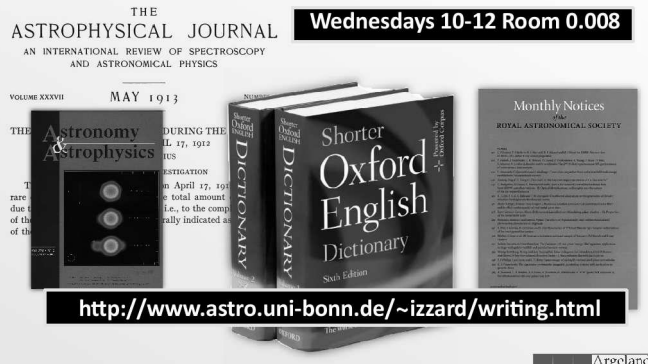
Scientific Writing 6951



Wednesdays 10-12 Room 0.008

http://www.astro.uni-bonn.de/~izzard/writing.html

Argelander Institut für Astronomie

Previously on *Scientific Writing 6951 ...*

- Abstracts
- 250 words
  - Topic, purpose,
  - your research question
  - Methods and data analysis
  - Results and findings (present as facts!)
  - Conclusions
- You learned how to join sentences
- ... and how not to :)

Informative Accurate Clear Concise Attention!

Argelander Institut für Astronomie

Homework 1: Keywords

- Assign a few keywords to each of the abstracts from the exercises

http://www.aanda.org/index2.pphp?option=com_content&task=view&id=170&Itemid=256

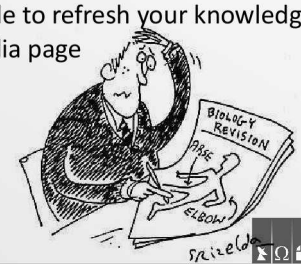
- Why are keywords useful?

Argelander Institut für Astronomie

Homework 2:

- Choose a subject you studied as an undergraduate e.g.

  quantum mechanics, relativity, electrodynamics
- Read up on this a little to refresh your knowledge e.g. read the wikipedia page



Argelander Institut für Astronomie

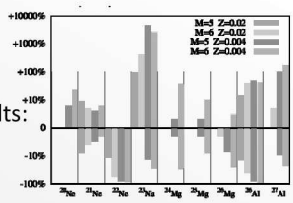
Today: getting started

- The hardest part of writing!
- We will examine today:
  - **Planning**
  - **Brainstorming**
  - **Literature**
  - **Freewriting**
  - **Combating writer's block**
- + Exercise on sketching out an article on the subject you chose to revise for your homework

(you did your **homework**, right?)

Argelander Institut für Astronomie

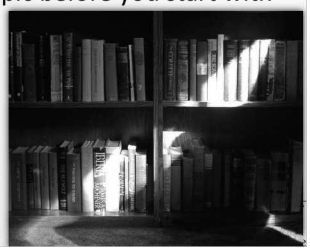
Raw Material



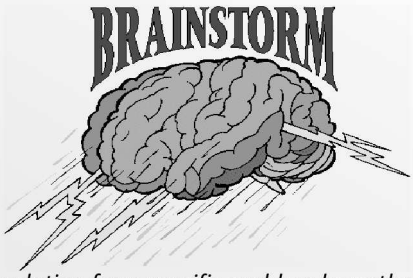
- Collect together all your results:
- **Graphs, plots**
- Notes
- Computer code(s) : **organise** your data!
- Relevant **papers** (on paper, in a folder)
- Books, lecture notes etc.
- **Coffee, tea** etc. close at hand!

Literature review

- Every project/introduction needs some kind of **review of the literature**
- Reference the **most important papers**
- Also a good review of the topic before you start with the rest of the paper!
- Not too long …
- But not too short!



Brainstorming



… find a solution for a specific problem by gathering a list of ideas spontaneously contributed …

https://en.wikipedia.org/wiki/Brainstorming

Brainstorming

Problem: either your scientific question,

or "what do I put in the paper?"

Advantages:

- **Quantity** leads to **quality**
- **No criticism**! (do it later)
- **Unusual** ideas
- **Combine** ideas to **improve** them
- *Buffers individuals from negative evaluation*

Osborn 1939

Heath & Jourden, *Organizational Behavior and Human Decision Processes* Vol. 69, No. 2, pp 103-116, 1997

Brainstorming

Difficulties:

- Ideas not important to the **group?**
- **One person** at once: ideas forgotten
- More effort to be proactive, **easy to sit back**
- Group productivity **illusion**
- **Myopic** view of outside information

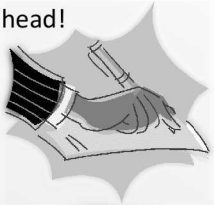
Minson & Mueller, *Psychological Science* (2012)

Also Schultze, Mojzisch & Schulz-Harz (2013)

Freewriting

- Write down whatever comes into your head!
- Great way to get started
- Like brainstorming on your own:

  can be (much) more productive!



Carry a **notebook** around with you!
Ideas can arrive at any time!

Writer's block

- Can't think of anything?
  - Define **topic** and **audience**
- Plan goals by a certain time
- **Avoid internet**! (no phone!)
- Go somewhere else (**cafe**? Library?)
- **Do not edit** at all (yet)
- Try writing on **paper**
- Try freewriting

Combating Writer's block

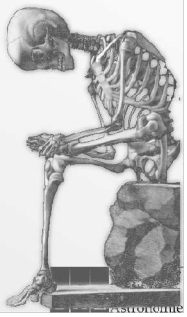
- Break your work into **small pieces**
- Stuck? Leave it until tomorrow
- Discuss with friends and colleagues
- Get **feedback** on your draft
- Remember to rest e.g. weekends!
- Treat yourself when you succeed!

- Remember: it's just a job
  like any other part of your research.

Argelander Institut für Astronomie

Skeleton Article

- *Abstract, Introduction, Method, Results, Discussion, Conclusions*
- Skeleton article contains the *main points only*
  e.g. bullet point list (one per paragraph?)
- Perhaps then add data figures and tables
- Write *Introduction*'s literature review
- *Method* and *Results* :
  you know these best!
- Then finish the ***Introduction*** and ***Discussion***
- Finally *Conclusions* and *Abstract* (?)

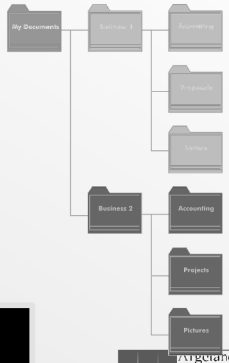


Practical advice

- If you are working on a **computer**:
  keep timestamped backups!
- e.g. **label** filenames
  review_paper_v123.tex
- Or use version control e.g. CVS/SVN/Git
  http://svnbook.red-bean.com/
- Keep an **off site** backup(s)!

Practical advice 2

- Before you start, structure your document storage:
- svn/tex/
- svn/tex/2011
- svn/tex/2011/papers
- svn/tex/2011/minutes
- svn/tex/2011/refereeing
- svn/tex/2011/reports



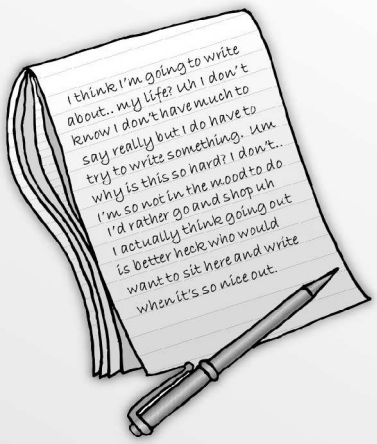
AIfA has an SVN server
Or use *github* (or similar)

Argelander Institut für Astronomie

Exercise

- You each chose a **homework subject**
  (I hope!)
- In groups of **three** (each with different subjects!)
- You have to **write a paper for 1st year undergraduates** on your subject
- **15 minutes** of brainstorming for each of you : remember to think outside the box!
- What **ideas** will you put into the paper?
- For now (or homework) write paper skeleton.

Argelander Institut für Astronomie



Argelander Institut für Astronomie