THE COMPLEXITY OF THE LANGUAGE LEVEL AND THE MULTIMODALITY USED IN SINGAPOREAN AND INDONESIAN SCIENCE TEXTBOOKS WRITTEN IN ENGLISH FOR PRIMARY THREE AND FOUR

A THESIS

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by

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STATEMENT OF ORIGINALITY

I hereby state that this thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also state that it has not been previously or concurrently submitted for any other degree or institution.

Semarang, 20 February 2016

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PAGE OF APPROVAL
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(learning by teaching)

to Yokko and Kyralee

to Mom and Dad
ABSTRACT


**Keywords:** lexical density, language complexity, textbooks, multimodality

The use of English language as communication media (spoken and written) in International schools, RSBI/SBI (International – Standardized Schools), and Immersion programs in several national schools have been widely accepted based on the Constitution of National Educational System (Undang-Undang Sistem Pendidikan Nasional) number 20, year 2003. Therefore, this condition leads to the use of textbooks in English and other sources of materials as the supporting elements of the school programs. This condition also gives both national and foreign publishers chance to publish bilingual books.

The use of bilingual textbooks for teaching subjects, such as Science has been triggering questions that bring us into long discussions of the effectiveness of the textbooks to the students and the teachers. In brief, there are several elements that are needed in composing textbooks. Multimodality: the representatives of various modes, namely, images, layout, design, color, and all visual representations to support the texts (semiotic approach) and the language level to provide an analysis based on the lexical approach are the elements that are going to be explored in the research.

This study is carried out to find out the complexity of the language used in the Singaporean and Indonesian science textbooks in terms of lexical density and to reveal the differences of language complexity both textbooks, the writer took data from text books with the same materials. In this chase the writer chose topics on matters. Besides it also sees the multimodality and the suitability of the texts for the students. The result of the study can be summarized as follows:

First, the bilingual texts are not appropriate for grade three and four. The texts are more complexed compared to the monolingual text which consists of less number of words. Second, all the texts have lower lexical density as the percentage of the unique words and hard words is less than 60%. Third, although the three texts have lower lexical density, the most appropriate text for grade three and four is the monolingual text. It has less number of words but the students may improve their vocabulary with more unique words and hard words with three syllables. Fourth, the monolingual textbook is more suitable for young students as it has more suitable multimodalities that supported the content of the subject.
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CHAPTER 1

INTRODUCTION

This section comprises the background of the study: the underlying concerns that lead to the discussion of this topic, the reason why this topic is chosen, the research questions and the objectives of the study, the significance of the study that comprises scientific significance, practical significance and pedagogical significance. Additionally, the limitation of the study, the definition of terms, and the organization of the study are discussed at the end of this section.

1.1. Background of the Study

The existence of English language at school is now diverged into the communicative use of English language in the classroom, not only for teaching English but also teaching other subjects, such as Science and Mathematics. This circumstance has been fully established in Indonesia, as this country has been developing international standardized schools (RSBI/SBI: (Rintisan) Sekolah Bertaraf Internasional) and many international schools that adopt and/or use the curriculum from other countries, exist in Indonesia. The use of English language as communication media (spoken and written) in International schools, RSBI/SBI (International – Standardized Schools), and Immersion programs in several national schools have been widely accepted based on the Constitution of National Educational System
(Undang-Undang Sistem Pendidikan Nasional) number 20, year 2003. One of the sections of the law is section 50 verse 3 that suggests the central and/or district government organize at least a unit of education in every level of education, and it should be developed into an international education level (Dinas Pendidikan Provinsi Jawa Tengah, 2007).

Hence, the upgraded curriculum, based on the Decrees of Minister of National Education Number 22 Year 2006 concerning the Standard of Contents and Number 23 Year 2006 concerning the Standard of Graduate Competence open the opportunities for schools to use and enhance their own materials used for achieving the international standard. Therefore, this condition leads to the use of textbooks in English and other sources of materials as the supporting elements of the school programs. Textbooks as the core components of the teaching – learning activities, play an important role in providing and developing the students’ knowledge on the lesson they learn, as emphasized by Crookes – Chaudron, quoted in Celce-Murcia (2001), that the function of the textbooks are for syllabus, training program and for the aid of the lesson as well. Furthermore, this condition also gives national publishers chance to publish bilingual books. This phenomenon also widens the chance of the international and/or foreign publishers to come and promote the imported books, for instance, Singaporean Science textbooks.

Yet, the use of bilingual textbooks for teaching subjects, such as Science and Mathematics has been triggering questions that bring us into long discussions of the effectiveness of the textbooks to the students and the
teachers. Are they really compatibly designed for Indonesian students, especially elementary students, who position English as their foreign language? Is the language level appropriate to the (elementary) students as English is still positioned as a foreign language in Indonesia? Does the language level ‘ease’ the reader to construct their scientific concepts and processes? And the last question probably, do the books contain multimodal elements to enhance the students’ comprehension towards the texts and the core of the lessons? Those questions are addressed as learning science in school entails understanding and linking verbal, visual and mathematical models to develop knowledge of scientific concepts and processes, as stated by Waldrip et.al. (2006). Students should be engaging effectively with these literacies of science as they interpret and construct scientific texts.

In brief, there are several elements that are needed in composing textbooks. Multimodality: the representatives of various modes, namely, images, layout, design, color, and all visual representations to support the texts (semiotic approach) and the language level to provide an analysis based on the lexical approach are the elements that are going to be explored in the research.

1.2. Reason of Choosing the Topic

As the government gives the freedom for school to choose their own materials, they can choose many books available in the marketplace. They choose the books based on their needs. In Indonesia, it is currently wide-
spread the use of bilingual books in some subjects, such as Science and Mathematics. However, the books they choose may not be appropriate for their students, in terms of the language level and the existence of multimodality.

This condition makes the writer decide to do a research on investigating the appropriate books used for students with the certain age. The finding of this research hopefully can give guidance for teachers to choose the right books with the suitable language level and engage the writers of the textbooks to compile and design better textbooks for Indonesian students. The writer will see whether the English language used in bilingual books, the level of difficulty is suitable for the students used the books or not. Furthermore, the comparison of the Science textbooks, represented in a Singaporean Science textbook and a bilingual (English and Bahasa Indonesia) Science textbook will provide us the facts that multimodality plays an important role in enhancing the comprehension, to produce a better understanding.

1.3. Research Questions

1. How complex is the language level used in the Singaporean and Indonesian Science books written in English in terms of lexical density and syntax?

2. What are multimodalities used in the science books?
3. Why are there any specific differences of language complexity and multimodality realized in both textbooks?

4. To what extent do the language complexity and multimodality used in each textbook suit the students?

**1.4. Objectives of the Study:**

The objectives of the study are as follows:

1. To find out the complexity of the language level used in the Singaporean and Indonesian science books in terms of lexical density. Supported by the results of the students’ understanding.

2. To discover the multimodality used in the science books.

3. To explain the differences of language complexity and multimodalities both textbooks.

4. To discover whether the language complexity and multimodalities used in each textbook suit the students.

**1.5. Significance of the Study**

**1.5.1. Theoretical Significance**

As this study provides the knowledge on the essentials of (science) textbooks, it enriches the extension of the previous scientific research related to the language complexity and multimodality in the textbooks. By knowing further aspects of the complexity of the language and
multimodality used in science textbooks, better analysis towards the textbooks can be obtained.

1.5.2. **Practical Significance**

This study contributes the academic genre based on the educational discourse that can be useful for guiding (Science) textbooks making. The study will reveal the textbooks that are suitable for the students so that the school can choose the best Science textbooks written in English. This will make the students reach their maximum potentials in Science. Moreover, the findings of this research will give contributions to the writers and/or publishers to review, evaluate and design more appropriate (Science) textbooks in Indonesia.

1.5.3. **Pedagogical Significance**

This study presents the importance of multimodality in textbooks for children. Furthermore, it enriches the readers with the knowledge of complexity of language that is appropriate for young learners. Therefore, this study enlightens the educators and English linguists to mix and match the aspects of textbooks, the nature of the readers (in this case young learners) and the elements of multimodality and language complexity.

1.6. **Scope of the Study**

The concern of this study is on the comparison of the complexity of the English language used in the Science textbooks. The writer analysed the
lexemes used and the level of sentence complexity. The lexemes which are investigated are those found in the science text books which are written by Indonesian and text books written by Singaporeans. These lexemes were analysed to see the sentence complexity.

Moreover, the writer compared the multimodality used in both books. It explained the images or drawings, writing, font design and placement, familial and cultural connection to students’ lives, relative size of images or writing and the use of colors to express meaning.

Then, based on the finding of lexical density and multimodality, a comparison of the language complexity of both books was done to find the differences between them. Finally, it was investigated whether the books suited the students. Therefore, it can be said that this study is a holistic view towards the textbook design.

1.7. Definition of Key Terms:

1. Complexity

Complexity is a composite measure of language use, normally reflecting the length of utterances and the amount of subordination used. In studying a second language learner’s discourse or inter-language complexity is one measure of L2 development. (Longman Dictionary of Language Teaching and Applied Linguistics 2002)

2. Language Level
A layer in a linguistic system, e.g. word level, phrase level. Often, these levels are considered to form a scale or hierarchy from lower levels containing the smaller linguistic units to higher levels containing larger linguistic units, e.g. morpheme level – word level – phrase level – clause level, etc. It is also sometimes said that the items on each level consist of items on the next lower level: clauses consist of phrases, phrases of words, words of morphemes, etc. (Longman Dictionary of Language Teaching and Applied Linguistics 2002)

3. Lexical density

Lexical a measure of the ratio of different words to the total number of words in a text, sometimes used as a measure of the difficulty of a passage or text. Lexical density is normally expressed as a percentage and is calculated by the formula

4. Readability

Readability refers to the easy degree of a text to be understood (Richard et al (1985: 238)). Based on Nababan (1999: 62), readability is a difficulty measurement of reading and understanding written materials. As we can see, both definitions refer to the ease/difficulty to extract meaning and information out of a textual body, both from the content (vocabulary and syntax), and from the typography (font size, line height).

5. Multimodality

The existence of various modes representing visually as the illustrations or the designs found in the textbooks. (Kress, 2010).
Multimodality includes images/drawings, writing, font design and placement, familial and cultural connections to students’ lives, relative size of images/writing, and the use of color to express meaning.

1.8. Organization of the Study

This study is going to be organized in five chapters. The first chapter states the background of the study, reasons for choosing the topic, the statements of the problems, the research questions, objectives of the study, significance of the study, the limitation of the study, and the organization of the study.

The theoretical framework in the second chapter arranges the necessary steps taken in this study, as well as providing the details of the theories in relation to the research objectives. The second chapter also discusses the related literature and previous studies with their significance to the research conducted in this study.

The research methods and theoretical framework employed in this study would be revealed in the third chapter. This chapter discusses the nature of the research, the objects of study, and how the writer analyses the objects as well as the measurement unit. The comparison method of the resulting data is also discussed in this chapter.

Chapter four provides the collection and the analysis of the data. The study proceeds with the comparison of the data according to the research questions and within the borders of the theoretical framework. The 1st part
will focus on the complexity of the language using lexical density measurements. The 2\textsuperscript{nd} part will focus on the multimodalities used in both texts. The 3\textsuperscript{rd} part will compare the 1\textsuperscript{st} and the 2\textsuperscript{nd} part for both texts. And lastly, the 4\textsuperscript{th} part will determine the suitability of both texts to the readers (students).

And finally, it arrives to the conclusions in the fifth chapter, resulting in suggestions to further improve the textbooks.