Workshop Reflective Practice; Academic Writing

by *Gerrit Muller*   Buskerud University College

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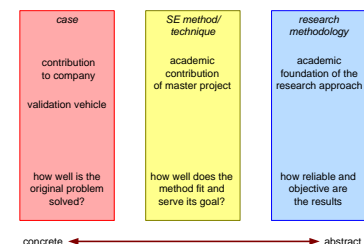
www.gaudisite.nl

Abstract

The final product of the Master in Systems Engineering education is an academic paper describing the evaluation of a systems engineering method or technique that has been applied in practice. This workshop focuses on the academic writing: the style, language, structure, and the way to argument.

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Colophon

Merete Faanes from Buskerud University College created the educational flow *Reflective Practice*. Reflective Practice is a thread throughout the entire master Systems Engineering to stimulate students to relate *Education* and *Practice*.

These workshops are the result of the cooperation of Merete Faanes and Gerrit Muller

Pre-assignment

Write the first page of your paper: the introduction.

Include figures where this is functional.

Be aware that the readers of your paper share an interest in systems engineering and probably will not work in your domain or know your company and system.

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RPAWpreAssignment

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Agenda

9:00   welcome, last workshop, introduction this workshop

9:10   block 1: Style and Language

10:20 block 2: Structure

11:30 block 3: Research Methodology, Future Research

12:40 plenary discussion

12:50 close

Plain English Language Recommendations

* Keep your sentences short

* Prefer active verbs

* Use 'you' and 'we'

* Choose words appropriate for the reader

* Don't be afraid to give instructions

* Avoid nominalisations

* Use positive language

* Use lists where appropriate

from Plain English Campaign
http://www.plainenglish.co.uk/files/howto.pdf

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Style Aspects of Academic Papers

Avoid "I".

Avoid amplifications (e.g. *very* high).

Do not use humor.

Do not ventilate opinions.

Anchor every statement by fact or reference.

Explain every abbreviation or concept once at first occurence; e.g., *Kongsberg Maritime (KM) is ...*

Avoid commercial language and selling or pushing.

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Language Aspects

Use Word to check spelling, grammar, and style with language English US.

Avoid passive voice, e.g. *A3 reports have been made* (passive) should be replaced by *The designers made A3 reports* (active). See http://writingcenter.unc.edu/handouts/passive-voice/

Frequently made mistakes by Norwegian students:

marked i.s.o. market

which i.s.o. that

use of *the* and *a* or *an*

plural and single mismatch between subject and verb

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Punctuation Marks

The use of ",", ";", and ":":

, commas:

      in lists: *one, two, and three*

      parenthetic expression: *the method under study, requirements engineering, is...*

; semicolon: use it when the two sentences are complete and closely related

: colon: use it when a list follows the sentence, e.g. *we have three choices: red, green, or blue.*

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Visualization Guidelines

Texts should be readable: use sufficient font size.

Text and background should have sufficient contrast.

Shapes, such as boxes, should have the same size.

Use the layout (left-right, up-down, close-remote) to support the message of the diagram.

Design the layout such that there are few crossing lines.

Use colors, but limited.

Design the diagram such that it still works when printed in black and white.

Limit the amount of information in one diagram.

Two or three types of information can be combined in one diagram.

Annotate generic diagrams with specific examples; use font size and type to visually differentiate generic from specific.

Use 2D/3D drawings or photos limited.

Ensure that the message of the visualization is clear.

Add legend to explain shapes, colors, line types, axes, etc.

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Block 1

+ Verify style and spelling of the introduction written by your colleague student

+ Discuss your findings, and list guidelines to prevent typical mistakes.

> be specific

> give examples

Results on flip-over

Structure

Take reader's perspective.

Make a book plan with structure of the paper:

    sections and subsections with size estimate, e.g.

        abstract (1/2 page)

        introduction (1 page)

            domain, company, system, and case introduction

            problem statement

            method introduction and rationale

    etc.

Do not include table of content, or list of abbreviations in the paper itself.

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Content

title, authors, abstract

introduction

    domain, company, case, problem, goal

    research questions, claims and observations, positioning
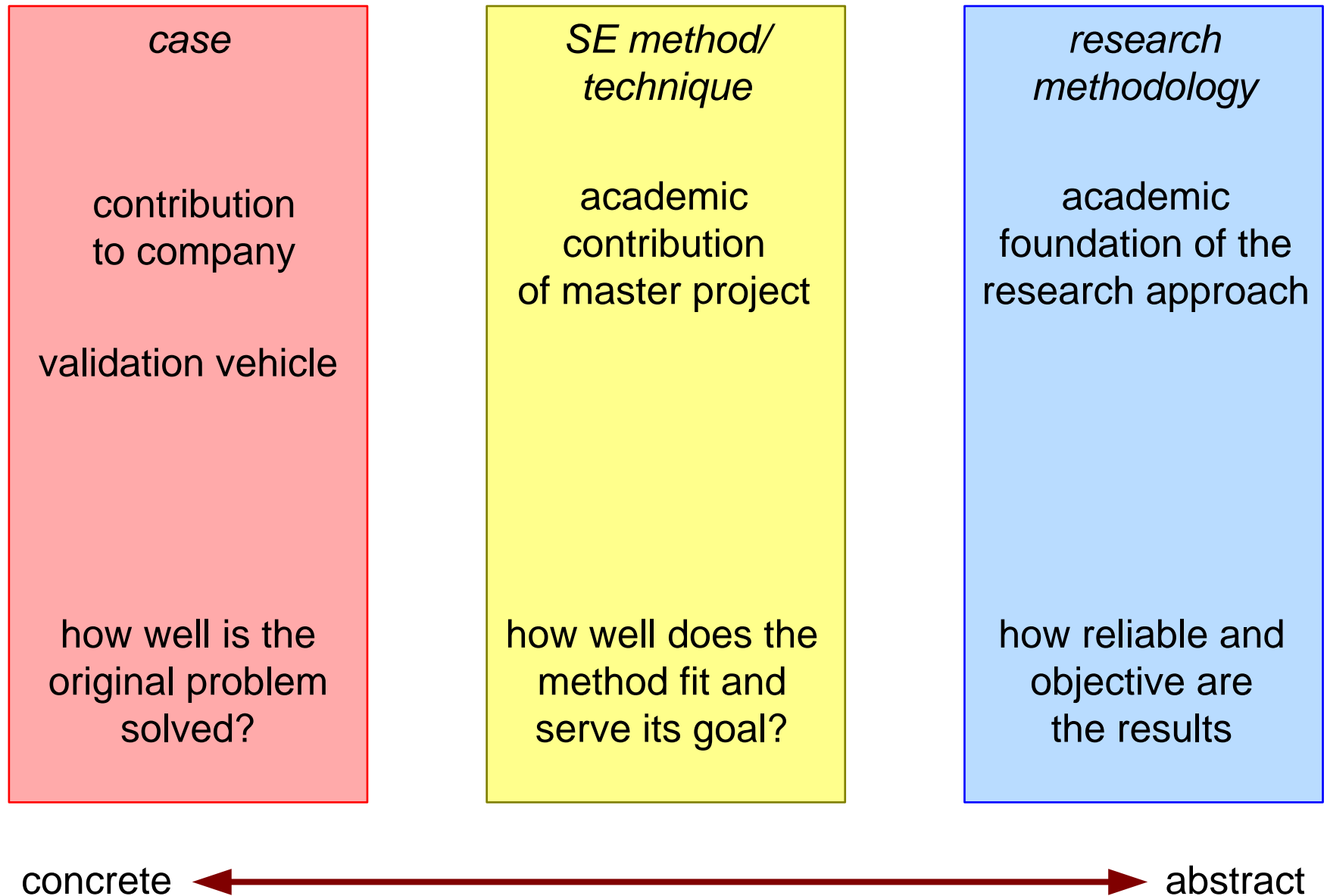
research methodology

main body

    data, analysis, results

conclusions, summary

future research

references

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Multiple Threads

case	*SE method/ technique*	*research methodology*
contribution to company	academic contribution of master project	academic foundation of the research approach
validation vehicle		
how well is the original problem solved?	how well does the method fit and serve its goal?	how reliable and objective are the results

concrete ⟵————————————⟶ abstract

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Open, Elaborate, Close

open
  elaborate
  open
    elaborate
  close
  open
    elaborate
    open
      elaborate
    close
  close
close

open: introduction, question, problem, or statement

elaboration: facts, explanations, and argumentation

close: conclusion or summary

Block 2

+ Identify the "flows" of information in your study and paper

+ Visualize how these flows will be ordered and interwoven

+ discuss the flows

> be specific

> give examples

Results on flip-over

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Research Methodology

Describe how you do your research:

How do you obtain data?

How do you analyse data?

What is the credibility of the data, the analysis, and the results?

How do you validate data, analysis, and results?

What are the limitations or constraints of the results?

Why is this approach appropriate?

Future Research

What research needs to be done next?

How far did your research go? What research was limited due to time or effort constraints?

What are the major limitations that need to be resolved?

What new research questions appeared that deserve more research?

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Block 3

+ make a diagram to explain your research methodology

+ what follow-up research is needed?

+ discuss methodology and future research

> be specific

> give examples

Results on flip-over

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Post-assignment Academic Writing

Rewrite the first page of your paper: the introduction.

Make a book plan (the structure of your paper in sections with an estimated size in number of pages).

Send the rewritten introduction and book plan to your supervisors. Discuss style, format, and structure of your paper with your academic supervisor. These aspects will differ slightly between the academic supervisors. Make sure that you have a good understanding of your supervisors expectations and preferences!

Write and submit a one-page reflection report on the workshop and the post-assignment. What feedback did you get from your supervisor? Where do you expect challenges in writing?

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links and References

Language

William Strunk Jr. and E.B. White, The elements of Style, Longman Publishers

http://www.plainenglish.co.uk/free-guides.html

http://writingcenter.unc.edu/handouts/

http://www.idea.gov.uk/idk/core/page.do?pageId=8036055

http://oxforddictionaries.com/words/better-writing

nominalization http://www.mywritingblog.com/2010/05/nominalization-and-why-you-should.html

apostrophe http://oxforddictionaries.com/words/apostrophe

passive voice http://writingcenter.unc.edu/handouts/passive-voice/

numbers http://www.dailywritingtips.com/10-rules-for-writing-numbers-and-numerals/

References and citations http://tim.thorpeallen.net/Courses/Reference/Citations.html

Visualization http://www.gaudisite.nl/VisualizationGuidelinesSlides.pdf

Research validation http://www.gaudisite.nl/SEresearchValidationPaper.pdf

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Replacing assignment; only after permission of the teacher

- do the pre-assignment and submit this to the teacher (as all other students)

- go through the workshop questions yourself

- discuss the questions and your answers with a local colleague

- write a (max) 2-page document with your answers including examples and rationale behind the answers

- send this 2-page document by mail to another student and ask for comments

- update the 2 page document

- do the post-assignment, include what the feedback of the other student changed in your thinking

- send 2 page document and post-assignment to the teacher

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