

Dissertation Writing and Presentation

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Writing – an essential means of scientific communication

- Written records – our knowledgebase
- If you don't report what you did, it wasn't worth doing

Golden Rules

1. Have a logical structure
2. Feature on
 - Clarity
 - Consistency
 - Evidence
3. Write with a particular audience in mind
 - Your readers are in the same peer
 - Be kind to your readers. Don't assume that they know everything you know

Write with a particular audience in mind

Example

The self-ignition of wood by radiation effect in lack of a pilot action is 33.5 kW/m² but this value is 12.5 kW/m² when a spark or a flame source exists (Barnett, 1988). This is a mount of heat per 1 m² area in 1 sec.

Corollaries

- Only include the relevant materials in the dissertation
- Make a layout plan of the dissertation before you start writing
- Give definitions, illustrations or explanations when new concepts or ideas or parameters first appear in the text
- Give full names before the abbreviations are introduced

Corollaries

- Present information graphically or in tabulation whenever possible
- Illustrate the graphics and tables
- Number all equations, figures and tables
- Use references and cross references
- Define parameters clearly
- A nomenclature section helps

Timing

- Plan your time and place for writing
- Allow enough time to proof-read
- Have a break between writing and proof-reading by yourself

Structure of the Dissertation

- Three basic elements
 1. The context
 2. What I did
 3. What it means
- Your research proposal and/or progress report document is a starting point.

Of course, the presentation is in different language!

The Context

- A literature review
- You should discuss the issues
- You should establish why you wanted to conduct the research

The Literature Review

- What is our current understanding of the topic
- What have other people done
 - How was it done
 - What were the findings or conclusions
 - What can I use to
 - support my concept
 - justify my approach
 - compare my results
 - backup my conclusion
 - What is in dispute

What I did

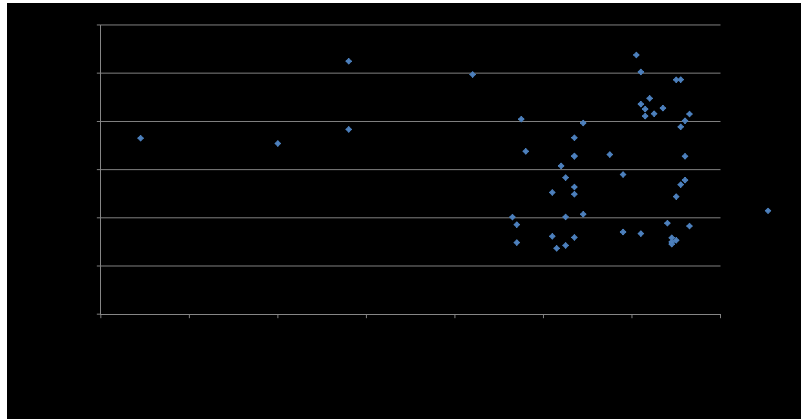
- Report on the methodology
- Describe the tools (show your understanding of the tools)
 - Equipment and instrument
 - Computer models
 - Limitations and/or range of applications
- Describe the data collection process

What I did (continued)

- Establish that your technique was OK
 - statistical significance
 - control groups
 - recording of data
- The reasons for your particular approach
- Limitations of your approach

Example – Technique

- Insufficient data and in appropriate technique



Conclusion: the ventilation factors in modern buildings scatter more than in old buildings

Survey Work

Describe

- The overall survey/field study strategy
- The targeted subject
- The development of questionnaire
- The interview process
- The data collection process

Experimental Work

Describe

- The overall experiment strategy
- The laboratory setup
- The instruments
- The test process
- The test conditions

Numerical Simulation Work

Describe

- The overall simulation strategy
- The computation domain and grid setup
- The simulation scenarios
- The input parameters (boundary and initial conditions)
- The output parameters

What it means

- Often two sections help
 1. Discussion
 2. Conclusions

Discussion

- Analysis of the results
- Evidence
- Logic
- Unresolved issues
 - You may give ideas without strict proof
 - speculation
 - May be tempered by “this needs further work”

Analysis of Data

- Present data graphically and/or in tables
- Use legends in graphs
- Add comments to graphs and tables
- Illustrate data conversion process
- Estimate data quality
 - Significance test (survey/field study)
 - Estimate of errors (experimental work)
 - Grid dependence analysis (numerical simulation)
- Establish links and/or connections between parameters
- Don't dismiss the inconvenient results

Tips on Analysis of Data

- Be critical to your own results – check and verify
- Compare with the results of others (if any)
- Discuss the attribute to discrepancies (if any)
- Use statistics as a guide to significance, but use your intelligence as well
- When the result disagrees with you initial anticipation or common sense, there is either a big problem or a new finding.

Conclusions

- Must be a formal chapter
- A conclusion must be a repeat (or rewording) of something that appears in the main text body
- Must be supported by the evidence that you have obtained through your research (must have the proof)
- Conclusions chapter can be quite short
- Do not go beyond the scope of the study

The Language of Dissertation

- A dissertation or thesis is not a chronological record or diary of your research activities.
- There are fewer traps if you use impersonal language (Tests were conducted....).
- In general use single or multiple sentences to describe one idea instead of using one sentence to convey multiple ideas.

The Language of Dissertation

- Use logical constructs (Because “A” occurred at the same time as “B”.....)
- Minimise or avoid rhetoric
- Avoid the use of “loaded language” – (sexist, racist, ageist, etc.)

Traps - Example 1

In FDS4, the governing factors of sprinkler activation is convection and conduction. Thermal radiation cannot activate sprinkler.

In FDS4, the governing factors of sprinkler activation are convective and conductive heat transfer. Thermal radiation is not included in the calculation of sprinkler activation.

Logic and Connection - Example 2

Background: retention of features in a refurbishment of an old building that do not comply with the current building code

Statement

"This approach is a problem as it can seriously impact on the [safety of communities](#) and [that of the general public](#). As an example, [the courts will not look favourably at the retention of a balustrade in an old building that does not meet the minimum height requirement of the BCA](#) if it is the cause of an accident and an injury due to a building occupant falling over."

Logic and Connection

Analysis

The impact of the problem "on the safety of communities" in this example is that injury may occur, regardless of how courts view it. The court's view is the impact on owners liability.

Logic and Connection – Symbolic Analysis

"This approach is a problem as it can seriously impact on the **safety of communities** and **that of the general public**. As an example, **the courts will not look favourably at the retention of a balustrade in an old building that does not meet the minimum height requirement of the BCA** if it is the cause of an accident and an injury due to a building occupant falling over."

Statement

$A \rightarrow B$

Example

C

Therefore

$A \rightarrow B$

Reworded statement

This approach is a problem as it can seriously impact on **the safety of communities** and **the liability of building owners**. For example, the retention of a balustrade in an old building that does not meet the height requirement of the BCA **may pose greater risk to the occupants than otherwise**. If *it* is the cause of an accident and **an injury** due to a building occupant falling over, **the court may hold the building owner responsible**.

Symbolically

A = "This approach"; B = the safety of occupants; C = liability
Statement

$A \rightarrow B \rightarrow C$

Example

$a \in A, b \in B$ and $c \in C$

$a \rightarrow b \rightarrow c$

Therefore

$A \rightarrow B \rightarrow C$

Rhetoric – Example 3

Research Objective

- To demonstrate that adequate fire safety systems will provide life safety to building occupants

Question:

How is the adequacy of fire safety systems determined?

Cyclic Rhetoric – Example 4

“It is determined that after systems become more widely utilised and understood, greater scope and opportunity for these systems will be generated”

“It is determined that after greater scope and opportunity for these systems are generated, they will become more widely utilised and understood.”

Question:

Which statement is correct?

Clarity – Example 4

Table below summarises the results of the investigations into reliability in Sections 2 & 3

	Reliability * Mean value 95% confidence limit was achieved in this set of data.	Reliability* Mean value	Reliability Mean Value
Dwelling	77.8% ** lower bound 75.1% upper bound 80.6%	67.6% *** lower bound 62.5% upper bound 71.5%	73.7%**** lower bound 62.5% upper bound 75.7%
Shopping Mall	72% ** lower bound 70.2% upper bound 73.7%.	71.7%*** lower bound 66.2% upper bound 75.7%	72%****

Table 4.1 Summary of Reliability Data

* Reliability is defined for this report as "a measure of the probability that a fire protection system will operate as intended when needed". Bukowski, Budnick & Schemel

**R. W. Bukowski, E. K. Budnick & C. F. Schemel. "Estimates of the Operational Reliability of Fire Protection Systems", Proceedings of the Third International Conference on Fire Research and Engineering, Chicago US (1999)

*** Statistical analysis on smoke detector reliability data from JR Hall "US Experience with smoke detectors and other fire detectors" 1995.

**** "US Experience with Smoke Alarms and other Fire Detection/Alarm Equipment". Marty Ahrens from the US National Fire Protection Association November 2004

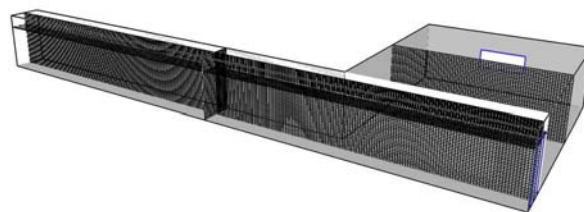
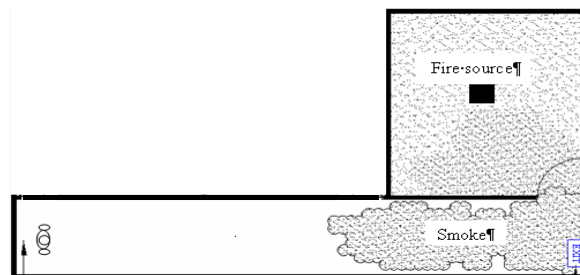
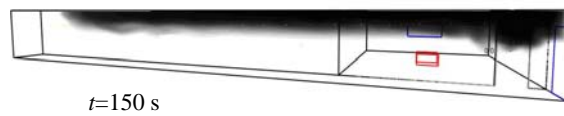
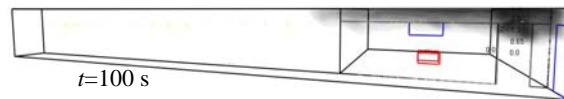
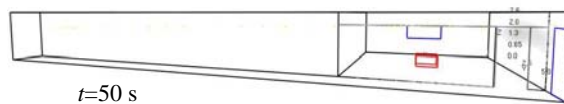
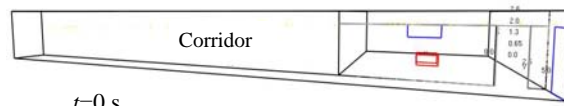
The Same Table

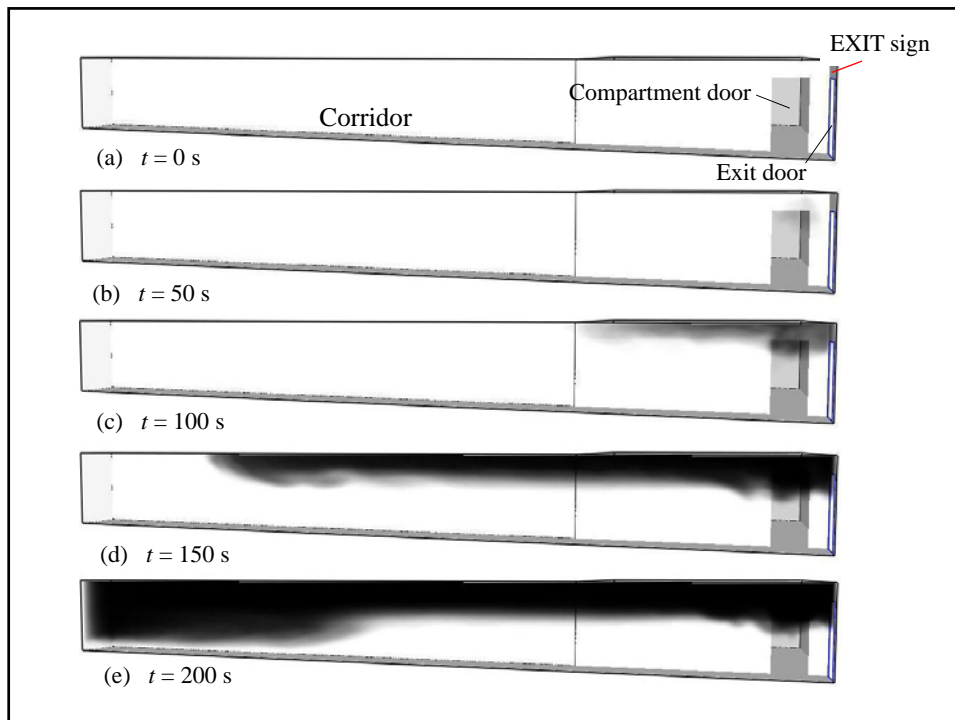
Table 4.2 Summary of Reliability (%) Data

Type of occupancy	Source	Mean	Lower bound	Upper bound	Level of confidence (%)
Dwelling	Bukowski, et al (1999)	77.8	75.1	80.6	95
	Hall (1995)	67.6	62.5	71.5	-
	Ahrens (2004)	73.7	62.5	75.7	-
Shopping Mall	Bukowski, et al. (1999)	72	70.2	73.7	95
	Hall (1995)	71.7	66.2	75.7	-
	Ahrens (2004)	72	-	-	-

(Definitions, discussions and a reference list are given in the main body of the dissertation.)

Clarity of Figures – Example 5





References

- Harvard style **must be used consistently**
http://library.uws.edu.au/FILES/cite_Harvard.pdf

Tips on Presentation

- Be nervous!
- Know the material to be presented
- Be focused
- Have eye contact with the audience
- Dress smartly
- Don't read off the slides (see slide tips)
- Concentrate on examiners' questions
- Rehearse and video tape

Academic writing help in the Library

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- question analysis
- critical analysis
- essay structure and
- academic writing style

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Tips on dissertation writing

- Focus!
- Focus!
- Focus!

Good Luck