How to write a paper?

Bernard Pochet, PhD (ULiège Library)

2021 (cc-by)
[recall] In science, research and literature are linked
Don’t forget the processes

Research
- the research question
- the systematic review
- the hypothesis
- the experimental work

Access
- the informational curation
- the sources
- the documents
- the state of the art

Writing
- the authors' guide
- the structure of the document
- the readability, clarity & style
- the precision
- the citations

Diffusion
- the databases
- the search engines
- the social networks
- the open access repositories

Editorial process
- the editor
- the editorial board
- the peer review process

Publishing
- the printed documents
- the electronic documents
- the grey literature

Edition
- the publisher
- auto-publishing
- the open access way
Especially the editorial process
Write to be read ... barriers?

- **The title**: short, attractive, representative of the text/research
- **Keywords**: thesaurus?
- **Abstract**: abstract structure?
- **Authors**, their affiliation
- **Language**: do you speak/write/read English?
- **The text**:
  - The quality of the scientific approach
  - The structure of the text: IMRaD,…
- **The quality of the writing**:
  - readability
  - clarity
  - precision
  - style
A paper:

Is:

- A problem and a solution;
- A new and original answer (compared to what we already know);
- Only one message.
A paper:

Is:

- A problem and a solution;
- A new and original answer (compared to what we already know);
- Only one message.

Although not what was planned at the beginning of the research…
Anatomy of a research paper

Autumn sowing and first-year mowing enhance flowering species abundance and diversity in wildflower strips

Jichen Panjouy 1,2, Valentin Gilliaux 1, Bernard Bodin 1, Grégory Maly 1,3

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Introduction

The objective of the study was to evaluate the impact of autumn sowing and the first-year mowing on flowering species abundance and diversity in wildflower strips. The study was conducted in a field trial located in France. The trial consisted of 10 replicate plots, each measuring 30 m x 30 m. The sowing and mowing treatments were applied in the first year of the trial. The sowing was carried out in October 2014, and the first mowing was performed in June 2015. The flowering species were monitored throughout the growing season. The results showed that autumn sowing and first-year mowing significantly increased the abundance and diversity of flowering species in the wildflower strips.

Keywords: flowering species, wildflower strips, mowing, autumn sowing, biodiversity.
Autumn sowing and first-year mowing enhance flowering species abundance and diversity in wildflower strips

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**Université de Liège-Gradis, Agri-Bois Terres, TRR330, Teaching and Research Center, Crop Science, Parc des Déportés, 2 Beaulieu-Gihem, Belgium

Received 15 December 2020; accepted 18 November 2020; available online 1 December 2020.

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Anatomy of a research paper

Bernard Pochet, PhD (ULiège Library)

Introductory part

Body text

How to write a paper?
Anatomy of a research paper

Introduction part

The introduction of a research paper serves a dual purpose:

1. **Setting the stage** for the research
2. **Motivating the reader** to continue reading

### Key Elements of an Introduction

- **Background Information**: Provide context and relevant background information.
- **Research Gap**: Identify gaps in the existing literature.
- **Objectives**: Clearly state the objectives and goals of the research.
- **Methodology**: Outline the approach and methods used.
- **Significance**: Explain the importance and impact of the research.

### Steps to Writing an Introduction

1. **Read the Literature**
2. **Identify the Research Gap**
3. **Define the Objectives**
4. **Design the Study**
5. **Write the Introduction

---

Body Text

The body text is the main content of the research paper, where the research is presented systematically.

### Sections of the Body Text

- **Methodology**
- **Results**
- **Discussion**
- **Conclusion**

### Writing Tips

- **Clarity**: Ensure the language is clear and concise.
- **Consistency**: Maintain consistency in terminology and data presentation.
- **Relevance**: Focus on the relevance of each section to the research question.

---

Bibliography

List all the sources cited in the research paper, following a specific citation style.

---

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Each element is listed “as it” in most bibliographic databases:

- **Title** (+ current title & translated title);
- **author(s)** + affiliation (use institutional standardization);
- **Summary**: structured abstract;
- **Keywords**: use a thesaurus.
Introductory part

Each element is listed “as it” in most bibliographic databases:

- **Title** (+ current title & translated title);
- **author(s)** + affiliation (use institutional standardization);
- **Summary**: structured abstract;
- **Keywords**: use a thesaurus.

Special attention must be paid to the quality of these informations
The title

- Short (between 5 and 25 words);
The title

- Short (between 5 and 25 words);
- Clear (so unambiguous);
The title

- Short (between 5 and 25 words);
- Clear (so unambiguous);
- Summary (≈ summary of the abstract);
The title

- Short (between 5 and 25 words);
- Clear (so unambiguous);
- Summary (= summary of the abstract);
- Must attract the reader;
The title

- Short (between 5 and 25 words);
- Clear (so unambiguous);
- Summary (= summary of the abstract);
- Must attract the reader;
- Informative or synthetic;
The title

- Short (between 5 and 25 words);
- Clear (so unambiguous);
- Summary (= summary of the abstract);
- Must attract the reader;
- Informative or synthetic;
- In the form of a question or statement.
Abstract

Description of the subject. Wildflower strips are used to provide flower resources for insects in agroecosystems. There is a need to determine implementation processes that maximize the development of the sown flowering species.

Objectives. To determine the effect of i) sowing period (autumn and spring) and ii) early cutting of annuals during the first growing season on the development of the sown perennial species.

Method. We surveyed species development during three years (2012-2014) in 24 plots in an experimental wildflower strip. Plots were sown either in autumn or in spring, and received or not an early cutting management in 2012.

Results. Sown species were favored by autumn sowing. A few species did better after spring sowing. Two years later (2014), early cutting management enhanced sown flowering species abundance and diversity in case of spring sowing only.

Conclusions. Studying implementation and management protocols is of first importance to improve the efficiency of wildflower strips. We recommend autumn sowing as a first approach, and mowing aimed at controlling annuals in the first year after sowing.
Or graphical abstract
The body of the text: IMRaD model/structure
The body of the text: IMRaD model/structure

- Introduction
  - What is the context for this project?
  - How does it fit in with other research on the topic?
  - What is the research question?

- Methods

- Results

- Discussion/Conclusion

WHY?
The body of the text: IMRaD model/structure

- **Introduction**
  - What is the context for this project?
  - How does it fit in with other research on the topic?
  - What is the research question?

- **Methods**
  - What did the author(s) do to answer the research question?

- **Results**

- **Discussion/Conclusion**

**WHY?**

**HOW?**
The body of the text: IMRaD model/structure

- **Introduction**
  - What is the context for this project?
  - How does it fit in with other research on the topic?
  - *What is the research question?*

- **Methods**
  - What did the author(s) do to answer the research question?

- **Results**
  - What was the answer to the question?
  - This is often shown in tables and figures.

- **Discussion/Conclusion**

**WHY?**

**HOW?**

**WHAT?**
The body of the text: IMRaD model/structure

Introduction
- What is the context for this project?
- How does it fit in with other research on the topic?
- What is the research question?

Methods
- What did the author(s) do to answer the research question?

Results
- What was the answer to the question?
- This is often shown in tables and figures.

Discussion/Conclusion
- What is the significance of this project?
- How does it fit in with what else is known about the topic?
The body of the text: Introduction

**Must:**
- Indicate the problem (what exactly are we talking about?);
- Refer to published literature (what we already know?);
- Present the hypothesis(s) (what is asked?).
The body of the text: Introduction

**Must:**
- Indicate the problem (what exactly are we talking about?);
- Refer to published literature (what we already know?);
- Present the hypothesis(s) (what is asked?).

**Objectives:**
- Highlight the value of the work presented in the article;
- Justify the choice of hypotheses and scientific approach.
Description (specify, unless already well described in the literature) of the experimental protocol.
Description (specify, unless already well described in the literature) of the experimental protocol.

Objectives:
- allow the evaluation of the result’s quality;
- allow another researcher to:
  - Reproduce the results obtained,
  - Use the same method in further experimentation.
The body of the text: Results

No interpretation, only results
The body of the text: Results

No interpretation, only results

Illustrations

- Not to be redundant (graphs, tables and text);
- Readable independently of the text:
  - quality of the title (above for tables & below for graphics) and legends (always below),
  - multilingual;
- numbered and always called (Table x or Figure y) in the text.
Figure 1: Total polyphenols contents of spices using different roasting temperatures (roasting time: 15 min) and different roasting times (roasting temperature: 140 °C), respectively — Teneurs en polyphénols totaux des épices respectivement à différentes températures de torréfaction (temps de torréfaction : 15 min) et à différents temps de torréfaction (température de torréfaction : 140 °C).
The body of the text: Discussion/conclusions

Must:

- Relate the results to the starting hypothesis;
- Recall the originality and interest of the article (and research);
- Highlight the practical consequences of this research;
- No bibliographic references. It is the discussion of the author’s work, not that of other works;
- Be critical, present the limits of the research conducted (without denigrating the work);
- Possibly explain unexpected results or observations.
The body of the text: Discussion/conclusions

**Must:**

- Relate the results to the starting hypothesis;
- Recall the originality and interest of the article (and research);
- Highlight the practical consequences of this research;
- No bibliographic references. It is the discussion of the author’s work, not that of other works;
- Be critical, present the limits of the research conducted (without denigrating the work);
- Possibly explain unexpected results or observations.

*It is an essential part. Sentences can be cited in many articles and books*
A review (or systematic review)

- For a review paper;
A review (or systematic review)

- For a review paper;
- For an application for research funding;
A review (or systematic review)

- For a review paper;
- For an application for research funding;
- For a research paper (part of the introduction);
A review (or systematic review)

- For a review paper;
- For an application for research funding;
- For a research paper (part of the introduction);
- For a thesis.
A Review

Demonstrates the value of your work.

Show that you’re proficient in the topic.

Express your agreement and disagreement.
A review - can use another structure

**Introduction:**

- Subject, limitations, and scope of the research;
- Presentation of the structure of the “Literature” section;
- Presentation of the methodology of the extended literature search.
A review - can use another structure

**Introduction:**
- Subject, limitations, and scope of the research;
- Presentation of the structure of the “Literature” section;
- Presentation of the methodology of the extended literature search.

**Literature:**
- Discussion on the different sources selected;
- Organization: evolution over time, points of view and schools, different aspects.
### Introduction:
- Subject, limitations, and scope of the research;
- Presentation of the structure of the “Literature” section;
- Presentation of the methodology of the extended literature search.

### Literature:
- Discussion on the different sources selected;
- Organization: evolution over time, points of view and schools, different aspects.

### Conclusions (or “implications” and “future”):
- Contributions of the literature (what is already known);
- Areas of agreement and controversy (incl. Your voice);
- Questions still awaiting answers (by You).
A revue - can also be structured as a research article

Introduction

- Subject, limitations, and scope of the research.
A revue - can also be structured as a research article

<table>
<thead>
<tr>
<th>Introduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject, limitations, and scope of the research.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Material &amp; methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentation of the methodology of the extended literature search.</td>
</tr>
</tbody>
</table>
A revue - can also be structured as a research article

**Introduction**
- Subject, limitations, and scope of the research.

**Material & methods**
- Presentation of the methodology of the extended literature search.

**Results**
- Findings (structured presentation of the literature) by sources, area of knowledge, timeline, ...
A revue - can also be structured as a research article

**Introduction**
- Subject, limitations, and scope of the research.

**Material & methods**
- Presentation of the methodology of the extended literature search.

**Results**
- Findings (structured presentation of the literature) by sources, area of knowledge, timeline, ...

**Discussion**
- Contributions of the literature (what is already known);
- Areas of agreement and controversy (incl. Your voice);
- Questions still awaiting answers (by You).
All documents used must be cited in the text, with reference to the bibliography.
All documents used must be cited in the text, with reference to the bibliography.

All documents in the bibliography must be cited at least once in the text.
The bibliography

References must be:

- Recent
- Exhaustive (but not redundant – a selection of the most representative)
- Accessible (not « submitted » or « local document not published »)
- Scientific (should this be specified?)
The bibliography

References must be:

- Recent
- Exhaustive (but not redundant – a selection of the most representative)
- Accessible (not « submitted » or « local document not published »)
- Scientific (should this be specified?)

And don’t forget the use of the right tool to manage documents and bibliography!
Some publishers accept appendices;
It’s getting easier with electronic publishing;
With open science, it’s called open data.
Before all: literature search;
Before all: **literature search**;

The **article type** (research, review, research note...);
Writing a paper: first steps

- Before all: literature search;
- The article type (research, review, research note...);
- The list of authors (!);
Writing a paper: first steps

- Before all: literature search;
- The article type (research, review, research note...);
- The list of authors (!);
- The choice of the journal (tools...);
Writing a paper: first steps

- Before all: **literature search**;
- The **article type** (research, review, research note...);
- The list of **authors** (!);
- The choice of the **journal** (tools...);
- Define the **subject** of the article (one question - one answer);
Writing a paper: first steps

- Before all: **literature search**;
- The **article type** (research, review, research note...);
- The list of **authors** (!);
- The choice of the **journal** (tools...);
- Define the **subject** of the article (one question - one answer);
- **Authorizations** (for illustrations).
A decision must be taken **before** starting the work (research and writing).

**The author:**
- Plays a central role in determining hypothesis;
- Contributes to obtaining, analyzing and interpreting results;
- Participates in writing a significant part of the article;
- Not to be confused with thanks.

The place of an author in the list is also important (first, last...)

Bernard Pochet, PhD (ULiège Library)

How to write a paper?

2021 (cc-by)
The journal choice

- Open access! (or at least fair publisher):
  - avoid hybrid journals (“Open Choice”),
  - avoid predatory journals/publishers.
- International recognition;
- Databases and citations;
- Peer reviewing;
- Audience (generalist vs. specialist, language...);
- diffusion (eJournal, frequency, process duration);
- Edition (author’s guide).
The journal choice

- Open access! (or at least fair publisher):
  - avoid hybrid journals (“Open Choise”),
  - avoid predatory journals/publishers.
- International recognition;
- Databases and citations;
- Peer reviewing;
- Audience (generalist vs. specialist, language...);
- diffusion (eJournal, frequency, process duration);
- Edition (author’s guide).

OA = between 2 et 5 times more citations!
Enter your abstract here:

After a brief historical review, this article presents the current situation of the journal BASE, its objectives, its challenges, its functioning, and its limitations. BASE is a journal that publishes articles in Open Access in the field of agronomic sciences in the broad sense and offers a free service to authors. The editorial board pays particular attention to the transparency of its validation and editing processes. The figures presented allow BASE to find its place alongside all international scientific journals. At the end of the article, after describing the difficulties encountered, several perspectives are described. These should address the possible disadvantages of the multidisciplinary nature of BASE.

Your results...

Score: Title of Journal, ISSN

98.42: Social Communication, 2299-5382
98.40: Revista Română de Biblioteconomie și Ştiinţa Informării, 2559-5490
98.35: Journal of Research Practice, 1712-851X
98.30: Management, 2299-193X
98.28: Analele Universității "Eftimie Murgu" Resita: Fascicolă II, Studii Economice, 2344-6498
Open Access Journal Finder powered by Enago

The Enago Open Access Journal Finder enables you to find quality open access journals that are pre-vetted to protect you from predatory publishers. This free journal finder solves common issues on predatory journals, journal authenticity, and article processing fees by utilizing a validated journal index provided by the Directory of Open Access Journals (DOAJ). Enago's proprietary search algorithm helps you shortlist journals that are most relevant to your manuscript and research objectives, thus giving you the best chance of publication.

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- Chinese
- Korean

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Think. Check. Submit. helps researchers identify trusted journals and publishers for their research. Through a range of tools and practical resources, this international, cross-sector initiative aims to educate researchers, promote integrity, and build trust in credible research and publications.

Sharing research results with the world is key to the progress of your discipline and career but with so many publications, how can you be sure you can trust a particular journal? Follow this checklist to make sure you choose trusted journals and publishers for your research.

Think. Check. Submit.

Are you submitting your research to a trusted journal or publisher?
Is it the right journal or book for your work?

Subscribe to our mailing list

* indicates required
Email Address *

First Name

Last Name

You can unsubscribe at any time by clicking the link in the footer of our emails. For information about our privacy practices, please visit our website.

We use Mailchimp to manage our mailing list. By clicking below to subscribe, you acknowledge that your information will be transferred to Mailchimp for processing. Learn more about Mailchimp’s privacy practices here.

SUBSCRIBE

Think. Check. Submit. Retweeted
Authorizations

For:

- Tables;
- Graphics (including maps!);
- Drawing or photograph.
For:
- Tables;
- Graphics (including maps!);
- Drawing or photograph.

You must have permission to reproduce (unless in open access, e.g. CC, or public domain)

Contact with rights holders (editor, authors…) can take a long time…
The basic

- Write to communicate, not to impress;
- Keep your audience in mind;
- Write in your own voice: express yourself;
- Organize the information carefully;
- Follow the instructions;
- Set aside blocks of time for writing;
- Write quickly and leave gaps if necessary;
- Revise, revise, revise.
Your text

- Write readable (words, sentences & paragraphs);
- Be understandable and direct;
- Remove jargon;
- Use concrete words;
- Be precise (never use the word “many” without saying how many!);
- Add enough details (but not too much);
- Credit sources adequately.
The right tools
- Write without editing!
- Use an editor (instead of a word processor) to write without distraction;
- Use a mental map to structure your ideas.

Don’t try to get it right the first time and resist the temptation to edit as you go.
The right tools

- Write without editing!
- Use an editor (instead of a word processor) to write without distraction;
- Use a mental map to structure your ideas.

Don’t try to get it right the first time and resist the temptation to edit as you go
→ You will tend to get stuck and waste time.
Some simple tips to improve your writing (to write stronger sentence)

1. Avoid contractions

   don’t → do not
   can’t → cannot
   shouldn’t → should not…
Some simple tips to improve your writing (to write stronger sentence)

1. Avoid contractions

   don’t → do not
   can’t → cannot
   shouldn’t → should not...

2. Avoid “there is” or “there are”

   There are many issues that students face at university → Students face many issues at university
Some simple tips to improve your writing (to write stronger sentence)

3. Avoid “really”, “very”, “a lot”, “so”

A lot of students think university is very hard → 50% of students find it hard to study at university
Some simple tips to improve your writing (to write stronger sentence)

3. Avoid “really”, “very”, “a lot”, “so”

A lot of students think university is very hard → 50% of students find it hard to study at university

4. Prefer the active voice

Healthcare reforms were implemented by Obama → Obama implemented healthcare reforms
Some simple tips to improve your writing (to write stronger sentence)

3. Avoid “really”, “very”, “a lot”, “so”

A lot of students think university is very hard → 50% of students find it hard to study at university

4. Prefer the active voice

Healthcare reforms were implemented by Obama → Obama implemented healthcare reforms

5. Use strong verbs

He made objection to nationalization → He objected to nationalization
Predatory publishers and fake journals

- Use our Compass to Publish (https://app.lib.uliege.be/compass-to-publish/)
Ethics

Predatory publishers and fake journals

- Use our Compass to Publish (https://app.lib.uliege.be/compass-to-publish/)

Experimental ethics

- Ethics commission;
- Protocol number.
## Ethics

### Predatory publishers and fake journals
- Use our Compass to Publish (https://app.lib.uliege.be/compass-to-publish/)

### Experimental ethics
- Ethics commission;
- Protocol number.

### Peer reviewing process
- Open / single blind / double blind;
- contacts (between the authors and reader are forbidden).
Ethics

Fraud

- Plagiarism and self-plagiarism;
- data production;
- data manipulation and falsification.
# Ethics

## Fraud
- Plagiarism and self-plagiarism;
- data production;
- data manipulation and falsification.

## Conflict of interest
- Financial and Commercial;
- Contractual;
- Patent.
Ethics

Fraud
- Plagiarism and self-plagiarism;
- data production;
- data manipulation and falsification.

Conflict of interest
- Financial and Commercial;
- Contractual;
- Patent.

Authorship
- who did what?
- ghost authors (rewriting company).
Ten advices to write an incredibly bad paper ... ;-)

1. Avoid Focus;
2. Avoid originality and personality;
3. Make the article really really long;
4. Do not indicate any potential implications;
5. Leave out illustrations (...too much effort to draw a sensible drawing);
6. Omit necessary steps of reasoning;
7. Use abbreviations and technical terms that only specialists in the field can understand;
8. Make it sound too serious with no significant discussion;
9. Focus only on statistics;
10. Support every statement with a reference.

Sand-Jenson in Oikos 2007, 116 723 (C&E News Sept 10, 2007)
The fighting course

Submit your paper

- via email or on a dedicated site;
- With a cover letter:
  - A brief description of the work, its purpose, and interest in the journal,
  - The originality of the manuscript,
  - The subject of the manuscript fit with the scope of the journal;
- Declaration on the honor of lack of conflict of interest (funding, for example);
- Declaration on honor that all co-authors authorize the submitting of the paper;
The process...
The fighting course

After preliminary reading (and opinion of the editorial board)

- Rejection;
- Request for additions before proceeding.

After peer review

- Acceptance (rarely with the first version);
- Minor revisions (form);
- Major revisions (content);
- Rejection.

Delay

= several months (up to one year!)

Bernard Pochet, PhD (ULiège Library)
The fighting course

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- Rejection;
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Delay

Reviewers + corrections by authors + management of a large number of articles = several months (up to one year!)

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The fighting course

After preliminary reading (and opinion of the editorial board)
- Rejection;
- Request for additions before proceeding.

After peer review
- Acceptance (rarely with the first version);
- Minor revisions (form);
- Major revisions (content);
- Rejection.

Delay
reviewers + corrections by authors + management of a large number of articles
= several months (up to one year!)
Reject?

The main reasons for rejection (or major revision) are as follows:

- There’s plagiarism;
- The content is not original;
- There are too many mistakes (spelling, grammar, language…);
- Objectives (hypothesis[s]) are not defined;
- The interest is too local;
- The experimental design is too poor;
- There are inconsistencies in the data;
- The conclusions are hasty or erroneous;
- The results are too partial (“further study should…”);
- The bibliography is poor or too old and does not give a current vision of the problem.
Thank you for your attention

\[1\text{these slides were created with a Markdown file, Beamer and Pandoc}\]