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Scientific writing …continued

IPP Seminar 3

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Scientific writing

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(Mack, 2018)

Scientific writing

- Spelling
- Some useful grammar
- Styling and formatting

Spelling

The current situation in overall spelling

Photo credit: Matson (2015)

Hi-Tech v/s Spelling

The paradox:

- **Globalisation**
  - English = a global language
  - Mobility and growing international business have increased the learning of other languages
- **Hi-Tech**
  - Typing machines then computers have increased typing speed (rapid production of documents)
  - People expect you to type faster!

    fast → more mistakes

Hi-Tech v/s Spelling

- **Auto-correct programs**
  - **Most programs today have spellchecks and auto-correct your spelling mistakes**
  - **Be careful: spellcheck and auto-correct work for general English!**

Hi-Tech v/s Spelling

> *An official White House press statement recently called for 'peach' in the Middle East*

The true importance of good spelling, BBC Capital (2017)

Hi-Tech v/s Spelling

- **Auto-correct programs**
  - Most programs today have spellchecks and auto-correct your spelling mistakes
  - Be careful: spellcheck and auto-correct work for general English!
- **Texting**
  - More and more expressions in emoticons/emojis
- **AI v/s correct English**
  - We are writing less and less

Spelling

- The negative influence of phonetics on English proficiency
  - "[…] recommended measures for the **proscriptive** use of vegetation cover for soil slopes of different gradients."

→ prescriptive use

"higher" purchase
→ hire purchase

bathroom "sweets"
→ bathroom suites

Spelling

- How do we make less spelling mistakes?
  - Use a dictionary, ALWAYS check
  - Practise writing the words you always check in the dictionary
- Due to hi-tech, spelling mistakes are less and less tolerated.

Some useful grammar

The scientific style consists in a new way of writing.

1. **Use of passive voice**
   - **purpose of scientific research: contribute to knowledge**
   - **knowledge is *discovered***
   - **which makes scientists "replaceable"**
   - **they remove themselves from the discussion**

Some useful grammar

The scientific style consists in a new way of writing.

1. **Use of passive voice**

E.g. "We then performed an experiment…"

→ "An experiment was then performed…"

2. **Use of 1st person "we" or "I"**

- **Avoid in Experiments or Results**

Some useful grammar

The scientific style consists in a new way of writing.

1. **Use of passive voice**
2. **Use of 1st person "we" or "I"**
3. **Impersonal form**

   - **It is believed that climate change is the result of global warming.**

Some useful grammar

- Which tense to use?

Section	Description	Tense
Abstract	**Refers to unpublished results**	**Present + Past**

Being able to achieve rapid prototyping also depends on having available a rapid, precise, nondestructive profilometry technique in order to optimize each stage of the manufacturing process. After comparing several techniques for structural characterization, we found that coherence probe microscopy was the best one suited for rapid and precise measurement […].

Flury et al. (2002)

Some useful grammar

❖ Which tense to use?

Section	Description	Tense
Introduction	- Background information - Importance of research	Present perfect + Present simple

Such compositional stratification has generally been interpreted to reflect sequential eruption from the top downward into a progressively less differentiated body of magma. The processes [...] are complex and not well understood, but many studies suggest that they derive in part from fractional crystallization and/or magma mixing.

Wallace et al. (1999)

Some useful grammar

❖ Which tense to use?

Section	Description	Tense
Method	**Description**	**Past simple**

- ***Total phosphorus and total nitrogen were measured in the laboratory using standard procedures.*** **(passive voice, more common)** **Unimelb (2012)**
- ***We used the first and second equations of motions in the determination of […].*** **(active voice)** **Elchinger (2018)**

Some useful grammar

❖ Which tense to use?

Section	Description	Tense
Experimental	**Description**	**Past simple**

- ***MS/MS spectra were filtered to contain at most eight peaks per 100 mass unit intervals. The initial MS mass tolerance was 20 ppm and MS/MS fragment ions could deviate by up to 0.5 Da.*** **(passive voice, more common)** Cox et al. (2014)
- ***Each of the three groups took 2 litre samples at a depth of between 0.1m and 0.5m at the down-wind end of each wetland.*** **(active voice)** Unimelb (2012)

Some useful grammar

❖ Which tense to use?

Section	Description	Tense
Diagrams	**Description**	**Present**

- ***Table 1 above demonstrates the success of cloning in various animal species.***
- ***Figure 2 below shows methylation in mouse 2-cell embryos.***

Unimelb (2012)

Some useful grammar

❖ Which tense to use?

Section	Description	Tense
Results	**Details of what was obtained**	**Past + Present**

- ***Results indicated that prolonged exposure to ultra-violet radiation had a positive correlation with the development of melanomas.*** **Unimelb (2012)**
- ***The ablation plumes are strong enough to push the microsphere out of its initial position, explaining why the etching depths do not depend on the number of pulses.*** **(present tense, rare) Abdurrochman et al. (2014)**

Some useful grammar

❖ Which tense to use?

Section	Description	Tense
Discussion	- Significance of results → - Summarise findings →	Present simple Past simple

- ***However, regarding the usage of this analysis for modelling diachronic information, this finding has to be handled with care. If low usage frequency can possibly predict obsolete terms, it can also be a sign of new terminology.*** **Elchinger (2012)**

- ***First, it was demonstrated that the different types of term evolution in the sample were not evenly represented, thus validating the first hypothesis.*** **Elchinger (2012)**

Some useful grammar

❖ Which tense to use?

Section	Description	Tense
Conclusion	**Highlight research and direction**	**Combination**

- ***The analyses have shown that areas with gneissic rock types are more prone to debris flows than areas covered by granitic rock types. As a matter of fact, this study compared coastal regions and central land with different climatic conditions. However, an excessive overestimation of affected areas has to be avoided, as this susceptibility map will impact future land use planning.*** **Fischer et al. (2012)**

Some useful grammar

❖ Which tense to use?

Section	Description	Tense
Abstract	Refers to unpublished results	Present + Past
Introduction	- Background information - Importance of research	Present perfect + Present simple
Method	Description	Past simple
Experimental	Description	Past simple
Results	Details of what was obtained	Past + Present
Discussion	- Significance of results → - Summarise findings →	Present simple Past simple
Conclusion	Highlight research and direction	Combination

Styling and formatting

- There is no universal format for all written work in Science
- Common goal: clear presentation of information

1. Paper

Each journal has its specific format

- follow the guidelines of the journal

Styling and formatting

- There is no universal format for all written work in Science
- Common goal: clear presentation of information

2. Thesis

There is no specific format

- follow the guidelines of your lab/university

Styling and formatting

- Pay attention to formatting
- It takes more time than you think!

1. APA Style

(American Psychological Association)

2. MLA

Useful references

- **Mack, C. A. (2018) How to write a good scientific paper. *SPIE*, ISBN: 9781510619135**
- **Elchinger, A. (2012) Terms with time: application in Molecular Biology. *Quantitative Methods in Language Studies.* The University of Melbourne.**