

# STEPS IN CONDUCTING A RESEARCH PROJECT

1. Identification of a practical problem – Motivation; (*optional*)
2. Identification of a research problem
3. Literature review
4. Determining specific research questions
  - Specification of a conceptual framework, (including a set of hypotheses)
5. Choice of a research methodology
  - Data collection
  - Verifying data
  - Analysing and interpreting the data
6. **Reporting and evaluating research**
7. Communicating the research findings and, possibly, recommendations

Implementation of the chosen research method steps...

# RESEARCH QUALITY

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# RESEARCH QUALITY CRITERIA

- **Originality**
  - Are the RQ/conclusions novel? Never reached before?
- **Relevance**
  - Are the RQ/conclusions of an interest/value for the research community (or broad society)?
- **Validity**
  - Are the conclusions right?
- **Reproducibility**
  - Can the conclusions be reproduced/repeated?

# VALIDATION OF RESULTS

Threats of Validity



# EMPIRICAL VALIDATION

- Are the results trustworthy? Meaningful?
  - **Internal validity** – how well the study is conducted
  - **External validity** - how the findings can be generalised (applicable) to the real world?
- **Validity Threats:**
  - What can compromise validity?
- **Mitigation strategies:**
  - What can be done to improve validity?

<https://www.verywellmind.com/internal-and-external-validity-4584479>

# INTERNAL VS. EXTERNAL

## Internal Validity

- Conclusions are warranted
- Controls extraneous variables
- Eliminates alternative explanations
- Focus on accuracy and strong research methods

## External Validity

- Findings can be generalized
- Outcomes apply to practical situations
- Results apply to the world at large
- Results can be translated into another context

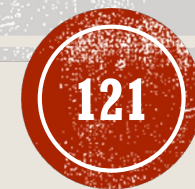
# OTHER TYPES OF VALIDITY TO CONSIDER:

- Conclusion validity
- Construct validity (theoretical validity)
- Experimental validity
- Descriptive validity

# REPORTING RESEARCH

Research ethics

Writing a research paper



# BEFORE YOU START WRITING..

- Academic Honesty and Plagiarism

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- Academic Honesty and Plagiarism

Dictionary definition of “plagiarism” (from [Merriam-Webster](#)):

To steal and pass off (the ideas or words of another) as one's own: to use (another's production) without crediting the source

“What is plagiarism?” article:

<https://www.scribbr.com/category/plagiarism/>

# PLAGIARISM

*“Plagiarism involves the intentional or negligent use, by paraphrase or direct quotation, of the published or unpublished work of another person **without full and clear acknowledgment** in all such scholarly work as essays, examinations, oral/written reports, homework assignments, laboratory reports, computer programs, music scores, choreography, graphic depictions, and visual presentations.”*

—Bowdoin Academic Honor Code

<https://www.bowdoin.edu/dean-of-students/judicial-board/academic-honesty-and-plagiarism/what-is-plagiarism.html>

<https://www.scribbr.com/category/plagiarism/>



# PLAGIARISM EXPLAINED

- Can happen accidentally
- Applies even if you paraphrase/translate
- Using other sources is good, as long as you cite them
- Citing sources shows which ideas are your own



# TYPES OF PLAGIARISM

- **Global plagiarism** - plagiarizing an entire text.
  - **Verbatim plagiarism** - directly copying someone's words, without using quotation marks or citing the source.
  - **Paraphrasing plagiarism** - rephrasing someone else's ideas and presenting them as if they were your own original thoughts.
  - **Patchwork plagiarism** - copying phrases, passages, and ideas from different sources and compiling them into a new text.
  - **Translation plagiarism** – translating a text from one language to another and using it without mentioning/citing the source
  - **Self-plagiarism** - recycling previous work that you've already submitted or published.
- 
- Attention to:
    - Referencing
    - Quotation
    - Paraphrasing
    - Translation

<https://www.bowdoin.edu/dean-of-students/judicial-board/academic-honesty-and-plagiarism/index.html>

<https://www.scribbr.com/category/plagiarism/>

# CONSEQUENCES OF PLAGIARISM

Grade penalties

Failing your course

Disciplinary action

Suspension or expulsion



# HOW TO AVOID?

Scribbr: <https://www.youtube.com/watch?v=uQhVDH9p7aU&t=4s>

1. Keep track of all the sources
  - Sources: Articles, books but also websites, videos, whitepapers, blogposts etc.
2. Quote and paraphrase
  - [How to quote?](#)
  - [How to paraphrase?](#)
3. Cite your sources in the text systematically
  - Manage bibliography and in-text citation



# SOURCE DOCUMENTING = CITATION

- ✓ Author name
- ✓ Source title
- ✓ Publication date
- ✓ Publisher
- ✓ Page numbers of specific quotes or passages
- ✓ URL or DOI for online sources
- ✓ Access date for online sources

Full citation, following one of the recognised standards in a Bibliography part of the paper fully accounts for correct source documentation



# QUOTE VS. PARAPHRASE: HOW?

Two ways of sharing information from a source:

## Quoting

- ✓ Copy the author's exact words
- ✓ Use quotation marks
- ✓ Mention the source
- ✓ **Example:** According to Darwin, "as natural selection acts solely by accumulating slight, successive, favourable variations, it can produce no great or sudden modification; it can act only by very short and slow steps" (1859, p. 510).

## Paraphrasing

- ✓ Put the text into your own words
- ✓ No quotation marks
- ✓ Mention the source
- ✓ **Example:** According to Darwin, natural selection is a gradual process that produces many small changes over time rather than sudden leaps (1859, p. 510).



# QUOTE VS. PARAPHRASE: WHEN?

Two ways of sharing information from a source:

## Quoting

- ✓To give textual evidence
- ✓To analyze language
- ✓To give precise definitions

## Paraphrasing

- ✓To support / illustrate your claim
- ✓To explain ideas
- ✓To show your understanding of the source

“Rule”: Quoting > 30 words ==> need to paraphrase!



# ENGLISH TO FRENCH TRANSLATION

- Use paraphrasing and citations when you translate from English!
- You can use quotation in English in your text in French



# CITE THE ORIGINAL SOURCE IN YOUR TEXT, FIGURES ETC

- Use In-text citations to identify the source
- Use Bibliography section to give full source information
- Follow a consistent citation style (e.g. APA, MLA, Chicago)

In-text citation:

Recent research has shown that plagiarism is an increasingly widespread issue (Smith & Thomas, 2018, pp. 34–36).

Bibliography entry:

Smith, T. H., & Thomas, L. (2018). *New challenges in higher education*. Free Press.

In-text citation:

Recent research has shown that plagiarism is an increasingly widespread issue [1].

Bibliography entry:

1. Smith, T. H., & Thomas, L. (2018). *New challenges in higher education*. Free Press.



# ORGANISING YOUR BIBLIOGRAPHY

- Alphabetic order of entries
- Order of appearance in the text



# PLAGIARISM CHECKERS

- Used by universities to detect plagiarism
- Compares your document to a database of sources
- Detects text that is too similar to other sources
- Detects where citations are missing
- <https://compilatio.univ-paris1.fr/>



# GEN AI IN SCIENTIFIC WRITING

- Can we use?
- How can we use?
- What happens if ... ?



# MORE ON SCRIBBR...

<https://www.scribbr.com/plagiarism/how-to-avoid-plagiarism/>



# SCIENTIFIC REPORT STRUCTURE (INDICATIVE)

- Abstract
  - 1. Introduction – 5%
    - Problem setting
  - 2. Background – 5%
  - 3. Research methodology – 10%
  - 4. Solution/results – 35%
    - Data collection
    - Data analysis
  - 5. Analysis/discussion of results – 25%
    - Validation
  - 6. Related works – 10%
  - 7. Conclusion/future work 10%
  - Bibliography
  - Appendices
- see EPI: **Mémoires / Master thesis**

# OTHERWISE... GET SOME INSPIRATION

- Choose one research paper you like
- Check out:
  - What is its (general) structure?
  - Why is it so pleasant to read? / How the author(s) organise “ the story”?
  - Can you present your work in the same/ similar way?
- Follow the same structure for your report.