



**Australian
Centre for Sustainable Development
Research & Innovation (ACSDRI) - A Research Institute**
Towards Sustainable Development Principles
(An Australian Registered Charity Organisation)

Academic Writing

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Background to my work in Academic Writing

Economic drivers:

- Need to improve quality, acceptance rates and quantity of academic journal articles plus
- Need to improve high level pass rates for theses.

Ethical driver:

- Coupled with significant increases in international students who need support.



What facets of publishing control and define Academic Writing?

Purpose

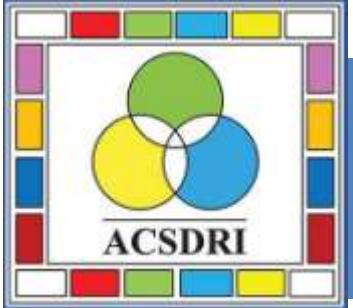
- Check out the instructions on the publishers' pages and ensure you follow all the details.

Audience

- Who are you writing for? What will get them excited? Key words and title issues.

Gatekeepers

- How do you please a reviewer?



I started with a Needs Analysis: what did the EHDRS want?

- Grammar knowledge as it pertained to them.
- Genre knowledge as per their needs.
- Idiom knowledge so that their work is accepted closer to the first time.

Does this fit with what I see in my role as an Editor?

- Absolutely.



The three elements of the MOGTREE System and their rationales

<http://www.mogtreeapp.com>

- A free, engineering-orientated website covering word, phrase, sentence and genre level grammar plus punctuation as a means of clarifying expression.

The Mech Concordance

- 1000000 words to be dropped into AntConc to support collocations above all.

The Language Trees

- Physical objects used to set up genre-based structures and simplify the drafting and editing process.



Where to start with a journal article

- Use your existing research skills to help you get articles published.
- Analyse successful articles and journals.
- Use results of applied linguistics research to highlight key points for focus
 - See ‘Writing scientific research articles: strategy and steps’ (M. Cargill & P. O’Connor, 2009, Wiley-Blackwell).
- Develop strategies for playing the game.



Instructions to contributors

- Find them early in the preparation period.
- Seek out the Scope/Aims/Overview/Readership section in particular to help decisions focusing on your journal(s) of choice.
- Once your journal is chosen, check for any downloadable template of the required format for the manuscript. Otherwise, copy all the instructions given on the website and build them into your paper from the outset, including the word count, font size and layout instructions.
- Note table/figure requirements in detail.

N.B. Submissions are often returned if instructions are ignored.



Journal assessment table (Cargill & O'Connor, 2009, p. 72)

Journal name	Recent similar work?	Audience	Journal quality/ impact	Time to publication	Page/ open access charges?

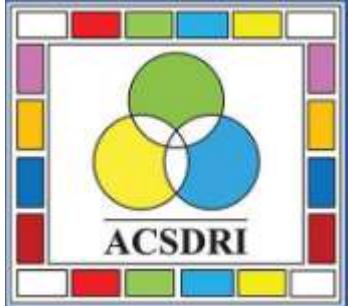


From results to paper outline

Experience suggests that a productive way to prepare a paper is to start with the results.

They will be read first and contain the essence of your paper.

Identify a package of results that tell a single story and support a clear take home message (THM).



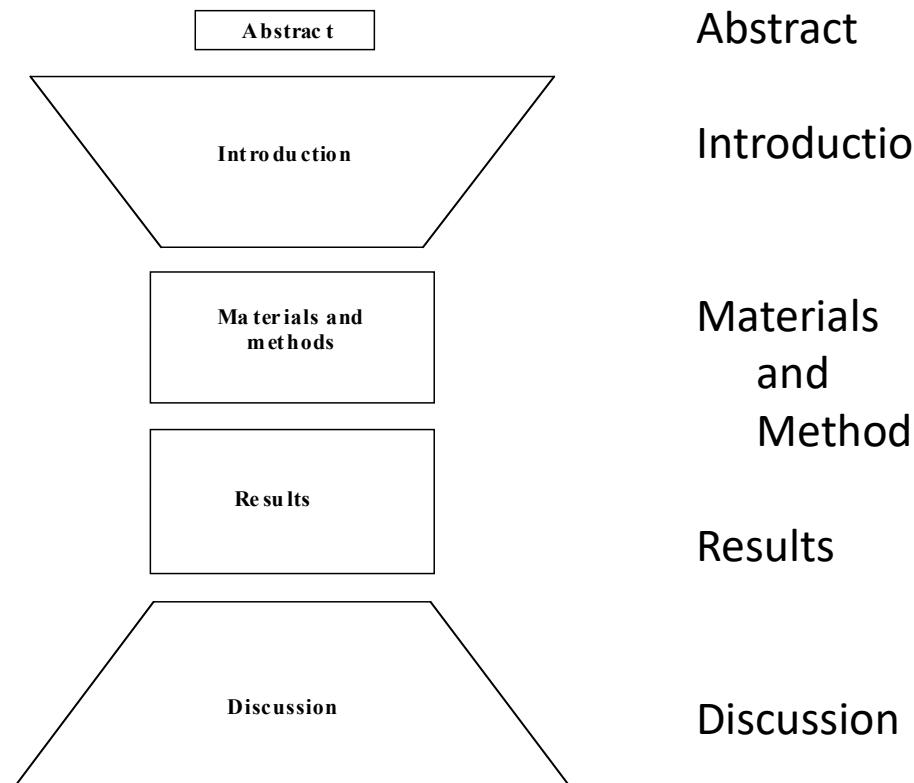
Thinking about the results

- What do my results say?
- What do they mean in their context?
- What is the significance of these results?
- Who needs to know this?
- Why do they need to know?
- Why would it matter if they never read my paper?
- What contribution do these results make to the field?



The AIMRaD article

(Weissberg & Baker 1990,
Cargill & O'Connor 2009)





Notes on an AIMRaD article

- These are conceptual diagrams: it is the width and shape of the boxes that is important, not their depth (i.e., there is no reference to the length of the section indicated here).
- The whole structure is governed by the Results (however arranged).
- The Introduction begins in a much broader way, making firm contact with the selected audience, at the logical contact point.
- Between the start and the end of the Introduction, background information and previous work are woven together to justify the study.
- The Introduction ends EITHER with the aim of the present study OR a summary of the main activity reported OR of the findings of the study (depending on the research field and the journal conventions).
- The M&M establishes credibility for Results by showing how they were reached and why they should be trusted.
- The Discussion begins at same width as the Results, but by the end is the same width as the start of the Introduction, addressing the same big picture issue as was the focus at the beginning.
- When the Results and Discussion are combined, the paper will have a Conclusion to address the big picture (usually named Conclusions but may also appear with separate Results and Discussion sections).



Gatekeeper requirements

How do the AIMRaD structures relate to what editors and referees want to publish?

- The basic structure has survived because it allows scientific authors to tell the stories they need to tell, within a shared set of recognisable conventions.



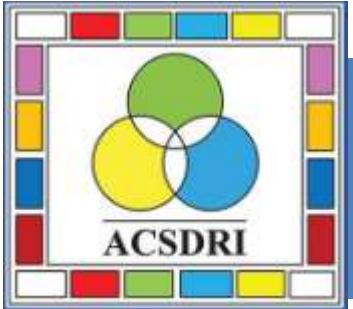
A collated referee form

- Is the contribution new?
- Is the contribution significant?
- Is it suitable for publication in the Journal?
- Do the methods and the treatment of results conform to acceptable scientific standards?
- Are all conclusions firmly based in the data presented?
- Is the length of the paper satisfactory?
- Is the organization acceptable?
- Are all illustrations required?
- Are all the figures and tables necessary?
- Are figure legends and table titles adequate?
- Do the title and abstract clearly indicate the content of the paper?
- Are the references up to date, complete and the journal titles correctly abbreviated?
- Is the paper Excellent, Good or Poor?



Quality checklist

- Originality: Is the work relevant and novel? Does it add significantly to results that are already published? Is this Paper likely to be cited in future?
- Motivation: Does the problem considered have a sound motivation? All Papers should clearly demonstrate the scientific interest of the results. Papers should not rely solely on previous literature or novelty to motivate publication.
- Is the content of sufficient interest for the space required? Should it be shortened? If so, please explain how.
- Repetition: Have significant parts of the manuscript already been published? Serial publications are not encouraged, and a follow-up Paper must contain significant new material.



Presentation

- Title: Is it adequate and appropriate?
- Abstract: Does it contain the essential information of the article? Is it complete by itself and suitable for direct inclusion in an abstracting service?
- Diagrams, tables, and captions: Are they clear and essential?
- Text and mathematics: Are they brief but still clear? If you recommend shortening, please suggest what should be omitted.
- Conclusion: Does the paper contain a carefully written conclusion, summarizing what has been learned and why it is interesting and useful?
- Finally, referees are not expected to correct punctuation or grammar except when the meaning needs clarification by an expert.



Measurement, Science and Technology

- **Technical detail**
 - Scientific merit: notably scientific rigour, accuracy and correctness.
 - Clarity of expression and communication of ideas, readability and discussion of concepts.
 - Sufficient discussion of the context of the work, and suitable referencing.
 - Appropriateness of the material for the journal.



The Introduction moves from broader, more general, statements to more specific statements

1. Statements about the field, providing the reader with a setting or context for the problem to be reported and claiming its centrality or importance
2. More specific statements about the aspects of the problem already studied by other researchers, laying a foundation of information already known
3. Statements that indicate the need for more investigation, a gap, problem, or research niche for the present study
4. Statements giving the purpose or objective of the author's study OR its main activity OR findings
5. Optional statement(s) that give a value or benefit for carrying out the study
6. A map of the rest of the article (some fields, and reviews)



Titles

- Titles need to attract the right readers by giving the key words at the outset.
- Ensure that all key words are searchable.
- Be clear and pithy (ideally!).
- Use no more than 13 words.
- Reflect on whether you need a question or a statement: what are you setting out to achieve here?
- Does your title work hard for you?



Checklist for titles

- Keywords up-front, NOT ‘An investigation of...’.
- Choose keywords with the key audience in mind (remember the search engines).
- Noun phrase or sentence (including questions)?
- Consider taking advantage of the colon (or dash)
e.g., ‘Crossed source-detector geometry for a novel spray diagnostic: Monte Carlo simulation and analytical results’.
- The goal of the title is to get the right readers to download the abstract.



Tense 1

- The simple past tense is used when the sentence grammar focuses on the completed study – what was done and found at a known time.
- The present simple tense is used
 - when the sentence grammar focuses on the document, which will always be there, and
 - when the sentence describes a situation that is ‘always true’ or has been shown to be true.
- Modal verbs are used in comments, especially in ‘that’ clauses.



Tense 2

- Present perfect tense
 - action has been completed over a time range in the past.
 - specific time is not known or of interest (often followed by several references).
 - action has an ongoing effect in the present.





Tense 3

Modal verbs:

- Include verbs such as *can*, *may*, *could* and *would*.
- Tense is not an issue here – the verbs have specific individual meanings.
- They are used to show the writer's view of the status of the statement as definite or tentative.

Compare:

this technique is used for x

this technique can be used for x

this technique could be used for x.



Increasing the impact of figures and tables

When do you choose to use each of these sentence styles?

- The optical arrangement to construct the modulated laser sheet for the SLIPI measurements is shown in figure 1.
- Figure 2 illustrates the experimental setup.
- The noise produced by both Plate One with turbulent trailing edge flow and Plate Two with mixed laminar and transitional boundary layers at the trailing edge is entirely broadband in nature and displays an oscillation in magnitude that varies with frequency (see Fig. 5(a) and (b)).



Reading order

- In what order do *you* read the sections of a paper?
- What order do you think the *journal editor* uses?
- What about the *referee/reviewer*?

Some clues available from a survey of scientists active in roles of editor, referee and individual reader (Burrough-Boenisch 1999)

- Methods section:
 - 50% of Editors read it ‘in place’, 21% earlier and 29% later.
 - 40% of Reviewers read it ‘in place’, 27% earlier and 33% later

Implications for manuscript authors:

- This section must cater for readers reading in many different orders.
- Subheadings and clear links to other sections are recommended to assist readers.



Materials and Methods (Experimental)

- Stated purpose is that the work can be repeated
 - Is this true in your experience?
- A key purpose of the Methods section is to establish the credibility of the Results.
- Cite methods if they are previously published e.g.:
 - The method for extracting and analysing trailing edge noise developed by Moreau et al. [23] was implemented.
- All novel methods must be described in full.
- Passive voice verbs are commonly used throughout – but check recent examples of the journal!



Organising your Methods section

- It is useful to begin Methods with an overview statement to set up expectations of what is coming.
- Alternatively, subheadings can follow the order used in the Introduction, Stage 4 (this enhances structural cohesion). In some fields there is a conventional order that is always followed.
- Consider using introductory phrases to explain why a method was used, e.g.:

To confirm the different mechanisms involved in the drying process, we compared the evaporation mass flux of three drops: blood, serum and pure water on a glass substrate.
- Or use the first sentence in a paragraph to introduce the method and then give details e.g.:

For a general understanding, the algorithm is first described in a simplified step by the step procedure, followed in the next subsection by a more detailed derivation.



Discussions and conclusions

- The discussion/analysis of results relates to the Introduction:
 - the aim/purpose statement
 - the initial problem or issue that was described
 - the evidence leading to the gap, and
 - the Stage 1 where the Introduction began.
- It highlights the key points from the results story.
- If the target journal does not usually have a separate Conclusion, use the last paragraph of the Discussion to conclude.



Adjust the strength of the claims in the sentence below by changing/adapting/ ameliorating the verbs that have been underlined

The measured extinction coefficient shows that qualitative conclusions drawn from conventional planar laser sheet imaging can be highly ambiguous.



The core elements of a paragraph

- B Some background information.
- P The principal activity (or purpose) of the study and its scope
- M Some information about the methodology used
- R The most important results of the study
- C Statement of conclusion or recommendation



Core elements of a discussion/conclusion

1. Reference to the main activity, hypothesis or purpose of the study, or summary of main findings of the study.
2. Restatement of the most important findings, generally in order of significance, including:
 - whether they support the original hypothesis, and/or
 - whether they agree with the findings of others.
3. Possible explanations or speculations about the results.
4. Limitations that restrict the generalisability of the findings.
5. Implications of the study (what they mean for the field).
6. Recommendations for further research or practical applications (after Weissberg and Bunker, 1990).



Key elements for impact

- As you draft, concentrate on the take-home messages (THMs) to be drawn from your study
- Use a subheading or a topic sentence to show where each THM begins
- Finally, check for a good link between the take-home message(s) and the paper's title.



Useful resources

Completing a PhD by Publication

<https://www.youtube.com/watch?v=kooWKjunQks>

Writing a Journal Article

<https://www.youtube.com/watch?v=N1zLsJKINUo>

Paraphrasing

<https://www.youtube.com/watch?v=1VACN6X2eF0>



Useful websites

<http://www.mogtreeapp.com>

This is a grammar website designed specifically for Engineers.

<http://www.phrasebank.manchester.ac.uk>

This is literally a bank of phrases for every section of your article.



Useful references

- Burrough-Boenisch, J. (1999). International reading strategies for IMRD articles. *Written Communication*, 16(3), 296-317.
- Cargill, M and O'Connor, P (2013) *Writing Scientific Research Articles: Strategy and Steps*. 2nd Ed. Oxford, UK, Wiley-Blackwell (www.writeresearch.com.au)
- Olsen, L A and Huckin, T N (1991) *Technical Writing and Professional Communication*. New York, USA, McGraw-Hill.
- Weissberg, R and Baker, S (1990) *Writing Up Research: Experimental research report writing for students of English*. Englewood Cliffs, New Jersey, USA, Prentice Hall Regents.



What are the most common error types in academic journal writing?

- Tense errors
- Subject verb agreements
- Modal verbs
- Collocations
- Prepositions



Tense and verb errors

- Check for order
- Check for consistency
- Check for voice (active/passive)



Checking subject-verb agreements

Go back through your sentence and replace the true subject with a pronoun. That will tell you if the verb should be singular or plural:

The data is gathered in Table 1.

THEY (plural – data not singular datum) ARE gathered in Table 1.

Sitting here, I think my dinner are cooked.

Sitting here, I think IT (my dinner) IS cooked.

Going through the lesson, I notice grammar are emphasised.

Going through the lesson, I notice IT (grammar) IS emphasised.



Modal Verbs

Modal verbs express:

- Doubt
- Ability
- Obligation
- Possibility

They are used to show what *may* happen, without asserting that it *definitely will*.



Common modal verbs

Modal	Meaning	Example
can	<i>to express ability</i>	I <i>can</i> speak a little Russian.
can	<i>to request permission</i>	<i>Can</i> I open the window?
may	<i>to express possibility</i>	I <i>may</i> be home late.
may	<i>to request permission</i>	<i>May</i> I sit down, please?
must	<i>to express obligation</i>	I <i>must</i> go now.
must	<i>to express strong belief</i>	She <i>must</i> be over 90 years old.
should	<i>to give advice</i>	You <i>should</i> stop smoking.
would	<i>to request or offer</i>	<i>Would</i> you like a cup of tea?
would	<i>in if-sentences</i>	If I <i>were*</i> you, I <i>would</i> say sorry.



Tricky bits of modal verbs

Modal verbs are unlike other verbs. They do not change their form (spelling) and they have no infinitive or participle (past/present). The modals *must* and *can* need substitute verbs to express obligation or ability in the different tenses.

Modals are auxiliary verbs. They do not need an additional auxiliary in negatives or questions. For example: *Must I come?* (Do I must come?), or: *He shouldn't smoke* (He doesn't should smoke).



Using modal verbs

Simple past: Sorry I'm late, I had to finish my maths test.

Present perfect: She's had to return to Korea at short notice.

Future: You'll have to work hard if you want to pass the exams.

Infinitive: I don't want to have to go.

Past simple: I couldn't walk until I was three years old.

Present perfect: I haven't been able to solve this problem. Can you help?

Future: I'm not sure if I'll be able to come to your party.

Infinitive: I would love to be able to play the piano.



Remember!

In spoken language and in informal IELTS, contractions are acceptable:

- Can't
- Won't
- Should've

... but they are not acceptable in formal academic language:

- Cannot
- Will not
- Should have.



Collocations

Words that go together by habit are called collocations. They are difficult because there is often no rule to determine which word goes with which other word: they are just used that way. That's where the Mech Concordance is handy.

The Mech Concordance shows you a chosen number of words either side of a key word you have chosen. It then tells you statistically what is most likely to be the word you need.

You can ask me for a copy of the corpus, then drop it into AntConc (a free internet download) and fire ahead. AntConc is great, with lots of useful YouTube tutorials to help you use it effectively.

You can also use tools like Google Ngrams to see which prepositions most commonly occur with particular words – but remember, this tool can't explain the difference in meaning between different prepositional phrases like "to pay for" (to purchase) and "to pay off" (to bribe). For that, you may want to refer to a list of prepositions that includes the meaning of common combinations.



What do prepositions do?

- Prepositions tell us where or when something is in relation to something else. When monsters are approaching, it's good to have these special words to tell us where those monsters are. Are they **behind** us or **in front of** us? Will they be arriving **in** three seconds or **at** midnight?
- Prepositions often tell us where one noun is in relation to another (e.g., *The coffee is **on** the table **beside** you*). But they can also indicate more abstract ideas, such as purpose or contrast (e.g., *We went **for** a walk **despite** the rain*).
- **Types of Prepositions**
- Prepositions indicate direction, time, location, and spatial relationships, as well as other abstract types of relationships.
- **Direction:** Look *to* the left and you'll see our destination.
- **Time:** We've been working *since* this morning.
- **Location:** We saw a movie *at* the theatre.
- **Space:** The dog hid *under* the table.



Critical keys to a successful journal article

- Target your journal carefully. You want to get past the gatekeepers the first time.
- Check for all instructions from that journal.
- Use a clear AIMRaD structure for the plan.
- Plan simple take home messages: repeated and proved.
- Have a searchable title and keywords.
- Start with the results and work around them.
- Use clear headings and subheadings.
- Use clear, fluent English (the complications come from the technical language used only).
- Double check for: order, tense, subject-verb agreements and collocations.