HOW LEXICAL DENSITY REVEALS STUDENTS' ABILITY IN WRITING ACADEMIC TEXT

BAGAIMANA DENSITAS LEKSIKAL MENGUNGKAP KEMAMPUAN MAHASISWA DALAM MENULIS TEKS AKADEMIK

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Abstract

Through the analysis of lexical density, students' progress in language learning, especially in writing can be identified. This article aimed to find out lexical density of students' writing and to explain how lexical density shows their ability in writing an academic text. The data were taken from the introduction section of thesis proposals written by English graduate students, with the readers of higher education level. By statistical and descriptive analysis, the study reveals that the lexical density of students' writing is categorized as less dense (51.19%). Grammatical complexity became the major factor that contributed to lexical density. It was revealed that the complexities emerged since students still have limited knowledge about the language use in writing an academic text. The fact shows that students' ability in writing academic text is still in average level. This implies that the ones who write the text should consider the high density for the academic text. It is recommended to provide the topic of lexical density in the subject of academic writing subject in the syllabus of English study program of higher education.

Keywords: lexical density, writing ability, academic text, language use

Abstrak

Melalui analisis kepadatan leksikal, kemajuan siswa dalam pembelajaran bahasa, khususnya dalam menulis dapat diidentifikasi. Artikel ini bertujuan untuk mengetahui kepadatan leksikal tulisan siswa dan untuk menjelaskan bagaimana kepadatan leksikal menunjukkan kemampuan mereka dalam menulis teks akademis. Data diambil dari bagian pendahuluan proposal tesis yang ditulis oleh mahasiswa Pascasarjana Pendidikan Bahasa Inggris, dengan pembaca berada pada tingkat perguruan tinggi. Dengan analisis statistik dan deskriptif, penelitian ini mengungkap bahwa kepadatan leksikal tulisan siswa dikategorikan kurang padat (51,19%). Kompleksitas tata bahasa menjadi faktor utama yang berpengaruh pada kepadatan leksikal. Terungkap bahwa kompleksitas tersebut muncul karena siswa masih memiliki keterbatasan pengetahuan tentang penggunaan bahasa dalam menulis teks

akademik. Fakta menunjukkan bahwa kemampuan mahasiswa dalam menulis teks akademik masih dalam tingkat rata-rata. Hal ini menyiratkan bahwa penulis teks harus mempertimbangkan kepadatan yang tinggi untuk teks akademis. Disarankan untuk memberikan topik kepadatan leksikal pada matakuliah *Academic Writing* dalam silabus program studi bahasa Pendidikan Bahasa Inggris di perguruan tinggi.

Kata kunci: lexical density, writing ability, academic text, language use

A. INTRODUCTION

Lexical density is defined as the proportion of lexical words to the total number of words in a text. It refers to statistical measures that gauge the lexical richness of a text and may also be used to assess students' progress in learning language. Texts with lower lexical density are easily understood. Generally, written texts have higher lexical density than spoken texts because they have a higher proportion of content words than spoken texts (Stubbs, 2002; Johansson, 2008; To et al., 2013; Ure, 1971 in Johansson, 2008). Thus, written texts can be more tightly packed with information.

Several studies have been conducted related to lexical density in writing, especially in EFL setting. Chaudron (2003), in Doughty and Long (2005: 762-858), concludes that EFL students, by and large, use few numbers of content words per clause in their writing, which implies that their writing is lexically sparse. In addition, To, et.al (2013), who conducted a study about nominalization and lexical density and readability in IELTS writing paper tests in University of Tasmania, Australia, found that the density of EFL students writing is low. The candidates used limited number of nominalization. This study concludes that nominalization contributed to the lexical density of the writing. Similar to this finding, Refnaldi (2015: 27-33) states that students' abstracts are lexical sparse; their abstracts are still dominated by the use of grammatical complexity and written in spoken mode. It reveals that lexical density on students' academic writing is low. The use of grammatical metaphor, especially nominalization, was limited in students' writing. As a result, their writings are more likely spoken language transferred into written form.

The studies indicate that the importance of lexical density in academic writing gives great contributions to the quality of students' writing. Since students' writings are lexical sparse, most of the writings have few content words and are written in a complex way. As a consequence, they could not yet represent a qualified academic writing. Meanwhile, the language in academic writing should be concise, clear and straight forward (Soles, 2010: 96; Swales & Feak, 2012: 25). A good writer will avoid using unnecessary words and choose the exact words to deliver the meaning of the writing. Using only sufficient words is very importanat to express the points. This implies that students should select more precise words to sharpen the ideas instead of using many words and write it in complex way. Then, students need to notice the choice of words they use to produce a good writing.

Thus, lexical density becomes one of important aspects in academic writing due to the style of language use in writing. How students choose the words and construct the sentences to achieve a certain goal is an element of style. Conciseness and preciseness in writing are also reflected through the style of students in writing. This means that word choices and sentence structures can be seen through lexical density since it sees how words are arranged to convey the meaning in writing. The text formality, according to Vinh To, et.al. (2013: 64), is the base of lexical density. The more academic a text, the higher the lexical density is. Consequently, it will take longer time for readers to read academic texts.

The concept of lexical density is firstly introduced by Ure in 1971. She distinguishes words with and without lexical properties (in Johansson, 2008: 65). According to Ure, words carrying lexical values include nouns, verbs and adjectives, and some adverbs; they are usually known as content words. She defines lexical density as the proportion of words carrying lexical values to the words with grammatical values.

Another concept of lexical density is developed by Halliday (1985), stating that an item may consist of more than one word. For example, the word turn on, is counted as one lexical item, while Ure counts it as one lexical item (turn) and one grammatical item (on). Thus, Halliday defines lexical items as items that function in lexical sets not grammatical systems. Halliday (1985: 64) defines lexical density as the number of lexical items as a proportion of the number of running words.

Furthermore, Nunan (1993); Stubbs (2002); Johansson (2008); and Richard and Schmidt (2010) state that the number of content word means a percentage of the total number of words. Content words as opposed to function words are words carry a high information load such as nouns, verbs, adjectives and adverbs. Meanwhile, function words create the relationships of the concepts in a sentence. They relate content words to each other and give little, even no information in the text (Halliday, 1985: 63; and Stubbs, 2002: 40-41). Sentences which contain many content words and lexically dense are usually more difficult to understand while texts with a lower density are more easily understood. The text with this kind can be found in academic text.

Academic text includes all texts as the product of studies, investigation or enquiry used for the advancement of knowledge in academic or professional settings. In the educational institutions, there may be two kinds of academic texts: firstly, professional research writings, the prerequisites for annual appraisals or academics which must be published. The second is the student academic writing which involves writing of term papers, research projects, theses and dissertations (Refnaldi, 2015).

One kind of academic texts that is required for the students to be produced is thesis proposal. Creswell (2009: 274) states in order to develop a dissertation or a thesis, the writer should firstly create a proposal as a formal description of a plan to investigate the research problems. In addition, Arikunto (2009: 7) adds that by writing a research proposal, a researcher can clearly state the intended goal of the research. Writing a thesis proposal is, then, obliged to students before they go to the field to conduct a research. As the first step, writing a proposal is required for college students before the execution of a thesis or dissertation study in order to demonstrate that they have a reasonable research plan before being allowed to begin the research. Therefore, a thesis proposal has a significant role. It is a written plan to describe a proposed research by providing clear information about the reasons to conduct the research, what to be researched and how to research.

In writing a thesis proposal, students should pay attention to the language. Language aspects become important since they will affect the meaning the writer wants to convey. Since a language is not only a matter of sentence structure, the writer's voice, word choices, contents and word orders are also important to be considered in writing an introduction section. Soles (2010: 96) and Cali (2015) are in the opinion that a good academic writing and good writers should be clear and concise. The composed information should be written straightforward to make the points delivered in an interesting way. The writers try to avoid using unnecessary words and choose the exact words to convey the meaning. Hence, they should

consider carefully about all language aspects in writing an introduction to make his introduction concise.

Related to this, Rosenwasser & Stephen (2012: 379) state that selecting more precise words will not only make the writing clearer but also sharpen the ideas. If students can choose more precise words, they can arrange the information in introduction section more densely and minimize the use of function words. As a result, it will increase the lexical density.

Lexical density is, then, necessary to be considered in writing an introduction section of thesis proposal. It provides information about word choices and sentence structures in academic writing, especially the introduction section of thesis proposal. Hence, students should be careful in selecting and arranging the words in writing the introduction to produce a qualified introduction section.

The phenomena and the complex factors influencing academic writing assured us to explore lexical density in academic writing for discussion. The paper aims at finding out lexical density of students' writing and explaining how lexical density shows their ability in writing an academic text

B. RESEARCH METHOD

A descriptive technique was used to seek lexical density and other related issues like the distribution of content words in the introduction section of thesis proposal written by English graduate students. There were 30 pieces of students writing as a document for analysis. After identifying the data were classified in order to know the ability of students and the distribution of content words revealing the lexical density. The ability of students' academic writing was analyzed by giving the score for each component of academic writing, and putting them into percentage. The rank shows the category of students' writing ability, namely 4 (excellent), 3 (Good), 2 (Fairly good), and 1 (Poor). This way is based on Soles's, and Swales and Feak's work. Knowing the lexical density was by using the Ure's theory.

C. RESULT AND DISCUSSION

Based on data analysis, the introduction section of students' thesis proposals is generally categorized as less dense. The result of the research shows that the average percentage of lexical density in the introduction section is 51.19%. The minimum lexical density is 45.71% and the maximum is 56.38%. A half of the documents (17 of 30) are in the level of less dense (range between 51%-60%) and the other half are in the level of not dense (range between 41%-50%).
It can be seen in Table 1 below.

Table 1. Lexical Density in the Introduction   Section of Students'Thesis Proposal

No.	Lexical Density	Proportion	Percentage (%)
1.	>70%	0	0
2.	61-70 %	0	0
3.	51-60%	17	56.7%
4.	41-50%	13	43.3%
Total		30	100%
Average LD		51.19%	

The finding is in line with results of other studies conducted in EFL setting, mostly on textbooks. Vinh To, et.al (2013) found that the density of some English

textbooks in Tasmania is between 45% and 53%. Generally, EFL students' writings still have low density because they have the index between 42% - 53% (Vinh To, 2013). Meanwhile, in Indonesia, the study about lexical density is limited to reading materials (texbooks) for high schools students. Rahmansyah (2012) found that most of the texts generally have density between 42% - 59%.

These results infer that the lexical density of the introduction section of thesis proposal written by graduate students is in the same level of reading materials for Junior and Senior High School students. In other words, it can be assumed that High School students can understand the introduction section of the thesis proposals. Meanwhile, the target readers for thesis proposal are English graduate students and the lecturers who have higher academic level.

The ratio of the word occurence can be reflected from the result of its Type Token Ratio (TTR) index that is 0.34, means 1:3. It indicates that the introduction sections have low lexical variety. There are few different words emerged and more repeated words are used more frequently.

To be more specific, the result of data analysis shows that the distribution of content words is dominated by nouns and verbs. In average, the students used 364 nouns and 133 verbs from 580 content words, and only 68 adjectives and 14 adverbs are appeared. The number of nouns reached a half number of total content words, twice as much as the number of verbs. In some of the documents, very few adverbs, even not any adverb can be found.

It is interesting to note that nouns and verbs are used more frequently in writing to help readers visualize the sentences (Cali, 2015). Moreover, good writers use adjectives sparingly and adverbs rarely. It indicates that nouns and verbs are the key words used in academic writing since they carry the most information in writing. Essentially, students can reduce the use of common words by using more academic words. Graduate students, then, should have possessed better vocabulary knowledge since they are considered to have higher academic level.

The frequency of content words used wthin students' writing is also listed as the most numbers found in their writing. It can be seen in Table 2.

Table 2. Ten content words mostly used isn the Introduction section

No.	Content Words							
	Nouns	**F**	**Verbs**	**F**	**Adjectives**	**F**	**Adverbs**	**F**
1.	students	1055	Use	197	high	91	especially	40
2.	writing	315	Have	179	good	78	Well	33
3.	reading	309	Make	86	important	62	Often	19
4.	teacher	306	Give	76	able	57	Daily	14
5.	Text	275	Find	74	different	50	usually	14
6.	English	229	Do	71	difficult	43	easily	11
7.	strategy	213	Know	62	appropriate	42	mostly	10
8.	learning	201	Learn	62	written	36	namely	9
9.	teaching	199	need	62	senior	32	actively	9
10.	language	183	read	56	effective	25	always	9

From Table 2, most of the ten content words are not academic words. The words like *use*, *have* and *students* are frequently used. They may be substituted by the more formal ones as needed for academic writing. For example, in place of *use*, the words *apply*, *utilize*, can be used; *have* could be replaced by *possess*, *contain* and many others; and *students* can be changed into *learners*.

Deeper analysis visualizes that the introduction section of thesis proposal still contains many function words. The number of content words is only a half of the total number of words in the text. In fact, the words which give meaning to a text are content words while function words only create relationship between the concepts in a sentence. Students should maximize the use of content words and minimize the use of function words to make the introduction section more effective and dense.

Writing long and complex sentences is seen in the sample data rather writing the concise ones. Almost all of the introduction sections were written in complex grammatical forms. Many loose sentences and some extraneous words emerged in the text. As a result, the writing product becomes pointless with long and complex sentences. This grammatical complexity became the major factor that contributed to less lexical density of the text. It can be seen in the following sample.

> *The difficulties of the students in reading can be minimized by the teacher quickly if the teachers use the strategy that appropriate with students' problem in learning process.*

From the sample, the underlined items make the text wordy. Thus, it increases the number of function words. It is in line with Johansson's (2008) opinion, stating that there is a tendency to re-use several function words to produce a new content word and to link one content word with another. The text can be revised as follows:

> *"Students' difficulties in reading can be minimized if the teachers use appropriate strategy in learning process."*

Therefore, Wallwork (2012: 23) suggests that writers should choose words that lead to the most concise sentence can be reached.

Related to this, Cali (2015) asserts that many students initially write a looser oral style adding words to the sentence in the order they come to mind. This means that everything in the students' mind is directly written in no particular order. The students do not think about the arrangement and structure of the sentences in order to make the sentences clear and brief.

Another factor is the use of more similar words or vocabulary. Eventhough sentences are clear, they are lack of variation. Some sentences have awkward structures and unclear content. Students did not succeed to use different kinds of words in writing an introduction section. The result of data analysis demonstrates that many words are repeated frequently, especially for common words or everyday words. The following sample pictures out the case.

> *"It means that the students who have self regulated learning will take responsibility in improving their writing ability. In order to improve their writing ability, the students should have high self regulating in writing. With high self regulating, the students will be more focus on achieving their goal in learning."*

These repetitions which are underlined are on three phrases (*self regulated, improve, their learning ability*) that make the sentence monotoneous and less cohesive. Based on Biber's (1988) Type-Token Ratio (TTR) index of lexical variation, the emergence of repeated words lead to low density of information.

The lack use of academic words is indentifiable within the data . Many common words such as *thing*, *people*, *way*, *do*, *make*, *get*, *use*, and *have* were still found in students' writing. In the text, "*One important thing is the teacher should alert the*

students that reading can be used as a form of entertainment.", *thing* is a common word that makes the sentence become less academic and it gives very little contribution to lexical density (Halliday, 1985: 65). Based on this finding, it can be affirmed that students have inadequate vocabulary.

In expressing the ideas of their academic writing, the writer can actually reduce the use of common words by using more academic words. Sepecifically, graduate students should have possessed better vocabulary knowledge since they are considered to have higher academic level. They should have been able to search more precise words, or consult the dictionary to find more academic words to improve their writing.

Transfering ideas through the process of translation from their mother tongue into English was shown in the arrangement of the sentences constructed. It shows that students tend to write indirectly and implicitly. The following datum demonstrates the process of translation in students' writing.

> *Even though the teacher did brainstorming technique, it had limited time which was not enough to support the students in writing analytical exposition text.*

The underlined sentence sounds awkward due to the translation process. They transferred the ideas from Indonesian into English word by word. As a result, the sentence becomes vague and long. The sentence can be revised as

> *The brainstorming done by the teacher could not optimally assist the students in writing analytical text because it had limited time.*

Similar case can also be seen in Syarif (2011) study, in which students commonly provide any less important information to start their writing. They tended to create English sentences while thinking in Indonesian style. Meanwhile, a good academic writer should be direct, explicit and straightforward (Day, 1998: 2-3). Good writers state only important information in their writing. This culture indirectly contributes to the lexical density of students' writing. If the sentences are implicit and indirect, there will be many function words, which can decrease the lexical density. As stated by Wallwork (2011), loose and long sentences will increase the number of function words. As a consequence, it decreases the lexical density.

Related to students ability on writing academic text, it is reflected in Table 3.

Table 3. Students' Writing Ability

No.	Writing Score (X)	Category	Freq. (Y)	%	X x Y
1.	4	Excellent	3	10	12
2.	3	Good	14	47	42
3.	2	Fairly Good	12	40	24
4.	1	Poor	1	3	1
	Total		**30**	**100**	
	π			**2.67**	

It shows that writing score is in four levels, 4 is the highest and 1 is the lowest, which is categorized into excellent, good, fairly good, and poor. 3 (10%) students are in the excellent category. The most are in good category. From the analysis, the

average category of students ability is in average level, which is shown in the score of 2.67.

In line with the discussed data analyzed, it is clearly seen that the lexical density of the text written by students is mirrored in their writing ability. It is clear that both lexical density and writing ability are mutual dependent. The average ability is caused by the less dense text or vise-versa. The more students have the knowledge of lexical density and apply them in their writing, the more qualified their writing is. It is inline with Creswell's opinion that in order to develop a dissertation or a thesis, the writer should firstly create a proposal as a formal description of a plan to investigate the research problems (2009: 274).

D. CONCLUSION

This study shows that lexical density in the introduction section of thesis proposal written by English graduate students is categorized as *less dense*. It can be figured out from any components of its characteristics. Almost in all components determined, the text written did not apply the characteristics of good academic writing as they should be. The *average* level of students' ability in writing signals the category of their text lexical density that is in less dense category. In short, it can be asserted that English graduate students still have limited knowledge about the language use in writing an academic text.

The implication of this research is that students should give more attention to the language aspects of their writing, especially in writing an academic text. They should consider the choice of words in writing academic text, improve their vocabulary knowledge, and bring their vocabulary knowledge into active use in writing.

Moreover, the lecturers need to lead and assist the students in choosing more precise and concise words. They should train students how to construct a more precise text so that students' writing will have good quality in academic setting. Besides, they should train students to get used to the concept of grammatical metaphors. Hence, it is recommended to provide the topic of lexical density in the subject of academic writing subject in the syllabus of English study program of higher education.

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