



Writing scientific research articles: a 4-day workshop to improve writing and publishing skills

Presented by

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for the

CAS Institute of Applied Chemistry, Changchun

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Rationale of this Workshop

- Shared desire for more research to be available internationally in English
- Intersecting expertises: applied linguistics and researcher education, plus disciplines of our collaborators
- Workshops in Australia, Spain, China (Chinese Academy of Sciences) and the Philippines 2001-2008
- Evaluations by participants extremely positive
- Participants' evaluations incorporated in subsequent versions of the workshop



Introducing the presenters

- We do this to help develop the relaxed and comfortable atmosphere needed for effective language learning
- It also helps you get used to our voices
- Each of the presenters will tell you something about themselves



Margaret Cargill BA, DipEd, MEd(TESOL)

- Writing and publication skill development for research students and staff in the sciences for 15 yrs
- Collaborative paper writing workshops for universities and research institutes in Australia, Asia and Europe 2000-2009
- Co-author (with Patrick O'Connor) of *Writing scientific research articles: Strategy and steps* (Wiley-Blackwell, 2009)
- Past editor of the journal *TESOL in Context*; co-editor, special issue of *Journal of English for Academic Purposes* 'English for research publication purposes' 2008; active reviewer for international journals



Patrick O'Connor BSc (Hons) PhD

- Visiting Fellow at the University of Adelaide
 - Plant-microbe community ecology
 - Biodiversity monitoring - design and analysis
- Company Director – environmental science consultant to Government and Non-government sector – environmental science / economics
- Reviewer for 10 International Scientific Journals
- Co-author (with Margaret Cargill) of *Writing scientific research articles: Strategy and steps* (Wiley-Blackwell, 2009)
- Partner: Anna Ziersch - Social Scientist
- Three Children: Shaez - girl 19 yrs, Jem boy 6 yrs and Eamon 3 yr
- Volleyball, Tennis, Australian Football and Table Tennis





Completing the initial questionnaires

- Please complete the sheet that will be distributed to you.
- This research helps us improve the workshop for future presentations
- The questionnaire asks for your Date of Birth. This enables us to match your responses to a second set you will complete on the last day.



Session 1

- Introduction to the workshop
- Selecting your target journal



Introduction to the workshop methodology 1

- Principles:
 - People learn best by doing
 - You want to continue developing skills after we go
 - People learn language best when they are relaxed and comfortable
 - Lively oral interaction stimulates critical thinking



Introduction to the workshop methodology 2

- Methods arising from the principles:
 - We analyse together papers from your field
 - We use a descriptive, not a prescriptive approach
 - We develop ways for you to learn about your target and how to reach it through speaking, listening, reading and writing
- For the writing part of this workshop, you will:
 - draft and/or revise a paper on your own research



Example papers for analysis

- You were asked to select an example article and bring it to the workshop; your selected article should be
 - a research article (not a review)
 - relevant to your own research;
 - from a discipline-specific journal (i.e. not *Nature* or *Science*)
- We expect that you have already read it in detail.
- We will use these articles as the basis for exercises throughout the week.



Why publish?

- Share ideas and results with colleagues
- Leave a record of research which can be added to
- Receive due recognition for original ideas and results
- Attract interest in the area of research
- Receive expert feedback on research contribution
- Legitimise the research – i.e. gain independent verification of the methods, results or intellectual argument
- (Get your degree!)



Participation in the international scientific community requires ...

- Understanding the cutting edge of scientific or social-scientific disciplines (journal subscription/ internet/ database)
- Peer-review (international)
- Written and spoken English for communication with peers
- Active involvement in international conferences
- Good writing skills and understanding of the format of journal articles and examinable theses



What does this mean for you?

- Many journals available – you need to select one to submit to (SCI status, impact factor, kind/level of your research are all important factors)
- Many articles get submitted – yours must meet the journal's requirements and 'stand out' for its quality and innovation
- Researchers are busy – they rely on electronic searching to find useful articles – yours must 'stand out' as relevant and interesting



Selecting target journals

- Check if the journal:
 - normally publishes the kind of work you have done
 - referees the papers
 - publishes reasonably quickly
 - has no page charges – or will waive them
 - provides an affordable open-access option (if you need it)



Getting the most out of publishing

- Publishing quickly is often helpful
- Publishing in a widely read journal is better for you (consider the *citation index/ impact factor*)
- If you aim too high you may be rejected (resubmitting takes more time)
- Publishing where your peers will read it is important



Journal quality indices

- Impact Factor (IF) is commonly used but not equally relevant to all discipline areas
 - $$\text{IF (Year}_x\text{)} = \frac{\text{cites to recent articles (Year}_{x-1} + \text{Year}_{x-2})}{\text{number of recent articles (Year}_{x-1} + \text{Year}_{x-2})}$$
- Other options include Journal Cited Half-Life
- For details see <http://www.isiwebofknowledge.com>



Getting to know a journal 1

- Go to the journal's home-page on the internet if it has one (or find a hard copy in the library)
 - Read the introductory materials: Scope, Readership, Objectives, Aims, etc. Do these match your research?
 - Scan the Tables of Contents of several issues over the past few years. Is your research relevant to this area?

What sort of papers get into *Crystal Growth and Design*?



- Synergistic approaches originating from different disciplines and technologies and integrating the fields of crystal growth, crystal engineering, intermolecular interactions and industrial application are encouraged.
- Contributions emphasizing the fundamental concepts of crystal growth and supporting further understanding of the relationship between crystal growth conditions and resulting properties of the crystal will be highlighted.

What sort of papers do not get into *Crystal Growth and Design*?



- It (the journal) will NOT cover routine reports of crystal or molecular structure.

Personal task



- Use the table on the next slide to compare four journals you think are likely to accept your article.
- Once all the information is recorded, rank the four journals in order of preference for your article, taking all the criteria into consideration.

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



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

Getting to know a journal 2



- Publishing in an international journal = joining an international conversation
- So you must listen before you speak (= read before you write)
- Try to cite papers from the target journal in your manuscript, to show you are aware of the 'conversation' in that journal.

Relevance to your writing



- You are writing your Introduction directly to these people, to convince them that they need to read your paper.
- You need to use their articles and their findings to show that you know the field.
- You need to keep up to date with the literature – subscribe to email alerts by the journal publishers, or database services online.
- Make notes as you read, and organise them so you can find them when you need to for your writing. Do not leave this till the writing stage.

Session 2



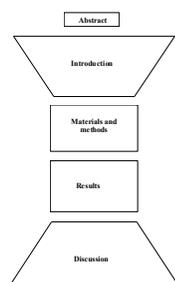
- Logical reasoning and article structure: the connections
- Article structures and gatekeeper requirements: further connections

Inductive writing in experimental sciences



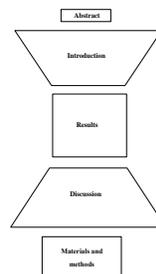
- Inductive scientific articles usually follow this order of logical reasoning:
 - Identify a specific problem or issue which needs to be addressed
 - Refer to existing knowledge and previous research to develop a hypothesis to be tested and/or to justify the approach to be taken to investigating the issue
 - Describe appropriate methods to test the hypothesis or fulfill the objectives of the study
 - Analyse and interpret the data collected
 - Draw conclusions and relate them to existing knowledge in the field

The AIMRaD article: Abstract, Introduction, Methods, Results and Discussion (Cargill and O'Connor, 2009)



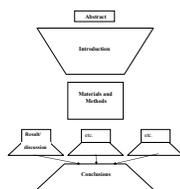
- Abstract
- Introduction
- Materials and Methods
- Results
- Discussion

For many 'molecular' papers (AIRDaM)



- Abstract
- Introduction
- Results
- Discussion
- Materials and Methods

Structure of articles that combine Results and Discussion (AIM[RaD]xC)



- Abstract
- Introduction
- Materials and methods
- Combined Results and Discussion
- Conclusions

Notes on the diagrams: AIMRaD and variants



- It is the width and shape of boxes that is important
- The structure is governed by the Results box
- Introduction begins much 'broader', attracting the interest of the selected audience, at the logical contact point
- Between start and end of Introduction, background info. and previous work are woven together to justify the study
- Introduction ends with the aim of the present study or a summary of the main outcomes of the study (depending on the research field and the journal conventions)



AIMRaD *continued*

- M&M establishes credibility for Results by showing how they were reached and why they should be trusted
- Discussion begins at same 'width' as Results, but by the end is the same width as the start of Introduction – addressing the 'big picture' issue
- Where Results and Discussion can be combined, the paper may have a Conclusion to address the big picture
- Are these shapes a good 'picture' of a research article for you?



Article analysis

- Look at the article you brought with you from your own field.
- Write down the headings and subheadings in the order they occur:
 - Are headings numbered to indicate whether they are Level 1, Level 2 or Level 3 significance? Does the font change?
 - Make sure you indent section headings to show their level.
- Does your article follow one of the patterns of logic just referred to? If not, what are the differences?
 - Share your outline and findings with the group.



Gatekeeper requirements

- When you submit your article to a journal, the editor and reviewers (or referees) act as 'gatekeepers'.
 - i.e. they decide if your paper will be accepted or not.
- How do the article structures we have presented relate to what editors and referees want to publish?



A collated Referee Report Form: Sciences

- Is the contribution new?
- Is the contribution significant?
- Is it suitable for publication in the Journal?
- Is the organization acceptable?
- 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?



A Referee Report Form *cont.*

- 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?



Where in the manuscript do you think a referee would look for evidence on which to base an answer to each of these questions?



Evidence for refereeing

- Work with your neighbour/s on this task.
- For each point listed in the relevant Referee Report Form, decide where the referee would look for evidence.
- Write the relevant letter/s (A [abstract], M, R, D and/or Ref [reference list]) next to the point.



Session 3:

Strategies for Developing

Discipline-specific English



Key Point Summary

- Making YOUR meaning clear is the most important thing.
- Most editors and referees want to understand your science so they can evaluate it – but if the English gets in the way they cannot do so.
 - Some demand native-speaker standard = unrealistic expectation?
- Asking a native-speaker to correct a paper is a very 'big ask'.
 - If you do this, make sure you have put in the work to make it as clear and as accurate as you possibly can.



Primacy of 'the science' for editors/reviewers

- "For the researcher and for the reviewer, we should emphasize the scientific contents of their work. Language skills should not be the barrier."
 - "The Authors may have important data, which is useful for the Community, and must be helped."
- Elsevier online editors' forum [accessed 16 Jan 2008]
http://www.elsevier.com/wps/find/editors.editors/editors_update/issue10d



What does this mean for our work together?

- Write in simple, clear sentences first – 2 clause maximum.
- There are no 'formulas': you need to develop a repertoire of ways to make the meanings you want to communicate.
- We will do this building from examples in the papers you have read, which we will analyse together.
- Our advice is that it is better to write in English from the beginning, rather than writing in Chinese first and then translating.



Re-using language?

- Copying whole sentences from other people's papers is generally not acceptable in international practice, even if the sentences are referenced.
- However, there are acceptable ways to re-use language from the articles you read to make the meaning you want
- You can re-use
 - Sentence templates
 - Noun phrases (NPs)
- And you can use proven linking strategies to help your ideas flow logically for readers of English

Sentence Templates



- In your reading you may find sentences that express a meaning very clearly and effectively.
 - You can remove the NPs from it to make a 'sentence template' which you can re-use later.
- e.g. Smith (1981) suggested that this discrepancy in feeding rates may reflect differences in light levels used in the two different experiments. Jones (1984), however, found that light level did not influence the feeding rates of these animals and suggested that the rate differences reflect differences in the density at which the animals were held during the two experiments.
- = (Author) suggested that (NP1) may reflect differences in (NP2).
(Another author), however, found that (NP2) did not influence (NP1) and suggested that (NP1) reflects (NP3).

Using Sentence Templates



- The aim is to insert your own NPs into a template to make a suitable sentence for your own purposes, e.g.
 - (Author) suggested that (NP1) may reflect differences in (NP2).
(Another author), however, found that (NP2) did not influence (NP1) and suggested that (NP1) reflects (NP3).
 - Jones (2000) suggested that English learning outcomes for EFL science students may reflect differences in willingness to take risks. Smith (1999), however, found that risk-taking did not influence language learning and suggested that learning outcomes reflect study behaviour.

Class activity



Using the template below, compose a sentence based on the work in your ODA, or other research you are familiar with.

(Author) suggested that (NP1) may reflect differences in (NP2).

An applied chemistry example



Despite the indications that block length polydispersity may provide a novel tool for manipulation of BCP morphology, this area remains largely unexplored due to the comparative lack of techniques for synthesis of polydisperse BCPs relative to monodisperse BCPs.

The template



Despite the indications that NP1 may provide a novel tool for NP2, this area remains largely unexplored due to the comparative lack of NP3.

Class exercise:



- Now make a template from this sentence:
Previous studies of the pool burning of silicone fluids have been limited in the number of fluids tested and have not measured the spatial distribution of radiative flux or the global radiation properties under steady mass burning flux conditions, an important consideration for measurement accuracy.

The template:



Previous studies of (NP) have been limited in the number of (NP) tested and have not measured (NP) or (NP) under (adjectival phrase) conditions, an important consideration for (NP).

- Exercise: In groups of 2-3, compose a sentence for your own field of study using some or all of this template.

Example answer



Previous studies of **teaching article writing** have been limited in the number of **discipline areas** tested (examined) and have not measured **research experience** or **motivation** under **actual composing** conditions, an important consideration for **achieving publishable articles**.

Task



- Identify one sentence from your example paper that you think you could re-use as a sentence template.
- Copy it onto your notes, and then convert it into a sentence template, as in the previous examples we have provided.
- Discuss your template with your neighbour/s and/or one of the presenters.

General Strategies for the Future

- Use the articles you read for two purposes:
 - the scientific content, and
 - a source of data to improve your discipline-specific English
- Select papers written by native-speakers for Purpose 2
- Types of data to collect:
 - sentence templates (as described earlier)
 - noun phrases (NPs) commonly used in your field
 - common collocations: words used together with other words
- Keep special lists of these data and learn them

Noun phrases (NPs)



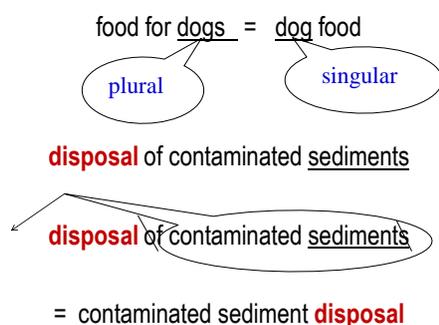
- Noun phrases are chunks of language that refer to a thing or an idea – they do not contain a finite verb.
- Each NP has one 'headword' – the main noun in the phrase that determines the grammar requirements
- The headword can be joined to other nouns or NPs by prepositions, and it can have adjectives in front of it and verb phrases after it
- Look at the examples on the next slide

NP examples – headwords underlined



- the pool burning of silicone fluids
- the global radiation properties under steady mass burning flux conditions
- steady mass burning flux conditions
- manipulation of BCP morphology
- olefin block copolymers (OBCs) with block length polydispersity
- contaminated sediment disposal
 - [= disposal of contaminated sediments]

A special case: noun/noun phrases



Class exercise

- From your ODA, identify and write out two NPs that would be useful for you to re-use in your own writing
- Underline the headword of each NP
- If your NP is a noun/noun phrase, write out its full form as well as its short form, e.g.
 - sediment organic carbon (short form)
 - organic carbon in sediments (full form)
- Explain the meaning of the NPs to your neighbour
- If you have questions, ask one of the presenters

How many words in a noun phrase?

- NPs are often very long in science/technical writing
- Often these long phrases make it hard for the reader to understand the meaning !
- We recommend that:
 - Using 3 words in an NP is usually completely clear
 - For 4 words, check carefully that meaning is unambiguous
 - For 5 or more words, try to break the NP up with prepositions into smaller NPs.

Selecting NPs to learn

- Extending vocabulary is an ongoing need for EAL scientist authors
- One effective way to select vocabulary to learn is to use a word frequency list from your own discipline.
- Such a word list can be created by using concordancing software to search a collection of discipline-specific texts such as research articles.
- These text collections are called corpora (sing. =corpus)
- We will give you an opportunity to learn about creating corpora for your disciplines this week.

Concordancing: a software tool for discipline-specific English development

- We can provide a simple concordancing program and train you in its use if desired
 - For more information, see 'Concordancing Help' on the website www.writeresearch.com.au
- Its use requires you to build a corpus (collection) of native-speaker authored text from your own field
- This is done by converting the text parts of research articles to .txt format and saving them in one folder.
- We will run a training session at lunchtime on Tuesday for interested people.

Session 4:

- Titles and Abstracts



Thinking about titles: Part 1

- Title is the first thing a reader reads
- Can be a Noun Phrase (NP), a sentence, or a question
- Should provide as much information as possible but be concise
- Important to avoid ambiguity if using long and complex noun phrases



Thinking about titles: 2

Crystal Growth and Design Author Guidelines say:

- Titles should clearly and concisely reflect the emphasis and content of the paper.
- Titles are of great importance for current awareness and information retrieval and should be carefully constructed for these purposes.
- Succinct titles are encouraged.

The Title: examples describing the same work

Effects of added calcium on salinity tolerance of tomato

Salinity tolerance of tomato: effects of calcium addition

Calcium addition improves salinity tolerance of tomato

Calcium addition has differential effects on salinity tolerance of three varieties of tomato

Calcium addition has differential effects on salinity tolerance of three varieties of tomato grown in solution culture

Calcium addition improves salinity tolerance of tomato by increasing the K/Na ratio in plant tissues



Titles: example papers and your own

- Example papers:
 - Is the title a sentence or a noun phrase?
 - How many words are used?
 - What is the first idea in the title?
 - Why do you think the authors chose to put that idea first?
- Now, revise the English title for your own paper
 - What is the first idea in your title?
 - Why did you choose to put that idea first?
 - Share your thinking with a neighbour.



Why are Abstracts important?

- Often the only thing busy readers read
- May be all that is available to some readers
- Abstracting services may use it as a source of information for databases
- What about 'additional keywords'?
 - Choose words your target audience will use to search under
 - Strategic repetition of words already in the title or abstract can maximise chances of being found by search engines
 - Check if the words are used in other papers in your field (or in the database index, if available)



Abstracts: Typical information elements (Weissberg and Buker, 1990)

B = some background information

P = the principal activity (or purpose) of the study and its scope

M = some information about the methodology used in the study

R = the most important results of the study

C = a statement of conclusion or recommendation



Abstracts, cont.

This list can sometimes be compressed (in a so-called 'reduced' abstract) to:

- P + M = purpose and method of the study
- R = results
- C = conclusion (and recommendations)



An example: Chemistry

Ambient water nanofilms confined on solid surfaces usually show properties not seen in bulk and play unique roles in many important processes. **Here we report diffusion and self-assembly of peptides in ambient water nanofilms on mica, based on "drying microcontact printing" and ex situ atomic force microscopy imaging.** We found that diffusion and self-assembly of several peptides in the water nanofilms on mica resulted in one-dimensional "epitaxial" nanofilaments. The peptide self assembly process is sensitive to the amount of water on the surface, and different peptides with varied molecular structures show different humidity-dependent behaviors. In addition, some peptides that cannot form nanofilaments on substrates in bulk water can be successfully self-assembled into nanofilaments in the water nanofilm.



Abstracts, *Crystal Growth and Design*

All manuscripts must contain an Abstract, not exceeding 200 words, which should provide a succinct, informative summation of the most important results and conclusions. The opening lines of the Abstract should present the principal results and conclusions.



Abstracts, *The Journal of Physical Chemistry A/B/C*

Authors' abstracts are used directly for *Chemical Abstracts*. The abstract should be a clear, concise, one-paragraph summary, informative rather than descriptive, giving scope and purpose, experimental approach, significant results, and major conclusions. Write for literature searchers as well as Journal Readers.



Task

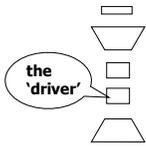
- Look at the abstract in your example paper:
 - Which information elements are included?
- Write, revise or seek feedback on your own abstract.



Session 5:

- Results as the 'driver' of the article
- Formulating 'take-home messages' from your results

An image to consider



Your results determine every other aspect of your paper: they are the 'driver'



From Results to paper outline

- Our experience suggests that a productive way to begin preparing a paper is to focus first on your results
- With your co-authors, identify a 'package' of results that tell a single 'story' and support a clear 'take-home message' (THM)
- Then answer the 4 questions on the next slide, for this package of results



Your 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? (= specific audience for the paper)
- Why do they need to know? (what contribution do these results make to the field?)



Results as the key driver

- Strategic approaches to preparing results for papers
 - Refining the tables and figures
 - Deciding on the 'take-home messages'
 - Writing subheadings, figure legends, paragraphs and sentences for maximum effect
 - Drafting a title to reflect the key message/s



Deciding on the 'take-home messages'

- Once you have refined the data presentation
 - Decide on an optimal grouping and order for them, to highlight the appropriate number of 'take-home messages'
 - Think: evidence for the points to be presented in the Conclusions
 - And: meeting the Objectives given in the Intro.
- You are answering the question 'What do my results say'?



Task

- Use the data or draft you brought with you to develop a series of 'dot points' to highlight the take-home message of the paper you will write or revise in this workshop
- Be ready to present them to the group for discussion and feedback





Session 6:

- Refining data presentation



Turning data into knowledge:

Verify, analyse and display DATA
to
share, build and legitimise NEW KNOWLEDGE



Key questions to consider include:

- What data are essential for the 'story' of the paper?
- Will the journal accept other data as Appendices (printed) or as supplementary on-line data?

Langmuir - "Authors are encouraged to make extensive use of the Supporting Information format, since this material is now widely available on www...."



The first step

- Prepare tables and/or figures that present the key data that form your story
- Write table titles or figure legends that highlight the key points of the story so that they 'stand alone' (do not need the reader to consult the rest of the text in order to understand them)
- Check your target journal for relevant examples and specific requirements



Figure, table or text?

- The choice depends on
 - the point (the meaning) you want the reader to get out of the data
 - the function that the data are going to fulfil in your argument

Langmuir - Tabulation of experimental results is encouraged whenever it leads to a more effective presentation or economical use of space.



Tables are useful for ...

- Databases - recording data (raw or processed)
- Explaining calculations or showing components of calculated data
- Where the actual numbers are important
- Where there are numerous individual comparisons to be made, in many directions
- Where a variety of categories of information are to be displayed

Figures are more useful where ...

- The overall picture is important
- The results can be comprehended more rapidly through shape than through number
- The comparisons between elements are relatively simple
- Chronological or logical processes need to be understood

Additional considerations

- Be consistent with the styles of tables and figures
- Figures should tell the story as clearly as possible
- Keep figures free from clutter (= many different items, distracting reader from main point/s)

Consider this example figure

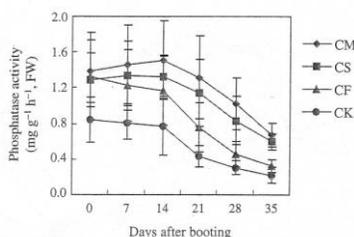


Figure 5. Comparisons of root surface phosphatase activity (RSPA) of rice plants for Control (CK), exclusively chemical fertilizer (CF), combined application of chemical fertilizers and wheat straw (CS) and farmyard manure (CM) treatments, respectively. Error bars represent the standard error of the mean for each treatment.

Figure could be improved by:

- Including standard error (or LSD) in the caption text and removing error bars from the figure
- Using some 'open' symbols
- Describing symbols in the caption text and removing the legend

Suggested features for an ideal figure

- Decide on the point you want to get across and design your figure accordingly
- Most prominent in the figure should be
 - what is clearest in the data, or
 - what is most significant in the process

Figure type

- To show proportions of a whole: PIE CHART
- If variables are independent of each other (eg. apples & oranges): HISTOGRAM or BAR CHART
- If there is a sequence of variables or dependence of one variable on the other (eg. change over time): LINE CHART
(Line charts should have the dependent variable on the y-axis, independent variable on the x-axis.)



Design points for figures

- Maximise white space – use ink to present most important data
 - Keep variable order the same between different figures
 - Boxed figures look better, rectangular proportions, usually 3:2 (shape and orientation of the box is important)
- Langmuir* - For best results, submit illustrations in the actual size at which they should appear in the journal.



Design points for figures

- Scales (axis) start logically (ie should "0" be included even if it is not a sampling point?)
- Choose scale divisions that are meaningful
- Point size – not too big, not too small (refer to instructions for authors)
- Axes should be clearly labelled
- Use lines to show the most important trend
- No more than 5 lines on a line graph (if different variables)
- Font should be clear (refer to instructions for authors)



Figure legends

Description or Declaration?

- Usually one descriptive line, tells you what the figure is about
 - eg "Mean number of visits/bird"
- Maybe one sentence about the method
- Explain key results or observations
- Key – explain the different treatments for different points
- Explain statistical and other notation



Tables

- Design the table around the point you wish to illustrate most strongly
- Keep tables free of clutter
- Don't box tables, use horizontal lines as separators
- Use space to distinguish columns
- Define abbreviations in the table using footnotes and the title legend
- Sort data to best show the main correlations



Reference to tables and figures in the text

- All tables and figures should be presented sequentially and referred to in that order in the text
- Figures and tables do not stand outside the text - they should always be referred to as part of the 'story' being told



Tables and figures task: Either

- Look at your own tables and figures.
 - Identify strengths and weaknesses in the layout and presentation - revise as needed.

OR

- Look at the tables and figures in your example paper.
 - Identify places where the principles set out in the previous slides have been used effectively, or where they could have been improved.
 - Discuss with your neighbour/s.



Session 7

- Writing the Results section



Writing Results: The “Story” of the paper

- Highlight the key points...
- ...but don't restate too much. Be CONCISE!
- Don't repeat everything from the tables and figures
- Concentrate on the important results (the ones you will want to focus on in the Discussion)
- You should be able to reduce results to a series of “dot points” before you start writing the sentences



Writing about Results: *Three information elements*

- A statement that locates the figure/s or table/s where the results can be found (L)
- Statements that highlight the most important findings (H)
- Statements that comment on (but do not discuss) the results (C) (Weissberg and Buker 1990)



Which elements are present in each sentence?

¹A total of 53 samples were examined. ²Direct microscopic examination of the samples showed 20 different fungal strains, which were isolated by culture and identified to the level of genus and/or species (Table 1). ³These findings show that fungi can tolerate adverse environmental changes in the vegetative form. ⁴Table 2 shows the results of the tests applied to the isolates. ⁵None of the fungi strains was able to grow in culture media with 500 to 5000 mg L⁻¹ of anionic surfactant. ⁶An inhibitory effect on fungal growth and activity might be expected from the anionic surfactant level found in the ponds. (cited in Weissberg and Buker 1990)



Answers

Sentence Number	Information element
1	H
2	H + L
3	C
4	L
5	H
6	C



Task, Part A

- **Check one Results section from your example paper.**
 - Are the L and H elements mostly separate or combined?
 - Where L elements are separate, why do you think the authors have chosen that option?
 - What tenses are used? Why do you think different tenses appear?

Tense in Results sections



- Simple past tense is used when the sentence focuses on the completed study – what was done and found
- Present simple tense is used
 - when the sentence focuses on the document, which will always be there, and
 - When the sentence describes an 'always true' situation'.
- Modal verbs are used in comments, especially in 'that' clauses.

Which tenses and why?



Surprisingly, we immediately noticed an unusual coloration in the molded samples of the high $\Delta C8$ OBC diblocks. The compression molded films shown in Figure 2 are imaged on either black or white backgrounds or through clear glass to demonstrate these effects. The samples are all colorless on white backgrounds, but samples 1 and 2 appear blue when viewed under ambient light against a black back-ground and yellow when viewed in transmission in front of a white light source. These effects are absent in the physical blend (sample 3) and low $\Delta C8$ diblock (sample 4). The differences in appearance in reflected and transmitted light suggested that the colors were not the result of an absorbing moiety but rather a scattering phenomenon. (Hustad et al. 2009)

Task, Part A cont.



- Read 2 additional paragraphs of results in your example article
- Underline all finite verbs, and check the tenses:
 - Can you explain the choice of tense using the guidelines previously presented?
 - Ask the presenters if you find any problematic uses of tense.

Task, Part B



- Now develop the 'dot points' you wrote previously telling the 'story' of your results into sentences and paragraphs (or revise a previous draft).
- Make decisions about separate or combined L and H elements, and tense usage, based on the guidelines we have discussed.

Session 8



- Materials and Methods: establishing credibility

Materials and Methods



- Stated purpose is that the work can be repeated
- BUT: what problems have you had following methods from published papers?
- A key purpose of the M&M section is to establish the credibility of the Results
- Cite methods if they are previously published
- Describe in full if readers lack access to the original publication
- All novel methods must be described



Crystal Growth and Development Author Guidelines

The Experimental Section should provide a clear, unambiguous description of materials, methods, and equipment in sufficient detail to permit repetition of the work elsewhere. Repetitive descriptions of a general procedure should be avoided.



Organising the M&M effectively (1)

- A goal of the M&M is to help readers understand the Results
- It can be useful to use similar or identical subheadings for the two sections
- Investigate your example paper to see if the authors have used this strategy
 - Do the subheadings match?



Subheadings in your example paper

Materials and Methods	Results



Organising the M&M effectively (2)

- Consider using introductory phrases to explain why a method was used, e.g.
To measure pollen fertility, we collected pollen from one flower on each hybrid plant and 10 wild plants per population. (Campbell & Snow 2007)
- Or use the first sentence in a paragraph to introduce the method and then give details, e.g.
Mineralisable N was estimated using an anaerobic incubation assay as described by Keeney (1982). This involved ...



Check your example paper

- Can you find any 'introductory phrases' explaining why a method was used?
- Can you find any 'topic sentences' introducing a longer explanation of a method?



Factors that influence the choice of active vs passive verbs

- Does the reader need to know who performed the action? If not, ⇒ the passive:
e.g. Data were collected weekly from each site.
- Does it sound immodest (or repetitive) to use a personal pronoun subject? If so, ⇒ the passive
e.g. Least significant differences (l.s.d.) were calculated to compare means.
- Remember: only a transitive verb can be used in the passive (one that can have a direct object – indicated by vt. in dictionaries)



Factors that influence the choice of active vs passive voice (2)

- Does it help the information flow to choose either active or passive?

The four reactors we tested in the work reported here all contained a platinum catalyst (ACTIVE). Each *reactor-catalyst configuration* will be described separately (PASSIVE). *The quartz reactors* were manufactured by the Wm. A. Sales Company of Wheeling, Illinois (PASSIVE). (cited in Weissberg and Buker 1990)



Problems with passive sentences (1)

- X Wheat and oats, collected from the Virginia field site, as well as barley and rye, collected at Loxton, were used.
- ✓ Four cereals were used: wheat and oats, collected from the Virginia field site; and barley and rye, collected at Loxton.



How could you improve this sentence?

Actual evapotranspiration (T) for each crop, defined as the amount of precipitation for the period between sowing and harvesting the particular crop plus or minus the change in soil water storage in the 2m soil profile, was computed by the soil water balance equation (Xin, 1986; Zhu and Niu, 1987). [Fengru et al. 2000]



Task:

- Use what you have learned in this session to begin writing or to revise your own Methods/Experimental section.

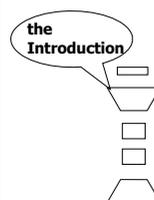


Session 9:

- Introductions – using the literature to justify or situate the study
- The 5 possible ‘stages’ of justification,



In the context of AIMRaD



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



The five stages of an Introduction

(adapted from Weissberg and Buker 1990)

1. General 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 principal focus or activity
5. Optional statement(s) that give a value or justification for carrying out the study



Class exercise

- Read the Introduction on the next 3 slides. Decide if all the stages are present, and mark where each one begins and ends. (It is possible that stages may be repeated or come in a different order to that suggested above!)



Spatial Distribution of Litter and Microarthropods in a Chihuahuan Desert Ecosystem

¹In most deserts of the world, transitions between topographic elements are abrupt and watercourses which are dry most of the time tend to dissipate their occasional waters within local basins. ²Occasional torrential rainfall, characteristic of most desert regions, washes loose debris into watercourses or transports this material, depositing it in and along the shores of ephemeral lakes. ³These physical processes result in a redistribution of dead plant material (litter), affect the distribution of soil water and create a heterogeneous biotic community. ⁴Therefore, before the dynamics of desert ecosystems can be adequately understood, the spatial relationships must be clarified.



⁵There have been few studies of litter distribution and/or soil fauna in any of the world's deserts (Wallwork, 1976). ⁶Wood (1971) surveyed the soil fauna in a number of Australian arid and semi-arid ecosystems. ⁷Wallwork (1972) made some studies of the microarthropod fauna in the Californian Mojave desert and Edney et al. (1974, 1975, 1976) studied abundance and distribution of soil microarthropods in the Mojave desert in Nevada.



⁸In the Chihuahuan desert, Whitford et al. (1975, 1976, 1977) described the spatial relationships for many groups of organisms, but soil microarthropods remain unstudied. ⁹The lack of such information represents a gap in our knowledge of desert ecosystems. ¹⁰As part of our continuing program of studies of the structure and dynamics of Chihuahuan desert ecosystems, we designed the study reported here to understand the relationship between litter redistribution and the spatial distribution and composition of the soil microarthropod community.

(cited in Weissberg and Buker 1990)



Class exercise : Where are the stages?

Stage Number	Sentence Numbers
1	1 – 4 (or 1-3?)
2	5 – 8a
3	(4?) 8b – 9
4	10
5	10a (?)



Task

- Read the introduction of your example paper and decide if all stages are present, and where each one begins and ends. (It is possible that stages may be repeated or come in different order to that suggested above!)
- Are there any other 'stages' present that are not included in the Weissberg & Buker model?



Stage 1

- Helps your reader move from your 'country' to your 'province' to your 'city'
- Your 'city' is not the aim of the study, but rather its particular topic area.
- For the Desert Ecosystems introduction:
 - What is the 'country'?
 - What is the 'province'?
 - What is the 'city'?



Stage 1 cont.

- For your example paper:
 - Country?
 - Province?
 - City?
- Now, think about your own paper:
 - Country?
 - Province?
 - City?



Stage 2: References (or citations)

- Are used in a sentence to acknowledge that the idea/s or fact/s in it come from the cited source
- Appear in text either as a surname and a date in brackets (e.g. McNeill *et al.*, 2000) or as a number in brackets (e.g. [7] or a superscript number (e.g. ⁷), depending on the journal's preferred style (see Instructions to Contributors)
- Refer to the List of References at the end, where the full publication details are given.
- Are especially important when discussing previous work in your 'city' area, to justify your Stage 3 gap or problem.



Using citation to develop your argument

Three possible 'styles' to use:

- Information prominent
- Author prominent
- Weak author prominent

You choose a style depending on how you are developing your argument.



Information prominent style

Topic sentence

Shrinking markets are also evident in other areas. The Australian wool industry is experiencing difficulties related to falling demand worldwide since the development of high quality synthetic fibres (Smith 2000).

- This is the 'default' style in many areas of science - it is the main style used in the example papers used for this workshop.



Author prominent style (1)

Shrinking markets are also evident in other areas. As Smith (2000) pointed out, the Australian wool industry is experiencing difficulties related to falling demand worldwide since the development of high quality synthetic fibres.

- This style gives more option to show the writer's view of the cited fact
- Here, the citation shows that the writer agrees with Smith



Author prominent style (2)

Smith (2000) argued that the Australian wool industry is experiencing difficulties related to falling demand worldwide since the development of high quality synthetic fibres. However, Jones et al. (2001) reported that ... It would seem that...

- This style also allows the use of verbs such as 'argued', which give advance notice that a 'however' is coming



Weak author prominent style

Several authors have reported that the Australian wool industry is experiencing difficulties related to falling demand since the development of high quality synthetic fibres (Smith, 2000; Wilson, 2002; Nguyen, 2005). For example, Smith (2000) highlighted ...

- This example has a general reference to 'authors' in the subject and then more than one reference in the brackets.
- It is followed here by an author prominent citation
- This style can be effective as a topic sentence starting a new paragraph
- Note the tense of the verb – present perfect



Task

- Check your example article to see which of the 3 styles are used:
 - Information prominent?
 - Author prominent?
 - Weak author prominent?
- Now check the Discussion section and answer the same questions.



Avoiding plagiarism

- Plagiarism is using ideas or words that originated in another work without acknowledging their source.
- Papers will be rejected if plagiarism is detected.
- It is regarded internationally as a form of cheating.
- It also prevents your gaining credit for knowing the work of other researchers in the field, which can be important for referees.



Compare these two versions of the same information and identify the problem

1. Smith (1981) suggests that this discrepancy in feeding rates may reflect differences in light levels used in the two different experiments. Jones (1984), however, found that light level did not influence the feeding rates of these animals and suggested that the rate differences reflect differences in the density at which the animals were held during the two experiments.
2. This discrepancy in feeding rates might reflect differences in light levels. Jones (1984), however, found that light level did not influence feeding rates. Perhaps the difference in feeding rates reflects differences in the density at which the animals were held during the two experiments. (Pechenik 1993)



The important check point:

- It must be clear to your reader whether the idea or fact you are using in your sentence is yours, or has come from the work of another person. If it comes from another person, cite them. The position of the citation can be important also, eg
 - “Interestingly, AtNramp 1 overexpression in *Arabidopsis* also confers tolerance to toxic concentrations of external Fe(II) (Curie *et al.*, 2000), suggesting, perhaps, that it is localised intracellularly. (Kaiser *et al.* 2003)



Stage 3: The research ‘gap’ or ‘niche’

- There are special ‘signal’ words that often appear in this Stage.
- One type of signal points to an upcoming contrast (eg ‘however’)
- Another type indicates a problem, a need or a lack.
- Check in your example papers for words that serve these purposes



Stage 4: The statement of aim or main activity

- Which of these variants occurs in your example paper: aim, principal activity, or summary of findings?
- Is there a detailed list of objectives?
- Which of these will you use in your own paper?
- Draft or revise your own Stage 4 statement now.

Suggested process for drafting an Introduction (after the Results ‘story’ is clear)

- Begin with Stage 4
- Draft Stage 3 next – the ‘gap’ or driving problem
- Then think about how to begin Stage 1 – the setting (think about your audience)
- Next, arrange the information you have collected from the literature into Stage 2
- Consider whether you need a Stage 5, and if so where it should be placed.
- In what order will you discuss the different ‘stages’?
- Then, combine the stages and add any additional sentences needed to connect them into a coherent Introduction.



Writing time

- Work on your own Introduction now
- The presenters will be available to provide feedback once you have applied the learning from the session to your draft



Session 10

- Strategies for creating flow in academic writing

Promoting logical 'flow': the writer's responsibility in English



- Five techniques of skilled writers of English :
 - Always introduce
 - Move from general information to specific information
 - Put 'old' information before 'new' information in sentences
 - Make appropriate link to preceding text within the first 7-9 words of a sentence
 - Try to include both the subject and the verb in the first 7-9 words.

1. Always introduce!



- 'A key to effective scientific communication in English is to set up expectations in your reader's mind, and then meet these expectations as soon as possible.'
- Use informative titles and subheadings
- Use well-chosen introductory sentences or phrases
- In paragraphs, use the first sentence as a 'topic sentence' to foreshadow the main point, and the scope of information presented.

Examples of effective topic sentences



- Synthesis of dielectric core/Au shell nanostructures is a multistep process.
- The viscosity of a liquid can be markedly increased by the addition of fairly small amounts, of the order of a few percent, of nanoparticles.¹¹⁻¹⁵
- Micronutrients such as iron are essential for bacteroid activity and nodule development.
- To complement data and information collected from surveys, three types of studies were conducted.

2. Move from 'general' to 'specific'



- **Does this paragraph follow the guideline?**
Pleuropneumonia (APP) can present as a dramatic clinical disease or as a chronic, production limiting disease in pig herds. A sudden increase in the number of sick and coughing pigs and a sharp rise in mortalities among grower/finisher pigs may herald an outbreak of APP in a herd. On the other hand, signs may be limited to a drop in growth rate and an increase in grade two pleurisy lesions in slaughter pigs. The disease surfaced in the Australian pig population during the first half of the last decade and ten years on is regarded as one of the most costly and devastating diseases affecting the Australian pig industry. (C. Cargill, unpublished)

A better version



Pleuropneumonia (APP) **surfaced in the Australian pig population during the first half of the last decade and ten years on is regarded as one of the most costly and devastating diseases affecting the Australian pig industry.** It can present as a dramatic clinical disease or as a chronic, production limiting disease in pig herds. A sudden increase in the number of sick and coughing pigs and a sharp rise in mortalities among grower/finisher pigs may herald an outbreak of APP in a herd. On the other hand, signs may be limited to a drop in growth rate and an increase in grade two pleurisy lesions in slaughter pigs.

(C. Cargill, unpublished)

3. 'Old' information before 'new' (1)



Which example is easier to follow?

- A: The five year plan does not indicate a clearly defined commitment to long-range environmental research. For instance, the development of techniques rather than the identification and definition of important long-range issues is the subject of the plan where it does address long-range research.
- B: The five year plan does not indicate a clearly defined commitment to long-range environmental research. For example, where the plan does address long-range research, it discusses the development of techniques rather than the identification and definition of important long-range issues.
- (Olsen and Huckin, 1991, p. 440)



Old and new information (2)

- **Which sentence needs changing to follow the guideline?**
Pleuropneumonia (APP) surfaced in the Australian pig population during the first half of the last decade and ten years on is regarded as one of the most costly and devastating diseases affecting the Australian pig industry. It can present as a dramatic clinical disease or as a chronic, production limiting disease in pig herds. A sudden increase in the number of sick and coughing pigs and a sharp rise in mortalities among grower/ finisher pigs may herald an outbreak of APP in a herd. On the other hand, signs may be limited to a drop in growth rate and an increase in grade two pleurisy lesions in slaughter pigs.



A clearer version

Pleuropneumonia (APP) surfaced in the Australian pig population during the first half of the last decade and ten years on is regarded as one of the most costly and devastating diseases affecting the Australian pig industry. It can present as a dramatic clinical disease or as a chronic, production limiting disease in pig herds. **An outbreak of APP in a herd may be heralded by** a sudden increase in the number of sick and coughing pigs and a sharp rise in mortalities among grower/ finisher pigs. On the other hand, signs may be limited to a drop in growth rate and an increase in grade two pleurisy lesions in slaughter pigs.



'Old' and 'new' information (3)

- 'Old' information is anything the reader already knows
- Place 'old' information before 'new' in sentences to promote flow
- Task: in the Stage 1 of the Desert Ecosystems introduction, underline the words that represent or refer to old information.



Spatial Distribution of Litter and Microarthropods in a Chihuahuan Desert Ecosystem

¹In most deserts of the world, transitions between topographic elements are abrupt and watercourses which are dry most of the time tend to dissipate their occasional waters within local basins. ²Occasional torrential rainfall, characteristic of most desert regions, washes loose debris into watercourses or transports this material, depositing it in and along the shores of ephemeral lakes. ³These physical processes result in a redistribution of dead plant material (litter), affect the distribution of soil water and create a heterogeneous biotic community. ⁴Therefore, before the dynamics of desert ecosystems can be adequately understood, the spatial relationships must be clarified.



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4 and 5: Important role of first 7-9 words

- Make link with previous sentence within this limit
 - Try to include subject AND verb within this limit
i.e. Always put a list at the end of a sentence
- How could you improve the second sentence below?

The definition of seed quality is very broad and encompasses different components for different people. The quality and quantity of flour protein, dough mixing requirements and tolerance, dough handling properties and loaf volume potential are quality parameters of wheat seed for bread bakers.



A clearer version

- The definition of seed quality is very broad and encompasses different components for different people. **Quality parameters of wheat seed for bread bakers are** the quality and quantity of flour protein, dough mixing requirements and tolerance, dough handling properties and loaf volume potential.



'Rules of thumb' for first drafts

- Begin sentences with information that links to the sentence/s before.
- SUBJECT plus VERB plus OBJECT plus OTHER ELEMENTS – for first draft – reorganise for better flow later if necessary
- Try to keep sentences to one or two clauses only.
- Then, use the 5 Strategies to self-edit your own writing for its logical flow.



Session 11

- The Discussion section:
 - optimal organisation of the information
 - negotiating the strength of your knowledge claims



Discussion sections

- The Discussion/Analysis relates to the Introduction
 - the aim/purpose statement
 - the initial problem or issue that was described
 - the evidence leading to the 'gap' or argument, and
 - the 'country' where the Introduction began
- It highlights the key points from the results 'story'
- Does your target journal usually have a separate 'Conclusion'? If not, use the last paragraph of the Discussion to conclude.



Check your example paper

- Does your paper have a combined Results and Discussion, or is Discussion separate?
- Is there a separate heading for Conclusions?
- If there is no Conclusion heading, what signal can you see in the text that tells you where the conclusion part starts?



Information elements to include

1. Reference to the main activity, hypothesis or purpose of the study
2. Review of the most important findings, whether they support the original hypothesis, and/or 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
6. Recommendations for further research or practical applications (Weissberg and Buker, 1990)

Discussion, cont.



- The first 4-5 of these points are often repeated for each group of Results
- 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
- If you have grouped your discussion into themes, make sure you write a clear link between them.
- Finally, check for a good link between take home message/s and the paper title

Task: Analysing examples



- Select one paragraph of discussion from your example paper
- Decide which information elements from the list are included in it
- Underline the words that carry the key message relevant to those information elements
- Repeat for another paragraph if time allows

Discussion information elements



Element	Present?	Words carrying the key message
1		
2		
3		
4		
5		
6		

Sentence templates for Discussion/Analysis



- We found that, for a given NP1, NP2 between NP3 and NP4 was maintained irrespective of how (clause).
- As expected, increased NP1 reduced NP2, a result consistent with previous studies (refs).
- Thus, based on the currently available data, we propose that NP1 is a [number]-stage process: an initial NP2 followed by NP3.
- Our results show that NP1 is X times [greater] than NP2 and this sector is thus [highly] competitive with NP3.

Task



- Check the Discussion section your example article for sentences that could form the basis of sentence templates.
 - Record the templates, plus details of the type of NPs needed.

Drafting/revising Discussion



- Spend some time now writing or revising your own Discussion section.
 - Check that the appropriate information elements are included for each key results/THM
 - Use identified sentence templates if appropriate
 - Ask the presenters for help as needed



Session 12

- Negotiating the strength of your claims in Discussion, Conclusion and Abstract



Negotiating the strength of your knowledge claims

- For the last 4 information elements in particular, authors need to take special care with the *verbs* they use to discuss their results.
- The verbs carry much of the meaning about *attitude to findings* and *strength of claim*.



Strength of claim

In sentences using *that*, authors have two opportunities to show how strong they want their claim to be:

- In the choice of vocabulary and tense in the main verb;
- In the choice of verb inside the *that* clause.



Negotiating strength 1

This concept, combined with ... **suggests** that accurate predictions of polydisperse BCP phase behavior **will require** more complex models than monodisperse systems.



Negotiating strength 2

Work by Loveys *et al.* (2003) **indicated** that this **may also be** true for root systems, ...



Negotiating strength 3

These results **suggest** that hybrid success in natural populations **is unlikely to be** limited by density alone ...



Task

- In your example paper, find at least one sentence that follows the pattern we are currently investigating.
- Underline the verbs and note
 - the tense
 - the strength of meaning (that is, the 'modality') conveyed by the choice of words
- Does the sentence as a whole agree well with the strength of the data presented in the paper?

Suggest alternatives to the underlined words: stronger or weaker claim?

The indicate that may become more
theory's nonequilibrium effects important as
results is increased.
polydispersity



An alternative construction

Example

This marked increase of values of effective viscosity certainly suggests a local concentration increase of nanoparticles near the triple line.

Task: Rewrite the example using a 'that' clause and without changing the strength of the claim.



Task

- Work on your own Discussion draft now
 - Check for sentences that present your claims
 - Revise the strength words if necessary to ensure a good match with the data presented in your Results
 - Ask the presenters for help as needed



Session 13

- Submission and beyond
 - Publishing ethics
 - Submitting manuscripts
 - The Editor's role and the refereeing process
 - Responding to referee comments: steps and strategies



Submission

- Commonly done as an email attachment or by uploading files to a website
- Is the first step for the manuscript in its journey on a path with several different crossroads



Editor's rejection without review

- The topic is not suitable for the journal
- The language or structure of the paper is poor, and therefore it cannot be sent to referees
- There are clear and obvious flaws in the science or in the methodology described
- Does not fulfil ethical guidelines



Publishing ethics

- It is not acceptable to submit a manuscript, or another version of the same manuscript, to more than one journal at the same time
- It is not acceptable to put authors' names on a manuscript, or to use their data, unless they have agreed in writing
- It is not acceptable to submit material for publication which has already been published, or accepted for publication, elsewhere



The author's covering letter

You can use the covering letter to do the following:

- express your belief that the paper is within the scope of the journal;
- state the title of the manuscript and the names of the authors;
- state that the research and the paper are new and original;
- highlight specific points that reinforce the novelty and significance of the research;
- highlight any points about the manuscript which may raise questions for the editor, e.g. that a long paper is justified or that photographs are necessary to report important findings;
- express hope that the presentation is satisfactory; and
- say that you look forward to the referees' comments.



Task

- Using the suggestions on the previous slide, draft a covering letter to accompany the manuscript you plan to submit.
- Ask you neighbour to check for each of the suggested elements



The Editor's role 1

- The Editor is responsible for maintaining the reputation and competitiveness of the journal.
- The Editor is responsible for the initial decision as to whether a submitted manuscript will be sent to reviewers.



The refereeing process

- Manuscripts are sent to two or three peer reviewers or referees
- Each journal has its own set of instructions for referees – sometimes these are available on the journal's website



Nominating reviewers

- Some journals allow (ask) you to nominate reviewers
- You should choose people who you feel are leaders your field
- Do not nominate colleagues or people you often publish with!
- The editors may not use your nominations – but you have nothing to lose by making suggestions



What are referees asked to do?

- In addition to 'ticking the boxes', referees are asked to write their comments about any problems with the manuscript or any suggestions for improvement that need to be followed before the manuscript can be considered suitable for publication in the journal
- Referees return their comments to the editor



What are referees of *Crystal Growth and Design* asked?

Criteria for consideration by reviewers:

- relevance of the work to the fields of crystal growth, design, and application;
- its overall quality and completeness;
- its originality and significance;
- the quality, clarity, and conciseness of the manuscript;
- the quality and appropriate use of figures, tables, etc.;
- whether the conclusions reached are adequately supported by the data;
- the use of satisfactory nomenclature;
- whether the potential hazards have been adequately described;
- whether the references given are appropriate and adequate.



Recommendation options

- Accept
- Accept subject to minor revision
- Review again after major revision (or Reject with resubmission encouraged)
- Reject



The Editor's role 2

- The Editor receives the reports from the referees and decides what response will be made to the author/s
- If the first referees disagree, sometimes the Editor will send the manuscript to an extra referee for an additional opinion
- The Editor then writes to the corresponding author, telling her/him of the decision



Dealing with editorial decisions and referee comments

- Is the paper accepted or rejected?
- Editors' letters are not always easy to interpret
- If in doubt, discuss with your co-authors or a colleague



Paper accepted subject to minor revision

- Respond quickly
- Try to make all the changes
- Don't start any unnecessary arguments



Who gets rejected?

- Survey of scientists who had published at least 10 papers in 5 top ecology journals between 1990-1999 (Cassey & Blackburn 2003)
 - 22% of papers eventually accepted had been rejected at least once
 - Every author had at least one paper rejected
 - Senior scientists & scientists with more publications had higher rejection rate
 - EVERYONE



Why a paper might be rejected:

- High ranking journals need to reject a high proportion of submitted manuscripts even if the reviews are (mostly) positive
- The paper may not fit the scope of the journal
- Referees may not read or understand the paper thoroughly enough to appreciate it (remember: the review process is unpaid work for busy people)
- Something may have annoyed the referee – they are unpredictable: can be helpful or (sometimes) unhelpful



Responding to rejection

Determine why the manuscript is rejected:

- Not suitable for the journal – submit to another journal
- Problems with design or method – try to publish the good parts, or develop the study if possible
- Research not new or 'important' enough – submit to lower ranking journal
- If submitting the same manuscript, make the changes recommended by the reviewers first



Paper needs some revision: Rules of thumb

- Rare that the referee is completely right and the author completely wrong
- Object is to accommodate the referee by addressing their comments without compromising the message of the paper
- Always show the editor you are trying to do the right thing – be polite
- Rejection does not automatically mean that the science is not good or that the paper is not well written



Example: letter from Editor to author after review

"Based on the comments and recommendations of the two reviewers (included) and my own reading of the manuscript, it is my view that **some revision is required** before this paper would be acceptable for publication. If you wish, you can **send me a revised version** of the manuscript, with a covering letter **outlining how each of the reviewers' comments have been addressed**. I have also included an annotated copy of the manuscript with some corrections to grammatical, typographical and formatting errors. Please **attend to these** as well in the manuscript revision."



Example: response from *author* to *Editor* after revision

"Please find enclosed a **revised version of the manuscript**, a letter outlining how the **reviewers' comments have been addressed** and the annotated copy of the first version. Sorry for the delay, but **some ... measurements** were required... . The manuscript has been **thoroughly revised** in order to address the **valuable suggestions** of the Editor and the two reviewers."



Main types of comments from referees

(Cargill & O'Connor in press)

1. The aims of the study are not clear.
2. The theoretical premise or "school of thought" on which the work is based is challenged.
3. The experimental design or analysis methods are challenged.
4. You are asked to supply additional data or information that would improve the paper.
5. You are asked to remove information or discussion.
6. The conclusions are considered incorrect, weak or too strong.
7. The referee has unspecific negative comments – eg. poorly designed / written / organised.



Task

- Form groups of 3-4 people
- Imagine you are an author team who have received reviews of your submitted manuscript
- With your group read the referee's comment on the sheet you have been given
- Together decide whether or not you will address the reviewer's comment by making changes to your manuscript
- Draft one or two sentences advising the editor
 - what you have decided and why, and
 - what you have done



1. The aims of the study are not clear

RESPONSE:

- check the aims are clearly stated in the Introduction
- check the aims are consistent with the experimental design
- check that the discussion refers back to the aims



1. The aims of the study are not clear EXAMPLE COMMENT AND RESPONSE:

R: "The purpose of the research is not clear"

A: "Regarding the purpose of the research, a sentence has been added at the end of the introduction... viz 'This should provide a better basis for understanding and predicting...change...'"



2. The theoretical premise or "school of thought" on which the work is based is challenged

RESPONSE:

- Check that the Introduction shows the diversity of theories (*cite the literature*) and demonstrate that you are testing one of these theories
- If you are challenging accepted wisdom, use theory, references and structure (e.g. section headings)
- Include *constraints* in the discussion



3. Experimental design or analysis methods are challenged

RESPONSE:

- Defend the design or analysis on its merits
- Refer to previously published examples using the design or analysis
- Include additional information on the design or analysis if available
- Refine the methodology and describe accordingly



3. Experimental design or analysis methods are challenged EXAMPLE COMMENT AND RESPONSE:

R: "No explanation is given for the [**pre-treatment**] procedure"

A: "Two paragraphs are added justifying the use of [**the procedure**]. Two recent references are included which show that the procedure [**works**]."



3. Experimental design or analysis methods are challenged EXAMPLE COMMENT AND RESPONSE:

R: "The main weakness of the paper is that it did not study the long-term effect"

A: "Long-term effects would be addressed properly by adding further experimental data We believe that these comments are accurate and point out future research directions"



4. You are asked to supply additional data or information that would improve the paper

RESPONSE:

- Do it if you can.
- If you cannot, consider whether you are expected to make major or minor corrections by the Editor.
- If you think the paper will not be improved with the suggested additions, make your case to the Editor.



4. You are asked to supply additional data or information that would improve the paper EXAMPLE COMMENT AND RESPONSE:

R: "One possible approach is to run replicate analyses...see [**suggested reference**]"

A: "Taking the ideas of [**suggested reference**], we ran duplicate measurements..." [**new data included**]



5. You are asked to remove information or discussion

RESPONSE:

- Do it if you can, without changing the 'story'.
- Ask a colleague to make suggestions on where to make cuts.
- If you don't want to make all the cuts, see if one referee is on your side and make your case to the Editor.



5. You are asked remove information or discussion
EXAMPLE COMMENT AND RESPONSE: :

R: "This area of research is well known and does not need this exhaustive review section."

A: "We have reduced the size of this section and referred to critical reviews by **[references]**"



6. The conclusions are considered incorrect, weak or too strong

RESPONSE:

- Make sure the discussion is tied to the aims at the beginning of the paper.
- Reassess the literature you have cited and make a case to the Editor if there is adequate supporting literature.
- Check that all your statements are justified and the strength is appropriate.
- Include limitations in the discussion.



6. The conclusions are considered incorrect, weak or too strong
EXAMPLES:

R: "This is hardly astonishing. A similar accumulation was reported by **[References]**"

A: "The comments of the reviewer were profoundly appreciated and taken into consideration. Two references referred to by the reviewer were included..."



7. The referee has unspecific negative comments eg. poorly designed / written / organised

RESPONSE:

- Show the referees' comments to a peer and discuss them.
- Think about what the referee has a specific problem with; restate it and respond.
- Point out to the Editor all the work you have done to improve the paper.
- Build up a body of positives – eg. "I have addressed point 1 by..."



7. The referee has unspecific negative comments eg. poorly designed / written / organised
EXAMPLE COMMENT AND RESPONSE:

R: "The English is not good and needs to be greatly improved."

A: "Grammatical points of the language were reviewed to improve readability...None of the authors is an English native speaker. But anyway, we tried to improve it as far as we could."



Re-submit (same journal), with letter to editor:

- Point out supportive comments by referees and any disagreements between them (try to get the Editor on your side).
- List the main changes individually, referring to referees' reports (*copy each individual referee's comment (e.g. in **BOLD** text) and address each comment directly underneath (e.g. in plain text).*)
- Say you have also corrected minor errors (e.g. of English).
- Defend your conclusions if referee is factually wrong.
- Say you believe the paper is important research and is now acceptable.
- Hope for the best!

Session 14

- Putting the pieces together for a convincing draft
 - Recap: production process for a manuscript
 - Editing your manuscript
- Writing time

A manuscript preparation process?

- Select a 'package' of results from analysis **OR** an over-arching 'thesis' with dot points to support it using data
- Discuss with co-authors:
 - 'Take-home' messages
 - Target audience and journal
 - Distributing the labour
 - Authorship order (see <http://authororder.com>)
 - Timelines

Manuscript preparation process (2)

- Obtain 'Instructions to Contributors'
- Refine tables and figures; draft Results and/or dot-points for Discussion/Analysis
- Draft Title
- Draft Materials and Methods, [or, for some, methods statements for insertion into Analysis sections]
- Draft Introduction

Manuscript preparation process (3)

- Draft Discussion/Analysis sections (and Conclusion if required)
- Draft Abstract
- Combine all sections into complete first draft
- Follow suggested Editing procedures

Increasing your chance of getting your manuscript published

- The contribution is new
- The contribution is significant
- The whole paper excellent or good

Increasing your chance of getting your manuscript published?

Is the contribution new?

- Read the most recent work in your field (including reviews)
- Check introductions for the 'size' of 'gaps' and/or the way the research problem or question are presented
- Check Discussion/Analysis sections for suggested 'future work', limitations of previous studies, possible inclusion of method statements, and/or new topics
- Be realistic about how long the study + writing will take you
- Choose the right journal

Increasing your chance of getting your manuscript published?



Is the contribution significant?

- Check how much data, and what kind of data, are usually required for your type of study or journal
- Check Introduction for the 'size' of 'gaps', and the levels of specific-ness or generality in which in which problems are described
- Check discussions for suggested 'future work', limitations of previous studies and/or new topics
- Think about the studies that might follow from your published research

Increasing your chance of getting your manuscript published?



Is the whole paper excellent or good?

- Do not lose sight of the research while fixing the English: make sure the tables and figures are accurate
- Give your manuscript to a colleague to read. Ask them to list the questions they have about the research
- Be honest with yourself about the strengths and weaknesses of the research. Can you fill any gaps at this stage?
- Check the grammar, spelling, instructions to contributors etc. methodically and systematically

Editing procedure: suggestions



- Put draft aside (48 hrs)
- Read through (on paper!) and mark places needing attention – don't stop to fix things
- Then address issues you marked
- Repeat from the beginning until satisfied with the content (the 'science')
- Check citations are accurate and relate accurately to the reference list

Editing procedure: suggestions (2)



- Edit for 'flow features'
 - Sub-headings (appropriate for content of sub-section)
 - Topic sentences, and link phrases between paragraphs
 - General to particular order in paragraphs
 - 'Old' information before 'new' in sentences and paragraphs
 - Lists at the end of sentences, not in the middle

Editing procedure: suggestions (3)



- Edit for grammar, spelling and punctuation
 - Your own common errors (use 'Find all')
 - Watch for errors that Spellcheck misses
 - Use Spellcheck effectively – add all technical terms to the Dictionary
 - Use ConcApp to answer questions as they arise (Thursday seminar)
 - Consistent italics usage
 - All journal guidelines followed
 - Use a ruler from the bottom up on hard copy for grammar
 - Final proofread (yourself and then others)
 - Will you use a fee-for-service editor?

Writing time



- Decide where you are in the writing process right now
- Work on your own draft from that point
- The presenters will be available to answer questions or provide feedback



Question time

- This week we have explored
 - how to choose an appropriate journal
 - the structures and logics of published articles in applied chemistry
 - the drivers of research writing
 - the language and content of different subsections
 - the mechanics of English in research documents
 - the submission and refereeing processes
 - polishing your article drafts
- Any final questions?



Course evaluation

- Please complete the two questionnaires that you have been given.

Thank You



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