ETH zürich

# MIM workshop: General principles of scientific writing

## 14. Sep. 2023

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# Review

- Structure building (Intro or whole paper)
  - Skeleton/meat/cosmetics
- Sentence building to create structure (w/ examples)
  - Flexibility of sentence structuring
- Concept of reading like a robot
- Concept of coheseveness and coherence
  - Within a paragraph, within a section (Intro/Results/Discussion) and within a whole manuscript (i.e., closure between problem statement and discussion/conclusion)
- Preparing and practicing a 1-min talk
- Sketch -> write -> revise
- Finding right questions / knowledge gap (analysis)
- Analytical (rather than content-focused) reading

# Improve clarity: 10 examples of cumbersome writing

**S05xE01 - Ten rules to avoid cumbersome expressions**

Please download the file: 3.1-A_guide_to_scientific_writing_Chapter3.pdf

In pairs, discuss two rules (of the 10 in total). After that, present these points to all participants.

1. Cluster of nouns
2. Clusters of adjectives
3. Subordinate clauses at beginning of sentence
4. Nouns derived from verbs
5. Filler verbs / words
6. Passive vs active
7. Use of imprecise words
8. Use of compound prepositions
9. Use of multiple negatives
10. Use of unfamiliar abbreviations, symbols and references

# Improve clarity: 10 examples of cumbersome writing

- Cluster of nouns

  - one noun after another

Examples:

"Chemical healing suppression"

→ Suppression of chemical healing or Chemical suppression by healing

- Cluster of adjectives

  - one adjective after another

Example:

"The maximum net returns above feed cost ration"

→ Innovation-based return on investment

<u>Solutions</u>

1.) Replace one or more adjectives by a noun or replace one or more nouns by an adjectives

2.) Add a preposition between nouns/adjectives (need to check afterwards if meaning is retained)

3.) Add a hyphen in-between words

# Improve clarity: 10 examples of cumbersome writing

- Subordinate clauses at beginning of sentence
  - Tricky to read b/c starting out with long explanation before main clause
  - Example: Thus, although there were too few plots to show all of the interaction, which we sought, under the conditions of the experiment, copper and zinc acted additively.

  →Thus, copper and zinc acted additively under the conditions of our experiment, although there were […]

  Tip: Avoid starting with: “Based on the fact that”, “While/whilst […]”, “Although […]”

- Nouns derived from verbs
  - Example: “**Weights** of the animals were taken”

  → “The animals were **weighted**” (“were taken” not needed → makes sentence also shorter)

# Improve clarity: 10 examples of cumbersome writing

- Filler verbs / words
  - Don't add more meaning to sentences

Example: "To occur", "to be present", "to be noticed", "to perform"

"We conducted the study of pathogenic insects"

→"We studied the pathogenic insects"

"An improvement in the digestibility occurred"

→"Digestibility improved [….]"

"Increase in the protein content was made"

→ "Protein content of the diet was increased"

- Passive vs active
  - Active voice is encouraged: gives feeling of responsibility or involvement in the work we do

Example: "The mechanism was investigated" → "We investigated"

# Improve clarity: 10 examples of cumbersome writing

- Use of imprecise words
  - “The majority of”, “The minority”

  →If possible, state actual numbers

- Use of compound prepositions

  Examples: “In the case of”, ”In regard to”, “In respect to”, “As to whether”, “Due to the fact that”, “In order to”
  - Can dimmish value of sentence
  - Not necessary, rather filler words

# Improve clarity: 10 examples of cumbersome writing

- Use of multiple negatives

  Example: “It is not uncommon”, “It is unlikely it won’t work”
  → “It is common”, “It is likely to work”

- Use of unfamiliar abbreviations
  - Avoid if not used often in text
  - Spell out at first mention AND in the title, in figure/table headers,
  - Watch out for ambiguous abbreviations if not introduced (e.g., aa)

# Report writing - practice

**S06xE01 – Structuring (before writing) a scientific research article**

Please open the file "4-Draft_manuscript.commented.docx" and make suggestion how the paragraphs could be improved by making use of what you learned so far, including:

- Concise writing: as short as possible, but as much as needed to understand content
- Abstract writing
- Problem statement including consequence if not addressed
- Forward-looking discussion rather than summary of results
- Power of position to improve coherence
- Resolve cumbersome writing (previous exercise)
    - avoid subordinate clauses

Edit the document by making suggestions, pointing out missing information, and importantly being constructive!

# Report writing - practice

**S06xE02 – Start structuring your report**

- **Use abstract (draft or bullet points) and start "skeleton" for your report**
- **Introduction**
  - **Paragraph 1: background, state-of-the-art on subject**
  - **Paragraph 2: focus on specific topic**
  - **Paragraph 3: problem statement**
- **Results**
  - **Section header 1 = message 1**
  - **Section header 2 = message 2**
- **Discussion**
  - **Paragraph 1: message 1 in context of problem/question**
- **Figure:**
  - **Title: one sentence message, if possible.**
  - **Legend: what does the figure tell us (rather than describing what the reader looks at)?**

# Resources

## This course - https://sunagawalab.ethz.ch/MIM_SW/HS-2023/

## Books

- "A guide to scientific writing", David Lindsay (basic)
- "The craft of research", Booth et al (intermediate) → focus on scientific process / practice
- **"Writing Science", Joshua Schimel (intermediate) → focus on story telling**
- **"Scientific Papers Made Easy" (intermediate) → focus on clarity and impact**
- "Style", Joseph M. Williams (advanced)

## Example online resource for scientific writing:

- https://www.aje.com/en/arc/

# Assignment

- Research report **due on 24. September 2023**
  - send by email to ssunagawa@ethz.ch
- max. 1,500 words, 1 fig and/or 1 table
  - include citations, but no bibliography needed

- You will receive your certificate upon receipt of report