Scientific paper writing workshop

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Agenda
- Concept – Scope – Focus
- Story board & Outline
- Target journal
- Figures & Tables
- Introduction
- Discussion & Conclusion
- Title & Abstract
- Authorship & Acknowledgements
- Submission & Revision

Focus

<table>
<thead>
<tr>
<th>Literature</th>
<th>Methods</th>
<th>Data</th>
<th>Results</th>
<th>Relevance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>2</td>
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<tr>
<td>3</td>
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</tbody>
</table>

Define the Story

Need
- Approach
- Supporting evidence
- Evaluation
- Conclusion

The structure of prose

Interpretation of information is easier if placed where the reader expects to find it
- Subject verb separation
- Locate the action with verbs
- The stress position – new information
- The topic position – old information/context
- Provide context before introducing new ideas/findings
- Emphasis follows structure – meets reader’s expectations – enhances comprehension

Gopen & Swan, 1990

2-minute drill – narrative
- Too long?
- Too much?
- Unfocussed?
- Did they get it?
- Who’s confused?

Content tighter & clearer – to you & listener
- Early exposure – vulnerable & confronting
- Example
Structure of a scientific paper (IMRAD)

Title & Keywords
Authors
Abstract
Main text (IMRAD)
  Introduction
  Materials & Methods
  Results
  And
  Discussion (Conclusions)
Acknowledgements
References
Supplementary material

Outline

Set out sections – journal guide
Fill in sub headers
Dump content into sub headers:
  • 2 to 5 dot points → paragraphs
  • Consistency across sections
Drop in mini-references and other prompts
3 to 6 pages – keep building

Target journal

1. Type of paper: journal article; a review paper; a letter; short communication
2. Geographic and scientific scope/impact
3. Who is your readership?
4. Who are you citing – peers & competitors?
5. Where are they publishing?
6. Make a short list of journals
7. Check their impact rating
8. Style guide/template from the journal’s homepage

Impact factors
Critical Questions

1. Is the paper a self-contained narrative? (a story with the appropriate level of complexity)
2. Is the original contribution clear?
3. Does the paper build on previous key work?
4. Have the current trends in this field been identified and contrasted?
5. Is the target journal and paper type a good choice?

Figures, tables and captions

Figure & Tables enhance narrative
Reduce the number of figures and tables – move extra to appendices or data repositories
Table or figure – not both
Colour does not always enhance clarity, cost?
Text, captions, axes and legends must be clear & consistent
A word on publication vs. presentation

Figures – Publication vs. Presentation

<table>
<thead>
<tr>
<th>Publication</th>
<th>Presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audience – narrow</td>
<td>Audience – broad</td>
</tr>
<tr>
<td>Read</td>
<td>Listen</td>
</tr>
<tr>
<td>Paragraphs</td>
<td>Words or phrases (dot points)</td>
</tr>
<tr>
<td>Time – lots (hours)</td>
<td>Time – little (seconds - minutes)</td>
</tr>
<tr>
<td>Distance – arm’s length</td>
<td>Distance – short to vast</td>
</tr>
<tr>
<td>Detail [ ← → ]</td>
<td>Broad brush [ → ]</td>
</tr>
<tr>
<td>Methods</td>
<td>Need</td>
</tr>
<tr>
<td>Results</td>
<td>Findings</td>
</tr>
<tr>
<td>Tables &amp; Figures</td>
<td>Illustrations</td>
</tr>
<tr>
<td>References</td>
<td>Importance</td>
</tr>
<tr>
<td>Discussion &amp; Conclusion</td>
<td>Take home message</td>
</tr>
<tr>
<td>[&quot;Figure 1 shows…&quot;]</td>
<td>[&quot;I realise you can’t read this…..&quot;]</td>
</tr>
</tbody>
</table>

Less is More

Which is better?

from presentationzen (2008)

Introduction/Background

Grabbing statement – First sentence, paragraph – importance / need / scope
State of play – previous work, current work (paradigms, algorithms), gaps, incorrect or inadequate interpretations or conclusions
Scope – geographic, taxonomic, disciplinary, methodology, empirical, modelling
Contribution of this paper – “This paper proposes a new relationship…….”
No surprise ending – save it for your novel!
### Structure of a Discussion

**Not just a reiteration of Results**
- Strong concise statement of main findings
- How is this advancing knowledge in your discipline?
- How does your study compare with other studies?
- How can you synthesize these findings?
  - e.g. a conceptual model, relationship amongst facts
- Strong concluding paragraph
- What is the significance of your study? – limitations, implications, & applications
  - Be careful

### Title

- A label, not a sentence
- Rarely too short, often too long
- Use specific, familiar, short words
- Avoid abbreviations & acronyms
- Too clever?
- Avoid series (e.g. I, II, III, IV)

### Keywords

- Titles & Keywords are indexed by computer
- Title & Keywords are **different** – don’t duplicate
  - Prawn + shrimp
  - Cyanobacteria + blue-green algae
  - Nutrients + N, P, Si
  - Stable isotopes + $\delta^15$N, $\delta^13$C
  - Pigment + Chlorophyll a, HPLC

### Abstract

- Two kinds of Abstracts: informational & indicative
- Must "grab" the reader in the **first sentence**
- Give a complete & concise summary
- Include reason/importance, findings, implications, take home message
- Seek an independent review of your Abstract by a non-specialist – may increase your citations

### Authorship/acknowledgement

- **Authorship**
  - ‘Significant contribution’ to: original thinking; design; analysis; interpretation; and writing
  - Inclusion & order of authorship – on the basis of ‘importance’ to research outcome
  - Co-authorship – best to be pre-agreed
    - Bridge from Acknowledgements
  
- **Acknowledgements**
  - Supervised technical work
  - Advice
  - Unpublished data offered by third parties
  - Reviewers (known and unknown)
  - Funding source

### Flesh on the bones

- **Journal instructions & Style guides**
- Leave the outline in place
- Delete unnecessary words and paragraphs
  - see Robert Day’s Appendix 2 – Words & expressions to avoid
- Don’t get hung up on questions or clarifications
  - leave questions or notes for later
- Keep track of added/deleted Figures, Tables & References
- Focused writing sessions (days) – divert your phone and turn off e-mail
Flesh on bones (2)

- Write a list of outstanding work
- Schedule blocks of time (2 to 3 h) to finish each item
- Leave routine work (e.g., figure improvements and reference formatting) for the smaller time slots
- Set a deadline and stick to it
- Use an editor to assist with the grammatical and narrative improvements

Suggested manuscript length – 25 to 30 ms pp.

- Abstract: 1 paragraph
- Introduction: 1.5 to 2 manuscript pages (double-spaced, 12pt)
- Methods: 2 to 4 pages
- Results & Discussion: 10 to 12 pages
- Conclusions: 1 to 2 pages
- Figures: 6 to 8
- Tables: 1 to 3
- References: 20 to 50 items

Six deadly sins

1. Multiple submissions
2. Redundant publications
3. Plagiarism
4. Data fabrication and falsification
5. Improper use of human subjects and animals in research
6. Improper author contribution

Cover letter

Basic information should be:
- Editor name(s)
- Originality of submission – sole submission
- No competing interests – no prior publication or financial ties
- Suggest 3 to 6 potential reviewers (referees)
- Corresponding author

Reasons for rejection – Content

- Limited interest or covers local issues only
- Routine application of well-known methods
- A minor advance or is limited in scope – “Salami” papers: datasets too small to be meaningful
- Novelty and significance are not immediately evident or sufficiently well-justified
- Out of date
- Duplication of previously published work
- Incorrect/unacceptable conclusions

Reasons for rejection – Preparation

- Failure to meet submission requirements
- Incomplete coverage of literature
- Unacceptably poor English
## Manage the review and revision process

- Your manuscript is likely to get four or more reviews.
- Consider using internal reviews (total or partial)
- Follow the internal and journal process instructions strictly
- Suitability of journal – seek advice, write to journal
- Suggested reviewers – select carefully & pre-warn

In replying to reviewers’ comments:
- Follow the editors instructions
- Constructive criticism is valuable (feedback from experts)
- Be polite, not argumentative – if they’re confused it’s your fault!
- Provide a response sheet addressing each item of feedback

## Marketing your product / self

- The publication is just the beginning
- Get out and talk about it
  - Conferences
  - Workshops
  - Seminars
  - Lab visits
  - Press releases and interviews

- Send it to others in your field
- Reference it in your next publication

## Final comments

- Define the message
- Pick the messenger
- Share the quest with peers
- Learn from the setbacks
- Share the message & build a network
- Establish your legitimacy
- Finally, celebrate your achievements

## Additional reading