CHAPTER THREE

THEORETICAL FRAMEWORK AND RESEARCH DESIGN

3.0 Introduction

This chapter outlines the theoretical background of this investigation and presents the methodology that is involved in data analysis of the study. The chapter begins with Section 3.1 that discusses the theoretical framework of Halliday and Matthiessen (2004) on the Interpersonal Metaphor. Section 3.1.1 delves into the Metaphor of Mood. This is followed by Section 3.1.2 that addresses another type of Metaphor under the Interpersonal Metaphor - Metaphor of Modality. The chapter continues with Section 3.2 that deals with the study's research design. The section is followed by a set of sample analysis to illustrate the analytical procedures of the study in Section 3.3. Section 3.4 analyses the Interpersonal Metaphor. Section 3.5 describes the coding of the features to be analysed. Section 3.6 presents the distribution patterns of the Interpersonal Metaphor features in percentages and number of occurrences. The chapter ends with a chapter summary in Section 3.7.

3.1 The Theoretical Framework of the Interpersonal Metaphor

Based on the discussion in Creswell (1994), the study uses the 'constant comparative method'. The method involves a continuous process of comparison between the data in the study and Halliday and Matthiessen's (2004) theoretical explanation on Interpersonal Metaphor. This method is also in line with Miles and Huberman's (1994:160) view on grounded research where "initial conclusions are verified as the research progresses." Therefore, in this study, Halliday and Matthissen's (2004) theory on Interpersonal Metaphor is verified progressively with the development of the research.

The data, analysis and explanations offered in the study are done through checking the views of Halliday and Matthiessen on the Interpersonal Metaphor. This validity approach is named 'content validity' (Denscombe, 2002).

Figure 3.1 presents the system network of the theoretical framework of the Interpersonal Metaphor.

To insert the system network of theoretical framework in separate sheet

3.1.1 The Metaphor of Mood

The Metaphor of Mood is one of the two main resources of the Interpersonal Metaphor. Halliday and Matthiessen (2004:626) observe:

> "Systemically, (Interpersonal) metaphor leads to an expansion of the meaning potential: by creating new patterns of structural realization, it opens up new systemic domains of meaning."

It can be understood that a 'metaphorical' clause has two main features.

- Having underlying layers of meaning deriving from the 'congruent' clause. The congruent clause is defined as "that one which can be regarded as typical" (Halliday. 1984:14).
- Having the potential of creating new layers of meaning.

The semantic domain of a clause can be ascertained by its speech function. As observed by Halliday (1994) and Thompson (1996), there are four Mood types with four corresponding speech functions as shown in Table 3.1.

Table 3.1: Relationship between Mood Type and corresponding Speech Function
(Adapted from Eggins, 1994:153 and Halliday and Matthiessen, 2004:107)

Mood Type	Speech Function	Role in Exchange	Examples
Declarative	Statement	Giving information	He's giving her the teapot.
Interrogative	Questions	Demanding information	What is he giving her?
Imperative	Command	Demanding goods & services	Give me that teapot!
Interrogative	Offer	Giving goods & services	Would you like this teapot?

Since a metaphorical clause is derived from its congruent form, the metaphorical clause also fulfils the same speech functions. The phenomenon where both the metaphorical and congruent form of the clause fulfil the same speech function is known

as semantic expansion. This phenomenon of semantic expansion creates new domains of Interpersonal meaning within the Mood system.

Halliday (1989:172) notes that the process of "rewording a metaphorical clause to its more congruent form" (also known as "unpacking" by Halliday, 2006:48) usually involves two or three steps. The current study will limit itself to the unpacking process which involves only one step. It should be noted that all examples are drawn from Halliday and Matthiessen (2004: 634 to 635) unless specified. It is understood that there are four possible semantic expansions in the Metaphor of Mood which are:

- Declarative realising Statement and Command
- Interrogative realising Question and Statement
- Interrogative realising Question and Command
- Imperative realising Command and Statement

3.1.1.1 Declarative: Statement and Command

Table 3.2: Metaphorical Declarative Realising Statement and the Congruent Form Realising Command

Type of representation	Sentence	Speech Function
Metaphorical	The evidence is that they cheated before. (Mood: Declarative)	Statement
Congruent	Look at the way they cheated before.	Command

In Table 3.2, a metaphorical clause with Declarative mood has Statement as speech function. The congruent form is a Command. Since a metaphorical clause has been derived from the congruent form, it fulfills its own corresponding speech function as well as the congruent form's speech function. In this example, the metaphorical sentence realizes a Statement to provide information for listeners with an underlying

meaning of inviting listeners to comply with the speaker's direction of thought. Figure 3.2 shows a Declarative Mood, realising Statement and Command.

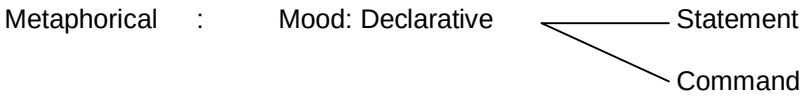

Figure 3.2: Declarative Mood Realising Statement and Command

3.1.1.2 Interrogative: Question and Statement

Table 3.3: Metaphorical Interrogative Realising Question and the Congruent Form Realising Statement

Type of representation	Sentence	Speech Function
Metaphorical	How could you say such a thing? (Mood: Interrogative)	Question
Congruent	You shouldn't say such a thing.	Statement

The metaphorical question takes on the form of a rhetorical question. Frank (1990:726) asserts that rhetorical questions "enable speakers to make stronger statements, with greater implications than would be possible if they had made straightforward assertions." The metaphorical question also has an additional layer of meaning that is realized in the form of a statement. Figure 3.3 shows the metaphorical Interrogative realising Question and Statement.

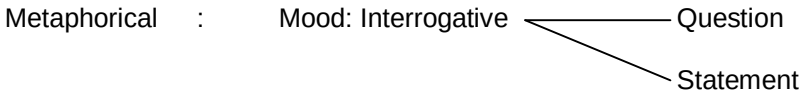

Figure 3.3: Interrogative Mood Realising Question and Statement

3.1.1.3 Interrogative: Question and Command

Table 3.4: Metaphorical Interrogative Realising Question and the Congruent Form Realising Command

Type of representation	Sentence	Speech Function
Metaphorical	Can you get some napkins? (Mood Interrogative)	Question
Congruent	Get me some napkins.	Command

Table 3.4 shows a metaphorical question that draws an action response from the listener. At the same time, the metaphorical question demands that the listener comply with the speaker's command. The metaphorical clause expands its semantic domain by enabling "variables of tenor" (Halliday and Matthiessen, 2004:631) which are "status, formality and politeness". Figure 3.4 shows an Interrogative Mood realising Question and Command.

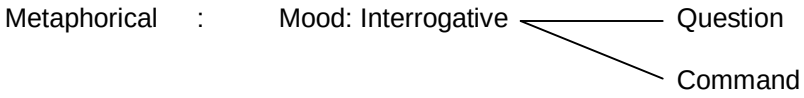

Figure 3.4: Interrogative Mood Realising Question and Command

3.1.1.4 Imperative: Command and Statement

Table 3.5: Metaphorical Imperative Realising Command and the Congruent Form Realising Statement

Type of representation	Sentence	Speech Function
Metaphorical	Return any defective rolls for replacement	Command
Congruent	Defective rolls can be returned for free replacement	Statement

Table 3.5 shows an example drawn from Lassen (2003: 283). The metaphorical command functions as a suggestion for the listener and states information related to the issue. In this example, the metaphorical command realizes "indirect speech acts such as offers, advice" (Lassen, 2003:284-285). Figure 3.5 shows the Imperative mood realising Command and Statement.

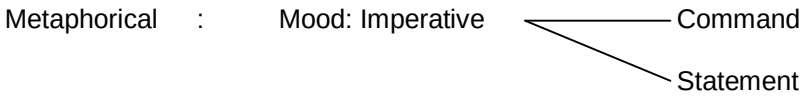

Figure 3.5: Imperative Mood Realising Command and Statement

This ends the discussion of the Metaphor of Mood. Section 3.1.2 discusses the Metaphor of Modality as the second main resource of the Interpersonal Metaphor.

3.1.2 The Metaphor of Modality

According to Halliday and Matthiessen (2004:613), modality clauses are said to be metaphorical because of the "alternative forms of expression" as the meaning extension of the semantic domain. Addressing the issue of the wide variant of alternative forms in modality expression, Halliday and Matthiessen (2004:624-625) suggest:

> "The importance of modal features in the grammar of interpersonal exchanges lies in an apparent paradox on which the entire system rests – the fact that we only say we are certain when we are not."

With the many forms of alternative expressions, modality clauses expand its meaning domain to express Interpersonal meaning. While the Metaphor of Mood are realized by semantic expansions within the system of Mood, the Metaphor of Modality are realized by projection clauses as shown in Table 3.6.

Table 3.6: The Interpersonal Metaphor and its Realization

Type of Interpersonal Metaphor	Realization
Metaphor of Mood	Semantic expansion
Metaphor of Modality	Projection

3.1.2.1 Projection as realization for the Metaphor of Modality

Halliday and Matthiessen (2004) observe that a sentence that has projection has two clauses: the first clause involves a process (such as a Mental or a Relational process) that projects the second part of the clause which contains the relevant information.

There are two kinds of projection clauses realising the Metaphor of Modality: the Mental and the Relational projection (Halliday and Matthiessen, 2004). In the study,

projection clauses are separated with double oblique (||) and are in bold. The example in Table 3.7 is drawn from Halliday and Matthiessen (2004:616).

Table 3.7: Mental and Relational Projection Clauses realising the Metaphor of Modality

Projection Clause	Description	Projection clauses
Mental	Involves perception, emotion and cognition such as *I feel, I think, I believe*	**I think ||** Mary doesn't know
Relational	Involves processes of being and having such as *It is believed that, it is said that*	**It's likely that ||** Mary doesn't know

As shown in Table 3.7, the Mental projection clause involves the writer's cognition "*I think…*" whereas the Relational projection clause "*It's likely that…"* is said to have "high value of probability claiming objective certainty" (Halliday and Matthiessen, 2004:625).

Within the Mental and the Relational Projection clauses, there are two types of metaphorical clauses: Probability and Obligation (Halliday and Matthiessen, 2004) as shown in Table 3.8.

Table 3.8: Types of Mental and Relational Projection Clauses realising the Metaphor of Modality

Projection Clause	Type of Projection Clause	Example of Projection Clauses
Mental	Probability	**I think ||** Mary doesn't know
	Obligation	**I think ||** John should go
Relational	Probability	**It's likely that ||** Mary doesn't know
	Obligation	**It's expected that ||** John should go

Probability indicates the author's assessment on the possibility of events and ideas, whereas Obligation has to do with a necessity for an action to be carried out (Halliday and Matthiessen, 2004).

The discussion of the Metaphor of Modality concludes the theoretical framework of this study. Section 3.2 discusses the research design including a set of sample analysis to show how the Interpersonal Metaphor is analysed.

3.2 Research Design

Figure 3.6 shows the steps involved in the research design of the study.

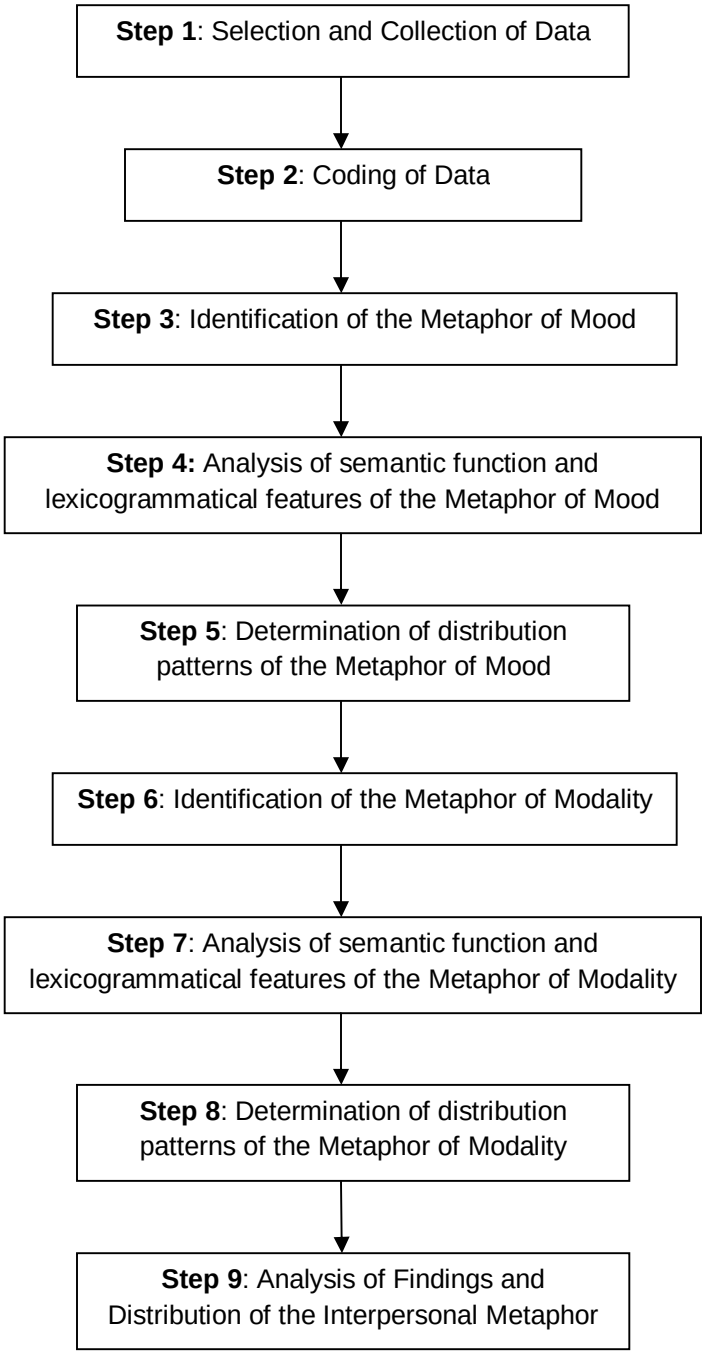

Figure 3.6: Flowchart of Methods in Data Analysis

As shown in Figure 3.6, the process of data analysis starts with the selection and collection of data. The next step is coding of data that involves generating a set of orthographic data. After the coding of data, the analysis of the Interpersonal Metaphor begins.

There are two main types of Interpersonal Metaphors: The Metaphor of Mood and the Metaphor of Modality. The analysis starts with identification of the Metaphor of Mood in the clauses, followed by the analysis of their semantic functions and lexicogrammatical features. Then the determination of distribution patterns of the Metaphor of Mood is carried out.

The second type of Interpersonal Metaphor is the Metaphor of Modality. Similar to the Metaphor of Mood, the Metaphor of Modality is analysed following the same methods, beginning with the identification of clauses with the Metaphor of Modality, analysis of lexicogrammatical features and ending with the determination of distribution patterns of the Metaphor of Modality.

Finally, the data analysis process is completed by the determination of distribution patterns of the Interpersonal Metaphor. This ends the discussion on the flowchart of methods in the data analysis process.

Section 3.2.1 presents the description, selection and collection of data, including a set of sample analysis to demonstrate the data analysis process of the study.

3.2.1 Data

3.2.1.1 Description of Data

Two books are chosen for the analysis of data in this study as stated in Table 3.9.

Table 3.9: Type and Title of the Two Computer Science Texts in the study

Text	Type of Text	Title of Text
Text 1	Textbook	The Introduction to Java Programming
Text 2	Popular Text	The Complete Idiot's Guide to Java 2

Both books have a similar topic of "Loops" chosen as data for the study.

(a) Text 1 - Textbook: *The Introduction to Java Programming*

This book is used as the textbook for first year Computer Science (CS) studies in University Malaya, Kuala Lumpur. This book is approved by the university as the compulsory text for all first year students in Computer Science studies; therefore, the study attempts to provide relevant, up-to-date and useful information for the practitioners of the Java Programming field.

(b) Text 2 - Popular Text: *The Complete Idiot's Guide to Java 2*

The Complete Idiot's Guide is one of the most popular series in the popular text genre. This genre uses daily life examples and familiar topics (such as movies) to illustrate the subject matter.

3.2.1.2 Selection and Collection of Data

The data analysis excludes the non-running text which are segments like 'Note', 'Caution', 'Tip' and 'Exercises' in the textbook and the popular text. These segments have the potential of being included in future research.

The Java Programming codes are excluded as well because the focus of this study is not about the technicality and functionality of Java Programming itself, but rather, the linguistic features that are involved in the running text.

For the study, two chapters on "Loops" are used. The chapters selected from the two texts are shown in Table 3.10.

Table 3.10: Chapter Selection of Two Computer Science Texts

Text	Type of Text	Title of Text	Chapter Selected
Text 1	Textbook	*The Introduction to Java Programming*	Chapter 4 – *Loops*
Text 2	Popular Text	*The Complete Idiot's Guide to Java 2*	Chapter 9 – *Feeling a Little Loopy*

The study aims to highlight the differences in the linguistic choice in relation to the Interpersonal Metaphor. Section 3.3 presents the sample analysis of the study.

3.3 Sample Analysis

Sentences from the two texts are chosen as samples to demonstrate the process of data analysis. The sample analysis is divided into two parts: (i) Analysis of the Metaphor of Mood (ii) Analysis of the Metaphor of Modality. Data is extracted from Text 1 and Text 2 to demonstrate the preparation of data.

(a) From textbook: *The Introduction to Java Programming*

Subtopic title: Introduction

Suppose that you need to *print* a *string* (e.g., "Welcome to Java!") a hundred times. It would be tedious to have to write the following statement a hundred times. Java provides a powerful control structure called a *loop* that controls how many an operation or a sequence of operations is performed in succession. Using a *loop* statement, you simply tell the computer to *print* a *string* a hundred times without having to code the *print* statement a hundred times. *Loops* are structures that control repeated executions of a block of statements.

Figure 3.7: Excerpt of running text from T1 - textbook *Introduction to Java Programming*

The data in the text excerpt is coded as shown in Table 3.11. It should be noted that all technical terms and jargons are italicized.

Table 3.11: Labeled excerpt from Text 1 - *Introduction to Java Programming*

Label	Sentence
T1/INT/S1	Suppose that you need to *print* a *string* (e.g., "Welcome to Java!") a hundred times.
T1/INT/S2	It would be tedious to have to write the following statement a hundred times.
T1/INT/S3	Java provides a powerful control structure called a *loop* that controls how many an operation or a sequence of operations is performed in succession.
T1/INT/S4	Using a *loop statement*, you simply tell the computer to *print* a *string* a hundred times without having to code the *print* statement a hundred times.
T1/INT/S5	*Loops* are structures that control repeated executions of a block of *statements.*

For example, the first sentence in Text 1 has the code as shown in Figure 3.8:

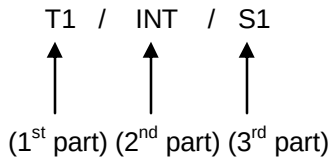

Figure 3.8: Data Coding in Parts from Text 1

The arrangement of three-part coding is as follows:

(i) 1st part – 'T1': The sentence is drawn from textbook *The Introduction to Java Programming* and is labeled as 'T1'

(ii) 2nd part – 'INT': The subtitle of the excerpt is '*Introduction*' and is abbreviated as 'INT'.

(iii) 3rd part – 'S1': The sentence is the first sentence in the sequence of the running text. Therefore it is labeled as 'S1'.

(b) From popular text: *The Idiot's Guide to Java Programming*

Subtopic title: A Loop for Every Occasion

Have you ever been talking to someone and it seems like he or she is saying the same thing over and over? I mean, you keep listening, and they keep talking, and it all sounds the same. And they talk somemore and you listen somemore and you wonder if it will ever end! Congratulations, you just experienced a perfect example of a verbal *loop*! In Java, a *loop* is a programming construct that enables you to repeat a section of code over and over, much like my conversation example.

Figure 3.9: Excerpt of running text from T2 - popular text *The Idiot's Guide to Java Programming*

The data in the text excerpt is coded as shown in Table 3.12. It should be noted that all technical terms and jargons are italicized.

Table 3.12: Labeled excerpt from Text 2 - *The Complete Idiot's Guide to Java 2*

Label	Sentence
T2/LEO/S1	Have you ever been talking to someone and it seems like he or she is saying the same thing over and over?
T2/LEO/S2	I mean, you keep listening, and they keep talking, and it all sounds the same.
T2/LEO/S3	And they talk somemore and you listen somemore and you wonder if it will ever end!
T2/LEO/S4	Congratulations, you just experienced a perfect example of a verbal *loop*!
T2/LEO/S5	In *Java*, a *loop* is a programming construct that enables you to repeat a section of code over and over, much like my conversation example.

For example, the first sentence in Text 2 has the code as shown in Figure 3.10:

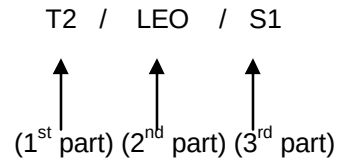

Figure 3.10: Data Coding in Parts from Text 2

The arrangement of three-part coding:

(i) 1st part – 'T2': The sentence is drawn from popular text *The Complete Idiot's Guide to Java 2* and is labeled as 'T2'

(ii) 2nd part – 'LEO': The subtitle of the excerpt is '*A Loop for Every Occasion*' and is abbreviated as 'LEO'.

(iii) 3rd part – 'S1': The sentence is the first sentence in the sequence of the running text. Therefore it is labeled as 'S1'.

After the coding of the sentences in text, the Mood Metaphor and Modality Metaphor as the two main resources for the Interpersonal Metaphor are identified.

3.4 Analysis of the Interpersonal Metaphor

After the coding process, the set of data is analysed based on the two main resources of the Interpersonal Metaphor: the Metaphor of Mood and the Metaphor of Modality. Table 3.13 presents a sample of data drawn from Text 1 to demonstrate the analysis of the Interpersonal Metaphor in the study.

Table 3.13: Text Extract drawn from Text 1 as Sample Analysis

Label	Sentence
T1/INT/S1	Suppose that you need to *print* a *string* (e.g., "Welcome to Java!") a hundred times.
T1/INT/S2	It would be tedious to have to write the following statement a hundred times.
T1/INT/S3	Java provides a powerful control structure called a *loop* that controls how many an operation or a sequence of operations is performed in succession.
T1/INT/S4	Using a *loop* statement, you simply tell the computer to *print* a *string* a hundred times without having to code the *print* statement a hundred times.
T1/INT/S5	*Loops* are structures that control repeated executions of a block of statements.

3.4.1 Analysis of the Metaphor of Mood

The analysis of the Metaphor of Mood starts with the identification of metaphorical sentences in the Mood meaning. This is done by determining the Mood type and the speech function of the metaphorical clause.

3.4.1.1 Identification of Metaphorical Sentences in the Metaphor of Mood

The metaphorical sentence is shown in Table 3.14.

Table 3.14: Text Extract showing Semantic Expansion as the Metaphor of Mood

Label	Sentence	Mood Type & Speech Function
T1/INT/S1	Suppose that you need to *print* a *string* (e.g., "Welcome to Java!") a hundred times.	No semantic expansion
T1/INT/S2	It would be tedious to have to write the following statement a hundred times.	No semantic expansion
T1/INT/S3	Java provides a powerful control structure called a *loop* that controls how many an operation or a sequence of operations is performed in succession.	No semantic expansion
T1/INT/S4	[Metaphorical] Using a *loop statement*, you simply tell the computer to *print* a *string* a hundred times without having to code the *print statement* a hundred times.	Declarative: Statement
	[Congruent] Using a *loop statement,* tell the computer to *print a string* a hundred times without having to code the *print statement* a hundred times.	Command
T1/INT/S5	*Loops* are structures that control repeated executions of a block of statements.	No semantic expansion

It is found that [T1/INT/S4] is metaphorical since the Declarative clause has the potential of expanding the semantic domain to fulfill Statement and Command. The next step involves the analysis of the Metaphor of Mood in the clause.

3.4.1.2 Analysis of Semantic Function and Lexicogrammatical Features of the Metaphor of Mood

The analysis of the metaphorical clause involves analyzing the function of the semantic expansion and the lexicogrammatical features of the clause shown in Table 3.15.

Table 3.15: Metaphorical and Congruent Clause as the Metaphor of Mood drawn from text extract

Label	R	Sentence	Speech Function
T1/INT/S4	M	Using a *loop* statement, you simply tell the computer to *print* a string a hundred times without having to code the *print* statement a hundred times.	Statement
	C	Use a *loop* statement to tell the computer to *print* a string a hundred times without having to code the *print* statement a hundred times.	Command

(a) Semantic Function

The Declarative clause fulfils both the speech function of Statement and Command. This semantic expansion features a semantic function as discussed below:

a(i) Functioning as an advice

In this semantic expansion, the metaphorical clause also acts as a form of advice for the readers so that the text can be more accessible to the readers such as in Example 2 in Table 3.15, "*Using a loop statement, you simply tell the computer to…*" The congruent form is in the form of a command "*Using a loop statement, tell the computer to…*" draws the reader to respond by following the advice of "telling the computer".

(b) Lexicogrammatical Features

The lexicogrammatical features found in the metaphorical clause is:

b(i) Grammatical person 'you'

Contrary to most beliefs that the inclusion of 'you' will result in a friendlier text, Wales (2006) observes that grammatical person 'you' is used in text to address the readers in a general term. However, when 'you' is used in a question form, it will contribute to the interactiveness of the text as discussed in Chapter 4.

b(ii) Marked Theme

The author uses marked theme to place emphasis on the message and make it appear as informative (Claridge, 2000 and Granger, 2003). The marked theme of the metaphorical clause is "*Using a loop statement…"* which highlights the focus of the clause: "*loop statement".*

After analyzing the semantic function and lexicogrammatical features, the analysis presents the distribution patterns of the Metaphor of Mood.

(c) Distribution of the Metaphor of Mood

There is only one occurrence of the Mood Metaphor in this sample analysis. Chapter 4 uses bar graphs to illustrate the distribution patterns of the Mood Metaphor in Text 1 and Text 2.

This ends the analysis of the Metaphor of Mood. The next process is the analysis of the Metaphor of Modality.

3.4.2 Analysis of the Metaphor of Modality

The analysis of the Metaphor of Modality starts with the identification of projection clauses in the text.

3.4.2.1 Identification of Projection Clauses

The projection clauses are shown in Table 3.16. It should be noted that projection clauses are in bold and separated with double oblique (||).

Table 3.16: Text extract showing a projection clause as the Metaphor of Modality

Label	Sentence
T1/INT/S1	Suppose that you need to *print* a *string* (e.g., “Welcome to Java!”) a hundred times.
T1/INT/S2	**It would be tedious** || to have to write the following statement a hundred times.
T1/INT/S3	Java provides a powerful control structure called a *loop* that controls how many an operation or a sequence of operations is performed in succession.
T1/INT/S4	Using a *loop* statement, you simply tell the computer to *print* a *string* a hundred times without having to code the *print* statement a hundred times.
T1/INT/S5	*Loops* are structures that control repeated executions of a block of statements.

It is found that [T1/INT/S2] is metaphorical in Modality since it has relational projection. The next step of the analysis process involves the analysis of lexicogrammatical features of the Metaphor of Modality.

3.4.2.2 Analysis of Lexicogrammatical Features of Projection Clauses

The analysis of the Metaphor of Modality involves analyzing the lexicogrammatical features of projection clauses drawn from the text extract in Table 3.17.

Table 3.17: Projection Clause as Metaphor of Modality

Label	Sentence
T1/INT/S2	**It would be tedious** || to have to write the following statement a hundred times.

(a) Lexicogrammatical Features of Projection Clauses

It is found that the projection clause has several lexicogrammatical features as discussed below:

a(i) <u>'Probability' in Relational Projection Clauses with Modal Auxiliary Verb</u>

The projection "It would be tedious to…" has modal verb "would" that denotes a probability of an event or an idea. In this sentence [T1/INT/S2], the projection indicates a possibility of "writing the following statement" as being "tedious" as stated by the author.

a(ii) <u>Absence of grammatical person 'you'</u>

The absence of 'you' in the text enables the author to concretise the statement that has been made since the text is made non-negotiable with the removal of any participants in the text (Ravelli and Ellis, 2004).

a(iii) <u>Attribute in Relational clauses</u>

The clause has an attribute "tedious" to "signal the speaker's position" and to include this personal judgment on the subject matter (Stillar, 1998:36). The author uses attributes to make the text more persuasive to readers.

(b) Distribution patterns of the Metaphor of Modality

There is only one occurrence of Modality Metaphor in this sample analysis. Chapter 4 uses bar graphs to illustrate the distribution patterns of Modality Metaphor in Text 1 and Text 2.

This ends the analysis of the Metaphor of Modality. The final step involves the distribution patterns of the Interpersonal Metaphor in Text 1 and Text 2. The analysis ends with a summary comparing the findings and distribution patterns of the Interpersonal Metaphor of Text 1 and Text 2 as shown in Chapter 4.

3.5 The Coding of Features to be Analysed

Table 3.18: Examples for the Data to illustrate each feature code

No.	Features of the Interpersonal Metaphor	Metaphorical and Congruent Sentence		Coding
Metaphor of Mood				
1	Declarative: Statement & Command	Metaphorical	Using a *loop* statement, you simply tell the computer to *print* a string a hundred times without having to code the *print* statement a hundred times.	**Dec/St/Co**
		Congruent	Use a *loop* statement to tell the computer to *print* a string a hundred times without having to code the *print* statement a hundred times.	
2	Interrogative: Question & Statement	Metaphorical	What is wrong if *saleAmount* is incremented after the commission is computed, as follows?	**Int/Qu/St**
		Congruent	There will be a mistake if *saleAmount* is incremented after the commission is computed, as follows.	
3	Interrogative: Question & Command	Metaphorical	What is the sales amount for a $25,000 commission?	**Int/Qu/Co**
		Congruent	Find the sales amount for a $25,000 commission	
4	Imperative: Command & Statement	Metaphorical	Use the *loop statement* that is most intuitive and comfortable for you.	**Imp/Co/St**
		Congruent	The most suitable technique is to use the *loop statement* that is most intuition and comfortable for you.	
Metaphor of Modality				
5	Mental Projection: Probability	Metaphorical	**You might think that** || a divisor for a number n1 cannot be greater than n1 / 2.	**Men/Prob**
6	Mental Projection: Obligation	Metaphorical	**You know that ||** number 1 is a common divisor but it may not be the greatest common divisor.	**Men/Ob**
7	Relational Projection: Probability	Metaphorical	**It is generally** || used with an *if statement.*	**Rel/Prob**
8	Relational Projection: Obligation	Metaphorical	**It is always evaluated** || before the *loop* body is executed.	**Rel/Ob**

Table 3.18 shows that there are eight features to be analysed. For the Metaphor of Mood, there are four features which are the Declarative realising Statement and Command, the Interrogative realising Question and Statement, the Interrogative realising Question and Command and the Imperative realising Command and

Statement. For the Metaphor of Modality, there are four features which are the Mental projection of probability, the Mental projection of obligation, the Relational projection with probability and the Relational projection with obligation. A full set of coding in data is provided in Appendix 9A and Appendix 9B. Section 3.6 describes the quantitative data of all features analysed in this study.

3.6 Procedures of Quantitative Data

After the completion of data analysis, the following procedures are used to obtain quantitative data. The procedure includes the calculation of percentages of the four domains of semantic expansions in the Metaphor of Mood.

(1) Declarative: Statement and Command

(2) Interrogative: Question and Command

(3) Interrogative: Question and Statement

(4) Imperative: Command and Statement

This is followed by the calculation of percentages of the four features in the Metaphor of Modality.

(5) Mental Projection – Probability

(6) Mental Projection – Obligation

(7) Relational Projection – Probability

(8) Relational Projection – Obligation

In addition, bar graphs will also be included to illustrate the distribution patterns that are obtained from the analysis. This ends the discussion of all research procedures undertaken in this study.

3.7 Chapter Summary

Chapter 3 has presented the underlying theoretical framework of the investigation. The chapter has also described the research design in terms of data description and research procedures used in the study. The findings of the investigation are presented and discussed in the Chapter 4.