



Integrated Land Management Institute (ILMI)
Land, Livelihoods and Housing Programme 2015-18

The Integrated Land Management Institute is a centre of the Faculty of Natural Resources and Spatial Sciences (FNRSS) at the Namibia University of Science and Technology (NUST) committed to develop reputable and multidisciplinary research and public outreach activities in the field of land, administration, property, architecture and spatial planning.

The Land, Livelihoods and Housing Programme 2015-18 aims at deepening and expanding the focus on these three key issues in Namibia. The programme was developed to guide ILMI's activities by organising it in four aspects: institutional, environmental, fiscal and spatial processes.

The ABC Model

SUMMARY

How does one build up an analysis? And how does one create the link between the individual partial-analyses in a problem-oriented project work? These are the two main issues that this booklet gives an overview of.

This document is a presentation of a way in which an analysis, a sub-project and a project can be structured.

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Foreword

How does one build up an analysis? And how does one create the link between the individual partial-analyses in a problem-oriented project work? These are the two main issues that this booklet gives an overview of.

The authors have extensive teaching experience, including guiding students in project work at Aalborg University - from semester 1 to Master's level. Through this work they realised that difficulties typically encountered during project work is understanding the difference between scientific texts and texts with other purposes such as literary presentations, tales, web pages, descriptions and the like. We hope that this booklet can help to create a clearer understanding of the building blocks that scientific analysis constitutes in project work.

The booklet does not replace existing literature on methodology and theoretical scientific texts. On the contrary, it is the intention to provide a concise and fundamental understanding of the building blocks of scientific project work that can serve as a framework for other literature on scientific theory and methodology. Such literature is available in multitudes – there are some examples listed in the back of this document.

The following is a presentation of a way in which an analysis, a sub-project and a project can be structured. We will start with the most uncomplicated: the individual analysis.

Aalborg, September 2012

The authors

1 An analysis

Fundamentally an analysis is an examination of something by looking at the individual parts in order to put the pieces together into an understanding that is deeper than the understanding one had at the starting point. Should we, for example, analyse the qualities of a Bonsai tree, one will typically look at the roots, the trunk, the branch structure and the leaves – all of the tree's individual parts – and on this basis assess whether the design of the tree is coherent.

An analysis is comprised of three main parts: A) an introduction, B) a descriptive/analytical part and C) a conclusion. This is illustrated in Figure 1.

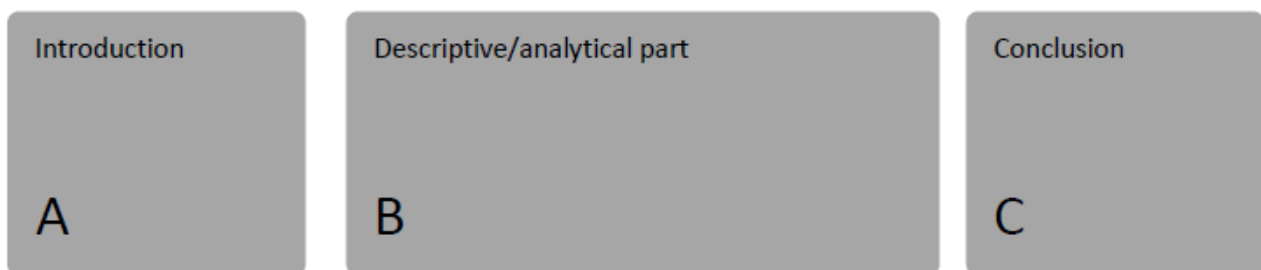


Figure 1: The analysis's separation in part A, part B and part C.

A) Introduction

The introduction is - contrary to what someone might think - a crucial part of the analysis. The analysis should be related to the context of the project. It is therefore appropriate to explain what the analysis will be about, why the analysis is relevant and how it relates to the project.

This part of the analysis also has a second purpose. In order for others to assess whether the analysis is of sufficient quality and that they can rely upon the result, how the analysis is conducted (i.e. the method applied) must appear clear and well-argued. It must be clear how the analysis is structured but also the method[s] used for the analysis.

The introduction shall adequately answer three questions:

- What should be investigated? [the purpose of this analysis]
- Why shall it be investigated? [relevance and consistency with the remaining part of the project]
- How shall it be investigated? [the structure of the analysis, method[s] and data]

Answers to the above questions must be sufficient so that after reading the introduction of the analysis, readers have no doubt of its content, relevance, approach, etc. The introduction therefore constitutes an essential element in documenting the analysis and thus the value of the project and its objectivity.

In addition to describing the value to readers and showing the work process of writing a clear and complete introduction, the introduction also has another purpose. When one has to explain the questions mentioned above to other people, any illogical circuits, omissions, or jumping to conclusions etc. will appear more clearly. In some cases it becomes clearer that there may be more appropriate methods, data, etc. The process of writing the introduction is thus to help establish the merit and value of the project.

B) Descriptive/analytical part

This part is in many ways the body of the analysis since it is where the relevant information is presented, described and explained. What is relevant and how it should be presented is determined by the purpose of the analysis, questions and method described under A) Introduction. Depending upon the purpose and nature of the analysis, comparisons, ratings and the like can also be made in this section.

It is possible to divide the descriptive/analytical part of the analysis into several smaller parts. In the example above with the bonsai tree there will be a sub-analysis of the roots, trunk, branch structure and leafs. Each of these items can, if they assume a certain volume, be structured according to the same "ABC - model" of the entire analysis.

C) Conclusion

The conclusion groups the parts together and the results of the individual (part) analysis are now seen in context. It is of course crucial to answer the questions or issues that were the purpose of the analysis (or alternatively, to explain why it was not possible to find an answer). In addition, very few answers are always applicable to every situation. In other words, the conclusion shall also indicate when the results of the analysis are valid, with which precision and/or surety and under which conditions.

2 A partial analysis

As mentioned, it is sometimes appropriate to divide an analysis into a number of sub-analyses. It can be if the case to be analysed consists of a number of more or less naturally limited single parts as will be appropriate to examine separately (see above example on the bonsai tree). Sometimes the division into sub-analyses are necessary because what is under investigation consists of some parts that can only be examined by various methods in that (unsurprisingly) all methods are not suitable for analysing everything.

For example, the design of a bonsai tree is analysed on the basis of set parameters (trunk, branch structure, leafs and their entirety), while the tree's health and viability is assessed from a completely different set of parameters (state of the roots, leaf colour, the number of new sprouts, etc.). It may also happen that it is useful to explore the same part by using different methods to achieve so-called method triangulation.

No matter how many sub-analyses it may be appropriate to split an analysis into, each sub-analysis should adhere to the ABC model of the analysis. If the elements of the main analysis are designated A, B and C the corresponding items of the sub-analysis can be designated a, b and c. That is, the main analysis part-B will be composed of {a1, b1, c1} ... {an, bn, cn}, see Figure 2.

The purpose of part A of the main analysis is the same as without division into sub-analyses; to describe and justify what needs to be examined why and how. The difference is that the 'how' now includes a description and justification for the division into sub-analyses and a (short) presentation of these.

Similarly, the main analysis' part C shall pick up at each of the part analysis conclusions {c1 ... cn}, gather the thread across c1 ... cn and remember to answer the main questions of the analysis (and, of course, explain the operative assumptions validity and accuracy). The complete main analysis can be illustrated as in Figure 2.

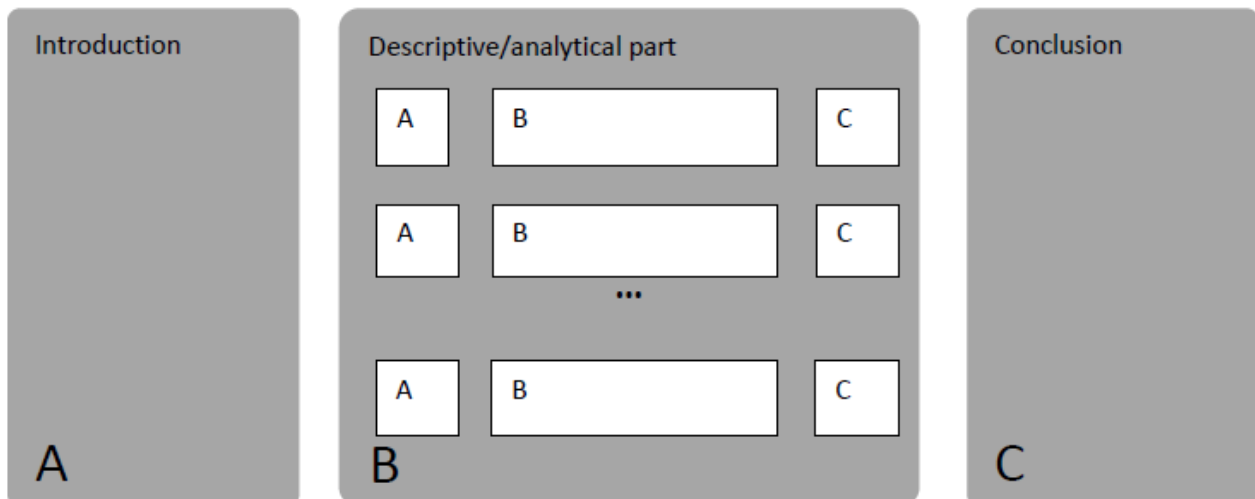


Figure 2: The main analysis b-part divided into sub-analyses.

3 A project

Fundamentally, we can consider a project as built up of the same three main parts as an analysis - an introduction (A), a descriptive/analytical part (B), and a concluding part (C). However, it requires a few additional comments.

A) Project introduction

The main purpose of the introduction to an analysis is to present the analysis in relation to the context in which it is encompassed. Similarly, a project introduction shall present the project in relation to the context of the project. The introduction shall clarify and justify what the project is about – and what exactly this project aims to investigate.

Introduction and problem statement

When initiating a project the upcoming project can in principle be on many different things. There are obviously certain limits of which the syllabi, the course outline and the curriculum learning objectives constitute a very significant share. An [almost] equally significant share is constituted by the interest of the student/group and professional desires. A project idea is required in order to get the formal framework and the student's/group's desires together. It can for example be a problem that the project aims to solve.

Based on the formal framework, the student's/group's interests and other relevant factors it is an essential objective of the introduction to present the project idea and flesh it out in a clear and operational problem statement. In this way we can say that the introduction is shaped like a funnel -

from the broad perspectives and the many possibilities to a concrete, demarcated and clarifying problem statement. This is illustrated in Figure 3.

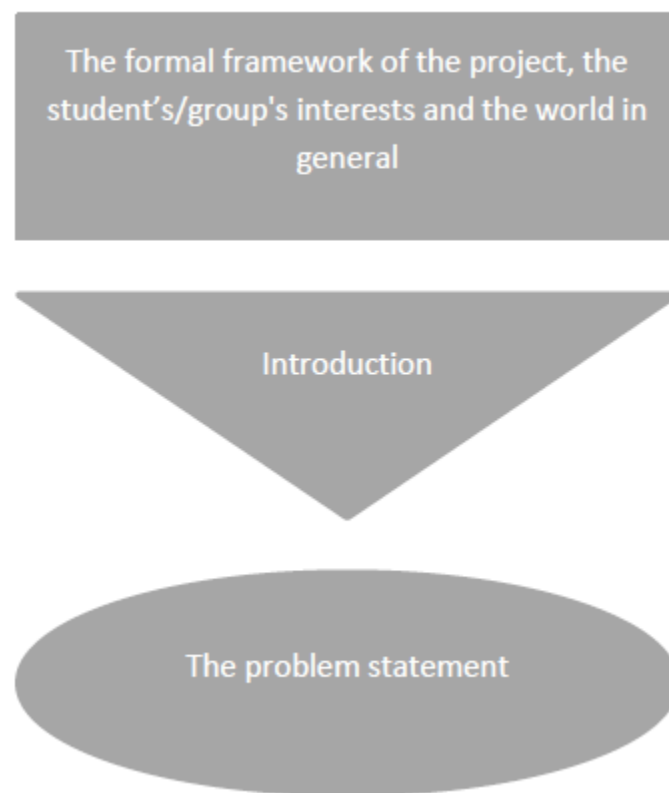


Figure 3: Fleshing out, demarcation and clarification of the problem statement.

The problem statement sets the agenda for the project work - it is the basic objective of the project work to reach a relevant, adequate and clear answer/solution to the problem formulation.

All problem statements have in common that they must be justified. Why have the student/ group chosen to use an entire project module for this problem? Why is it relevant - for the student/group, for the possible audience and professionally? Can it be proved that there is an actual problem?

Such reasoning is a significant part of the documentation for the project. The reasons help to clarify and communicate the context of the problem and it is only when you understand the context and can describe it that you have understood the problem. In this regard it is also important to document the project's knowledge assumptions. Since the project is about building [new] knowledge, about the problem and the possible solutions to the problem we also need to know what is known in advance so we can find out what knowledge we need to acquire through the project work.

Development of and description of method

When you have described what the project will examine (project purpose - the problem statement) and why (context, relevance and relationships) the next question to be answered is how the problem statement should or can be answered. It is, in other words to find and describe a method that can solve the project problem.

It is rare that pre-existing ready to use methods can easily be used, and it is also extremely rare to find any "authorized" approach to problem solving that can be referred to. In other words, the group itself has to clarify (and justify) the necessary examinations and sub-analyses in order to solve the project problem. What needs to be investigated, which theories and data would be useful, which analytical methods and techniques are appropriate, are there possibly any practical justifications that call for a specific type of investigation, are some methods better than others, etc.? An example of a structural diagram is illustrated in Figure 4.

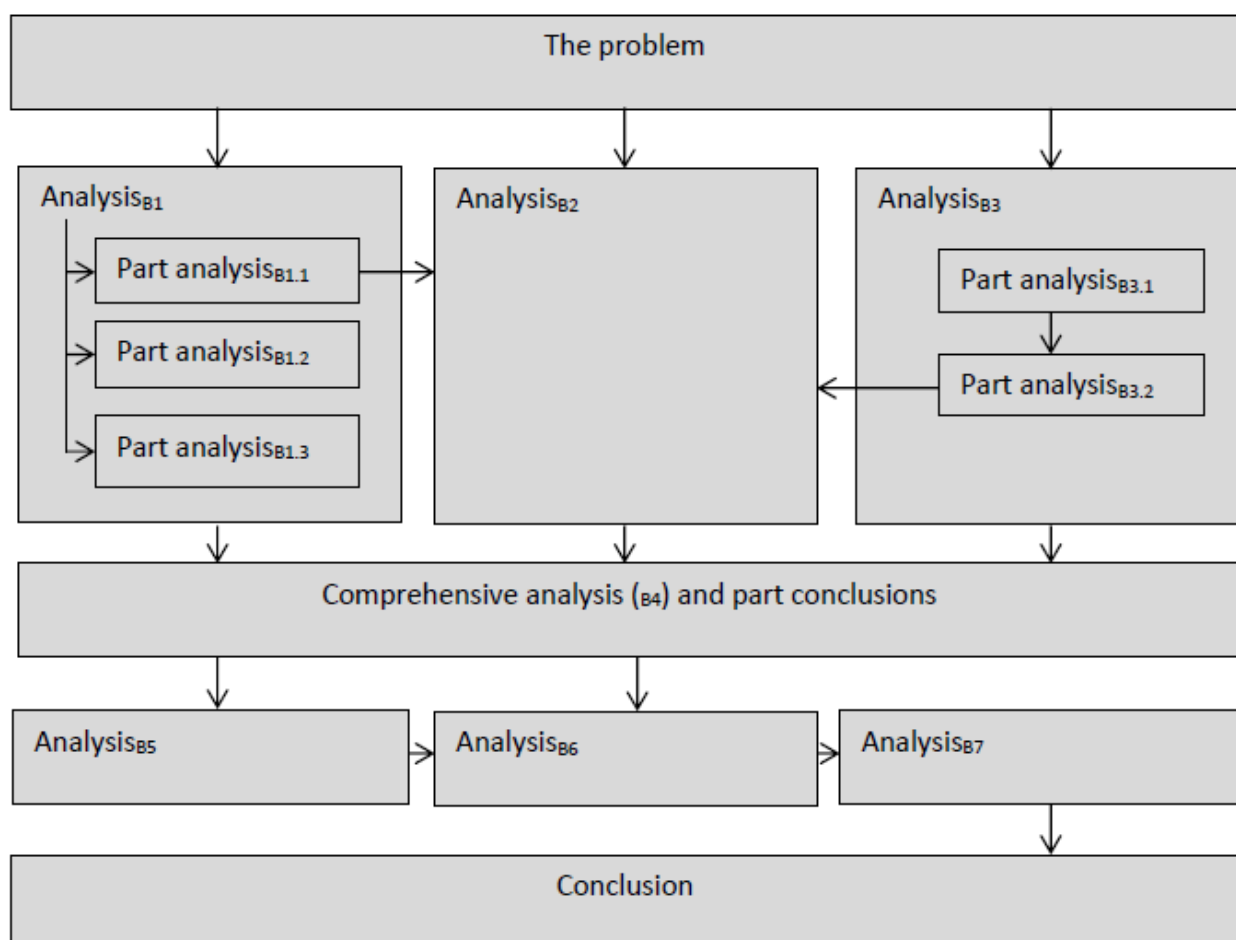


Figure 4: Example of structural diagram.

As a rule, it will be necessary to carry out a number of different analyses to put together the knowledge that is needed to solve the problem statement. There can be major or minor analyses and some of them are probably divided into sub-analyses (see above). It may also be that the knowledge gained (results) from one of the analyses will be used as input into another analysis; or maybe even in several other analyses. To keep track of the project structure it is considered appropriate to use structural diagrams or a similar tool to clarify and document the logical structure of the project. The project structure is usually not identical to the structure of the report, which generally is linear. Figure 4 illustrates an example of a project structure (structural diagram).

Structural diagrams are an effective tool to convey the methodological consistency of the project. A structural diagram is a diagram which shows how individual sub-analyses are linked and are therefore (practically) indispensable in the project method description. It may be that a number of part-analyses are interrelated and each of them contributes to the comprehensive answer of the same question, but from different perspectives. It may also be that part-analyses provide input for other analysis and thus constitute essential preconditions for these. It can all be viewed and clarified in a structural diagram. In many cases it is also through work with the structural diagram that the project group itself gets a grip on the project methods and contexts.

The methodological statement (incl. structural diagram) and documentation for the project construction, the choice of analyses and part-analyses, the relationship between the analysis, the methods used and the project scope are the most central elements of the project work and report. The method chosen by the group to solve the problem statement is unique in regard to the specific problem, context and scientific assumptions. Since it is not described elsewhere, it is important that the group describes the methodological considerations and choices in the methodological statement. It is important to formulate the problem (problem statement) - yes - but it is equally important to describe how you would solve it (on methodology) see Figure 5.

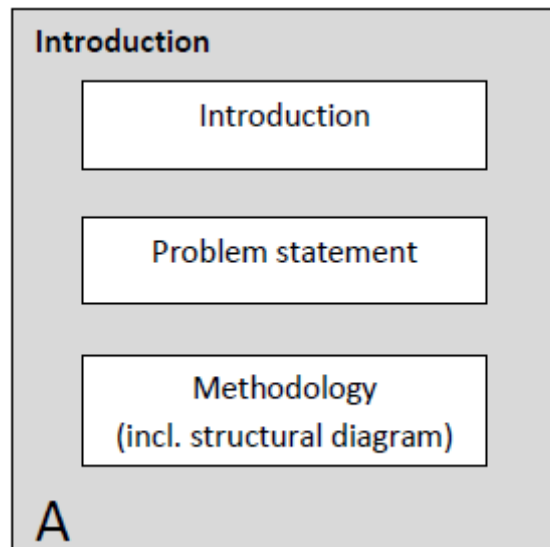


Figure 5: The A part of the project: Introduction.

When the project's methodological considerations are coming into place and the method description has been prepared in its first version (it is unusual if it is not to be redone several times in the project gradually as one delves into things and becomes wiser) it is ready for the descriptive- analytical part of the project.

B) The project's descriptive-analytical section

The project's descriptive-analytical part consists of the analyses and part-analyses that were found necessary in connection with the methodological considerations in the part A of the project. It is certainly not unusual that unforeseen things emerge in connection with analyses and these things will often make it necessary (or at least suitable) to reconsider the method. In such cases it is necessary to go back and change the methodological statement so as to ensure the continuity, coherence and validity of the project design.

C) The project conclusion

The purpose of the conclusion is to provide a response to the project's problem statement. Of course it is always the ambition to provide a complete response within the framework and scope set. Yet you will often come to a situation where for one or another reason can only provide a partial answer or answers that apply only under certain conditions. Although it may feel very frustrating it does not mean that the project has failed. The objective of creating projects is indeed to grow wiser - and actually it sometimes makes one much wiser when the project is tricky.

But just because the knowledge gained through the project, and thus the project's conclusion, is based upon a number of assumptions, it is important that one get together all the threads of the part-analyses and also to explain the assumptions upon which the conclusion is based, as well as the validity and accuracy of each part of the conclusion.

Perspective and post script

When the conclusion is written, the project has come to an end; sort of. The aim of the project was to find an answer or a solution to the project's problem statement, and the goal is met when a good conclusion is written. However, the conclusion is often a pause for ideas of one or the other nature. Such reflections can be written in either a discussion or a postscript section (see also Figure 6).

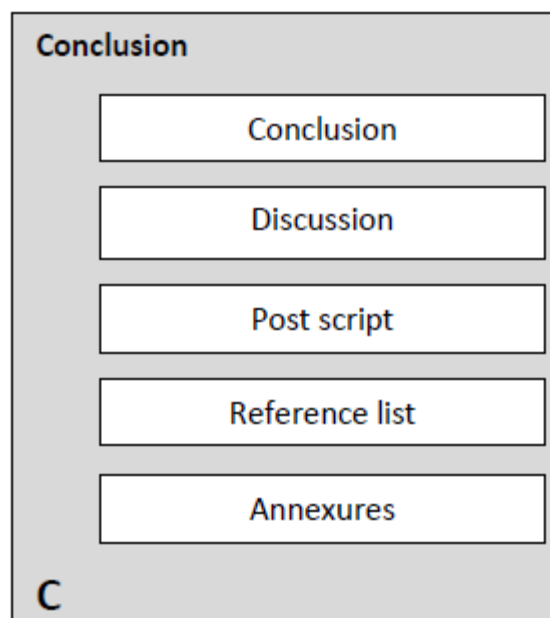


Figure 6: The project's part C: conclusion and end of project.

There is no formal requirement that the project must contain a discussion or a postscript, but sometimes one might think that one has something more one wants to say after the conclusion. It is a formal requirement that all information stated in the conclusion must be scientifically documented in the project. However, often one's thoughts continue (thankfully!) and new perspectives arise on the basis of what one has discovered. Such thoughts can be written in a discussion, since it is not subject to the requirements of scientific evidence.

The discussion must however still be professionally relevant in regard to the problem statement and academic content of the conclusion. If one has some reflections or food for thought of interest for the reader, yet not strictly scientific, one can write it in a postscript. A postscript can be perceived as a kind

of reverse foreword - and this is the last opportunity to write something in the report – before the mandatory sections with reference list and annexures.

4 A sub-project

Occasionally, it may be convenient to divide a project into sub-projects. E.g. it is often difficult to create a proper overview of the entire project in the initial project phase, and often it is difficult (if not impossible) to make a reasonable problem statement at this time. It is simply necessary to acquire additional knowledge, read literature and do some research before one can formulate a good and relevant problem statement. In such cases it is advisable to split the project into sub-projects, e.g. the aim of the very first challenge is to perform the studies and analyses that are necessary to reach a problem statement.

Basically one may stand with an immediate curiosity ("I wonder why ...?") or a more or less vague idea that there may be a problem ("I wonder if ...? ") without being able to define - let alone document – one's surprise / problems.

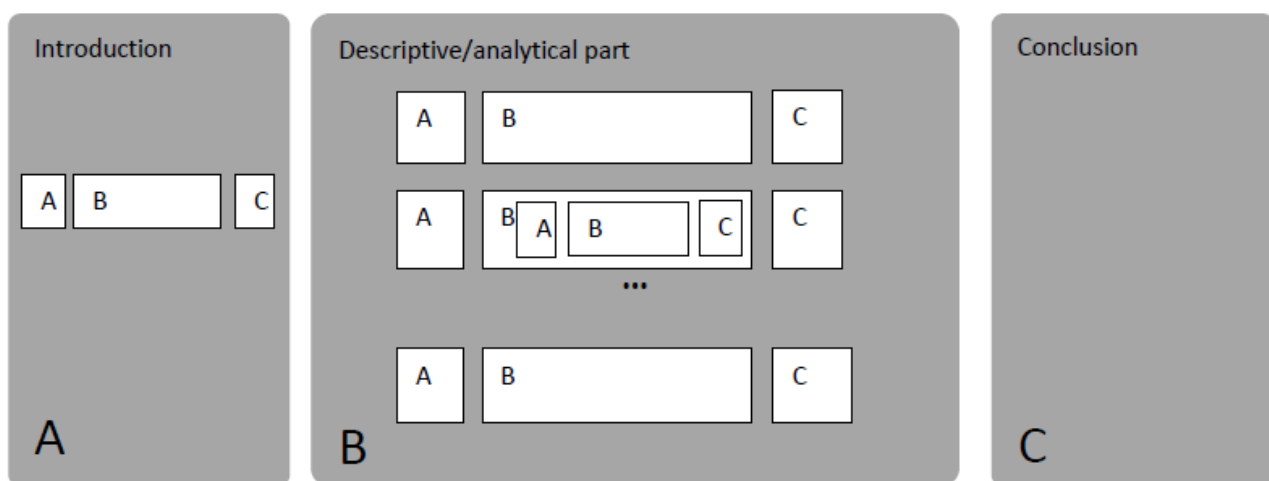


Figure 7: Division into sub-projects - such as the preliminary analysis as a project within the project.

"The problem statement" for the first part of the project is to move from the initiating problem of the project to a more concrete problem for the project. The final problem statement will make up a sort of conclusion for the first part of the project.

Often such a part-project is called a pre-analysis or problem analysis. To avoid this analysis being too random (and thus in fact just end up being a comprehensive free chatter-introduction), it is appropriate to consider it as a project within the project. See Figure 7. This part-project can then be handled in the same way as all the other project divisions into an A, B or C part.

5 Science, free text and plagiarism – short on sources and references in scientific contexts

In scientific contexts it is the norm that one documents one's findings. This means that knowledge generated must be based upon clear sources and explicit arguments to be accepted as scientific knowledge. The sources can be books, statistics, own investigations and observations, surveys, measurements etc. All sources are not equally good, but what matters in this context is that it must be clearly stated all the way to the individual and minor details of the project where the knowledge comes from. It may sound like pedantry, but with no obvious source of information, it is not possible to assess the value and merit of the information used. If you cannot trace where knowledge is derived from, it is considered as free text and it does not count (not even for the exam!). Knowledge can also be derived from investigations you have conducted, for example via field work where you have been counting, measuring or examining certain conditions. In such cases, the knowledge derived, including the methodology used, must be documented to be considered as a source of any value. Such documentation is often enclosed as annexures.

In other cases, knowledge is derived from sources produced by other people. In such cases, one obviously has to reproduce the information from the source as faithfully as possible, including the reservations and restrictions which may be specified. It can sometimes be difficult for students to find out how to manage the relationship between their own text and sources in practice, especially if "the source writes it much better than I can articulate it". It is important to avoid plagiarism. It is a severe offense and can ultimately result in eviction from the university. For this reason it is also unfair to your fellow students in the group to plagiarise. The danger is that they are dragged down with you. If you are in doubt, there is a good web tutorial for students on plagiarism on the following website: www.turn-It-In.com Try it.

In addition to reproducing information from sources as faithfully as possible, they must also be reproduced as accurately as possible, preferably using an easily understood system. It is considered to be courtesy to the reader to provide the page number or equivalent reference. It's not the reader's job to find your source of information somewhere in a book of e.g. 300 pages. The same applies to websites and the like, wherein a reference to the main address (e.g. UN-Habitat.org) is not sufficient. There is a variety of reference systems and standards and there are also digital tools that can help keep track of sources. As a rule, the APA referencing style is applied for all Namibia University of Science and Technology (NUST) projects and papers.

Additional literature

There are some books that examine problem-oriented project work from different perspectives and backgrounds. Not all of it is equally relevant but some useful and relevant books that can be recommended are:

About general project writing and methods

Problem-oriented project work: a workbook

Olsen, Poul Bitsch & Pedersen, Kaare [2008]. Problem-oriented project work: a workbook. Frederiksberg C, Denmark: Roskilde University Press:

Problemer i videnskab. En erkendelsesteoretisk begrundelse for problemorientering [in Danish]

Adolphsen, Jes [2006]. Problemer i videnskab. En erkendelsesteoretisk begrundelse for problemorientering. [Third edition]. Aalborg, Denmark: Aalborg Universitetsforlag.

Den skinbarlige virkelighed [in Danish]

Andersen, I., Den skinbarlige virkelighed. [2008]. [Fourth edition]. Frederiksberg C., Denmark: Samfundslitteratur.

About methods

Social research methods

Bryman, A., 2008. Social research methods. [Third edition]. New York: Oxford University Press. ISBN978-0-19-920295-9\

Case study research: Design and methods

Yin, R. K. [2003]. Case study research: Design and methods. [Third edition]. California: Sage Publications, Inc. ISBN 0-7619-2553-8