, or methodology or policy?
- Am I looking at **quantitative research** (e.g. on the effectiveness of a new procedure) or **qualitative research** (e.g., studies)?

Tips for writing a literature review - Scope

- What is the **scope** of my literature review?
- What **types of publications** am I using (e.g., journals, books, government documents, popular media)?
- What **sub/discipline** am I working in (e.g., computational theory, data analytics, security, machine learning, social network)?

Tips for writing a literature review - impact

- How good was my **information seeking**?
- Has my search been **wide enough** to ensure I've found all the relevant material?
- Has it been **narrow enough** to exclude irrelevant material?
- Is the **number of sources** I've used appropriate for the length of my paper/thesis?
- Will the reader find my literature review **relevant**, appropriate, and useful?

Tips for writing a literature review - depth and criticality

- Have I **critically analysed** the literature I use?
- Do I follow through a set of concepts and questions, **comparing** items to each other in the ways they deal with them?
- Instead of just listing and summarising items, do I assess them, discussing **strengths and weaknesses**?

Tips for writing a literature review - another perspective

- Have I **cited** and **discussed related work** and studies contrary to my perspective?

Tips for the review of each article/chapter/book - 1 of 4

- Has the author formulated a **problem/issue**?
- Is it **clearly defined**?
- Is its **significance** (scope, severity, relevance) clearly established?
- Could the problem have been approached more **effectively** from another perspective?
- What is the author's **research orientation** (e.g., interpretive, critical science, combination)?
- What is the author's **theoretical framework** (e.g., psychological, developmental, feminist)?

Tips for the review of each article/chapter/book - 2 of 4

- What is the **relationship** between the theoretical and research perspectives?
- Has the author **evaluated** the literature relevant to the problem/issue?
- Does the author include literature taking **positions** s/he does not agree with?
- In a research study, how good are the basic components of the **study design** (e.g., population, intervention, outcome)?
- How accurate and valid are the **measurements**?

Tips for the review of each article/chapter/book - 3 of 4

- Is the analysis of the **data** accurate and relevant to the research question?
- Are the **conclusions** validly based upon the data and analysis?
- In material written for a **popular readership**, does the author use appeals to emotion, one-sided examples, or rhetorically-charged language and tone?
- Is there an **objective basis to the reasoning**, or is the author merely 'proving' what he or she already believes?

Tips for the review of each article/chapter/book - 4 of 4

- How does the author **structure** the argument?
- Can you 'deconstruct' the **flow of the argument** to see whether or where it breaks down logically (e.g., in establishing cause-effect relationships)?
- In what ways does this book or article **contribute** to our understanding of the problem under study, and in what ways is it useful for practice?
- What are the **strengths and limitations?**
- How does this book or article **relate** to the specific thesis or question I am developing?

Literature review - final remark - 1 of 3

A literature review is a piece of **discursive prose**, not a list describing or summarising one piece of literature after another.

It's a bad sign to see every paragraph beginning with the name of a researcher. Instead, **organise the literature review** into sections that present themes or identify trends, including relevant theories.

Literature review - final remark -3 of 3

You are not trying to list all the material published, but to **synthesise and evaluate the literature** according to the guiding concept of your thesis or research question.

Literature review and the research question

A literature review is the means for finding and defining a research question.

A **Research Question** is a question that identifies the phenomenon to be studied.

A strong research question

A strong research idea should pass the ‘’**so what**’ test.

- What is the benefit of answering your research question?
- Who will it help (and how)?

A research focus should be narrow, not broad-based.

A strong research question

- **links to existing theories**: how does the research question relate to established literature?
- **informs new paradigms**: what new perspective are you bringing to a given field?

Research question and research hypothesis

A well-thought-out and focused **research question** leads directly into **research hypotheses**.

What predictions would you make about the phenomenon you are examining?

Hypotheses are **specific predictions** about the nature and direction of the relationship between two variables.

Strong hypotheses

- Give **insight** into a research question
- Are **testable** and measurable by the proposed experiments
- come **logically** from the experience of senior researchers

Good hypotheses will easily lead into the definition of the **specific aims**.

Types of research questions

- exploratory
- baserate
- correlation
- causal relationship
- design

Exploratory research questions

- **Existence**:
  - Does X exist?
- **Description and classification**:
  - What is X like?
  - How can X be measured?
  - What are X's components?
  - What are X's properties?
  - How can X be categorised?
- **Descriptive/comparative**:
  - How does X differ from Y?

Base rate research questions

- **Frequency & distribution**:
  - How often does X occur?
  - What is an average amount of X?
- **Descriptive/process**:
  - How does X usually work?
  - By what process does X happen?
  - What are the steps as X evolves?

Correlation research questions

- **Relationship**:
  - Are X and Y related?
  - Do occurrences of X correlate with occurrences of Y?

Causal relationship research questions

- **Causality**:
  - Does X prevent Y?
  - Does X cause Y?
  - What causes X?
  - What effect does X have on Y?

- **Causality/comparative**:
  - Does X cause more Y than does Z?
  - Is X better at preventing Y than is Z?
  - Does X cause more Y than does Z under one particular condition?

Design research questions

- **Design**:
  - What is an effective way to achieve X?
  - How can we improve X?

Example 1 - weak research question - 1 of 2

RQ: Why did people use online web-sites?

Problems:

- which people?
- which web-sites?

RQ is too broad, it does not define the segments of the analysis.

Example 1 - weak research question - 2 of 2

RQ: How many people did use Wikipedia in Ireland on June 6th 2015?

Problems:

- straightforward
- no room for research and analysis

RQ can be simply answered by a hypothetical Internet search (however it could become data for a larger argument)

Example 1 - good research question

RQ: What are some of the environmental factors that occurred in Ireland on June 6th 2015 that would cause people to use Wikipedia?

Advantages:

- can lead to the authors taking a stand on which factors are significant
- it allows to argue to what degree the results are valuable or not

Example 2 - weak research question - 1 of 2

Scope: after reading current research and performing a literature review, you want to investigate to what extent social networking web-sites are harmful.

RQ: Why are social networking sites harmful?

Problems:

- RQ is unclear
- which social networking web-sites?
- what harm is being caused?
- assumption: harm exists. Is this true?

Example 2 - good research question - 1 of 2

How the previous research question can be revised and made stronger?

RQ: How are Internet users experiencing privacy issues on social networking as Instagram/Facebook?

Benefits:

- RQ has a clear scope (Instagram/Facebook)
- RQ specifies the type of harm (privacy)
- RQ define also who is harmed (Internet users)

RQ does not leave room for ambiguity and allows the author to take an arguable position

Formulating research questions - hints - 1 of 2

In Humanities (and sciences) the following hints are beneficial for formulating a research question (RQ):

- Is the RQ too **narrow** or too **broad**?
- What **information** is **needed** to solve the RQ?
- Is the RQ researchable within the given **time frame/location**?
- Is the RQ something I or **others care about**?
- Is the RQ **arguable**?
- Is the RQ an interpretation of an old idea, or does it **solve a problem**?

Formulating research questions - hints - 2 of 2

While all research question need to stand, there are further requirements for research questions in the sciences and social sciences, compared to Humanities[1].

RQ in sciences need to have **repeatable data**.

Unreliable data does not support the formation of an arguable and strong research question.

[1] The humanities are academic disciplines that study human culture.

Putting the research question in context

Once the research & the research question (RQ) are defined, they have to be placed in the right context.

- **Existing theories**:
  - How does the research relate to established literature?
- **New paradigms**:
  - What new perspectives is the research bringing to the field?
- **Philosophical context**:
  - What will it be accepted as valid truth? (Positivist/constructivist/critical theorist/pragmatist)
- **Methodological choices**:
  - What methods are appropriate for answering the RQ? (empirical, data collection/analysis techniques)

Citations and references - APA 6 style

Text

... Studies suggest that considering the context is fundamental for inferring robust and significant assessments of usability (?, ?) . Similarly, considering features and characteristics of users for enhancing the design of interactive systems is a central notion for the User Modeling community, an important discipline within Human-Computer Interaction (?, ?) (?, ?) (?, ?) . ...

References (Bibliography)

Plagiarism - definition

Plagiarism is the act of stealing someone else's work and attempting to 'pass it off' as your own. This can apply to anything, from term papers to photographs to songs, even ideas!

Example of copying

'In a recent work, the nature of the concept of mental workload, from a computational perspective, is argued to be a defeasible phenomenon. It is a concept built upon a set of reasons that can be defeated by additional reasons. The reasonable assumptions behind this are: Assumption 1: human mental workload is a complex construct built over a network of pieces of evidence; Assumption 2: accounting and understanding the relationships of accounted pieces of evidence as well as resolving the inconsistencies that might arise from their interaction is essential in modelling human mental workload.'

If you copy someone else's work and put your name on it, you have plagiarised[2]

[2] Source: Longo, Luca. *Formalising Human Mental Workload as a Defeasible Computational Concept* (Ph.D.). The University of Dublin, Trinity College.

Plagiarism types - patchwork

Example of patchwork

'In a recent work, mental workload is argued to be a defeasible construct. It is a concept built upon a set of reasons that can be defeated by additional reasons. The reasonable assumptions of this statements are: Assumption 1: mental workload is a very complex concept constructed over a network of pieces of evidence; Assumption 2: in order to properly model mental workload, accounting and understanding the relationships of accounted pieces of evidence as well as resolving the inconsistencies that might arise from their interaction is necessary.'

This occurs when the plagiariser borrows the 'phrases and clauses from the original source and weaves them into his own writing' without putting the phrases in quotation marks or citing the author.

Example of Paraphrasing

Mental workload is argued to be a defeasible construct, that is a phenomena constructed over several reasons which can be attacked by additional reasons. In other words, two assumptions holds: Assumption 1: mental workload is a very complex concept constructed over a network of pieces of evidence; Assumption 2: in order to properly model mental workload, accounting and understanding the relationships of accounted pieces of evidence as well as resolving the inconsistencies that might arise from their interaction is necessary.'

This occurs when the plagiariser paraphrases or summarises another's work without citing the source. Even changing the words a little or using synonyms but retaining the author's essential thoughts, sentence structure, and/or style without citing the source is still considered plagiarism.

Example of unintentional plagiarism

In a recent work, the nature of the concept of mental workload, from a computational perspective, is argued to be a defeasible phenomenon. "It is a concept built upon a set of reasons that can be defeated by additional reasons". The reasonable assumptions behind this are: Assumption 1: human mental workload is a complex construct built over a network of pieces of evidence; Assumption 2: accounting and understanding the relationships of accounted pieces of evidence as well as resolving the inconsistencies that might arise from their interaction is essential in modelling human mental workload [Nielson2012].'

It occurs when the writer incorrectly quotes/cites a source they are using.Â
How is this plagiarism, if the author didn't mean to do it?

If a writer has incorrectly quoted/cited a source, it could be misconstrued as dishonesty on the writer's part, thus most often considered plagiarism. Therefore, the incorrect usage of another's work, whether it's intentional or not, could be taken for 'real' plagiarism.

The best method for avoiding plagiarism is to simply **be honest**; when a source has been used in your work, give credit where it's due. Acknowledge the author of the original work you have used.

Use your own work as often as possible. Quoting and citing sources is usually required and inevitable when doing research (to ‘back up’ your own work). But using someone else’s work excessively can be construed as plagiarism.