Professional Development
Write a Research Proposal
Week 3: How to Convince Decision-Makers

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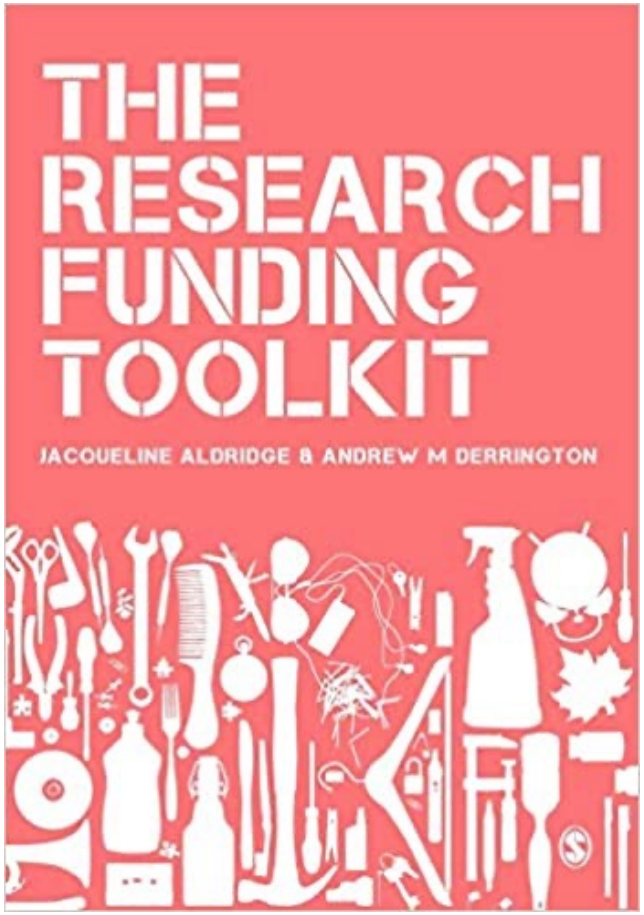
Useful Reading

- Much of the material comes from chapter 9 of this book.
- Really useful summary of *"how to convince decision-makers"*
- Read / scan chapter 9 of this book.
  - Activity are tools 13 and 14
- You have to produce a research proposal
  - This week (although not assessed) will really help you get started
  - Make writing it much easier
  - Give you the best chance of a good grade



Again we go back to 4 propositions

- Importance – this proposal asks an important question
- Success – this project is likely to answer the question
- Value – the likely gain is worth the resources requested
- Competence – the applicant (and team) are competent

Information and evidence

- You must produce the right information and evidence (“this project is the solution”)
  - Describe in enough detail so that it could be replicated by a colleague.
  - Defend parts that will attract criticism by *defensive writing*.
- You must help busy readers find the information they need
- You must help readers understand and remember the information you present

Important information

- Some parts of your proposal will be read in more detail than others (and by different people)
- Speed-readers are more likely to read the first sentence of a section or paragraph than the last:
  - important messages must come first!
- Works better if you think of it as either “convincing” or “defensive”.
  - Convincing arguments must be remembered
  - Defensive arguments are read by keen referee, they can be forgotten once they serve their purpose.
  - E.g. As a scientist with x experience, y can be trusted to design the experiment with appropriate parameters (see p111)

Understandable and memorable

- There is a limit to the number of items that we can retain in working memory!
- The limit is seven! So it should be less, really
- “Chunking” is an effective way of putting items together as a memorable chunk.
  - E.g. bullet points numbered list.
  - Can be used for objectives for instance
  - Can have main questions (numbered) and sub-questions (bullets) to have another level of chunking.

Our proposal plan so far

	Week1 - propositions	Week2 - case for support	Week3 - convincing arguments
20%	Importance and success	**Foot in the door** **(e.g. Project outline)** Grab attention Keep it simple Preview the project	
30%	Importance, success, competence, value	**We have a problem** **(e.g. Rationale, Introduction)** Use literature Limitations of previous? Objectives / questions (consistent with activities)	Speed readable Use "Chunking" Might need "convincing" and "defensive" arguments
50%	Success, competence, value	**This project is the solution** **(e.g. Research Plan)** Use literature Methods with activity Timings / duration What you will do with new knowledge	Speed readable Use "Chunking" Might need "convincing" and "defensive" arguments

Main points

- Need to provide the right information and evidence
  - Break it down into Convincing and Defensive arguments.
  - Put the most important point at the start of sentences.

- Make information memorable by using chunking (e.g. we have a problem)
  - no more than 7 points (and hopefully less)
  - Bullet points / numbered lists

- Develop tool 13 for yourselves. Start in tutorial
  - Use 4 propositions
  - Ignore points that are not relevant to you (e.g. publication?)
  - Tool 14 – use to identify supporting evidence / weaknesses
  - You may need to do a literature search to help you.

Example projects from week 1

(mainly atmospheric)

1. Evaluation of low-cost metal oxide sensors to measure air quality
2. An investigation into the drivers of seasonal variation in aerosol optical properties in the North East Atlantic region
3. Analysis of cold pools and dust uplift in the Sahara
4. Pockets of Open Cells: the control on the formation of gaps in clouds in the South-East Pacific.
5. Modelling concentration of PM2.5 with social development of China through supervised learning techniques.
6. Quantifying the effectiveness of HEPA air cleaners at removing particulate matter and black carbon from classrooms
7. A cost-benefit analysis of marine cloud brightening
8. Quantification of the relative contribution of aerosol and cloud factors to rain on the ground.
9. Analysis of ice nucleation data from the FIN-02 experiment.
10. The effect of ultra-viscous aerosol on the formation of cirrus clouds
11. Road traffic pollution modelling: a case study on princess parkway
12. Investigating the relationship of ice nucleating particles and soil dust
13. The impact of restaurants on particulate matter levels in Manchester city centre.
14. An observational study of atmospheric ice nucleating particles on polluted days.
15. The Glaciation of mixed-phase clouds
16. Dynamics of Rossby waves and shear instability of Saturn’s Hexagon