

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0 Introduction**

This chapter examines a selection of relevant literature pertaining to this study. Section 2.1 briefly introduces Systemic Functional Linguistics. Section 2.2 discusses the relationship between language and scientific discourse. This is followed by a review of literature on the Grammatical Metaphor and the Interpersonal Metaphor. The chapter includes Section 2.5 that presents prevailing studies on language and systemic functional linguistics. The chapter ends with a summary in Section 2.6.

#### **2.1 A brief introduction to Systemic Functional Linguistics**

According to Halliday (1994) and Halliday & Matthiessen (2004), Systemic-Functional Linguistics (SFL) is a theory of language centered around the notion of language function. Eggins (2004:2) notes that through the works of Halliday and his associates, SFL is recognized as a framework for viewing language as a “strategic,

meaning-making resource”. Halliday, 1995:8 shows distinctively how people use language as a “semogenic system in the form of text (spoken and written discourse)”.

There are social aspects of language use. The context of situation involves Field, which describes what the text is about. The patterns of processes is conveyed by verbs in the Field. Table 2.1 shows a sample of a transitivity analysis which shows the Field of the text.

Table 2.1: Field shown in transitivity analysis

A confirmation dialog	can be created	using the following statement
Attribute	Process:material	circumstance

Table 2.1 shows that the verb phrase “can be created” involves an action to be taken. In this sentence, the hidden participant is the reader. The reader needs to carry out the action of creating “a confirmation dialog” under the circumstance of “using the following statement.”

Tenor exposes the Interpersonal relationship between the speakers. The types of clause structures in Tenor are the Mood types (Declarative, Interrogative, Imperative), the degree of certainty expressed by modality, vocatives, attitudinal word and politeness. This study focuses on the Tenor, which has to do with the enactment of a relationship between the writer and the reader with a metaphorical realization in the systems of Mood and Modality.

Table 2.2 shows the tenor of a sentence taken from data.

Table 2.2: Tenor shown in SFPCA analysis

You	can	write	a loop	in any of these three forms
Subject	Finite	Predicator	Complement	Adjunct

Subject 'You' addresses the reader directly and establishes the reader-writer relationship in the text. The modal finite verb 'can' features politeness with a high degree of certainty. This sentence is Declarative with the position of Subject before Finite.

Mode describes the organization in text by the use of language. Mode is realized by the textual patterns which emphasizes the Theme and Rheme in the clauses.

Table 2.3 shows the mode of a sentence taken from data.

Table 2.3: Mode shown in Theme-Rheme Analysis  
(Example drawn from Halliday and Matthiessen, 2004:72)

The Walrus	is the one I like the best
Theme	Rheme

The clause "it is always evaluated" is fronted in the clause as an emphasis, signifying the fact that the clause has to be fulfilled "before the loop body is executed".

## 2.2 Language and Scientific Discourse

Halliday's (1989) study reveals the grammatical problems in scientific English. He observes that students have a common perception that scientific disciplines such as Physics, Biology or Mathematics are "forbidding and obscure" because scientific texts contain jargons and nomenclatures that make readers feel "excluded and alienated" from the subject matter (Halliday, 1989:159). This phenomenon leads the science teachers to believe that the problem of students being unable to relate to science text is the difficulties concerning vocabulary and jargons which are "the battery of difficult technical terms" (Halliday, 1989:160). However, Halliday's (1989:161) study finds that the real cause comes from the students not being able to understand the complex

relationship of scientific entities. He also elaborates that students find it hard to relate to the language that is used to present and explain technical terms in text (Halliday, 1995).

The scientific genre like computer science covers a wide scope of topics including hardware (such as computer equipments), software (computer programmes like Microsoft Office and programming codes like Java) and network (communications in between and among computers). Since the Computer Science genre is under the umbrella of scientific studies, it is natural to find that the language used to disseminate information is “more rigid” because of the technical words, jargons and nomenclatures (Halliday, 1989:159).

As noted by Varttala (1999), conventional academic text introduces theories through formality in technical language and impersonal tone. Observing the inadequacy of textbooks as students’ main resource in their studies, Paxton (2007) further suggests that the textbook pedagogy is single voiced and does not expose students to critical reading skills through varieties of arguments. Similar to Halliday’s (1989:176) observation on scientific text, he notes that the language of science is “a ritual that turns science into the prerogative of an elite”. He also adds that these rituals also serve to create a distance between the writer and the reader to depersonalize the discourse (Halliday, 1989). Besides, in Maruthai’s (2004) study, his findings show the scarcity of the Interpersonal theme that establishes the writer-reader relationship in his data. This could be the reason why scientific text is perceived as impersonal.

To ease the understanding of scientific material as the main resource for students, scientific texts have evolved into the genre of popular text. The recent emergence of popular science texts of scientific discourse has made scientific ideas

more accessible to students (Parkinson & Adendorff, 2004:388) by solidifying the relationship between the writer and the reader “through the portrayal of the writer as a personality”, through humour and hedging (Varttala, 1999). This is in line with Halliday’s (1995) observation that popular text is part of the evolution of text that addresses the issue of the alienating effect caused by conventional scientific text. With this evolution, popular text takes on a more active role in enacting social relationships that narrows the distance between the reader and the writer (Halliday, 1998). This enactment of social relationships is made possible by the Interpersonal resource of language, involving the linguistic device of the Interpersonal Metaphor (as a part of the Grammatical Metaphor). Before exploring in greater detail what the Interpersonal Metaphor is all about, Section 2.3 reviews literature pertaining to the Grammatical Metaphor.

### **2.3 Grammatical Metaphor**

According to Halliday (1994) and Halliday & Matthiessen (2004), Grammatical Metaphor involves “incongruent” and alternative ways of expression, which are ‘metaphorical’. The ‘congruent’ version is “the typical way of saying things” (Halliday, 1994:321) whereas a metaphorical version is a sentence which has a different grammatical construction from the congruent version to achieve a variety of purposes in text (Halliday, 1994) and Halliday and Matthiessen (2004).

As noted by Martin (1992:16), the Grammatical Metaphor is “a content plane that derives structures requiring more than one level of interpretation.” This is consistent with O’ Halloran’s (2005:83) definition of Grammatical Metaphor that it “necessitates more than one level of interpretation: the metaphorical (the transferred meaning) and the congruent”.

Steen (2007) notes that the lexical metaphor is often mistaken with the Grammatical Metaphor. The lexical metaphor involves “a variation in the use of words or lexemes.” (Simon-Vandenberg, Taverniers & Ravelli; 2003:6). This is to be differentiated with the notion of Grammatical Metaphor, which is as posited by Halliday (1994:342) as “a variation in the expression of meanings through different types of grammatical constructions.” Therefore, upper case ‘M’ is used to refer to the notion of Metaphor in Grammatical Metaphor throughout the study to differentiate itself from lexical metaphor. In addition, it should be noted that all SFL terms are capitalized, in line with the practices of SFL practitioners in the field.

According to Halliday and Matthiessen (2004), there are two main types of Grammatical Metaphor: The Ideational and the Interpersonal Metaphor.

### **2.3.1 Ideational Metaphor**

The main device for expressing the Ideational Metaphor is nominalization. It is usually used in scientific writing as suggested by Halliday (1961), Martin (1992) and Christie & Martin (2005). Nominalization renders a written text with more lexical words in a sentence – higher lexical density (Holton, 2001). Contrary to popular belief, Halliday and Matthiessen (2004) state that a high lexical density text does not necessarily mean that it is more useful since it is only natural that written text tend to accommodate more lexical items in a clause. However, spoken language is bound to have fewer lexical items, especially in dialogues (Halliday, 1984). The Ideational Metaphor has to do with the “quantum of information, involving participants and processes” (Halliday and Matthiessen, 2004:589). (Please see Figure 2.1)

### 2.3.2 Interpersonal Metaphor

The second type of Grammatical Metaphor is the Interpersonal Metaphor. According to Halliday and Matthiessen (2004), the Interpersonal Metaphor is mostly used as a linguistic device to build rapport with two or more interactants. The Interpersonal Metaphor involves the **Metaphor of Mood** and **Metaphor of Modality**.

Halliday (1994) describe the Metaphor of Mood as the semantic expansion of a clause where a clause can have multiple layers of meaning to achieve its social purpose. Halliday & Matthiessen (2004) and Eggins (2004) provide examples of clauses where commands are expressed using Mood structures other than Imperatives. SFL proposes that Imperatives typically realize commands, Declaratives realize statements and Interrogative realize questions (Martin, 1992; Halliday, 1994; Eggins, 2004; Halliday and Matthiessen, 2004).

Halliday (1994), Simms (1997), Halliday and Matthiessen (2004), Muntigl (2004) and Aijmer (2009) note that projections realize the **Metaphor of Modality**. They observe that the writer can express his or her own opinion, assessment and judgment through projections such as “I think”, “I want” and “It is believed that”. With projections like “I think”, the writer introduces “probability” into the clause where the reader can have the choice of accepting the writer’s opinion or claims. For example, “I think it’s going to rain tomorrow” means “Probably it is going to rain tomorrow” (Halliday & Matthiessen, 2004 and Muntigl, 2004). The reader has the choice to respond “Yes, it will” or “No, it won’t.” Halliday and Matthiessen (2004:618) further discuss that there are two types of projections: “epistemic modality” where it concerns probability of events. For example, “I think it’s going to rain tomorrow” shows the probability of the event of

“raining” to happen “tomorrow”. The second type of modality is “deontic” where there is a necessity in action. For example, “I want you to believe that it’s going to rain tomorrow” shows the writer wanting an action of “believing” to be done by the reader. A related study on projection is done by Tan (2008) where representations of experiential meanings are expressed through projection.

The Interpersonal meaning of a clause influences the reader-writer relationship and the interactiveness of text. The Interpersonal Metaphor enables clauses to have the potential of meaning expansion beyond the clause (Halliday and Matthiessen, 2004).

#### **2.4 The Interpersonal Metaphor in Systemic Functional Linguistics**

Metaphorical expression is realized by the “stratal relationship of semantics, and lexicogrammar” (Halliday and Matthiessen, 2004:587). The lexicogrammar stratum has three different units for each metafunction to realize three semantic domains respectively (Halliday and Matthiessen, 2004) as shown in Figure 2.1:



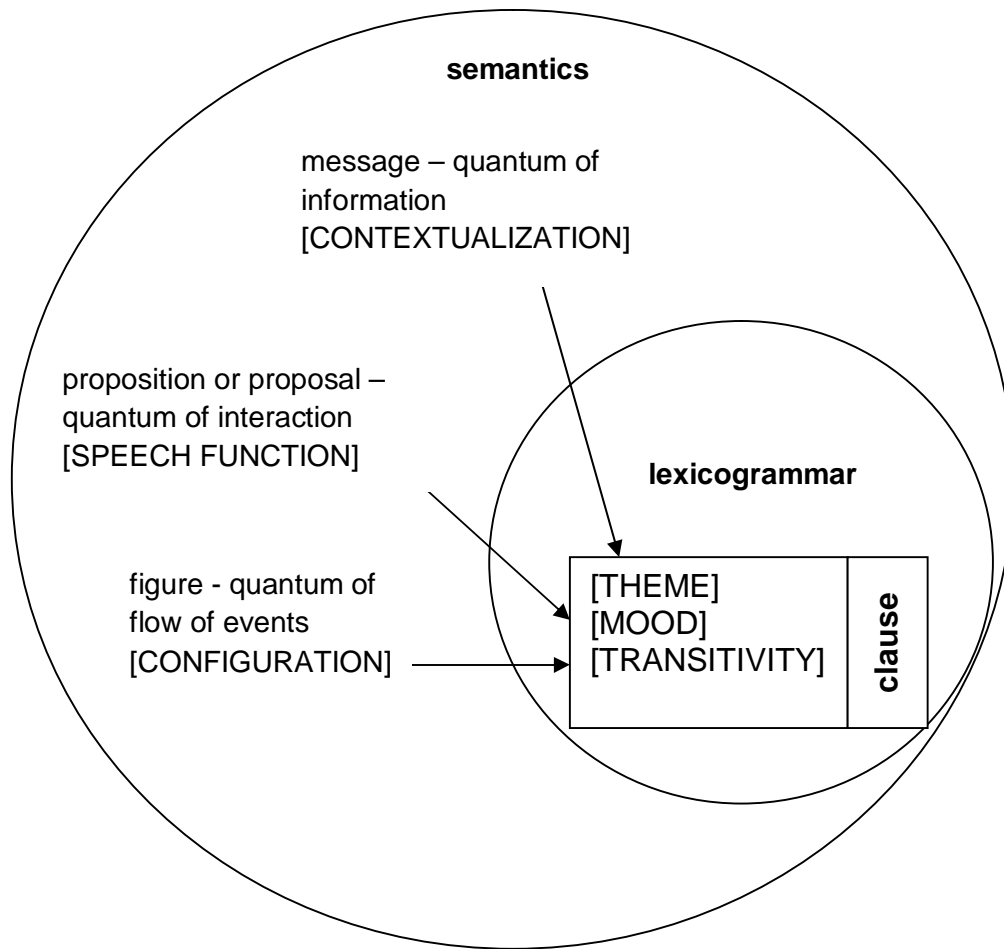


Figure 2.1: Clause as a tri-functional construct (Drawn from Halliday and Matthiessen, 2004:589)

According to Halliday and Matthiessen (2004:588), messages, propositions or proposals and figures can combine to form “more extensive semantic patterns” in the creation of text. Each metafunction has distinct patterns as suggested by Halliday and Matthiessen (2004):

- The Textual metafunction is to do with how messages combine to form a flow in the quantum of information

- The Ideational metafunction is to do with how figures combine to form quantum of flow of events through the use of transitivity to identify participants, processes and circumstances in each clause.
- The Interpersonal metafunction is to do with how the semantic domain of speech function forms patterns of exchanging information or goods and services respectively. The focus of this study is based on metaphorical realizations of interpersonal meaning.

The Interpersonal Metaphor operates within the broad category of Grammatical Metaphor. Both the Interpersonal and the Ideational Metaphor have consequences for Textual Metaphor in the sense that textual patterns are realigned in the course of semantic expansion in the metaphorical realizations of a clause (Thompson, 1996, 2004; Halliday and Matthiessen, 2004).

As suggested in Halliday and Matthiessen (2004), the semantic domain of speech function is realized lexicogrammatically by the Mood structure of the clause. This semantic function has to do with “proposition or proposal within the quantum of interaction” (Halliday and Matthiessen, 2004:589). This stratification of layers comes from the holistic view of SFL which describes language as having three dimensions: Ideational meaning is related to context, textual meaning is related to the organization of message and the Interpersonal meaning is related to the relationship among the interactants.

### **2.4.1 Perspectives on the Interpersonal Metaphor in text**

Typically, as discussed in Page 12, Halliday (1994) describes the matching pairs of Mood choices and speech functions. In metaphorical text, O' Halloran (2005:199) describes the Interpersonal Metaphor as using "Mood choices for different speech functions." This means that Declaratives with speech function 'Statement' can have different speech function such as 'Command'. Eggins (2004) adds on to the discussion of the Interpersonal Metaphor with an emphasis on the effects of subjective and objective modality in text. The subjective modality leaves room for the reader's interpretation whereas the objective modality presents itself as an arguable claim (Halliday, 1994). Besides, Eggins (2004) suggests the use of Adjuncts for a more interactive text.

Thompson (1996) uses the tool of transitivity to show the commitment of the Interpersonal Metaphor. He reveals the overlapping relationship of the Ideational and the Interpersonal Metaphor. Christie (2002) emphasizes that the Interpersonal Metaphor will occur in the language of early childhood classrooms. She elaborates that by upper primary years, the language of the teachers will be even more metaphorical in "responding to and talking with their students" to give an expression of teacher-authority in class (Christie, 2002: 20). Addressing the role of language out of the classroom, Dafouz-Milne's (2008) research on the lexicogrammatical features of a persuasive text suggests that a high count of Interpersonal metadiscourse markers results in a text being more persuasive. Supported by her view, a more interactive text between the two texts analysed in this study will show a higher occurrence of metaphorical sentences. As shown in Table 2.4, the five Interpersonal markers which influence the friendliness

and interactiveness of text are hedges, certainty markers, attributors, attitude markers and commentaries (Dafouz-Milne, 2008:5).

Table 2.4: Interpersonal metadiscourse markers (Drawn from Dafouz-Milne, 2008:5)

Macro-category	Subcategory	Examples
<b>Hedges</b>		
Express partial commitment to the truth-value of the text	Epistemic verbs Probability adverbs Epistemic expressions	May / might / it <u>must</u> be two o'clock Probably / perhaps / maybe It is likely
<b>Certainty markers</b>		
Express total commitment to the truth-value of the text		Undoubtedly / clearly / certainly
<b>Attributors</b>		
Refer to the source of information		'x' claims that... / As the Prime Minister remarked
<b>Attitude markers</b>		
Express writers' affective values towards text and readers	Deontic verbs Attitudinal adverbs Attitudinal adjectives Cognitive verbs	Have to / we <u>must</u> understand / needs to Unfortunately / remarkably / pathetically It is absurd / it is surprising I feel / I think / I believe
<b>Commentaries</b>		
Help to establish reader-writer rapport through the text	Rhetorical questions Direct address to reader Inclusive expressions Personalisations Asides	What is the future of Europe, integration or disintegration? <u>You must understand, dear reader</u> <u>We all believe/let us summarise</u> What the polls are telling <u>me</u> / <u>I</u> do not want Diana ( <u>ironically for a Spencer</u> ) was not of the Establishment

With hedges, certainty markers, attributors, attitude markers and commentaries, the text appears to be friendlier as readers appreciate if they are guided through the direction of the text without the author sounding "too assertive or patronizing" (Dafouz-Milne, 2008:16). Lassen (2003:35) observes that the Interpersonal Metaphor is a "fairly undeveloped area" in SFL. Therefore there is much need for research to be carried out in the area of the Interpersonal Metaphor.

## 2.4.2 The Lexicogrammar of the Metaphor of Mood

The Interpersonal Metaphor is expressed by means of lexicogrammatical features in two systems which are the Metaphor of Mood and the Metaphor of Modality.

### 2.4.2.1 Mood Structure

A clause is made up of Mood Structure and Residue. The Mood structure is made up of two parts: (i) Mood Block (ii) Residue. There are two grammatical structures that complete the Mood structure. Mood is defined as a particular arrangement of the Subject and Verb in a sentence. In the definition of Mood, the term 'Subject' and verb 'Finite' are used in the Mood Block as shown in Table 2.5. The Subject is in bold and the Finite is underlined.

Table 2.5: Mood Types, Positions of Subject and Finite and Examples  
(Drawn from Halliday & Matthiessen, 2004:114, 134-140)

Mood Type	Positions of Subject and Verb	Examples
Declarative	Subject before Finite	<b>The duke</b> <u>has</u> given that teapot away
Interrogative	<ul style="list-style-type: none"><li>Finite before Subject</li><li>Subject before Finite when the WH-word refers to the Subject</li></ul>	<ul style="list-style-type: none"><li>Whose little boy <u>are</u> <b>you</b>?</li><li><b>Who</b> <u>killed</u> Cock Robin?</li></ul>
Imperative	No Subject and Finite with the absence of Mood block	Let me help.
Exclamative	Subject before Finite, can be subsumed under the Declarative category	Oh what a case <b>Nata Nasimovah</b> <u>was</u> !

As shown in Table 2.5, there are four basic mood types in traditional grammar – Declarative, Interrogative, Imperative and Exclamative based on the position of the Subject in Mood Block.

### 2.4.2.2 Components of the Residue

The components of the Residue are Predicator, Complement or Adjunct. Table 2.6 shows the Mood Block and Residue of a sentence.

Table 2.6: Mood Block and Residue  
(Derived from Halliday and Matthiessen (2004:114))

The duke	has	given	that teapot	away
Subject	Finite	Predicator	Complement	Adjunct
Mood		Residue		

#### (i) Predicator

The Predicator specifies the time reference in “secondary” tense: past, present or future relative to the primary tense (Halliday and Matthiessen, 2004:122). An example of a Predicator is shown bold: *The Loopcondition **compares** the loop control variable to some limit or value.*

#### (ii) Complement

Complements complete the message conveyed by a clause. This element in the Residue has the potential to be the Subject, but is not. An example of a Complement is shown in bold letters: *This is a very popular way **to handle arrays.***

Table 2.7 shows an example of a Complement.

Table 2.7: Complement in Residue

This	is	a very popular way	to handle arrays
Subject	Finite/Predicator	Complement	Adjunct
Mood		Residue	

#### (iii) Adjunct

This is a grammatical constituent which adds additional information to the clause.

The absence of an adjunct would not cause the clause to be grammatically

incomplete. There are several types of Adjuncts namely: Modal Adjuncts, Circumstantial Adjuncts and Textual Adjuncts.

**(a) Modal Adjuncts**

Modal Adjuncts are those which contribute to the Interpersonal meaning by expressing an attitude or influencing the interaction of the text. Modal Adjuncts consist of:

a(i) Mood Adjunct

Mood Adjunct expresses aspects of meaning related to probability, typicality, obligation, intensification, degree, presumption, and inclination and secondarily, temporality (time). These tend to occur within the Mood block itself. For example: *You probably wonder exactly how the loop code works.*

a(ii) Comment Adjuncts

Comment Adjuncts expresses sentiments about the clause as a whole. Example: *Unfortunately, it isn't always easy to verbalize the flow of program code.*

a(iii) Polarity Adjuncts

Polarity Adjuncts play a role in text formation especially in oral interaction. For example, *Did you immediately begin to write the code? No.*

a(iv) Vocative Adjuncts

Vocative Adjuncts are usually names used in direct address such as *my dear, John and my dear readers.*

## **(b) Circumstantial Adjuncts**

Circumstantial Adjuncts provide experiential information and details of the circumstances for the action in the clause, be it time, place, manner, cause, matter, accompaniment, beneficiary or agent. For example, a *'for'* loop can be used to simplify the preceding loop.

Circumstantial Adjuncts tend to provide more 'concrete' information, as compared to Modal Adjuncts which are more abstract, portraying writer's or speaker's personal attitudes and perceptions.

## **(c) Textual Adjuncts**

Textual Adjuncts provide textual meaning as to how a text is organized. There are two types of Textual Adjuncts: Conjunctive Adjuncts (which link clauses to each other) and Continuity Adjuncts (which function mainly in oral interaction). Examples of Conjunctive Adjuncts are and, furthermore and however to provide direction of the text for readers. Examples of Continuity Adjuncts are expressions such as I see and see what I mean? to signal different stages in the interaction.

Although this investigation is mainly concerned about the Interpersonal Metaphor, it takes into account the contribution of the Modal Adjunct which adds "an expression of attitude" (Eggins, 2004:160). The information contained in the Modal Adjunct contributes to the metaphorical realization of the Interpersonal meaning. This concludes the discussion of the Mood structure which consists of the Mood block and



the Residue. The next section discusses the structure of projection that realizes the Metaphor of Modality.

### **2.4.3 The Lexicogrammar of Metaphor of Modality**

The Metaphor of Modality is realized by projection clauses (Halliday and Matthiessen, 2004).

#### **2.4.3.1 Projection**

Halliday and Matthiessen (2004) posit projection as a manifestation of the Interpersonal meaning including the speaker's opinion and his degree of commitment to the statement that he makes.

Projection includes both ideas and facts serving in a 'Mental' or 'Relational' clause. Halliday and Matthiessen's (2004) example of the Modality Metaphor points out that the Mental projection "I don't believe" in the clause "I don't believe that pudding ever will be cooked" functions as a metaphorical realization of probability, as can be shown by the mood tag: "will it?" instead of "do I?"

Another type of projection as a realization of the Metaphor of Modality is relational projection. The author projects a "high value of probability claiming objective certainty" in the projection such as "It is believed that" and "It is obvious that" (Halliday and Matthiessen, 2004:625).

## **2.5 Prevailing Studies on Systemic Functional Linguistics**

Studies in the area of SFL include transitivity (Devi, 2004; Siow, 2009), lexical cohesion (Supramaniam, 2004; Srinivass, 2004), child language (Srinivass, 2007), the

experiential and textual meanings (Sim, 2008), thematic patterns (Ma, 2003; Tan, 2008; Alasri, 2008) and the Interpersonal meaning (Wong, 2009).

### **2.5.1 Prevailing Studies on Language and Scientific Discourse**

There have been a number of studies on scientific discourse. This includes Azirah's (1996) thesis on syntactic choices and text organization in medical research, transitivity (Srinivass, 2003), logical semantic relations in scientific discourse (Sridevi, 2006a, 2006b, 2008 & 2009), the Interpersonal meaning in mathematical texts (Ho, 2004) and thematic progression in upper secondary EST texts (Maruthai, 2004),

Martinez (2003) investigates on the aspect of theme, revealing instances of textual and interpersonal themes to achieve different rhetorical purposes in research articles of Biology genre.

Lewin's (2005) studies on hedging in scientific text reveal that politeness is not the greatest motivation for authors to use hedging. He reasons that hedging is used because the authors are unsure of their claims. Mudraya (2006) specifies that technical terms should be given more attention in the ESP (English for Specific Purposes) classroom. This is supported by Woodward-Kron (2008) who concludes that emphasis must be placed on teaching and learning of specific vocabulary in specialist text because there are numerous disciplines within the scientific discourse.

One of the contributions to studies done on grammatical construction and patterns in scientific text is by Carter-Thomas and Rowley-Jolivet (2008) who highlight the grammatical constituent of If-conditionals in text which are used by writers in medical discourse as a linguistic device to manage their interaction with the addressee.

### **2.5.1.1 Prevailing Studies on Language and Computer Science**

In the genre of Computer Science, Posteguillo (1999) notes that Computer Science research articles have more introduction and conclusion sections instead of the IMRD (Introduction-methods-results-discussion) pattern. This is consistent with the researcher's observation that texts are no longer confined to the structure of 'introduction' at the beginning of the text and 'conclusion' at the end of the chapter. Instead, computer texts have introduction and conclusion sections within every subchapter to guide the readers in the direction of the text.

In the area of language in computer software, Etzkorn, Davis and Bowen (2001) discuss the language of comments in computer software which includes the use of tense, Mood and voice.

### **2.5.2 Prevailing studies on the Grammatical Metaphor**

Halliday (1993) explores the features that characterize the language of physical science. Goatly's (1996) work suggests that nominalization and Grammatical Metaphor cannot be abandoned in the scientific discourse. However, Kitis & Milapides (1998) argue that nominalization and Grammatical Metaphor should not be the only focus of the language of scientific discourse. Their research suggests that linguistic analysis should examine grammatical and lexical structures as being incorporated in the overall formation of the text. In Banks' (2005) research, he concludes that in all cases, scientific style displays an evolution towards an increased used of nominalizations.

Chen (2001) discusses that written language tends to display a high degree of the Grammatical Metaphor which results in high lexical density. He points out that this

distinctive feature is prevalent in most forms of written language, particularly in written discourse of scientific English.

Studies have been carried out in the area of lexical metaphors like Sharifah (2004), who investigates expressions using lexical metaphors, as in choices of words used in stock market news reporting. Similarly, studies on lexical metaphors in business news discourse have been carried out by Nanda (2005).

Several studies address the issue of Grammatical Metaphors in scientific text. Harwood (2005) reports on modal responsibility using the personal pronoun “I”. He discovers that students use more of “I” as compared to experts in the computer science field to achieve certain textual effects and help writers map out the structure of the text for the readers. In the same line of studies regarding the use of the personal pronoun, Duenas’ (2007) study is based on “I/we” used by writers in business management articles to present authorial selves and their contribution to their disciplines. Besides, Luzon (2009) highlights the use of “we” by Engineering students to perform discourse functions like proving their competence and rendering the text more persuasive.

Giannoni (2008) investigates popularizing the features of two unrelated domains (medicine and applied linguistics). Some of the features mentioned are questions, metaphor, marked lexis, humour, personalization, appeals to the reader and contingency.

Although a lot of research has been carried out on scientific texts, there is limited exposure on how scientific texts achieve their social purpose through establishing interpersonal relationships between the reader and the writer. It is therefore justified that

this research is carried out to address the research gap by highlighting the lexicogrammatical features and variations in grammatical construction that can render a text more accessible to readers, especially specialist text which appears to be rigid where jargons and technical terms make up most parts of the text.

### **2.5.2.1 Prevailing Studies on the Interpersonal Metaphor**

Research on the Interpersonal Metaphor is underdeveloped. One of the very few studies done on the Interpersonal Metaphor is by Li (2009) who experimented on the pragmatic strategies adopted by Hong Kong students in their English (their L2). His research shows that the Cantonese students are more likely to have metaphorical sentences instead of complex ones. Li (2009) draws a conclusion that the low use of complex sentences is related to their language competency. This shows a text with the Interpersonal Metaphor appears to be more accessible for a wider range of readers with different levels of language competency.

## **2.6 Chapter Summary**

This chapter has provided an overview of literature related to the relationship between language and scientific discourse. Chapter three presents the theoretical framework and research design of the study.