How to Write (Even) Better Academic Student Reports and Papers: some student advices

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Some Advices to Students

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The document is work-in-progress and the list of advices represent a comprehensive, not exhaustive list.

Please feel free to comment.

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PURPOSE

Writing good academic papers or reports that demonstrate academic rigour is not necessarily easy for university students (or academics for that matter). Common problems include lacking academic rigour when studying the research problem and difficulties in identifying literature and using theory, designing and applying methods and analysing and discussing data. Academic rigour is the focus in this document as this is the central component when assessing a report/paper. Moreover, it is written with the Aalborg University model of problem-based learning in mind[1]. Besides being a source of inspiration, the document can also act as a checklist before handing the exam report/paper in.

The document consists of two main themes covering 30 topics ranging from how to structure your paper and what to put into the different sections to how to pitch and write your paper to make it (even) more compelling.

Structure and Content of an Academic Report/Paper covers the seven required parts that make up an academic piece of work. That is, introduction (e.g., setting the hook), theory and/or literature review (e.g., which literature to you draw on and contribute to), methods (how did you study the research question), findings (outcome of the analysis), discussion (reflecting on the findings), conclusion (answering the research question) and references (knowledge reservoir). This sequence is (usually) also the order you write the report/paper in (although other well-thought structures may be equally relevant). For example, some students write methods before theory but doing so means you need to operationalize theory before you have introduced it. The second theme, General Tips and Tricks, provide rules of thumb (e.g., that you should kill your darlings), writing style and argumentation hints (e.g., use direct voice) and layout inputs (e.g., use the same format and font throughout).

Many university supervisors will agree with most of the advices (hopefully the majority group for the sake of academic rigour), but no one will disagree with all or most of them. The advices build on literature about academic writing (see references if you want to learn more) as well as my experience with supervising and reading student reports and papers.

Please note that the document is work-in-progress and that the list of advices represent a comprehensive, not exhaustive list, and that it is written with the Aalborg University model of problem-based learning in mind. Please feel free to comment on the advices listed.

[1] Aalborg University follows the approach called Problem Based Learning (PBL). PBL means that you as students need to build a bridge between two related yet different worlds. On one hand, you should solve problems of relevance to the real world and on the other hand, you should do this problem solving with academic rigor. A key challenge is therefore to balance and integrate these two approaches. This document focuses specifically on aspects related to academic rigor as this element is central element in the assessment of a project. The concrete results you create for the companies and organizations you typically work with have very little if any weight in the assessment of the project.

STRUCTURE AND CONTENT OF AN ACADEMIC REPORT/PAPER

Introduction (part one)

1. Set the hook to get the reader's full attention from the onset

- The fundamental question to answer in the introduction is: "What is this paper really about?" (Schminke, 2004, p. 311).
- Combine theory and practice in an intelligent and contingent manner to solve un-familiar and challenging problems. Solve real life problems academically by relying on a strong theoretical and methodological approach.
- "an effective introduction answers three sets of questions" (Grant & Pollock, 2011, p. 873):
  - Who cares? What is the topic or research question, and why is it interesting and important in theory and practice?
  - What do we know, what don't we know, and so what? What key theoretical perspectives and empirical findings have already informed the topic or question? What major, unaddressed puzzle, controversy, or paradox does this study address, and why does it need to be addressed?
  - What will we learn? How does your study fundamentally change, challenge, or advance scholars' understanding' [as well as firms and practitioners knowledge and decisions]
- Pitch the problem so the reader wants to read on! Why should readers spend the next hours of our life reading this project?'
  - Think beyond why the issue is important to the case company. For example, identify how it is relevant to the larger professional and research community. Consider what the academic contribution of your paper is (you are not only solving a consultancy task for a case company).

2. The research question is the guiding light

- Decide if you want to study a how, why or what type of research question. Sometimes you may also want to cover more than one type of research question in the same report.
- A research question should be neither too broad nor too narrow. It should be clear, focused, concise, complex, and arguable.
- The foundation for AAU projects is the problem and the process leading to the identification of the root causes is the foundation for writing the research question. Focus on root-causes and not just symptoms when developing the research question. Sometimes it may require (explorative) analysis to find the "real" problem. Do not take the initial information at face value (e.g., provided by the case company). The root cause analysis is thus what leads to choice of theories, and choice of theories should be assessed on their traditional academic merits and their relevancy as a problem solving tool.

- You cannot study everything so it is important that you delimit your research question to develop a focused and manageable question (or set of questions) you can answer. The delimitation is not always an analytical process as it may also be a choice you make about how to focus the project/problem.
- Your research question should be explaining itself in a short sentence, and then you can expand on the research question, e.g., with sub-questions or text explaining in more detail what the question covers.
- Consider breaking your research question into a practical and theoretical, e.g.,: a theoretical problem may be 'How does internationalization influence firms' value chains' and the corresponding practical problem could be something like 'How does company xyz internationalize its production'.
- Use the same research question formulation throughout. For some reason students often change the wording, which in turn makes the reader unsure about the purpose and direction of the paper.

3. Do what you say you want to do (that is, execute)

- Align your research question with the other parts of the report, that is, theory (select relevant theories), methods (e.g., how and why questions typically require qualitative research approaches), results (provide analytical input to the research question) and discussion and conclusion (answer and reflect about your research question)

4. Revise the introduction continuously (and also before you hand in)

- More than ten times is the average number a Best Article Award winner in Academy Management Journal rewrites the introduction (Grant & Pollock, 2011)! In other words, you become more knowledgeable along the way from, e.g., reading and collecting and analyzing data and this learning must be reflected in your introduction.

Resources:

- Pitching your research question and setting the hook in the reader: (Barley, 2006; Bergh, 2003; Colquitt & George, 2011; Grant & Pollock, 2011; Patriotta, 2017).
- Formulating research problems and questions: (Alvesson & Sandberg, 2011; Sandberg & Alvesson, 2011; Van de Ven, 2007).

Theory and literature review (part two)

5. Theories (or models and concepts) serve a purpose

- The theory and literature review section tells the reader which literature you draw on and contribute to.

- Theories determine what you should operationalize in your methods (when working deductively).
- In most cases, an "off-the-shelf, fits-all" theory does not exist. Typically, you need to put together your theoretical framework with different theoretical contributions and literatures.
- Clarify why you selected the theory(ies) and make clear how the theories fit together. Describe and discuss how you have adapted theories to your specific situation and research question. Also describe how the contribution from different theories enables you to answer your research question.

6. Use state-of-the-art literature by reviewing the literature

- A literature review maps and assesses the relevant intellectual territory, thereby outlining and enhancing the knowledge base and helping make sense of a mass of often-contradictory knowledge and evidence (Tranfield, Denyer, & Smart, 2003). In other words, you need to know (and demonstrate you know this) what research already has taught us about the topic you investigate.
- Tailor the literature review to the research question. Litmus test: if the theory section easily can be copy pasted across student reports/papers, then you have not tailored it well enough to your research question (i.e., it is too generic).
- Use scientific databases such as Business Source Premier or Web of Science (available through AUB at www.en.aub.aau.dk/find-material/databases). Google Scholar is also good to get an idea of the topic.
- Check the literature cited in the publications you find on the topic.
- Document how you searched for what (keywords used) and where (academic databases)
  - Use truncation (*) and wildcard symbols (?) to refine the search.

	Truncation Symbol (number of characters)	Example	Finds
EBSCO DATABASES (Academic Search Premier, ERIC, Psychlit, etc.)	* (one or more)	comput*	computer, computing, compute, etc…
	? (exactly one)	ne?t	neat, next, nest, newt, etc...
	??? (multiple ? ok)	bank???	bankers, banking

Resources:

- About theory and theory development: (Ashkanasy, 2016; Hambrick, 2007; Shepherd & Suddaby, 2017; Sparrowe & Mayer, 2011; Sutton & Staw, 1995; Van de Ven, 1989; Whetten & Rodgers, 2013).
- Reviewing literature systematically: (Moher, Liberati, Tetzlaff, Altman, & Grp, 2009; Tranfield et al., 2003)
- Get inspiration from top ranking review journals like International Journal of Management Reviews or Academy of Management Review or empirical journals like Management Science, Organization Science and Academy of Management Journal that also contain elaborate literature reviews relevant for the research question.

Methods (part three)

7. Write what you did, how and why (the reader does not have access to your head)

- The litmus test is providing enough information so that others can replicate the study and assess the quality of the findings and conclusions.
- If it is unclear what you did, the reader may assume that you do not know or you are trying to hide something (e.g., sloppy methodological work). Academic transparency is vital for good science!
- Avoid an overtly complex or theoretical methods section, only include the terms and concepts that are needed and relevant for your assignment
- Make sure that you do what write! For example, students often take a research philosophical standpoint (e.g., constructivist), but without any consideration about how this influence data collection and data analysis.
- Write the methods section in past tense. This pushes you to write what you did and why, thereby moving beyond writing in a way that sounds like you copied a textbook.
- Four main sections are typically needed to document how you carried out the study:
  - (1) Research design (e.g., a case study, survey)
  - (2) Case selection and case overview (if you perform a case study, which many students do then reflect about, e.g., why and how was the case selected, why is the case an insightful case regarding the research question)
  - (3) Data collection methods (quantitative, qualitative or a mix)
  - (4) Data analysis (describe how you performed the data analysis)

8. A good project requires collecting good data

- To answer a research question you must collect/obtain high-quality data (and often of different types). This in turn means you need to think carefully about if you are actually able to study the research question, e.g.; it can be difficult to collect the needed data because access to needed cases is virtually impossible or data is limited within the case.

9. Operationalise theory in the methods section

- When working deductively, operationalization is about identifying (from theory) measurable/observable/identifiable variables that you want to look for when you collect and analyse data.
- Describe how you used the selected theory in practice, which typically occurs as part of an interview guide, survey questions etc. and subsequent data analysis.
- Often requires breaking the theory/concept into smaller, more manageable parts. An example: if you are interested in how workers coordinate their actions to accomplish a collective task, then

divide coordination into, e.g., the five categories of mutual adjustment, direct supervision, and standardization of processes, skills and outputs.

10. Explain how you analysed the data

- The purpose of analyzing data, in general, is to obtain usable and useful information.
- Data Analysis concerns the process of systematically/thoroughly/rigorously crunching data by applying appropriate means (e.g., statistics in quantitative studies and data coding procedures in qualitative studies) in order to, e.g., describe and illustrate, condense and recap, and evaluate data.
- Students all too often only very briefly (if at all) describe how they analysed data. This is very unfortunate as it makes it impossible to understand how you arrived at your findings (and violates the scientific ideal of replication). Hence, you need to answer the questions: "how did you come to this result?" and "how do we know that this is the right result?"
- In quantitative studies, for example, describe which statistical analyses you made (descriptive statistics, logistic regression etc.).
- In qualitative studies, for example, describe how you coded data (e.g., interview transcripts) using theoretical concepts and then sorted them into meaningful larger categories.
- Data analysis is a central part in your projects as you here connect theory, methodology and data to develop new insights and findings (and in the end conclusions/recommendations). It is important that there is a strong and convincing "red thread" connecting these different elements to make a convincing project.

11. Time is always limited (and often the worst excuse around)!

- Design a study that you can complete within the allocated time – it is your responsibility! If you believe you do not have enough time, then it is (probably) due to poor project management skills. To illustrate that time rarely is an issue: AAU semester projects are allocated 15 ECTS*30 hours*no. of students so in a typical group this amounts to (15*30)*5 = 2.250 hours of student work!

Resources:

- Describing your method: (Zhang & Shaw, 2012)
- Get inspiration from top ranking journals such as Organization Science, Management Science and Academy of Management Journal.

Results/findings (part four)

12. Present the outcome of the data analysis in a clear and meaningful way

- Make sure to emphasis your key findings. Not all results are equally important and interesting
- Results/findings/recommendations must be based on the actual data analysis carried out.
- In quantitative studies, the findings section tends to be rather short as tables (numerical data) present results and only the main findings are written in the text. Importantly and next, you must discuss the implications of your findings in the subsequent discussion section (see below).
- In qualitative studies, the findings section tends to be longer than in quantitative studies because you have to present your findings in words. Still, tables and figures (labelled displays by Miles & Huberman, 1994,) are often also excellent means for presenting qualitative findings as displays are "organized, compressed assembly of information [which] permits conclusion drawing and action" (p.11).

Resources:

- Presenting your results: (Zhang & Shaw, 2012).
- Presenting (and analysing) qualitative data: (Miles & Huberman, 1994)

Discussion (part five)

13. A discussion is a reflection after an act (and not a second round of analysis)

- Practical implications. For example: What can the case firm and other practitioners and managers learn from your study? Are your analytical derived recommendations feasible in real-life, e.g., are they difficult and/or expensive to implement?
- Theoretical implications. For example, how do your findings fit with what we already know, how does your findings add to or amend established theory?
- Study limitations. For example, how generalizable is your study, how could it be improved, what are advantages and disadvantages?
- Future research. What to study next in order to take your new knowledge to the next level, what is the logical next step?

Resources:

- Crafting the discussion: (Geletkanycz & Tepper, 2012)

Conclusion (part six)

14. Make sure that you answer your research question!

- This section most likely needs to rewritten several times, and be aligned to the introduction.

Reference list and in-text references (part seven)

15. A reference list must be accurate and consistently follow a specific style

- The use of (relevant) references shows you have read the relevant literature, and that you are building your study and findings on existing research
- Not all references are equally important. Make sure to cite the most influential one (high-ranked journals/highly cited papers/ground-breaking, good research etc.).
- The Harvard or APA standards, e.g., are useful for aligning with a specific reference style including in-text citations and how to structure the reference list. Mendeley mentioned next can help you with both tasks.

16. Use a reference management software

- Mendeley is very good (available free at www.mendeley.com) as it helps managing in-text citations and creating and maintaining the reference list. Another freeware alternative is Zotero (zotero.org).

Appendices (a few cautionary words)

17. Use appendices carefully and mostly (only) as a means of documentation

- Students often put important things in an appendix even when it must be in the main text. For example, many students only mention the content of an interview guide or survey in passing in the methods section by stating that it can be seen in an appendix when it should be described in detail in-text to ensure that the reader can follow your logic (see methods section above).
- In general, appendices are mostly for documentation and interview transcripts, firm documents, survey responses are some examples.

GENERAL TIPS AND TRICKS

Rules of thumb

18. Kill your darlings!

- This literary advice highlights that sometimes you have to remove even your most precious and especially self-indulgent passages or sections for the greater good of your literary work even though these may hold special meaning to you. In similar words, you should not keep a text piece just because you have spent a lot of time writing it!

- The same goes for empirical work, although you may have spent a lot of effort on a certain analysis it may be irrelevant for the overall research question.

19. Need to know versus nice to know (add value throughout)

- Go through the paper and determine if something is just nice to know. If so, replace it with something that is need to know, thereby adding more value to the paper. Take the case description as an example: it is perhaps nice-to-know about the founders of a firm, but if you study supply chains then using that space for diving deeper into this need-to-know aspect is probably more valuable.

20. Apply the KISS principle (keep it simple stupid)

- A design principle which states that "most systems work best if they are kept simple rather than made complicated; therefore simplicity should be a key goal in design and unnecessary complexity should be avoided". Reducing unnecessary complexity is also relevant for your writing, e.g., avoid using overtly complex or theoretical terms, and be particular aware that you know what you are talking about!

21. Why is (probably) the best word you can ask in relation to your paper and choices made

- For example, regarding your paper ask 'why this research question', 'why this theory', 'why this method', 'why present the results in this way', 'why discuss this or that' etc. If it does not help you answering your research question, it may not be relevant!

22. Turn what you did into an asset (but do not make things up!)

- Do not excuse everything you did (along the lines of 'if only we had this or that') and do not make things up to make things sound better!
- For example, even if you have access to a firm because a family member works there, you must still think hard about why that firm is an interesting case regarding the research question (essentially this concerns your case selection strategy and criteria). To illustrate, Sonenshein (2014) writes about his case selection: "While the organization's growth was atypical, I reasoned that this extreme case might help elaborate theory (Lee, Mitchell, & Sablynski, 1999) by compressing the time for growth and allowing a real-time investigation of it. I also received unusually strong access facilitated by a personal contact" (p.817).

Writing style and argumentation

23. Divide the text into paragraphs

- Continuous piece of texts makes it difficult for the reader (and the writer) to follow the argument, so use paragraphs (aim at six sentences or a few more).
- A paragraph develops one topic or idea, that is, they add information, explanation, examples and illustrations to the central theme or idea until the theme is fully developed.
- The topic of one paragraph should follow logically from the topic of the last paragraph and should lead on to the topic of the next.

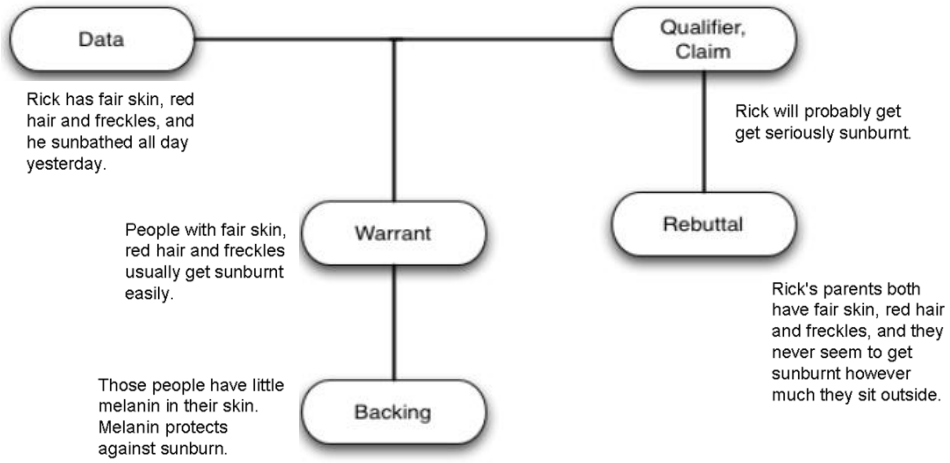
24. Use the active voice

- "At the heart of every good sentence is a strong, precise verb; the converse is true as well-- at the core of most confusing, awkward, or wordy sentences lies a weak verb" (Williams, 1989). The active voice, hence, pushes you to write more to the point and be operational. An example:
  - *Passive sentence:* It has earlier been demonstrated by Fischer (2000) that heart attacks can be caused by high stress.

    Active sentence: Fischer (2000) shows that high stress can cause heart attacks.

25. Back up your claims

- Referring to the existing literature is important.
- Toulmin's model of argumentation is a simple, but powerful way to improve argumentation:



- *Data*: The facts or evidence used to prove the argument
- *Claim*: The statement being argued (a thesis)
- *Warrants*: The general, hypothetical (and often implicit) logical statements that serve as bridges between the claim and the data.
- *Qualifiers*: Statements that limit the strength of the argument or statements that propose the conditions under which the argument is true.
- *Rebuttals*: Counter-arguments or statements indicating circumstances when the general argument does not hold true.

- *Backing*: Statements that serve to support the warrants (i.e., arguments that do not necessarily prove the main point being argued, but which do prove the warrants are true)

26. Use headlines to help the reader understand and navigate the report

- Insert a heading if you change to another, different topic.
- Do not use more than three levels of headings (i.e., 1, 1.1, and 1.1.1.). For one, it pushes you to consider how and what you present in each report chapter.

27. Use references throughout (and the stronger the better)

- Peer-reviewed journal articles are the gold standard! Books (some) are also fine.
- Use newspaper articles and web pages with care. Random web pages stating something is not scientific evidence. Check the authors' background and organisation and be very critical when judging the soundness of the source, e.g., if some organisations have a political agenda then this may dominate their output.

28. Write the report as if the study had occurred as a linear process!

- This despite the actual process usually unfolding in a back and forth as well as stop and go manner.
- It makes it easier for others to understand the purpose and process. As Kierkegaard wrote: "Life can only be understood backwards; but it must be lived forwards".

Resources about writing and argumentation:

- The elements of style: (Strunk Jr., 1935).
- www.uefap.com/writing/writfram.htm and http://secondlanguage.blogspot.dk/p/writing-process-reengineering.html

Layout

29. Tidy-up the paper layout

- Use same font and heading styles and sizes etc. throughout the paper. This may sound basic, but student reports often come across looking like they have been put together just before hand in.

30. Tables and figures must be self-explanatory

- Tables and figures must be easily understood from the information provided (table text and legend) and not needing further explanation. You should be able to understand a table/figure without having to read the main paper text!

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