



Scientific paper writing workshop

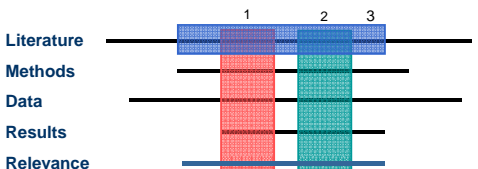
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Agenda

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

Focus



Literature

Methods


Data

Results

Relevance

Define the Story

- Need
- Approach
- Supporting evidence
- Evaluation
- Conclusion



Define the Story


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



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

Structure of a scientific paper (IMRAD)

- Title & Keywords
- Authors
- Abstract
- Main text (IMRAD)
 - I**ntroduction
 - M**aterials & Methods
 - R**esults
 - A**nd
 - D**iscussion (Conclusions)
- Acknowledgements
- References
- Supplementary material

Roadmap – Story Board



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

Journal Abbrev.	Subject	ERA category	2008 Impact Factor	2007 Impact Factor	% change	5-Year Impact Factor
ADV MAR BIOL	Marine	N/A	4.91	2.30	114%	5.32
ADV WATER RESOUR	Freshwater	A	2.24	1.82	23%	2.44
AM MALACOL BULL	Mollusc	C	0.38	0.44	-15%	0.69
AM MIDL NAT	Ecology	C	0.76	0.72	5%	0.99
AM NAT	Ecology	A*	4.67	4.54	3%	5.51
ANIM BEHAV	Ecology	A	2.83	2.75	3%	3.35
ANIM CONSERV	Conservation	B	2.59	2.50	4%	2.83
ANIM GENET	Genetics	A	2.46	2.64	-7%	2.80
ANN ENTOMOL SOC AM	Entom	B	1.24	1.15	8%	1.50
ANN LIMNOL-INT J LIM	Freshwater	N/A	0.77	0.48	59%	0.80
ANNU REV ECOL EVOL S	Evolution	A*	10.16	10.34	-2%	17.18
ANNU REV ENTOMOL	Entom	A*	11.92	10.68	12%	11.84
ANNU REV GENET	Genetics	A*	12.78	18.30	-30%	17.55
ANTARCT SCI	Polar	B	1.50	1.27	18%	1.81
AQUAC RES	Freshwater	A	0.99	1.07	-7%	1.18
AQUACULT INT	Freshwater	B	0.61	0.83	-27%	1.09
AQUACULTURE	Freshwater	A	1.68	1.74	-3%	2.13
AQUAT BOT	Botany	B	1.13	1.50	-25%	1.77
AQUAT CONSERV	Freshwater	A	1.62	1.24	31%	2.41

Critical Questions

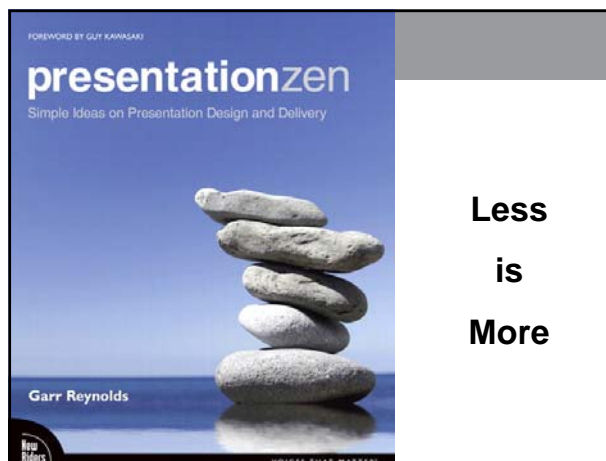
1. Is the paper a self-contained narrative? (a story with the appropriate level of complexity)
2. Is the original contribution clear?
3. Does the paper build on previous key work?
4. Have the current trends in this field been identified and contrasted?
5. Is the target journal and paper type a good choice?

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

Publication	Presentation
Audience – narrow	Audience – broad
Read	Listen
Paragraphs	Words or phrases (dot points)
Time – lots (hours)	Time – little (seconds - minutes)
Distance – arm's length	Distance – short to vast
Detail [↔]	Broad brush [→]
Methods	Need
Results	Findings
Tables & Figures	Illustrations
References	Importance
Discussion & Conclusion [“Figure 1 shows....”]	Take home message [“I realise you can't read this.....”]



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 + δN , δC
 - 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

Cribb J and Tjempaka SH (2002) *Sharing Knowledge: A guide to Effective Science Communication*. CSIRO Publishing, Melbourne. 208 p.
 ISBN: 0 643 06799 X (pbk)

Day RA and Gastel B (2006) *How to Write and Publish a Scientific Paper*. (6th Edition) Greenwood Press, London. 302 p.
 ISBN: 0 313 33040 9 (pbk)

Gopen GD and Swan JA (1990) The Science of Scientific Writing. *American Scientist*. November-December 1990: 1-12.

Lindsay D (2011) *Scientific Writing = Thinking in Words*. CSIRO Publishing, Melbourne. 122 p.
 ISBN: 9780643100466 (pbk)