

# **HOW TO WRITE A THESIS IN THE INFORMATION AGE**



**First Edition**

**How to  
WRITE A THESIS  
in the  
INFORMATION AGE**

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# Contents

<b>Contents</b>	<b>v</b>
<b>List of Figures</b>	<b>ix</b>
<b>List of Tables</b>	<b>xi</b>
<b>I Equipping the Beginning Researcher</b>	<b>1</b>
<b>1 Qualities of a Good Researcher</b>	<b>3</b>
1.1 Passion for Novelty . . . . .	4
1.2 Reflective Thinker . . . . .	4
1.3 Intelligent . . . . .	4
1.4 Systematic and Objective . . . . .	4
1.5 Has a Keen Sense of Perception . . . . .	5
1.6 Unconventional . . . . .	5
<b>2 Developing a Keen Perception</b>	<b>7</b>
2.1 Activating the Senses . . . . .	8
2.2 Implications of Observations . . . . .	9
2.3 Research Questions from Observations . . . . .	9
<b>3 Thinking Beyond the Box</b>	<b>13</b>
3.1 TBB vs. TOB . . . . .	14
3.2 Always Be Keen . . . . .	14
3.3 Example of TBB . . . . .	15
<b>4 Quantitative Research</b>	<b>19</b>
4.1 Qualitative Research Defined . . . . .	19
4.2 Purpose of Quantitative Research . . . . .	20
4.3 Conduct of Quantitative Research . . . . .	20

4.4 Limitations of Quantitative Research . . . . . 20

**5 Qualitative Research 23**

5.1 What is qualitative research? . . . . . 23

5.2 Purpose of Qualitative Research . . . . . 24

5.3 Conduct of Qualitative Research . . . . . 24

5.4 Limitations of Qualitative Research . . . . . 24

**6 Basic vs Applied Research 27**

6.1 Basic Research Defined . . . . . 27

6.2 Nature and Relevance of Basic Research . . . . . 28

6.3 Examples of Basic Research Questions . . . . . 29

6.4 Applied Research Defined . . . . . 29

6.5 Examples of Applied Research Questions . . . . . 29

**7 Research and Development 33**

7.1 Research and Development Defined . . . . . 33

7.2 Example of R & D Outcomes . . . . . 34

7.3 Why Invest in R & D? . . . . . 34

**II Narrowing Down the Research Topic 37**

**8 Identifying a Good Research Topic 39**

8.1 10 Guide Questions to Identify a Research Topic . . . . . 40

**9 Importance of Scoping 43**

9.1 Scoping Defined . . . . . 43

9.2 Example of a Scoping Activity . . . . . 43

9.3 Purpose of Scoping . . . . . 44

9.4 Mindset and Materials for Scoping . . . . . 44

**10 Generating Research Ideas 47**

10.1 Nine Techniques to Generate Ideas . . . . . 48

**11 Brainstorming 53**

11.1 Brainstorming Defined . . . . . 54

11.2 Materials Needed . . . . . 54

11.3 The Group Memory . . . . . 55

**III Writing the Research Proposal 59**

**12 Research Variables 61**

12.1 Variables Defined and Examples . . . . . 62

12.2 Types of Measurement Scales . . . . . 62

12.3 Independent vs. Dependent Variables . . . . . 65

<b>13 Research Outcomes</b>	<b>69</b>
13.1 Description . . . . .	70
13.2 Differences Between Variables . . . . .	70
13.3 Correlation Between Variables . . . . .	71
<b>14 The Research Paper</b>	<b>73</b>
14.1 Research Paper Defined . . . . .	74
14.2 Drawing Perspective . . . . .	74
14.3 A Good Research Paper . . . . .	74
14.4 Gathering Literature . . . . .	75
<b>15 Writing a Concept Paper</b>	<b>77</b>
15.1 Definition and Importance . . . . .	78
15.2 Writing the Concept Paper . . . . .	78
<b>16 Research Proposal Writing</b>	<b>81</b>
16.1 Starting Point . . . . .	81
16.2 The Problem Statement . . . . .	82
16.3 The Conceptual Framework . . . . .	83
16.4 Purpose of the Literature Review . . . . .	83
16.5 Gathering the Literature . . . . .	84
16.6 Write the review of literature . . . . .	84
16.7 The Methodology . . . . .	86
<b>17 Testing or Building Theory</b>	<b>91</b>
17.1 Theory Testing and Example . . . . .	92
17.2 Theory Building and Examples . . . . .	92
<b>18 Theoretical vs. Conceptual</b>	<b>97</b>
18.1 Difference Between Frameworks . . . . .	98
18.2 Framework Examples . . . . .	98
18.3 Conceptual Framework Development . . . . .	98
18.4 The Need to Iterate . . . . .	99
<b>IV Technical Writing Approaches</b>	<b>101</b>
<b>19 5Ws and 1H</b>	<b>103</b>
19.1 Why 5Ws and 1H? . . . . .	103
19.2 When to Use 5Ws and 1H . . . . .	104
19.3 5Ws and 1H Examples . . . . .	104
<b>20 The TSPU Technique</b>	<b>107</b>
20.1 The TSPU technique . . . . .	108
20.2 TSPU Examples . . . . .	108
20.3 Wrapping up the Paragraph . . . . .	109

<b>21 Effective Thesis Writing</b>	<b>111</b>
21.1 Concise and Direct Writing . . . . .	111
21.2 Use of Graphics . . . . .	112
21.3 Ideas in Chunks . . . . .	112
21.4 Too General . . . . .	112
21.5 Engage others . . . . .	112
<b>V Writing the Research Manuscript</b>	<b>115</b>
<b>22 Elements of a Scientific Paper</b>	<b>117</b>
22.1 Scientific vs. Non-Scientific Writing . . . . .	117
22.2 Elements of a Scientific Paper . . . . .	118
<b>23 Writing the Introduction</b>	<b>121</b>
23.1 Contents of the Introduction . . . . .	122
23.2 Deductive Writing . . . . .	123
23.3 Use a Hook . . . . .	125
23.4 Significance of the Study . . . . .	127
<b>24 Writing the Literature Review</b>	<b>131</b>
24.1 Important Considerations . . . . .	132
24.2 Online Databases as Sources of Scientific Literature . . . . .	134
24.3 Other Reliable Sources of Online Information . . . . .	135
<b>25 Data Accuracy and Integrity</b>	<b>139</b>
25.1 Ensuring Data Integrity and Accuracy . . . . .	140
<b>26 Results and Discussion</b>	<b>143</b>
26.1 Content of Results . . . . .	144
26.2 Content of Discussion . . . . .	144
<b>Bibliography</b>	<b>147</b>
<b>Index</b>	<b>151</b>



# List of Figures

3.1	Difference between TBB and TOB . . . . .	15
6.1	ATLAS at the Large Hadron Collider . . . . .	30
10.1	Example of a problem tree . . . . .	50
10.2	Template for problem tree . . . . .	51
11.1	Brainstorming . . . . .	55
11.2	Example of a mind map . . . . .	56
11.3	Mind map template . . . . .	58
18.1	Conceptual framework on teaching style . . . . .	99
23.1	Stages of writing . . . . .	124



# List of Tables

1.1	New discoveries . . . . .	6
2.1	Example of observations . . . . .	10
2.2	Observations while walking home . . . . .	11
4.1	Observations during enrollment . . . . .	21
4.2	Observations of phenomenon . . . . .	22
5.1	Issue or problem and answers . . . . .	26
7.1	Social need, issue, or concern . . . . .	35
7.2	Innovative products . . . . .	36
8.1	Community problems as research focus . . . . .	42
9.1	Community feedback and research questions . . . . .	46
10.1	Social problems . . . . .	52
12.1	Examples of phenomena and associated variables . . . . .	63
12.2	Examples of nominal variables . . . . .	63
12.3	Contingency table for Chi-square test . . . . .	64
12.4	Examples of ordinal variables . . . . .	64
12.5	Examples of interval variables . . . . .	65
12.6	Examples of ratio variables . . . . .	66
12.7	Phenomena and associated variables . . . . .	67
12.8	Variables, measurement scale, and categories . . . . .	68
13.1	Expected outcomes of research questions . . . . .	72
14.1	Answer sheet to questions . . . . .	76
15.1	Concept paper . . . . .	80
16.1	Topic and tentative problem statements . . . . .	88
16.2	Brief summary of scientific findings . . . . .	89

16.3 Methodology and method . . . . . 90

17.1 Theories . . . . . 95

17.2 Explanation of phenomenon . . . . . 96

19.1 Matrix of questions and information . . . . . 104

19.2 Questions in data gathering . . . . . 106

24.1 Type of variables, arguments, and issues . . . . . 138

25.1 Measurements of body temperature . . . . . 141

26.1 Analysis of the results and discussion . . . . . 146

To Marlene and Hannah Tricia



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My colleague and friend Maricel Elorde's suggestion to include evaluation questions, among other useful advice, at the end of the chapter allow students or readers to apply what they have learned. Engr. Ma. Rosario Aynon Gonzales expressed interest to use this book as a reference in teaching her research classes motivated me to complete this task.

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To all those individuals who have helped me but I failed to recognize, I am truly grateful.

To God all be the glory.

PAR





# Preface

Having taught and given advice to students and colleagues on research and statistics concerns for more than 20 years, I saw the need for writing this book upon noticing the difficulty encountered by a majority of my students in writing their thesis, both in the graduate and the undergraduate levels. They need to understand thoroughly the research concepts and processes that would enable them to do practical research work. In particular, the undergraduate students need an easy to understand guide that will give them the confidence and the capacity to work on their thesis requirement. The same goes for many of my graduate students in the research subject I teach as they have diverse educational backgrounds. They had varying degrees of exposure to research jargon and concepts. Further, senior students with administrative positions in various government and private offices have vague ideas of research in their minds as they have taken this subject many years back. Thus, this book aims to introduce, as well as refresh, those students who feel they belong to the above groups.

Although there are many books written on thesis writing, I felt and observed that many concepts presented in those books are too complicated for beginning researchers and are not attuned to the local need for a functional understanding of research. Of utmost importance are those research topics that cause one to do and appreciate the importance and significance of research results. Hence, I wrote this book to simplify concepts as much as I could so that students can write their thesis or conduct their research much more meaningfully. The chapters are written in a down-to-earth, conversational mode with many examples to demonstrate the concepts presented. This book is unlike its predecessors as it draws upon the various and contemporary research aids in the information age such as Google Scholar, Zotero, among others.

Moreover, I was encouraged to write this book upon getting positive feedback from readers responding to research-related articles I published online. An article on how to write the significance of the study gains more than 33,000 views a month; hundreds of thousands of internet users have benefited from this article alone at this time of writing. I never thought that a simple guide such as this is being searched by many. Another short article on how to differentiate the theoretical from the conceptual framework gained a similar number of views. These are not the only popular articles I

wrote that benefited people all over the globe through the internet.

Pleased by knowing that readers find my tips useful, I gathered all my research-related materials, enhanced the presentation and contents, added supplementary material, and organized them accordingly to ensure a smooth learning flow. Thus, this practical how-to book that seeks to equip the reader with the needed understanding and tools to come up with useful research outputs was born.

At the end of each chapter, exercises are provided to hone skills. Thus, instructors handling research subjects can find this handy in their lectures. Also supplied is a brief summary of the chapter to emphasize the key points. Helpful graphics is added to enhance further the students' experience while not deviating from the topic at hand.

The e-book version, available online, is easy to navigate as I have added hyperlinks to the contents, the index, the figures, tables, and references. The book takes advantage of the power and flexibility of  $\text{T}_{\text{E}}\text{X}/\text{L}_{\text{A}}\text{T}_{\text{E}}\text{X}$ , a high quality typesetting system through  $\text{L}_{\text{Y}}\text{X}$  as a front-end. Hence, students can easily skim to sections they want to read in a single mouse click; or use their netbooks, iPads, laptops, or desktops to browse the different sections.

Thesis writing requires the right attitude. Hence, the book starts with a description of the qualities of a good researcher in Chapter 1. Armed with the right attitude, the student then progresses to the steps of the scientific method, narrowing his topic to his interest and discipline, writing the thesis using simple but practical tips, and discussing the result of his investigation in a concise way.

Enjoy reading while learning and may your research venture be fruitful, satisfying, and enjoyable.



Patrick Ausan Regoniel, PhD

**Part I**

**Equipping the Beginning  
Researcher**



# Chapter 1

## Six Qualities of a Good Researcher



*Can anyone be a good researcher? Do scientists possess particular qualities that enable them to succeed in the field of scientific inquiry? Read on to find out if you have what it takes to become a good researcher.*

While everyone in college or the graduate school will be given the opportunity to do research, not everyone can live up to it unless they possess the qualities required of a good researcher. There are innate qualities that scientists must possess to succeed in this challenging task that requires much imagination and perseverance.

However, even if you do feel and believe that you lack some of those qualities mentioned here, it is still possible to train and build yourself up on those qualities that you find yourself wanting. Just like leaders, researchers can also be made, not just born.

What then are the qualities of a good researcher? Here are six notable attributes of people who tread the path towards discovery. While this list is not exhaustive, it will help you get started.

## 1.1 Thirsts for New Information

People who do not stop learning manifest this thirst for new information. They are those who gain new perspectives on things that appear to have been discovered, adequately studied, or options exhausted.

Two hundred years ago, has anyone ever thought that man could go to the moon, or explore the depths of the sea? Or tap on the keys of the cell phone to communicate with another person so far away?

The possibilities are endless. A good researcher explores prospects of discovering something novel out there. He is not content with the *status quo*.

## 1.2 Likes to Reflect on Things

Researchers who pause and reflect on the knowledge that they have gained, either under a formal setting such as a school or through their personal experience, gain insights. Insights are creative thoughts that make one nod his head and say, "Aha, this is something I have been looking for!" An original idea is born out of reflection.

## 1.3 Possesses Intelligence to Express Ideas

How can you express your thoughts if you cannot write? The point here is that a good researcher must be adept in the written language because, as a researcher, you are expected to write. You should be intelligent enough to be able to put your thoughts into logical writing, such that it will allow a healthy exchange of ideas between colleagues or individuals with similar interest. How can people understand your point when you are the only one who can understand what you are trying to say or have written?

The ability to express ideas clearly appears to be ingrained in gifted individuals. However, if you recognize your weakness in this realm, why not seek someone who can? After all, the idea is much more important; but of course, it would be better if you present it such in a way that others understand well what you want to say.

## 1.4 Applies Systematic and Objective Thinking

The circumstances surrounding a phenomenon are so intricate that there is a need to isolate parts of it and see how those parts are interrelated (see Chapter 14). Given the situation, a good researcher must be able to apply systematic and objective thinking to arrive at something meaningful. He should be able to analyze things, meaning, he should be able to break down a complex situation into manageable bits. He should be able to apply logical reasoning to come up with plausible conclusions. He should not mess up his observations with his emotions to avoid bias in his judgment.

## 1.5 Has a Keen Sense of Perception

Keeness is a quality developed through an observant attitude. A good researcher sees something more out of a common phenomenon around him. Moreover, he sees this quickly.

He can see a wiggling worm inside a flower, appreciate the beautiful color combinations of a wild plant, or simply notices the small fly in the burger. A good researcher is meticulous with details.

Keeness is an essential quality that every researcher must develop. How? Chapter 2 provides an illustration on how keeness can be harnessed and enhanced.

## 1.6 Thinks in an Unconventional Manner

A good researcher maintains an open mind about things he observes around him. He does not take things for granted but explores new grounds. He adopts the philosophy of "thinking beyond the box", leaving out the conventional for something innovative. A good researcher treads the unknown frontier.

Chapter 3 discusses this quality in greater detail together with an illustrative example.

## Summary

A good researcher should have at least six unique qualities. These are the following:

- 1) thirsts for new information,
- 2) reflects on things encountered,
- 3) possesses intelligence to express his ideas,
- 4) applies systematic and objective thinking,
- 5) has a keen sense of perception, and

6) thinks in an unconventional manner. While some of these qualities may be innate to some people, these qualities may be developed through constant practice and conscious effort.

## Hone Your Skills

1. List down five new discoveries within the last five years. Describe their uses. Write your findings on Table 1.1.
2. Examine the patterns of a leaf and ponder how water passes through it.
3. Write down your thoughts this morning in a blog and see how friends, colleagues or readers in general respond to your piece.

Table 1.1: New discoveries within the last five years.

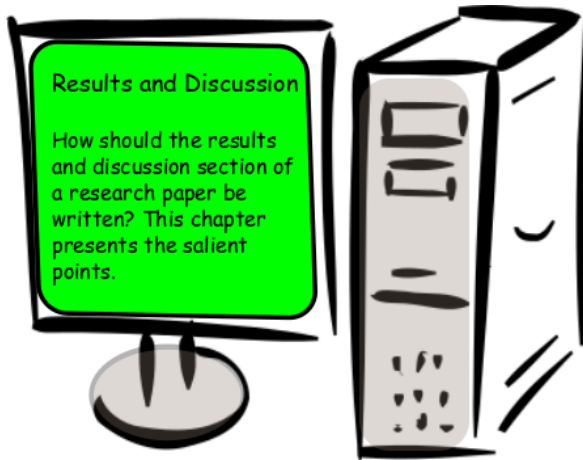
No.	New Discovery	Uses
1.		
2.		
3.		
4.		
5.		

4. Which of the lamps in a traffic light is green? Is it at the bottom, middle or the top?
5. Try to explain why many people like to use Facebook. Support each of your reasons with evidence.
6. Find a small insect and find out its color and describe its outstanding features.
7. Explore other ways of getting to your destination.



## Chapter 26

# Writing the Results and Discussion



*How should the results and discussion section of a research paper be written? This chapter briefly presents the salient points.*

Perhaps one of the most daunting and time-consuming section to write a research paper is the results and discussion section. But if you have a good literature review to guide you in the analysis and interpretation of your findings, your work is already half-finished. It is in this part of the research process where the expertise of the student in his chosen field of specialization is demonstrated.

It takes constant practice and deep, insightful thinking to come up with a good results and discussion write-up, but there are essential elements to consider. The discussion section is often taken for granted and even missed, in some research papers or thesis. Thus, discussion of significant findings is left hanging and/or unresolved. It will be all together difficult to come up with a good conclusion unless the issue is made clear through a good discussion of the relevant findings.

Some schools prefer that both results and discussion be written altogether as one section while some prefer that the results section be written separately from the discussion section. Whichever of this two is appropriate for an individual institution and to distinguish one from the other, the contents of the results section and the discussion section are discussed separately below.

## 26.1 Contents of the Results

The results portion of the research paper is that part where the student presents the outcome of his research after applying the detailed procedures outlined in the methods section. It is in the results section where the researcher makes a detailed, systematic presentation of his findings based on the objectives set beforehand, the relevant observations in the course of experimentation or survey, and analyzed data that can be presented in the form of tables, graphs, or illustrations.

In writing the results of the study, the researcher should organize the findings in such a way that the reader will be able to follow the findings in their logical order. It is not just a random presentation of the outcome of the study but one that corresponds to the research objectives set forth in the introduction. There should be a one-to-one correspondence between the objectives and the results of the study.

## 26.2 Contents of the Discussion

Many students inadvertently omit this part of research writing thinking that presenting the results will be sufficient enough to meet the objectives of the study. This belief is not so, as the discussion section is entirely different from the results section although one can creatively enmesh the discussion with the results.

It is in this part of the research paper where the researcher explains the results of the research investigation. In this section, the researcher relates his findings to previous findings (i. e., those tackled in the literature review) and where he draws conclusions; whether to affirm, confirm, or refute the arguments presented in studies that were reviewed before conducting the study. Thus, students need to devote enough time to ponder on the state of the art as pointed out in the literature review. It is here where the hypothesis of the study is either accepted or rejected. Also, the importance or significance of these results in the particular field he is working on is pointed out.

It is expected that new issues, problems, and questions will arise, and questions that the research aimed to answer will remain unresolved. These will serve as pathways for further investigation.

## Summary

The results and discussion section is the essence of the whole research process. It is in this part where the research questions are answered and where new issues, problems and questions for further investigation are raised.

## Hone Your Skills

1. Read the results and discussion portion of an article published in a reputable scientific journal. Answer the following questions:
  - a) If the results and discussion section are separate, differentiate the contents of the results and the discussion using the following questions as your guide:
    - i. Where were the graphs, tables, or illustrations placed?
    - ii. Which part did the author make conclusions?
    - iii. Where was the comparison made?
    - iv. Where are attempts to explain the findings given?
    - v. How are the findings arranged?
  - b) If the results and discussion part is taken as one, do the following:
    - i. Copy the research questions. Write these questions on the first column of Table 26.1.
    - ii. Write the corresponding answers to those questions based on what was written in the results and discussion. Identify which statements present the results and which statements discuss the results. Write your answers on the second column of Table 26.1.
    - iii. List all conclusions you can identify in the results and discussion section. Number them accordingly and list on the third column of Table 26.1.

Table 26.1: Analysis of the results and discussion.

---

Research Question	Statement	Conclusion
-------------------	-----------	------------

---

*Results*

---

*Discussion*

---

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# Index

5Ws and 1H, 103

albinism, 126  
analysis and interpretation, 143  
Applied research, 30  
applied research, 49  
association, 71

basic research, 27  
bibliographical details, 84  
bibliography, 134  
brainstorming, 54

concept paper, 77  
conceptual framework, 57, 71, 78, 97, 119  
conceptualization, 124  
conclusions, 144  
correlations, 69, 71  
curiosity, 28

data, 140  
data accuracy, 139, 141  
data analysis, 139, 140  
data integrity, 140  
data quality, 140  
decision making, 24  
Deductive writing, 123  
dependent variable, 61  
development, 34  
discovery, 14  
discussion, 143  
duplication of work, 132

equipment, 40  
examples of applied research, 30  
expert opinion, 120

facilitator, 54  
facts, 83  
faculty, 35  
focus, 112  
full paper, 77  
funding agency, 40

gap in knowledge, 124, 132  
Gatorade, 34  
general-to-specific, 123  
generate ideas, 82  
goal and objectives, 118  
good researcher, 3  
Google Scholar, 134

graphs, 112  
group memory, 55

hook, 125  
hypothesis, 79, 120, 125

ideas, 54, 78  
ideas in chunks, 112  
independent variable, 61  
information, 74  
innovation, 35  
insightful thinking, 143  
Intelligence, 4  
internet, 84  
introduction, 121, 125  
inverted pyramid, 123

Keen, 5  
Keeness, 5

lead statement, 111  
literature, 69  
literature review, 83, 131

manuscript, 113  
master's degree, 92  
measurement scale, 20, 62  
methodology, 86, 119  
methods, 119  
meticulous, 140  
mind map, 55  
mind mapping, 78

number of references, 120

objectives, 118  
objectives in writing, 109  
observations, 8  
one-to-one correspondence, 87, 144  
original idea, 74  
outliers, 140  
overview, 70, 118  
overview of the research paper, 121

paragraph, 108  
paragraph unity, 108  
peer review, 133  
perspective, 74  
pesticides, 127  
phenomenon, 19, 24, 69, 86, 98, 119, 125  
pieces of evidence, 86

policy making, 24  
 problem statement, 82, 83  
 problem tree, 49  
 projects, 43  
 pure research, 31  
 purpose of qualitative research, 24

Qualitative research, 23  
 quantitative data, 61  
 quantitative research, 19

rationale, 118  
 reinventing the wheel, 83, 119, 132  
 related literature, 119  
 relevant literature, 122  
 reliable sources, 122  
 research and development, 33  
 research ideas, 78  
 research objectives, 83  
 research outcomes, 69  
 research paper, 73, 84, 131  
 research paradigm, 98  
 research problem, 98  
 research proposal, 77  
 research question, 70, 86  
 research questions, 28, 44, 47, 69  
 research topic, 7, 39, 41, 47  
 resolution, 125  
 results, 123  
 results and discussion, 119, 120, 143  
 review of literature, 98, 119  
 review of related literature, 132  
 roadkills, 16

scholarship, 40  
 scientific journals, 133  
 scientific paper, 117, 118  
 scope and limitations, 122  
 scoping, 44  
 search engine, 134  
 secondary data, 43  
 senses, 14  
 social research, 24  
 statistical analysis, 20, 23, 83  
 statistical software analysis, 139  
 statistical tools, 19, 83  
 statistical treatment, 98  
 synthesis, 74, 93

technical writing, 103  
 themes, 84  
 theoretical framework, 57, 97  
 theory building, 91  
 theory testing, 91  
 thesis, 84, 113  
 thesis proposal, 78, 81  
 Thinking beyond the box, 14  
 thinking beyond the box, 13  
 thinking outside the box, 13  
 topic, 82  
 topics, 48

use of numbers, 20

variables, 20, 57, 61, 82  
 viewpoint, 85

writing, 81, 107  
 writing styles, 111  
 writing the literature review, 131