GRAMMATICAL INTRICACY AND LEXICAL DENSITY OF READING TEXTS OF ENGLISH TEXTBOOK FOR SENIOR HIGH SCHOOL GRADE XII

Johannes Jefria Gultom
Universitas Negeri Medan
johannes@unimed.ac.id
Evrianto Pintubatu
Universitas Negeri Medan
evriantopintubatu@gmail.com

ABSTRACT

This study deals with the grammatical intricacy and lexical density of reading texts of English textbook for senior high school students grade XII. The objectives of this study are to investigate the level of grammatical intricacy (GI), and lexical density (LD) of the reading texts of English Textbook. This study was conducted by using descriptive qualitative and content analysis design. The data of this study were simple clauses, clauses complexes, sentences, lexical items and content carrying lexical items (nouns, verbs, adjectives and adverbs) of the English reading texts of Look Ahead 3, English textbook for senior high school grade XII published by Erlangga 2007. The result of the analysis showed that: (1).The level of grammatical intricacy of four out of six reading texts is high (3.53, 2.3, 2.71, and 2.25) and the other two texts are medium (2) and low (1.83). (2).The level of lexical density of four out of six reading texts are low (42.67%, 45.93%, 48.47%, and 36.99%) and the other two texts are high (58.36, and 55.40%).

Keywords: grammatical intricacy; lexical density; reading texts

1 INTRODUCTION

There are four basic skills used in English: listening, speaking, reading and writing. Everything is important, including reading comprehension. Reading is the single most important fundamental skill a person can acquire. Reading comprehension refers to the ability to understand information presented in written form. Many students still have problems with their reading comprehension because they are unable to accurately understand written materials.

Halliday (2005) states that written and spoken texts have their complexity namely Lexical Density (LD) and Grammatical Intricacy (GI), Grammatical

Intricacy influence the reader's comprehension that can lead the students to be easier or harder to process the materials. So, it is important to analyze the textbook of the students in order to know about the ability of the students in understanding the materials which are given especially in reading texts. It refers to how often a clause complex appears in comparison with simple clauses. The existence of intricacy in a text arises when the amount of clause complexes is more than simple clauses and the proportion of grammatical intricacy in the text certainly will determine the difficulty of the text. In other words, the more clause complexes than simple clauses the text has, the more difficult the text is.

Lexical density is a condition of the words' proportion in the text. It shows the ratio of lexical items to grammatical items. Lexical items consist of noun, adjective, verb, and some adverbs while grammatical items consist of determiner, pronoun, most preposition, conjunction, finite verb, and some classes of adverb. Lexical density shows the complexity of words within text. It describes the development of lexical in the written language.

In achieving the goals of the curriculum, it is obvious that the teacher holds a crucial role in selecting appropriate text in order to facilitate or to make the students understand and comprehend every text easily. In addition, Beck, Mc. Keown, and Worthy (1995: 220) state that students' success in school depends to a great extent on their understanding of the text, and this understanding is influenced "by variety of features that characterize the nature of text". So, it is important to analyze the grammatical intricacy and lexical density in the student's text book in order to know the efficiency of the textbook in the classroom instruction. There have been many English textbooks published to fulfill the need of teaching English-learning process and the English teacher should choose the textbook that is appropriate to the students.

Most teachers in Indonesia often use textbook as a primary resource book for ideas and instructional activities as well as giving guides for what they do. The textbook plays an important role in teaching-learning process because it is used to convey the teaching materials to students, facilitate teaching-learning process and support the demand of good English ability. In this study, the researcher will choose *Look Ahead 3, English for Senior High School Textbook Grade XII published by Erlangga* to be analyzed. The book is one of series of English textbooks for Senior High School

and is published in line with 2006 curriculum or in Indonesian it is called Kurikulum Tingkat SatuanPendidikan (KTSP). The textbook is used by the students of Senior High School of Saint Mary Medan. The book consists of 34 reading texts and is written in 3 different genres, they are narrative, exposition and discussion text. The textbook is important to be analyzed in order to know the total of clause complexes, simple clauses, and the lexical items of each text because both grammatical intricacy and lexical density really influence students' reading comprehension. Through the grammatical intricacy and lexical density of the text, teacher also can know whether the text is easy or difficult for the students.

2 Review of Related Literature
2.1 Grammatical Intricacy

Grammatical Intricacy is an important concept in characterizing complexity of Language. Eggins (2004: 97) states that grammatical intricacy relates to the number of clauses per sentence or clause complexes and can be calculated by expressing the number of clauses in a text as a proportion of the number of sentences in the text. It relates to how much information is introduced in a clause complex which can contain more than one or simple clause.

A simple clause is easier to understand in the sense that the amount of information presented is less than the clause complex. In other words, a clause complex is indicated in functional grammar contains more information than a simple clause. No matter how long a clause is, they should be able to recognize the subject and predicate because those are two elements of grammar which create certain meaning.

In this case, the levels of Grammatical Intricacy counted by analyzing high and low level of grammatical intricacy (complexity) of a text. If the number of clause is more dominant than simple sentence in a text, it means that the text has high level of grammatical intricacy, and contrary if the number of clause is lower than simple sentence, it means that the text has low grammatical intricacy.

Halliday (2004) states that written language becomes complex by being lexically dense: it packs a large number of lexical items into each clause; as spoken language becomes complex by being grammatically intricate: it builds up and elaborate clause complexes out of hypotaxis and parataxis. Halliday's method of measuring the grammatical intricacy complements measuring lexical density, contributing to a more objective

description of the text. It is calculated by following the formula (Eggins, 2004:97):

$$\text{GI (Grammatical Intricacy)} = \frac{\text{total number clauses}}{\text{total number of sentences}}$$

The table below shows us the levels of grammatical intricacy based on Eggins (2004):

The levels of grammatical intricacy	Grammatical Intricacy
High level	More than 2
Medium level	Equal 2
Low level	Less than 2

2.2 Lexical Density

Lexical density is a term that is used in text analysis. Thornbury and Slade (2006:44) state that lexical density is a measure of the ratio of the text's content words to its function words. It is quite different with Johansson (2008:65) who states that lexical density is the term which is most often used to describe the proportion of content words (nouns, verbs, adjectives, and adverbs) to the total number of words. Moreover, Halliday (1985:63) gives more specific explanation about the lexical density. Halliday defines lexical density as the number of lexical items, as the proportion of the number of running words. Halliday refers to use lexical items than lexical word because they may consist of more than one word, for example stand up, take over, call off, and other phrasal verbs all function as single lexical items.

A text with a high proportion of lexical items or content words has high information than a text with a high proportion of function words (prepositions, interjections, pronouns, conjunctions and count words). In another word, Rahmansyah (2012) states that the higher the lexical density of a text is, the more information there is and the more difficult it is to be understood by reader. If the text has more grammatical items than the lexical items, the text is categorized to lower lexical density. On the contrary, if the text has more lexical items than the grammatical items, the text is categorized to high lexical density.

Halliday offers an approach to calculate lexical density stating that words are not packed inside other words; they are packaged in larger grammatical units-sentence, and their component parts. Instead of calculating the proportion of lexical and running items, he suggests that the number of lexical items per clause should be considered.

The formula for Enggins (2004)' lexical density calculation is as follows:

$$LD\ (\%) =$$

$$\frac{\text{Number of content carrying lexical items}}{\text{Number of lexical item in a text}} \text{x100 \%}$$

X 100%

The table below shows us the levels of lexical density:

The level of Lexical Density	Lexical density (%)
High level	More than 50%
Low level	Less than 50 5 or equal 50%

To know the level of the paragraph's lexical density, it is better to us to count the number of content words or content carrying lexical items (nouns, verbs, adjectives, adverbs) and the number of lexical item of the passage first (prepositions, interjections, pronouns, conjunctions, and content words)

2.3 Clause Complexes

Halliday (2004) states that the clause is the central processing unit in the lexicogrammar. In grammar, a clause is the smallest grammar unit that can express a complete proposition. A typical clause consists of a subject and a predicate, however the subject is sometimes not expressed ; this is often the case in null-subject languages if the subject is retrievable (regain) from context, but it also occurs in certain cases in other languages such as English (as in imperative sentences and non-finite clauses). A simple sentence usually consists of a single finite clause with a finite verb that is independent.

2.4 Genre

Gerot and Wignel (1994: 17) recognize that genre is as a culturally specific text-type which is resulted from using language in written and spoken to accomplish something. Dirgayasa (2015) states that there are thirteen types of text, however, this study will only be focused on three genres namely; Narrative, Explanation, and Discussion.

First, narrative is set in historical ones which aim to amuse, entertain, to deal with actual or vicarious experience in different ways and deal with problematic events (Dirgayasa, 2015). Narrative is one of texts which is learned by students, especially in senior high school level. According to Pardyono (2007:94) narrative has the purpose to tell a story in the past. It usually has a number of events that takes place and a problem that needs to be solved by the characters. One of the language features of narrative text is using action verbs in past form. About narrative, Knapp and Watkins (2005) add that formally, narrative sequences people/characters in time and space. The

function of narrative text is to amuse, to entertain, and to deal with actual or vicarious experience in different ways.

Second, a discussion text presents differing opinions, viewpoints or perspectives on an issue, enabling the reader to explore different idea making an informed decision. The writer normally explores different opinions and ends with a personal opinion or comment.

Discussion texts are concerned with the analysis, interpretation and evaluation of issues. Text type will give students the opportunity to develop the skills of finding information to support their arguments and the importance of anticipating arguments and responding to these. In effective discussion, all points of view on an issue are considered and attitudes change when perspectives are seen. By becoming aware that facts can be interpreted in different, students will understand that a variety of opinions on an issue may be valid. Experiencing discussion texts helps students to think clearly and critically.

The last, an explanation text is written to explain how and why something in the world happens. It is about actions rather than about things. It plays a valuable role in building and storing our knowledge. Technical and scientific writing are often expressed in this form.

When writing explanations we establish that the phenomenon exists and then explain why or how this came about. The writer should acquire a great deal of content knowledge before the explanation. There are different types of explanation. One type explains an occurrence or how something works. It may be mechanical explaining how a lawn motor works, technological describing how a computer works or natural when describing how avalanches occur.

2.6 English Textbook

Ferris and Hedcock (2009) state that textbooks are so important in educational system throughout the world. Indeed, textbooks provide the backbone for the courses of many educators. It means that textbook is a key component of most subjects in classroom. It plays an important role in teaching-learning process and has significant role in improving the students' English competences.

Look Ahead 3, English for Senior High School Textbook Grade XII published by Erlangga is one of series of English textbooks for Senior High School and is published in line with 2006 curriculum or in Indonesian it is called Kurikulum Tingkat Satuan Pendidikan (KTSP). The textbook is used by the students of Senior High School of Saint

Mary Medan. The book consists of 34 reading texts and is written in 3 different genres, they are narrative, exposition and discussion text. By knowing the purpose of textbook to student, the researcher will analyze this book in order to know the total of clause complexes, simple clauses, and the lexical items of each text because both grammatical intricacy and lexical density really influence students' reading comprehension.

1. RESEARCH METHODOLOGY

This research used descriptive qualitative design. According to Bogdan and Biklen (1992) qualitative research is descriptive, whereas qualitative research refers to several research strategies that share certain characteristics. The qualitative research design will present the description based on the data in form of word rather than number. Descriptive design simply describes what is going on the data shows because it focuses on the natural characteristics of the data. As this applied content analysis approach, the content analysis is a model which is used to investigate the documentation of data in the form of text, images, symbols and so on. Textbook is one of written documents. This study described the grammatical intricacy and lexical density in the reading texts of students' textbook.

"Look Ahead 3, English Textbook of Senior High School Grade XII published by Erlangga, 2007" is the subject of this research. This textbook is used in two semesters directly. The textbook consists of 34 reading texts and written in 3 types of genre. The researcher chose the reading texts in the textbook by analyzing two texts in each genre. It means that there were 6 texts analyzed by the researcher in this study.

The data of this study were collected by applying documentary technique. Burhan (2007:121) states that documentary technique is a method for collecting the data which is kept in the form of documentation. The reading texts of the textbook were read and analyzed by the researcher. The researcher paid attention to the simple clauses, clause complexes, sentences, and lexical items (nouns, verbs, adjectives, adverbs) which are available in the reading texts of the textbook.

In this research, the technique of the data analysis by Miles, Huberman and Saldana (2014) was applied. They elaborate several steps of analyzing data: data condensation, data display and conclusion drawing.

4. RESEARCH FINDINGS AND DISCUSSION

Research findings present the description of lexical density and grammatical intricacy found in Look Ahead English textbook published by Erlangga used by twelfth grade of senior high school. After analyzing the texts, the researcher states the findings below;

1. Please All and You Will Please No One gains the grammatical intricacy result 3.53, it shows that the proportion of clause complex is dominant in that text than simple clause, it means that the text has high grammatical intricacy. While the lexical density of the text gains 42.67%. regarding to Eggins' explanation which said that lexical density surpasses 50% means that the text has high lexical density. It means that the text has low lexical density.

2. The Shepherd's Boy. This text gains 2.3 grammatical intricacy and 45.93% for its lexical density. Based on Eggins' theory, the text is predicted easier to be understood by student compare to the previous text. It has high grammatical intricacy and less that 50% for its lexical density.

3. Tsunami gains grammatical intricacy 2.71 and 48.47% for its lexical density. It means that the researcher found that the text has more complex sentences than simple sentences, while the lexical density still shows that the text is easy to understand from its content carrying lexical items.

4. Sounds Recording and Reproduction. This text has 2.25 for its grammatical intricacy and 36.99% for its lexical density. It means that the text still has low lexical density, which means easy to understand. While 2.30 for grammatical intricacy shows that the text has more complex sentences than the simple sentences.

5. Breaking The Ice in Britain. This texts has 2.00 for the grammatical intricacy and has the highest result of lexical density 58.36%. it means that this text is predicted as the most difficult text to be understood by students because it has a very high lexical density. The grammatical intricacy is 2 which means that are in Medium Level.

6. The Advantage and Disadvantage of Nuclear Energy has 1.08 for its grammatical intricacy and 55.40% for its lexical density. The same to the previous text, Breaking The Ice in Britain, the text has lower

difficulty because the text has less than 2 for the grammatical intricacy, and the lexical density of the text 55.40 shows that the text is also difficult to understand because it has high percentage of lexical density.

7. After analyzing the texts, the researcher can explain that the text difficulties are influenced by grammatical intricacy and lexical density. The higher the grammatical intricacy and lexical density the text has, the more difficult the text to be understood by students. Grammatical intricacy is formed by unification of both simple clauses and complex clauses in a text which measured to find out how intricate the text is. Based on Halliday's theory which said that the text is intricate if it consists of more complex clauses than simple clauses. While lexical density is formed by unification of both lexical items and content carrying lexical items which measured to find out the proportion of information in a text.

Table 1. Grammatical Intricacy and Lexical Density of the Texts

No.	Title	Grammatical Intricacy	Lexical Density (%)
1.	Please All and You Will Please None	3.53	42.67
2.	The Shepherd's Boy	2.3	45.93
3.	Tsunami	2.71	48.47
4.	Sounds Recording and Reproduction	2.25	36.99
5.	"Breaking The Ice" In Britain	2	58.36
6.	The Adventages and Disadventages of Nuclear Energy	1.83	55.40

DISSCUSSION

The results shows that the highest lexical density comes from the fifth text entitled Breaking the Ice in Britain with 58.36 %. While the highest grammatical intricacy comes from the first text entitled Please All and You Will Please No One which has 3 for its grammatical intricacy. The result of grammatical intricacy shows that it likely above 1 which mean that the text consists of more complex clauses than simple clauses. Furthermore, Halliday explains that the more clause complexes the text has, the more intricate the text is.

Analysis result based on the genre shows that the average numbers of grammatical intricacy in narrative texts are 2.45, the average numbers of grammatical intricacy in explanation texts are 2.58 and the average number of grammatical intricacy of discussion text are 2.11. if the grammatical intricacy of a text approaching 2 means that the total number of complex clauses is higher than simple clauses, it shows that the explanation texts

have the highest level of grammatical intricacy of the genre. While the average number of lexical density of the narrative texts are 43.96%, explanation texts are 42.73% and discussion texts are 56.88%. Regarding Eggins' explanation which said that lexical density above 50% is high lexical density, means that the discussion texts are predicted more difficult to be understood by students compare to the narrative texts and explanation texts. From six texts which were analyzed by the researcher there was only one text which has low grammatical intricacy, 5 texts with high grammatical intricacy result, 4 texts have low level of lexical density and both discussion texts have high lexical density.

The results shows that the highest text score was 53.80% and the lowest score was 45.50%. This study was explained that the result of lexical density in those reading texts are predicted to be difficult to be understood by elementary students.

REFERENCES

Aritonang, DK (2014). Impacts of Methapor on Grammatical Intricacy and Lexical Density in the Text of Presidential Debate between Barrack Obama and Mitt

Eggins, S. 2004. *An Introduction to Systemic Functional Linguistics.*London: Pinter. Gerot,

George David Morley. 2000. Syntax in Functional Grammar. Suffolk :PastonPrePress Ltd

Halliday, MAK., and Matthiessen, C. 2004. *An Introduction to Functional Grammar* (3rd ed.). London: Arnold.

Halliday, MAK .2005. *On Grammar*. New York: Continuum.

Halliday, MAK. 2014. *An Introduction to Functional Grammar* (4th ed.). Newyork: Routledge.

Linda, and Peter, W. 1994.*Making Sense of Functional Grammar.*Sydney: GerdStabler.

Mariana N. (2005) Grammatical Intricacy in Novels the Colour Purple and Where She Went.(Unpublished Magister Thesis).State University of Medan, Medan.

Romney. *International Journal of Linguistics.*Vol: 11, Issue: 1Pp. 13-25

Soepriatmadji, L. (2011). Lexical Density dan Grammatical Intricacy MateriBacaanpadaBukuBahasaIng grisKelas 6 SD. *JurnalPengembanganIlmuBahasad anBudaya.*Vol: 5, Issue:2.

To, Vinh, Fan, Si., & Thomas, Damon (2013) Lexical Density and Readability: A Case Study of English Textbooks. *Internet Journal of Language, Culture, and Society*, 37:61-71

To, Vinh (2017) Grammatical Intricacy in EFL Textbook.*International Journal of English Education.*Vol: 5. No.2