



Department of Graduate Education & Leadership  
Lunchtime Seminar

*Writing Chapters 4 & 5 of the Research Study*

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# Introduction

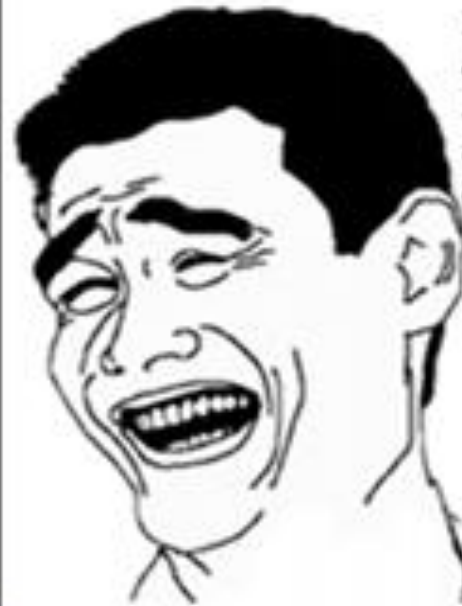
Blum (2006) indicates that getting a dissertation proposal approved is often so stressful and time-consuming that students have a hard time refocusing on the next phase in the process, that of writing chapters four and five.



No due dates, just turn  
in everything  
by the end  
of the semester.



\*le teach\*



I'll just do it  
all the  
last week of the  
semester.  
Should be easy!

**LATER...**



**WHAT  
HAVE  
I  
DONE**



# Purpose

Purpose of this seminar:

To remind us of important components to be included in writing Chapters Four and Five of a Thesis/dissertation.





## Writing Chapter 4

Chapter 4 is comprised of the following content:

The results or findings on the data collected and analysed.

- ❑ **Results** of descriptive analyses
- ❑ **Results** of inferential analyses (Quantitative).
- ❑ **Findings** of text analyses (Qualitative).



# Quantitative and Qualitative Data

Common Issues





Use the purpose statement as the connecting link between and among chapters.





According to Simon (2006), the length of a qualitative Chapter Four can range between 25-35 pages determined by number of themes.

A quantitative design is typically shorter ranging from 15-25 pages.

Why is this necessarily so?

Results of statistical tests rather than lengthy narratives.







No discussion of literature is to take place in Chapter 4.

That is the responsibility of Chapter 5.

Use section titles regardless of the method of organizing the findings, e.g. group the data by major themes found in the data itself and or sub-themes.



# Qualitative





# Present Demographics

Present the descriptive data:

1. explaining the age, gender, or relevant related information on the population (**describe the sample**).
2. Summarize the demographics of the sample, and present in a table format after the narration (Simon, 2006).
3. Otherwise, the table is included as an Appendix and referred to in the narrative of chapter four (American Psychological Association, 2001).



# Data

- ❑ Identify the process by which data were gathered, and recorded.
- ❑ Describe the systems for keeping track of data and emerging understandings— research logs, reflective journals, cataloging systems.





# Organization

Organize findings using titles and subtitles by:

1. Research Questions
2. Major Themes





# Findings

1. Patterns, relationships, and themes are described as findings and supported by the data. All salient data must be accounted for in the findings.
2. Findings are presented in a manner that address the research questions.





Qualitative data is analyzed for patterns or themes, and is presented based on the **major themes** found in the data.

Common methods to present themes are based on the **unit of analysis**.





The **unit of analysis** is the major entity that you are analyzing in your study. It is the ‘what’ or ‘who’ that is being studied.

e.g. a researcher is examining what kinds of **college students** are most successful in their careers.







If the design is **historical**, organize the findings **by time** (Creswell, 2004).

If the design is a **single-case study**, the unit **of analysis** is the entire case being studied (Yin, 1993).





## Summarize Themes

1. Summarize Themes: Add Examples, Tables, Code Names.
2. Under each theme and sub-theme, the researcher describes the pattern and adds counts or percentages in a narrative format (Creswell, 2004).



3. Explain the pattern being careful to code the participants names such as R1 (respondent one), or W1 (woman one).

Examples of some of the responses is typically included after the pattern summary.





# Validity Issues

1. How can one be assured that the data is valid?
2. Indicate how the study followed procedures to assure accuracy of the data (e.g., member checks, triangulation, etc.).
3. Such evidence is placed in the appendices (sample transcripts, researcher logs, field notes, etc.).



# Revision

- ❑ Be aware that writing the results chapter will be an iterative (repetitive) process.
- ❑ Outline key findings before you describe a complex pattern.





# Summary and Conclusion

1. Summarize the major patterns (findings) discovered.
2. No new information or analysis should be included.





Add a conclusion that makes the transition from Chapter Four to Chapter Five.





# Quantitative

## Organization

What issues must be addressed in Chapter 5?

1. The research questions and or hypotheses are analyzed.
2. Report the results obtained.







# Present Demographics

## Describe the sample:

1. The age, gender, or relevant related information on the population
2. Summarize the demographics of the sample, and present in a table format after the narration (as per sample) (Simon, 2006).
3. Otherwise, the table is included as an Appendix and referred to in the narrative of chapter four (American Psychological Association, 2001).



Table 8

*Number of Students Represented in the Study by Departments*

<b>Departments</b>	<b>N</b>	<b>n</b>	<b>Percent</b>
Biology	150	55	17.3
Medical Technology	140	45	14.2
Information Science	260	53	16.7
Mathematics	45	53	8.8
Nursing	372	87	27.3
Others	---	49	15.4
Information Missing	---	1	0.3
Total	967	318	100

Note. n = 318

Extract from Bailey (2007)



Chapter 4 **is not** the discussion chapter in a quantitative study. Discussion takes place in Chapter 5.





## Describe Tests and Data Collection Methods

1. Quantitative designs present results of statistical tests in chapter four.
2. Describe the type of tests that were chosen and why.
3. Describe the data collection instrument.



4. Does the process of how the data was intended to be collected as stated in Chapters 1 and 3 (methodology) match what is presented in Chapter 4.
4. A common error: what is done in chapter four does not match what the student said she was going to do in the Nature of the Study (Chapter I) and Chapter Three.



## Pilot Study

- ❑ Was there a pilot study? Describe any Pilot Study and any Missing Data.
- ❑ Test for validity and accuracy of the survey with a sub-set of the participants (Sproull, 2004).





- ❑ Describe the results of the item analysis, and report the alpha coefficient.
- ❑ Describe the factor analysis procedure to determine factor loadings (items that correlate with others to form a factor [variable]).
- ❑ Report and any later survey modification before implementing the survey to the rest of the participants.





If missing data could not be collected, as outlined in chapter three, include reasons why (Creswell, 2004).







For example, one student promised in chapter three that the data collection involved interviewing 25 retired police superintendents. Extreme problems gaining trust and confidence made it impossible to interview all 25, and after several weeks the researcher obtained interviews from 15 (minimum of 20) needed.





# Data Analysis

1. Analyze each research question or hypothesis.
2. Report outcomes of hypothesis testing procedures:
  - a. What has the research revealed?
  - b. To what extent do the results support what is found in the literature?
  - c. Are there results that differ from that found in the literature?



# Consistency of Analysis

Ensure that data analysis (interpretation, explanation, presentation) is consistent with research questions or hypotheses and underlying theoretical conceptual framework for the study.

- Consistency of hypothesis/research questions between Chapters 1, 3, and 4.
- Are the analyses consistent with what was proposed in Chapter 3?





# Present the Data

1. Present the result of each test in statistical format and with tables and charts in a visual manner using section titles related to each hypothesis (Simon, 2006).
2. Create section titles reporting on the result of each hypothesis instead of on the findings of patterns (qualitative).
3. For inferential statistics, report the test value and p-value.





## Results:

e.g. In 2003, Milford's study of "Senior high school students intention to pursue post-secondary education" used an independent-samples  $t$ -Test to determine the difference on intention between male and female students' (See Table 2). The results indicated that the test was significant,  $t_{(1119.5)} = -5.77$ ,  $< .01$ .





Table 2

*Independent Samples t-Test for students' intention, by Gender*

Student Intention	N	M	SD	T	df
Male	579	4.19	.92	-5.77*	1,179
Female	602	4.48	.76		

\* Significant at the  $< .01$  level.

Can anyone interpret this table?





## Interpretation:

Female students ( $M = 4.48$ ,  $SD = .76$ ) are more likely to express stronger intention to pursue post-secondary education than male students ( $M = 4.19$ ,  $SD = .92$ ). However, the effect size,  $d = .27$ , suggests a small difference. The null hypothesis was rejected.





1. Discuss implementation of data collection procedures, instruments.
2. Describe the assumptions of each test and indicate how the researcher met each assumption (Creswell, 2004).
3. Indicate the results of testing of the each hypothesis.







# Tools for Presenting Results

Three (3) main tools

- a. prose
- b. tables
- c. figures





# Tables and Figures

1. Are **properly titled** and captioned.
2. Are as self-descriptive as possible, informative, and conform to standard dissertation format.
3. Are **directly related to and referred to within the narrative**.
4. Have immediate comments.  
(see Slide 39 for table notes examples).





# Text vs. Tables

When should we use tables?

- ❑ Use tables to simplify text that otherwise would be **dense** with numbers.





# Discuss *Validity* and *Reliability*

Add a section after presenting the results of the tests that discusses how the research handled issues of validity and reliability.





# Conclusion

Outcomes are systematically summarized and interpreted in relation to their importance to the research questions and hypotheses.





## Chapter V

### Goal

1. To analyse of results in the context of the literature discussed in Chapter 2.
2. To state implications for further research, practice, and or social change.





# Qualitative

## Qualitative Designs

In qualitative studies, Chapter 5 follows the same major theme section titles as in chapter four.





For example:

A sub-section, in a qualitative design, under findings and interpretations might be:

## **Findings and Interpretations**

**Theme One: males indicate a higher level of preference for any leadership style that fits the situation.**





- ❑ Starting with the most significant theme(s) not found in previous studies, discuss their importance.
- ❑ Compare each theme to findings in the literature for similarities and differences of application.
- ❑ Meanings of any gaps or similarities in literature is critically analyzed and discussed for every theme?





What do the findings mean to leaders, and why should society care about the findings?

A summary of the major findings concludes the findings and interpretations section with a transitional paragraph introducing the recommendations section.





# Interpretation of Findings

1. Includes conclusions that address all of the research questions.
2. Contains references to outcomes in Chapter 4.
3. Covers all the data.
4. Is bounded by the evidence collected.
5. Relates the findings to a larger body of literature on the topic, including the conceptual or theoretical framework.





# Recommendations

## 1. Action

- a. Should flow logically from the conclusions and contain steps to useful action.
- b. State who needs to pay attention to the results.
- c. Indicate how the results might be disseminated.

## 2. Further Study

- a. Point to topics that need closer examination and may generate a new round of questions.





### **3. Implications for social change**

The Implications for Social Change are clearly grounded in the significance section of Chapter 1 and outcomes presented in Chapter 4.

The implications are expressed in terms of tangible improvements to individuals, communities, organizations, institutions, cultures, or societies.





# Qualitative Studies

Include a reflection on the researcher's experience with the research process in which one discusses the following:

- possible personal biases or preconceived ideas and values
- the possible effects of the researcher on the participants or the situation
- Your change in thinking as a result of the study.





# Quantitative





According to Creswell (2004), the intent of chapter five is to present the findings, implications, recommendations for implementation and actions, and to suggest studies for future research based on the result of the study.







# Possible Outline

Introduction

Purpose of the Study

Methodology

Population and Sample

Instrument

Summary of Results (Findings)

Discussion of Results (Findings)

Research Question 1

Sub-Titles

Research Question 2, etc.

Conclusion

Implications for Practice

Implications for Further Research





# Quantitative Designs

The Chapter is Captioned:

**SUMMARY, DISCUSSION, CONCLUSION,  
AND IMPLICATIONS**

Organize the hypothesis by the level of importance in the study (Sproull, 2004).





- ❑ For every hypothesis, there is a sub-section title explaining the results; does it or does it not support the hypothesis.
- ❑ Describe the results of testing in a concise and clear manner by stating if results supports or fails to support each hypothesis (Sproull, 2004).





# Recommendations

Recommendations should follow the same logical flow as the findings and interpretations; presenting each around the major theme or results of testing in the same order (Creswell, 2004).

Recommendations are suggestions for actions, how leaders can apply the results of the study, for whom, when, and where.



Recommendations state who needs to pay attention to the research results, and how the results might be disseminated (Simon, 2006).

Relate each recommendation back to the problem. Include a narrative of topics that need closer examination to generate a new round of questions. Be sure to make specific recommendations for leaders in the field and policy makers.





## Suggestions for Further Research

Suggest areas that the results of the study imply would be useful for future research by other researchers (Creswell, 2004).

Consider the study expansion or implementation with different populations.

Suggest possible different designs. Do not forget to mention any researcher surprises in the results.



# Qualitative and Quantitative





A common error in student papers:

Present an analysis in Chapter 5 that has nothing to do with the presentation in Chapter 4 .

Solution: In Chapter 5, use the same sub-section titles presented in Chapter 4 to ensure that the flow of chapter five matches chapter four in the findings and interpretations section.







# Introduction

Introduce the chapter with:

1. the purpose statement as the connecting link among chapters; it should appear in the introduction of each chapter (Creswell, 2004).
2. a brief overview of why and how the study was done.
3. a review of the questions or issues being addressed.
4. a brief summary of the results or findings.





## Summary and Conclusion

Create a strong concluding statement that will enable the reader to see the message clearly.





# References

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Sproull, N. D. (2004). *Handbook of research methods: A guide for practitioners and Students in the social sciences (3rd Ed.)*. New Jersey: The Scarecrow Press.

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