Research, Supervision and Publication- why, how and when

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Various possible answers- but the one I like most is- *overcoming previous ignorance*. It is about challenging our own (and of others) beliefs, attitudes, and providing new findings, and models to explain these findings.
Why do we do it

• Gone are the days of hobby scientists, when the nobility supported the activities of their mad friends.

• We all do research, because-
  – It is a job- to pay the bills.
  – We prefer this to other jobs.
  – There is creativity
  – We enjoy learning new things.
  – We enjoy the company of other researchers.
A Measure of Success

• Because research is not a hobby, but a profession, we need a measure of success. One of the widely accepted measure is the number and quality of publications.

  • Publishing- number of reason:
    – Peer Feedback.
    – Ego satisfaction.
    – Recognition
    – Growth of knowledge.
    – Measure of success.
What is Research

• Research is not making a ‘thing’
• Research is about discovering something new.
• But you may make the ‘thing’ when answering the research question.

Differentiate between the ‘wish-list’ and the research project.
Research

• The major aspect of research is-
• **Literature review**- to find out what others have done and -what is the unknown.

• Based on Literature, the plan for your research – hypothesis, experiments, etc.

• This requires ‘Details’ of the experiments.

• Self motivation requires discipline and planning.
Short term and Long term goals for self-motivation

- Identify the long term goal (of life, of PhD etc).
- Break it down to a set of short-term goals. Something measurable and well defined.
- The above is dynamic- changes with time.
- Check yourself against each of these goals, and if things do not go to plan, find out ‘why’.
- This is the most important way of ensuring success in your research. And freedom

Ensure that lit review is a regular part of these goals
Plan your publications before you start your research and experiments

– When writing the research proposal, develop the publications as milestones and deliverables at the start. Estimate the journals that are relevant.
– That will help design the experiments. And the analysis.
– If you are targeting a journal like Lancet, you need 1000+ data points, longitudinal studies, for recently identified medical or social issues etc. While high Impact factor, it does not have long half life.
When do we publish

• If you are a student, you need to publish to ensure that you get your degree.
• If you are an academic, you publish to be recognised in your field, and to attract good students and funding.
• If you are a University, you want (yours) to publish to satisfy the Government, funding bodies and prestige.
• It is also important to publish to get some feedback from other experts.
The Publish Measurements

• Conference- easy to publish- typically to report results, get feedback and to network.
• Journals- issues- impact factors, citations, etc.
• Decent PhD in Engineering- around 3 journal papers with impact factors > 1.
• FYI- medical journals have higher impact factors.
• Impact factors influence what others think of your paper.
• It is also important to ensure that experts in your field would read that journal.

You can shout- but how many are listening
Publishing - the time and how

- Most times, the first opportunity to publish.
- Your supervisor is pressing you, etc.
- Best - plan at the start of your research.
- Or - tabulate results, and list observations.
Table of results to the paper.

• Follow the following:
  – Tabulate the results, and list the observations.
  – Using the observations, try and search and find other similar works. Test if you have
    1. Followed the rigours done by others.
    2. That you are different from others.
    3. That you have compared yourself with others.
    4. List the journals and conferences where the work of others was published.
Now is the time for Discussion and Conclusion

• After you have done the exercise (previous slide), now write the conclusion, and discuss the conclusion with reference to the work of others. Ask yourself- is this something exciting and interesting- who will be interested, who are the audience (if any), etc.

• If it is not ready, see what more needs to be done.

• Also, find out- what additional (statistical) analysis and presentation style is understood by the audience. For example- clinicians, engineers and computer scientists use very different jargon and measures.
The Introduction

• Now, write the introduction- the introduction and conclusion should mirror each other.

• Now, identify the literature review that you have done already, and completes the story of the paper. Do not try and add unnecessary literature- do not try and prove that you have read number of papers.
Methodology

• The methodology has to be suitable for the journal you are planning to send the paper to.
• Make sure that you have read number of papers of that journal, and use their style.
Identifying the suitable journal

• This is very important—do not do this at the end, and do not take it for granted that your journal is the same as the other person in your department.

• Identify the audience and find the citations, read the editorial, and lots of papers in that journal.
Other Options

- Not all results need to be published in journals or conferences.
- Sometimes, you may need to patent the technology.
- You may also use the results for putting on the web- youtube, or just on the net in other ways. It also helps you reach audience, and attract other people to your work.
To Sum It All

• Start with the results section- not in your head- but on paper- and write your observations.

• Ensure that you do not have 2 or 3 separate points in the paper- stick to one- that is your main character, and do not forget that- for every paragraph, for all sentences- remember ‘the main character’. Nothing should be in the paper that does not tell the story about the main point.

• All sections of the Harry Potter book is about Harry Potter.
Revision

• After you have written the paper, print it, and take a red pen. Ruthlessly, cut out all things that are not part of the story. Stick to the point, and do not assume that your reviewer will not check things, or let things slip. If the reviewer is in doubt, they will go against you.

• For a good journal, in my lab, we can do over 100 iterations before the paper is sent.
Thanks- any questions

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