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## ADJECTIVE AND NOUN CLAUSE LEXICAL DENSITY IN AN ENGLISH TEXTBOOK FOR SENIOR HIGH SCHOOL STUDENTS

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### Abstract

This paper analyzed the lexical density of the adjective and noun clauses in an English textbook for senior high school students in Indonesia. It aimed to discover whether or not the textbook was suitable for the students in terms of lexical density. The researchers employed a content analysis approach to analyze data. There were 116 sentences, containing adjective and noun clauses, which were investigated. The researchers implemented the lexical density theory and the lexical density indicators to determine the average level of the lexical density measurements. Results showed that there were three lexical density levels found in those adjective and noun clauses. The three levels were low, medium, and high. The average level of the lexical density obtained from the adjective and noun clauses in the textbook was 47%, which was categorized as low lexical density. Thus, the researchers concluded that the English textbook for the tenth-grade students published by the Indonesian Government was appropriate for the students.

**Keywords:** Lexical Density, Lexical Density Level, Content Word, Adjective Clause, Noun Clause

### INTRODUCTION

Lexical density is a common issue for language learners. It is undeniable that every language learner must have experienced its complexity both in writing and speaking. As Hendrikse and Van Zweel (2010, p. 409) suggested, language can be used to describe various complex phenomena. Meanwhile, they also said that language is considered as a complex phenomenon. The complexity of language in practice has been discussed by many experts, but in fact, language learners still find some difficulties to master the target language. This is in accordance with the idea proposed by Kwapien (2010) that stated that the definition of linguistic complexity itself is still considered as an open issue in language. In addition, there is no rigid standard used to measure language complexity. Rimmer (2008) stated that the notion of language complexity has still become the central issue in literacy and language education (see also Varzaneh, & Darani, 2018; Pratiwi, Farikah, & Indriani, 2018; Nugraha, & Fithriyah, 2020).

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Nevertheless, the measurement of language complexity itself has not been formulated, even though many researchers have conducted research on it.

In Indonesia, English is a foreign language. Besides, it is a compulsory subject in formal education. Indonesian students start to learn English in elementary school, some of them are in kindergarten. However, the outcomes have not been satisfying. There are only a few students who are able to communicate fluently in English. In writing, they also make major mistakes in many aspects such as word choices and sentence structures. These common problems are not only faced by Indonesian students, but also by some other language learners around the world, in which English is still used as a foreign language (Lie, 2007, p. 1; see also Bahrudin, 2016; Karman, 2016; Berendes, Vajjala, Meurers, Bryant, Wagner, Chinkina, & Trautwein, 2018).

One of the most difficult language aspects experienced by Indonesian students in learning English is to understand the complex sentences. If they have some difficulties in understanding the use of complex sentence, it is going to be something difficult for them to create complex sentences both in speaking and writing. Most importantly, not all students join the learning process “equally prepared to use language in the expected ways, nor do all share the same understanding that certain ways of using language are expected at school” (Schleppegrell, 2001, p. 434; see also Uri, & Abd Aziz, 2018). Students have different ways in absorbing the materials given by teachers. Therefore, the Indonesian government has to regulate a good policy and provide a well-sensed framework in designing the English learning materials based on the students’ needs in order to achieve the better outcomes. The paper aimed to discover whether or not the textbook was appropriate for the tenth-grade students of senior high school in Indonesia, which is related to lexical density of the adjective and noun clauses (see also Putra, & Lukmana, 2017; Rahma, 2018; Yetti, 2019).

Based on the research background, the research question was formulated as follows: To what extent is the level of lexical density presented in an English textbook for senior high school students in Indonesia?

### **The Concept of Lexical Density**

#### **Lexical Density**

Lexical density is a linguistic terminology used to define statistical measures that calculate the lexical richness of texts. Sari (2016, p. 31) mentions that the level of lexical density presented in the English texts plays a significant role to the students’ understanding. In addition, it is a technique used to assess students’ overall progress within their learning (Daller, van Hout & Treffers-Daller, 2003). Johansson (2008, p. 65) stated that “lexical density



is the term which is most often used for describing the proportion of content words (nouns, verbs, adjectives, and adverbs) to the total number of words". This is in line with the concept mentioned by Vera et al., (2016), who say, "lexical density refers to the quantity of content vocabulary present in a text". Lexical density itself is included in the lexical richness. Šišková (2012, p. 26) suggests that there are three categories of the lexical richness, namely lexical diversity (the measurement of the total different words employed in the text), lexical sophistication (the measurement of the high level words employed in the text), and lexical density (the amount of content words presented in the text). Similarly, Ishikawa (2015, p. 2) claims that lexical density is the proportion of 'lexical' and 'open-class words' or content words. However, he distinguishes this measure in two distinctive concepts, namely 'an index of information-orientation' and 'lexical easiness'.

The concept of language density commonly focuses on the various complexities produced from the development of words (To, Fan, & Thomas, 2013, p. 61). This is also in accordance with the idea proposed by Halliday (1985) that lexical density is related to the notion of lexico-grammar especially in the wording level of language. Meanwhile, Kondal (2015, p. 25) states that lexical density (the total number of lexical items in a text) and lexical variety (the total number of different words in a text) are main concepts that can be attached to define lexical development. Furthermore, there is a theory that says the longer the sentence would indicate the more difficult the sentence to understand (Islam, Mehler, & Rahman, 2012, p. 546). There are various measurements of lexical density. The measurement of lexical density was firstly initiated by Ure (1971), who stated that "lexical density should be treated as the proportion of the number of lexical items per the number of running words". This formula was then developed by Halliday (1985) and O'Loughlin (1995).

Thus, it can be concluded that the level of lexical density can be obtained by calculating the number of content words which is divided by the total number of words in a sentence. Content words are words that deliver a high information load, namely nouns, verbs, adjectives, and adverbs (Solichatun, 2011, p. 15). Content words are different from grammatical function words. Grammatical function words are classified into determiners, pronouns, preposition, conjunctions, numerals, auxiliary verbs. Solichatun (2011, p. 15) stated that long and lexically dense sentences are more difficult to understand. Furthermore, Hanafiah and Yusuf (2016, p. 43) state that a text can be classified as a formal text when the proportion of the content words to the total words is proven to be lexically dense. On the other hand, sentences that have low lexical density are easier to understand.

## **Content Words**

Content words are any nouns, verbs, adverbs, and adjectives which have suitable and significant lexical meaning.

a) A noun is “a word used as the name of a living being or lifeless thing” (Curme, 1935, p. 1) as cited in Huddleston (1984, p. 90). Therefore, nouns generally can be the names of person such as Frans and Grace; the names of things such as cars, and books; the names of places such as cities and countries; the names of animals such as cats and dogs; the names of activities such as running and swimming; the names of days and months such as Friday and August; the names of the families such as brothers and sisters; the names of subjects such as English and Math.

b) A Verb is “part of speech that predicates, assists in predication, asks a question, or expresses a command” (Curme, 1935, p. 63) as cited in Huddleston (1984, p. 91). It can be concluded that a verb is a word that expresses action such as work, come, buy and study, being, or state of being.

c) An adjective is a word that modifies a noun or pronoun (Curme, 1935, p. 42) as cited in Huddleston (1984, p. 91). In general, an adjective used to explain or modify a person, place, or thing. For examples: beautiful, good, expensive, important, ugly, yellow, and interesting.

d) An Adverb is “a word that modifies a verb, an adjective, or another adverb” (Curme, 1935, p. 71) as cited in Huddleston (1984, p. 91). There are several types of adverbs, namely adverbs of manner (quickly, diligently), adverbs of time (now, last), adverbs of place (here, there, in Indonesia), adverbs of frequency (usually, never, always), adverbs of degree (very, really), adverbs of modality (probably, possibly).

## **Previous Research**

There are many studies which examined language complexity. The previous studies showed different results. Smith et al. (1994) investigated lexical density in written tests performed by students in their first year in the Australian university. They previously assumed that language difficulty might influence students' performances in the examinations. The findings of their study showed that there was no connection between student achievement and the linguistic complexity of the questions in terms of lexical density.

Cheryl (1995) examined the correlation between lexical proficiency and the quality of ESL compositions written by students at Indiana University, which are related to lexical density, lexical errors, and lexical variations. There were four lexical measurements used in

the study and the lexical density was the most concisely interpreted. The results suggested that there was a non-significant relationship between the proportion of content words and the quality of essays. Dale and Chall (1995) also conducted a research in lexical density. Dale and Chall listed 3,000 commonly known words for the 4th grade. The results of their study showed that reading difficulty is a linear function of the ASL of the percentage of rare words.

Solichatun (2011) conducted a content analysis of English reading materials in a Junior High School textbook. In her study, the results showed that the lexical density of the reading texts for junior high school was between 50%- 60% (medium lexical density). It means that the reading texts in the textbook were not complicated for the students.

## **RESEARCH METHOD**

This qualitative research explores social phenomena based on the perspective of the participants (Ary, Jacobs, & Razavieh, 2010). The researchers employed content analysis technique in this research. Ary et al. (2010) mention that "Content analysis is a technique that enables writers to study human behavior in an indirect way, through an analysis of their communication" (p. 472). The documents are usually "written documents, namely books, magazines, articles, newspapers, novels, official documents, or pictures" (Ary et al., 2010). The document of this research was an English textbook published by the Indonesian Government. The researchers selected the sentences presented in the textbook. After that, the researcher analyzed the sentences based on the theories of lexical density, focusing only on the use of adjective and noun clause lexical density in the textbook. One of the examples of the complex adjective or noun clauses in the textbook was presented below:

*"She told me that you sent her an email telling her that you would like to have more pen pals from the use" (p. 4)*

The data that had been collected and classified were coded and analyzed. The analysis included the lexical density presented in the textbook. In this research, lexical density levels were measured by:

1. identifying the sentences, especially adjective and noun clauses, containing the content words and the grammatical (function) words in a sentence.
2. calculating the number of content words
3. calculating the percentage of lexical density proportion in a sentence using the formula below:

$$\text{Lexical Density} = \frac{\text{Number of Content Words}}{\text{Total Number of Words}} \times 100$$

Solichatun (2011, p. 25) stated "that lexically dense text has a high lexical density of around 60-70%, quite lexical density measures of around 50-60%, and those which are not dense have a lower lexical density of around 40-50%".

## RESULTS AND DISCUSSION

### Results

The percentage of lexical density of each sentence was obtained by dividing the content words per total words based on the theory proposed by Johanson (2008). The researchers calculated the average of lexical density existed in all adjective and noun clauses from the textbook. The results of the calculation were presented in Table 1.

**Table 1.** Lexical density levels

Level of Lexical Density	Total Number of Sentences	Percentage (%)
High	14	12.06 %
Medium	32	27.60 %
Low	70	60.34 %
Total	116	100.00 %

From the results above, it can be seen that there were 116 sentences found in the text book. Those sentences consisted of adjective and noun clauses. There were 14 sentences (12.06%) categorized as high lexical density. In addition, there were 32 sentences (27.60%) categorized as quite lexical density. There were also 70 sentences (60.34%) categorized as low lexical density.

**Table 2.** The average lexical density

Level of Lexical Density	Percentage (%)
High	12.06 %
Medium	27.60 %
Low	60.34 %
Average	47.00%

Finally, it can be seen in Table 2 that the average lexical density of all sentences consisting of adjective or noun clauses was 47%, which was considered as low lexical density.

## Discussion

In analyzing the lexical density of the sentences consisting of adjective or noun clauses, the researcher calculated the number of content words to the total number of words in every sentence. The content words were presented in bold in order to make them clearer in the process of analysis. The researcher provided several samples of the data in this discussion.

### 1. Sentences with High Level of Lexical Density, example 1

*"However, the **battle provoked Indonesian and international mass to rally for the country's independence which made this battle especially important for Indonesian national revolution**". (p. 124)*

In the sentence above, the researcher found that there were fifteen content words consisting of **seven nouns, four adjectives, three verbs, and one adverb**. The total number of words in this sentence was twenty-four. The researcher counted the lexical density of the sentence by employing the formula below (Johanson, 2008).

$$\begin{aligned} \text{"Lexical Density"} &= \frac{\text{Number of Content Words}}{\text{Total Number of Words}} \times 100 \\ \text{Lexical Density} &= \frac{15}{24} \times 100 = 62\% \end{aligned}$$

Based on the result above, Example 1 had 62 % lexical density. It showed that *Example 1* had high level of lexical density. The indicator was in line with the theory suggested by Solichatun (2011). She stated that the text that has lexical density percentage around 60% - 70% was categorized as a text with a high lexical density. Here is example 2.

*"When **Habibie's minimum wage salary forced him into part-time work, he found employment with the Automotive Marque Talbot, where he became an advisor**" (p. 135).*

In the sentence above, the researcher found that there were fifteen content words consisting of **nine nouns, three adjectives, and three verbs**. The total number of words in this sentence was twenty-three. The researcher counted the lexical density of the sentence by employing the following formula (Johanson, 2008).

$$\begin{aligned} \text{"Lexical Density"} &= \frac{\text{Number of Content Words}}{\text{Total Number of Words}} \times 100 \\ \text{Lexical Density} &= \frac{15}{23} \times 100 = 65\% \end{aligned}$$

Based on the calculation above, Example 2 had 65% lexical density. It can be concluded that this sentence had high level of lexical density. The indicator was in line with the theory suggested by Solichatun (2011). She stated that the text that has lexical density percentage around 60% - 70% was categorized as a text with a high lexical density

## 2. Sentences with Quite Lexical Density, example 1

*"In a world that's **changing really quickly** the **only strategy** that is **guaranteed to fail** is not **taking risks**" (p. 22).*

In the sentence above, the researcher found that there were ten content words consisting of **three nouns**, **four verbs**, and **three adverbs**. The total number of words in this sentence was nineteen. The researcher counted the lexical density of the sentence by employing the formula below.

$$\begin{aligned} \text{"Lexical Density"} &= \frac{\text{Number of Content Words}}{\text{Total Number of Words}} \times 100 \\ \text{Lexical Density} &= \frac{10}{19} \times 100 = 52\% \end{aligned}$$

Based on the calculation above, Example 1 had 52% lexical density. It can be concluded that this sentence had medium level of lexical density. The indicator was in line with the theory proposed by Solichatun (2011). She stated that the text that has lexical density percentage around 50% - 60% was categorized as a text with a medium lexical density. Here is example 2.

*"In **daylight**, on your **way** to **Camp Leakey**, you can **see trees filled** with **proboscis monkeys**, **monkeys** that **have enormous snout** which can **only** be found in **Kalimantan**" (p. 53).*

In the sentence above, the researcher found that there were sixteen content words consisting of **ten nouns**, **four verbs**, **one adjective** and **one adverb**. The total number of words in this sentence was twenty-eight. The researcher counted the lexical density of the sentence by employing the formula below (Johanson, 2008).

$$\begin{aligned} \text{"Lexical Density"} &= \frac{\text{Number of Content Words}}{\text{Total Number of Words}} \times 100 \\ \text{Lexical Density} &= \frac{16}{28} \times 100 = 57\% \end{aligned}$$

Based on the calculation above, Example 2 had 57% lexical density. It can be seen that this sentence had medium level of lexical density. The indicator was in line with the theory suggested by Solichatun (2011). She stated that the text that has lexical density percentage around 50% - 60% was categorized as a text with a medium lexical density.

### 3. Sentences with Low Level of Lexical Density, example 1

*"In 1905, there was a TV talk-show that interview great inventors at that time" (p. 97).*

In the sentence above, the researcher found that there were seven content words consisting of **five nouns**, **one verb**, and **one adjective**. The total number of words in this sentence was fourteen. The researcher counted the lexical density of the sentence by employing the following formula (Johanson, 2008).

$$\begin{aligned} \text{"Lexical Density"} &= \frac{\text{Number of Content Words}}{\text{Total Number of Words}} \times 100 \\ \text{Lexical Density} &= \frac{7}{14} \times 100 = 50\% \end{aligned}$$

Based on the calculation above, Example 1 had 50% lexical density. It can be concluded that this sentence had low level of lexical density. The indicator was in line with the theory suggested by Solichatun (2011). She stated that the text that has lexical density percentage around 40% - 50% was categorized as a text with a low lexical density. Here is example 2.

*"He is trying to deny the evidence that the police have presented" (p. 90).*

In the sentence above, the researcher found that there were five content words consisting of **two nouns** and **three verbs**. The total number of words in this sentence was twelve. The researcher counted the lexical density of the sentence by employing the formula below.

$$\begin{aligned} \text{"Lexical Density"} &= \frac{\text{Number of Content Words}}{\text{Total Number of Words}} \times 100 \\ \text{Lexical Density} &= \frac{5}{12} \times 100 = 41\% \end{aligned}$$

Based on the calculation, Example 2 had 41% lexical density. It can be considered that this sentence had low level of lexical density. The indicator was in line with the theory proposed by Solichatun (2011). She stated that the text that has lexical density percentage around 40% - 50% was categorized as a text with a low lexical density.



## CONCLUSION

The researchers found three levels of lexical density in the textbook, namely high, medium, and low lexical density. The lexical density in clauses averaged 47 per cent. Thus, it can be concluded that the level of lexical density of the clauses in the textbook was categorized as low. It means that the textbook was easy to understand by the tenth-grade students at senior high school. In other words, the textbook was appropriate to use by Indonesian students in the tenth grade. Furthermore, it can be concluded that a sentence which has more lexical items carried a higher lexical density compared to a sentence that had fewer lexical items. Considering the results of the research, the researchers would suggest that further investigations of the lexical density in the whole texts in the textbook should be conducted since the current research focused on the lexical density of the clauses only.

Lu (2012, p. 191) suggests that the investigation about the relevance of 'lexical density' to the speaking achievement of the language learners is still limited. Therefore, the researchers also suggest that the study of lexical density in relation to the speaking aspect needs to be conducted further. For English teachers, the results of this research can be considered as feedback on their teaching practices to select an appropriate textbook to help students improve their English skills. This idea is supported by Gregori-Signes and Clavel-Arroitia (2015, p. 546), who suggest that teachers should possess high awareness of the lexis as it can be used as a self-evaluation to improve their teaching and to figure out the most suitable texts and materials for their students.

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