**How to write you final year project report**

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In addition to the requirements for fyp report writing given by the University, I hope this note would provide more guides for each steps of your writing so that the report stays more focused and ultimately, deliver the merits of your work to the full extent. Essentially, it is not the length of the report that makes it attractive and significant; it is the content of the report and the way the content is delivered. You should learn how to make good use of the limited number of pages to more effectively "sell" your work. The simplest way is to examine a technical publication: in a typical journal publication of 4-10 pages, it delivers a whole "story" of why the work is important, what has been the state of the art of the topic, how the investigation was organized and carried out, what were the key findings and their explanations, etc. In the end, the paper tells readers what scientific and technological findings / conclusions their work has made, so that future researchers can benefit from your work.

## Abstract

Abstract provides an overview of the entire paper. In other words, it is a super-condensed version of the whole paper. In very few sentences, you tell the readers the motive, the method used in the investigation, the key results and conclusions of the work. Readers usually scan through a paper from the Abstract first – so a carefully planned Abstract is very important to cast a positive first-impression of your work.

For beginners, you may try to write the abstract after you have completed the whole report. Imagine now you are told that instead of the 60 pages, you are only allowed to describe your work using 500 words, and these 500 words will be used for the assessment of your final year project. With this constraint in mind, what will be your decision of what to keep?

## Introduction

This section puts your work in contrast to the background work so that the need of your own work is highlighted. Generally, the introduction includes the following:

(a) Why the topic deserves attention – the importance of the work itself. You can cite industrial significance (e.g. … the industrial is moving towards 65 nm node technology, but the existing processing technique of xxx materials can no longer be used …), academic interest (e.g. why sandcastle does not fall?), and other reasons. Basically, either academic curiosity or practical needs or both can be used to justify your work.

(b) Background information / literature review – what have been done on this topic (or related topics) and their findings? By carrying out a critical review, you can point out what are still missing in order to answer the questions that you have raised.

In the literature review, it is important to be precise in describing others' work and give due references to these works. It is only when the summary of past work is both precise and critical, then the argument about your planned work can be well justified. In other words, you should discuss the contributions of and limitations each of these existing works and to show how the present investigation arises from contradictions or inadequacies of earlier investigations.

(c) A statement of the problem being investigated – now having identified the gaps between what have been accomplished and what you want to achieve, you can now state your objectives clearly.

## Experiment

This part basically lists down the details of materials used, experiments that you have conducted (how they were conducted) and the equipment that has been used. Too common equipment may not need elaboration (e.g. optical microscope, SEM, procedure of specimen preparation). This section usually is a bit boring but it can be very useful since readers go here for details if they are interested in repeating / learning from your experiment. So do give as much details as possible, especially for those experiments that are non-standard or non-routine in nature.

## Results and Discussion

The section sometimes can be split into two chapters: one for results and one for discussion. If you do not have too many items to cover, a combined chapter of Results and Discussion will be fine. In such a case, each section can be one piece of result presentation followed by its discussion.

This is the place that you tell people the most relevant findings we've made. Try your best to avoid listing everything you've done (like a diary or log book of your experiment). Many a time, you have indeed tried numerous ways and obtained lots of data. However when you write you report, you should only include those that are relevant (i.e. support and explain your ideas or arguments) to the main objectives.

Results presentation is also important. There are many ways to present the results. Do you choose to use a graph, a chart, a table, or just use words to describe them? The decision is made by yourself based on which is the most effective way that your readers can best understand them. In order to make your results easy to understand, you should present them in the background of known theoretical prediction or other people's findings. By comparison, your results are immediately correlated to these more established (and presumably, more trustworthy) source of information. Readers will then be able to see where your results stand from the perspectives of existing work. No matter whether your results agree or not with published literature results or theoretical predictions, an explanation is expected.

Why do we need to explain (discuss) the results? The primary purpose for such a discussion is to indicate your understandings from the reported facts / observations. Discuss the meaning of the facts, their underlying causes, their effects and their theoretical implications. If an existing materials science principle can be used to explain your observation, use it. If not, do not panic. You might have found something wonderful! At undergraduate level, it is fine for you to provide some explanation without thorough investigation due to time / resource limitations. But the bottom line is that your explanation should not disobey the fundamental principles of science. From the perspectives of fyp examination, your examiners are not looking for water-proof evidence / argument; the ability to reasonably argue your way out is most important!

## Conclusions and Recommendation for Future Work

What you conclude is the second scanning point after the Abstract if a reader only has limited time or patience. After glancing through both Abstract and Conclusions, and perhaps some figures in the paper within 3 minutes' time, experienced readers should have a pretty good idea what the paper is talking about and to decide whether they want to spend more time to read the details. For fyp examiners, the first scanning could very much influence his/her

grading (first impression!). So always ask yourself the question whether the Abstract and Conclusions have given enough information on how great (or well done) your work is.

The Conclusions section is different from Abstract in that it only summarizes the key findings and contributions made in the present work. Sometimes people use bullet-points, which in my view is very good format for beginners.

The Recommendation for Future Work is to tell that after the whole research process, what advice you are able to provide on the future research in the field. It should be made based on your understanding of the state-of-the-art after the research exercise (past literatures, your own results and analysis). Being able to make a sound recommendation demonstrates your ability guide research in the future, which is the purpose of fyp training.

If you have a lot to say for the Recommendation for Future Work, it could be made a separate chapter too. Otherwise a paragraph in the combined chapter will be alright.

## Others

Other miscellaneous points include acknowledgements and references. There is no need for me to provide details here. You can simply learn from any published papers.

Finally, an example of published journal article based on fyp work by one of your seniors (Chong Siat Ping, who graduated in 2004) is given for your reference: "Electroless Copper Seed Layer Deposition on Tantalum Nitride Barrier Film", *Surface & Coatings Technology*, 2005, Vol. 198. pp. 287-290. The original fyp report is much longer than this journal paper, but the essence of work is all in here. You should focus on this type of journal article style in your writing as much as possible. With this in mind, you will never worry about the possibility of going over the page limit of your fyp report!