This is the title of a thesis submitted to Iowa State University

Note that only the first letter of the first word and proper names are capitalized

by

Wilbur Terrance Johnson

A thesis submitted to the graduate faculty

in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

Major: Human Development and Family Studies (Marriage and Family Therapy)

Program of Study Committee:
Susan D. Ross, Major Professor
Mary Jones
Bjork Petersen

The student author, whose presentation of the scholarship herein was approved by the program of study committee, is solely responsible for the content of this dissertation/thesis. The Graduate College will ensure this dissertation/thesis is globally accessible and will not permit alterations after a degree is conferred.

Iowa State University

Ames, Iowa

2022

DEDICATION

I would like to dedicate this thesis to my wife Glenda and to my daughter Alice without whose support I would not have been able to complete this work.

TABLE OF CONTENTS

Page

LIST OF TABLES

Page

LIST OF FIGURES

Page

NOMENCLATURE

The nomenclature for your dissertation or thesis is optional. This list may be placed in the following places: as the last preliminary page, before the Reference section, or as an Appendix. The heading is bold if other major headings are bold, and the list is in the same font size and style as text. Nomenclature should follow a two-column format with the term in the left column and its definition or description within the right column.

Number Sets

$\mathbb{C}$ Complex Numbers

$\mathbb{H}$ Quaternions

$\mathbb{R}$ Real Numbers

Other Symbols

ρ Friction Index

V Constant Volume

Physics Constants

c Speed of light in a vacuum inertial system

g Gravitational Constant

h Plank Constant

ACKNOWLEDGMENTS

I would like to take this opportunity to express my thanks to those who helped me with various aspects of conducting research and the writing of this thesis. First and foremost, Dr. Susan D. Ross for her guidance, patience and support throughout this research and the writing of this thesis. Her insights and words of encouragement have often inspired me and renewed my hopes for completing my graduate education. I would also like to thank my committee members for their efforts and contributions to this work: Dr. August Tanner and Dr. Lewis Hargrave. I would additionally like to thank Dr. Tanner for his guidance throughout the initial stages of my graduate career and Dr. Hargrave for his inspirational teaching style.

ABSTRACT

This is the text of my abstract that is part of the thesis itself. The abstract describes the work in general and the heading and style match the rest of the document.

CHAPTER 1.   GENERAL INTRODUCTION

This chapter will have the introduction to your thesis as a whole.

This is the opening paragraph to my thesis which explains in general terms the concepts and hypothesis which will be used in my thesis.

With more general information given here than really necessary.

1.1   Overview

Here initial concepts and conditions are explained and several hypothesis are mentioned in brief.

1.1.1   Hypothesis

Here one particular hypothesis is explained in depth and is examined in the light of current literature.

1.1.1.1   Parts of the hypothesis

Here one particular part of the hypothesis that is currently being explained is examined and particular elements of that part are given careful scrutiny.

1.1.2   Second Hypothesis

Here one particular hypothesis is explained in depth and is examined in the light of current literature.

1.1.2.1   Parts of the second hypothesis

Here one particular part of the hypothesis that is currently being explained is examined and particular elements of that part are given careful scrutiny Allen (1984), Bruner (1960), de la Vallée Poussin (1900) abcd.

1.2   Criteria Review

Here certain criteria are explained thus eventually leading to a foregone conclusion.

1.3   References

Allen, B. S. (1984). System-assigned learning strategies and cbi. *Journal of Instructional Computing Research*, 1(1):3–18.

Bruner, J. (1960). *The process of education.* Random House, New York.

de la Vallée Poussin, C. L. X. J. (1900). A strong form of the prime number theorem, 19th century.

CHAPTER 2.   PAPER 1 TITLE GOES HERE

Authors and Affiliations

2.1   Abstract

This is the text of my abstract that is part of the thesis itself. The abstract describes the work in the first paper general. You can use the same abstract as your paper here.

2.2   Overview

The construct of this section or any further section is same as the authors paper. This is the opening paragraph to my thesis which explains in general terms the concepts and hypothesis which will be used in my thesis.

With more general information given here than really necessary.

2.3   Introduction

Here initial concepts and conditions are explained and several hypothesis are mentioned in brief.

Allen (1984), Bruner (1960) and Cox (1974) did the initial work in this area. But in Struss' work [Struss (1996)] the definitive model is seen.

2.3.1   Hypothesis

Here one particular hypothesis is explained in depth and is examined in the light of current literature.

2.3.1.1   Parts of the hypothesis

Here one particular part of the hypothesis that is currently being explained is examined and particular elements of that part are given careful scrutiny.

2.3.2   Second Hypothesis

Here one particular hypothesis is explained in depth and is examined in the light of current literature.

2.3.2.1   Parts of the second hypothesis

Here one particular part of the hypothesis that is currently being explained is examined and particular elements of that part are given careful scrutiny.

2.4   Criteria Review

Here certain criteria are explained thus eventually leading to a foregone conclusion.

2.5   Conclusion

The conclusion of the paper goes here. Cox (1974) Ancey et al. (1996), Radjavi and Rosenthal (1973) Aupetit (1991), Douglas (1972)

2.6   References

Allen, B. S. (1984). System-assigned learning strategies and cbi. *Journal of Instructional Computing Research*, 1(1):3–18.

Ancey, C., Coussot, P., and Evesque, P. (1996). Examination of the possibility of a fluid-mechanics treatment of dense granular flows. *Mechanics of Cohesive-frictional Materials*, 1(4):385–403.

Aupetit, B. (1991). *A Primer on Spectral Theory.* Springer-Verlag, New York.

Bruner, J. (1960). *The process of education.* Random House, New York.

Cox, S. R. (1974). Computer-assisted instruction and student performance in macroeconomic principles. *The Journal of Economic Education*, 6(1):29–37.

Douglas, R. G. (1972). *Banach Algebra Techniques in Operator Theory*. Academic Press, New York.

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Struss, J. A. (1996). An investigation of the sequence of utilizing a simulation in an introductory programming course. Master's thesis, Iowa State University.

2.7 Appendix A: Appendix A Title Goes Here After The Colon

If there is an appendix that needs to go with the paper it can be as a section Aupetit (1991)

2.7.1 Procedure details

Details of the paper specific appendix procedures

2.8 Appendix B: Appendix B Title Goes Here After The Colon

If there is an appendix that needs to go with the paper it can be as a section Aupetit (1991)

2.8.1 Procedure details

Details of the paper specific appendix procedures

CHAPTER 3.   PAPER 2 TITLE GOES HERE

Authors and Affiliations

Modified from a manuscript to be submitted to/ under review/ published in *Name of the Journal*

3.1   Abstract

This is the text of my abstract that is part of the thesis itself. The abstract describes the work in the first paper general. You can use the same abstract as your paper here.

3.2   Overview

The construct of this section or any further section is same as the authors paper. This is the opening paragraph to my thesis which explains in general terms the concepts and hypothesis which will be used in my thesis.

With more general information given here than really necessary.

3.3   Introduction

Here initial concepts and conditions are explained and several hypothesis are mentioned in brief.

Allen (1984), Bruner (1960) and Cox (1974) did the initial work in this area. But in Struss' work [Struss (1996)] the definitive model is seen.

3.3.1   Hypothesis

Here one particular hypothesis is explained in depth and is examined in the light of current literature.

3.3.1.1 Parts of the hypothesis

Here one particular part of the hypothesis that is currently being explained is examined and particular elements of that part are given careful scrutiny.

3.3.2 Second Hypothesis

Here one particular hypothesis is explained in depth and is examined in the light of current literature.

3.3.2.1 Parts of the second hypothesis

Here one particular part of the hypothesis that is currently being explained is examined and particular elements of that part are given careful scrutiny.

3.4 Criteria Review

Here certain criteria are explained thus eventually leading to a foregone conclusion.

3.5 Conclusion

The conclusion of the paper goes here.

Allen (1984), Bruner (1960), Halmos (1982), Rudin (1973), Conway (1990), Conway (1978), Kadison and Ringrose (1983), Kadison and Ringrose (1986)

3.6 References

Allen, B. S. (1984). System-assigned learning strategies and cbi. *Journal of Instructional Computing Research*, 1(1):3–18.

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Kadison, R. V. and Ringrose, J. R. (1986). *Fundamentals of the Theory of Operator Algebras, Part II*. Academic Press, New York.

Rudin, W. (1973). *Functional Analysis*. McGraw-Hill, New York.

Struss, J. A. (1996). An investigation of the sequence of utilizing a simulation in an introductory programming course. Master's thesis, Iowa State University.

3.7 Appendix: Appendix Title Goes Here

If there is an appendix that needs to go with the paper it can be as a section Aupetit (1991)

3.7.1 Procedure details

Details of the paper specific appendix procedures

CHAPTER 4.   PAPER 3 TITLE GOES HERE

Authors and Affiliations

4.1   Abstract

This is the text of my abstract that is part of the thesis itself. The abstract describes the work in the first paper general. You can use the same abstract as your paper here.

4.2   Methods and procedures

This is the opening paragraph to my thesis which explains in general terms the concepts and hypothesis which will be used in my thesis.

With more general information given here than really necessary.

4.3   Introduction

Here initial concepts and conditions are explained and several hypothesis are mentioned in brief.

As can be seen in Table 4.1 it is truly obvious what I am saying is true.

4.3.1   Hypothesis

Here one particular hypothesis is explained in depth and is examined in the light of current literature.

This can also be seen in Figure 4.1 that the rest is obvious.

Table 4.1   This table shows a standard empty table. In case of long captions, we want to use the long caption as the description to the table and image but not use it in the table of contents and list of figures/ tables. In order to do this, there are two captions which have been provided, remove the first square bracket options if there is only one small caption. You can use citations like this too Enflo (1987)

Figure 4.1   This table shows a standard empty figure

4.3.1.1   Parts of the hypothesis

Here one particular part of the hypothesis that is currently being explained is examined and particular elements of that part are given careful scrutiny.

4.3.2   Second Hypothesis

Here one particular hypothesis is explained in depth and is examined in the light of current literature.

4.3.2.1 Parts of the second hypothesis

Here one particular part of the hypothesis that is currently being explained is examined and particular elements of that part are given careful scrutiny.

4.4   Criteria Review

Here certain criteria are explained thus eventually leading to a foregone conclusion as can be seen in Table 4.2.

Table 4.2   This table shows a standard empty table
with a limited caption width

4.5   Results

Include any results

4.6   Conclusion

The conclusion of the paper goes here.

Read (1985) Enflo (1987), Daughtry (1975) Kim et al. (1975)

4.7   References

Aupetit, B. (1991). *A Primer on Spectral Theory.* Springer-Verlag, New York.

Daughtry, J. (1975). An invariant subspace theorem. *Proc. Amer. Math. Soc.*, 49:267–268.

Enflo, P. (1987). On the invariant subspaces problem for Banach spaces. *Acta. Math.*, 158:213–313. Seminare Maurey-Schwartz (1975-1976).

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Read, C. J. (1985). A solution to the invariant subspace problem on the space l_1. *Bull. London Math. Soc.*, 17:305–317.

4.8 Appendix: Appendix Title Goes Here

If there is an appendix that needs to go with the paper it can be as a section Aupetit (1991)

4.8.1 Procedure details

Details of the paper specific appendix procedures

CHAPTER 5.   PAPER 4 TITLE GOES HERE

Authors and Affiliations

5.1   Abstract

This is the text of my abstract that is part of the thesis itself. The abstract describes the work in the first paper general. You can use the same abstract as your paper here.

This is the opening paragraph to my thesis which explains in general terms the concepts and hypothesis which will be used in my thesis.

With more general information given here than really necessary.

5.2   Introduction

Here initial concepts and conditions are explained and several hypothesis are mentioned in brief.

Of course, data on this as seen in Table 5.1 is few and far between.

Table 5.1   Moon Data

Element	Control	Experimental
Moon Rings	1.23	3.38
Moon Tides	2.26	3.12
Moon Walk	3.33	9.29

5.2.1   Hypothesis

Here one particular hypothesis is explained in depth and is examined in the light of current literature.

Or graphically as seen in Figure 5.1 it is certain that my hypothesis is true.

Figure 5.1   Durham Centre

5.2.1.1   Parts of the hypothesis

Here one particular part of the hypothesis that is currently being explained is examined and particular elements of that part are given careful scrutiny.

5.2.2   Second Hypothesis

Here one particular hypothesis is explained in depth and is examined in the light of current literature.

5.2.2.1   Parts of the second hypothesis

Here one particular part of the hypothesis that is currently being explained is examined and particular elements of that part are given careful scrutiny.

5.3   Criteria Review

Here certain criteria are explained thus eventually leading to a foregone conclusion.

5.4   Results

5.5   Conclusion

The conclusion of the paper goes here.

5.6   References

Aupetit, B. (1991). *A Primer on Spectral Theory.* Springer-Verlag, New York.

de Branges, L. (1959). The Stone-Weierstrass Theorem. *Proc. Amer. Math. Soc.*, 10:822–824.

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Mathes, B., Omladič, M., and Radjavi, H. (1991). Linear Spaces of Nilpotent Operators. *Linear Algebra Appl.*, 149:215–225.

Radjavi, H. (1987). The Engel-Jacobson Theorem Revisited. *J. Alg.*, 111:427–430.

5.7   Appendix: Appendix title goes here

If there is an appendix that needs to go with the paper it can be as a section Aupetit (1991)

5.7.1   Procedure details

Details of the paper specific appendix procedures

Radjavi (1987) Mathes et al. (1991), Lomonosov (1973) Lomonosov (1991), Lomonosov (1992)
de Branges (1959)

CHAPTER 6.   GENERAL CONCLUSION

This is the opening paragraph to my thesis which explains in general terms the concepts and hypothesis which will be used in my thesis.

With more general information given here than really necessary.

6.1   Summary And Discussion

Here initial concepts and conditions are explained and several hypothesis are mentioned in brief.

6.1.1   Hypothesis

Here one particular hypothesis is explained in depth and is examined in the light of current literature.

As can be seen in Table 6.1 it is truly obvious what I am saying is true.

6.1.1.1   Parts of the hypothesis

Here one particular part of the hypothesis that is currently being explained is examined and particular elements of that part are given careful scrutiny. Allen (1984), Bruner (1960), Struss (1996)

6.2   References

Allen, B. S. (1984). System-assigned learning strategies and cbi. *Journal of Instructional Computing Research*, 1(1):3–18.

Bruner, J. (1960). *The process of education.* Random House, New York.

Struss, J. A. (1996). An investigation of the sequence of utilizing a simulation in an introductory programming course. Master's thesis, Iowa State University.

Table 6.1   This table shows almost nothing but is a sideways table and takes up a whole page by itself

Element	Control	Experimental
Moon Rings	1.23	3.38
Moon Tides	2.26	3.12
Moon Walk	3.33	9.29