

An Examination of Lexical Bundles in L2 Linguistics Journal Articles and Their Relationship to Disciplinary Variations

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ABSTRACT

The analysis of lexical bundles had been done by several studies from various genres and registers. However, the majority of the studies of lexical bundles in academic discourses which were written by Indonesian writers only focused on the level of expertises and English proficiencies. Therefore, one of the linguistic features that could be a characteristic marker in academic writing which were written by L2 English writers, including Indonesian, is through the identification of lexical bundles. However, those characteristics could be used as a list which could help writers constructed their research article. In addition, to fill this need in revealing the characteristics of research articles which were written by Indonesian writers, this study identified lexical bundles used in academic writing structurally and functionally, focusing on applied linguistics. By using corpus-based analysis, this study took a wider analysis than previous work. The combination of qualitative approach and quantitative approach were also applied in this study. The data were taken from five linguistics journal articles. Structural classification by Biber et al., (2004) and functional taxonomy approach by Hyland (2008a) were applied. The results reveal that 1) Indonesian writer has advanced writing in academic text because they use various structure of lexical bundles 2) the use of noun phrase category dominate the text 3) the verb phrase category was the second most highly used in the text. These results showed that Indonesian writers have more variations in the way they express their logical view in their research articles, especially on applied linguistics.

KEYWORDS

Indonesian
Corpus
Lexical bundles
Academic writing
Register



1. Introduction

Since the study of lexical collocation has been carried out by several researchers, the study of multi-word expressions is being developed until today. Several terms of the study of multi-word constructions have been explored such as ‘formulas’, ‘pre-fabricated patterns’, ‘fixed-expression’, ‘routines’, and ‘lexical phrases’. Then, the identification of lexical units using frequent word sequences in academic discourse with the term ‘lexical-bundles’ was developed and proposed by Biber & Conrad (1999). In detail, they stated that lexical bundles are “the most frequently occurring

sequences or words' in a given register (Biber, 2006, p. 134). Another definition stated by Hyland (2008b, p. 6) to define lexical bundles as "words follow each other more frequently than expected by chance". The sequences of lexical bundles start from two to six words combinations. Generally, the word structure of lexical bundles is divided into three, noun phrase based (e.g. *the use of the*), verb phrase based (e.g. *can be seen as*), and prepositional phrase based (e.g. *in the form of*) (Chen & Baker, 2010).

Many studies have been done in discovering lexical bundles used whether in the spoken or written register, interdisciplinary or intradisciplinary, and within L1 which stands for English as First Language students or L2 which stands for English as Second Language students (Biber et al., 2004; Pan & Liu, 2019; Ren, 2021; Shirazizadeh & Amirfazlian, 2020). Biber et al., (2004) conducted a study of lexical bundles that take a frequency-driven approach in university teaching and textbooks. This study becomes the first research that explored the lexical bundles using a frequency-driven approach. They also proposed the structural and functional taxonomy approach to analyze lexical bundles. They found that there is a close relationship between the frequency-driven approach to structural classification to reveal specific functions in academic genres.

It is widely realized that lexical bundles could also be used to indicate proficiency of English among language learners. Pan & Liu (2019) found that L2 of academic English writers used more bundles type and tokens rather than L1-English academic writers where they focused on the use of lexical bundles in student and expert writing between L1 and L2. However, based on the level of expertise, phrasal bundles are the most used by both L1 writers and L2 writers, proportionally. Shirazizadeh & Amirfazlian (2020) explored the used of lexical bundles in applied linguistics study field and compared them in the three different genres of theses, research articles, and textbooks. They revealed that the use of lexical bundles still varies across those three genres even in the same discipline. They also revealed that textbooks have the lowest bundles than research articles. Moreover, when the emergence of lexical bundles is compared between a wider discipline of applied linguistics and pharmaceutical science, Ren (2021) found that variability between disciplines plays an important role to examine fixed and unfixed use of lexical bundles where pharmaceutical sciences have more fixed bundles rather than applied linguistics.

Another strand of research has been emphasized to disclose lexical bundles used in written academic discourse (Cortes, 2004; Hyland, 2008a). By comparing the use of lexical bundles in student's writing of history and biology, Cortes (2004) revealed that the bundles which were used by students were rarely found in the published author. This finding means there are differences in the function of using lexical bundles between student's writing and published authors. However, Hyland (2008a) inspected the issue of lexical bundles used in master theses, research articles, and doctoral dissertations. He also revealed that students used more bundles rather than published articles. He concludes that those three different academic research shared dissimilar lexical bundles in developing their arguments and their credibility of their articles.

A growing interest has also extended to the appearing of lexical bundles in academic discourses which were written by L2 writers (Haq et al., 2021; Lee et al., 2020; Oktavianti & Sarage, 2021; Ruan, 2017). Focusing on the academic writing of Chinese students across different levels at English medium universities, Ruan (2017) disclosed that students tend to utilize more bundles types when they are progressed to a higher level. Structurally, NP-based is highly used by Year 1 essay rather than the writing of later years. Conducting the study of lexical bundles in written essays of Korean university students, Lee et al., (2020) examined that Korean students have a low use of PP-based. However, they also revealed that Korean students show a tendency to use lack of mixture of bundles in their essays. In line with the study by Ruan (2017), Oktavianti & Sarage (2021) found that NP-based is the most frequent in essays of Indonesian writers. Hence, Indonesian writers lack accuracy and variant of lexical bundles based on the context used in the essays. Different results were also found by Haq et al., (2021) where from the results of an analysis of lexical bundles structure in applied linguistics studies, they found 5-word bundles were the highest bundles used in the top 20 ranks of Indonesian corpus. Unfortunately, they only focused on the structural classifications and excludes the functional taxonomy of lexical bundles used. This also considers as a gap of their

research while functional-driven approach of the use of lexical bundles is important to identify the accuracy and variation of English by Indonesian writers.

All the prior studies that have been mentioned, revealed the urgency of investigating lexical bundles in various registers and genres. However, the studies of lexical bundles are mainly focused on lexical bundles used related to English proficiency and level of expertise. Whereas, lexical bundles are also related to the author's 'communicative experience' (Hyland, 2012) where the difference in the use of lexical bundles between L1 writers and L2 writers is not because of the level of proficiency but rather because of differences in characteristics that arise as a result of different experience and context. According to Pan et al.,(2016), there is not even a definite benchmark regarding to the variance in the use of lexical bundles by L1 and L2 academic writers. For example, a previous study found that there were consistent distinctness of lexical bundle used between L1 and L2 in the academic writing (Chen & Baker, 2010). However, there are also those who found that the level of expertise determines the use of variations in lexical bundles in academic writing rather than native like proficiency (Cortes, 2004; Römer & Arbor, 2009). There is an inconsistency in the result of the study which compares the employment of lexical bundles between L1 and L2 English writers regarding to the native like proficiency of English. Therefore, Pan et al.,(2016) suggest that registers are the most essential predictors in the examination of lexical bundles.

By these arguments, this research tried to conduct the analysis of lexical bundles in Indonesian published articles which analyze the structure and the function to prove that the variation of lexical bundles which were used by Indonesian writers is related to the writer's habits and characteristics as L2 English learner rather than nativity and proficiency level of English. This is also important to extend the writing course and material regarding to the application of varieties of lexical bundles in an appropriate contexts since this study is focused on the disciplinary variation of linguistics. Based on this consideration, this study aims to identify the emergence of lexical bundles as a linguistics feature and linguistics marker in research articles of applied linguistics which wrote by Indonesian writer as L2 English user. To this aim, the following two research questions are written down below:

- a. What are the most frequent of lexical bundles used in Indonesian published articles in the field of linguistics?
- b. What are the structural and functional constructions of lexical bundles used by Indonesian published articles in the field of linguistics?

2. Methode

To identify all the lexical bundles which were found in academic writing in the field of linguistics, both corpus-based analysis and qualitative research approach were applied. The corpus-based analysis helped to identify the frequency data while the qualitative research approach was used to describe results and findings based on the structure and functional taxonomy.

2.1. Corpus Method

This study used *AntConc 3.5.8* (2019) as a tool to identify a list of the frequency of lexical bundles which appears in the data sources. The data were taken from research articles of L2 writers which is published by Indonesian journals. Research article is one of the models of academic writing (Alangari et al., 2020). Those research articles were compiled from five Indonesian journal publishers, namely IJAL (*Indonesian Journal of Applied Linguistics*), JOALL (*Journal of Applied Linguistics and Literature*), IJELLTAL (*Indonesian Journal of English Language Teaching and Applied Linguistics*), Parole (*Journal of Linguistics and Educations*), and PRASASTI (*Journal of Linguistics*). Those journals were selected due to the focus of the study in the field of linguistics and provided open access to visit and download. In addition, those journals have a great score and indexes in Indonesia based on the SINTA rating. There are 138 articles in total which were published in 2020-2021. This consideration was applied due to the limitation of the present study which focuses on English lexical bundles analysis in L2 writers. Another limitation was applied in the present study where this research only focused on the article that was published in 2020-2021 as the recent article. Table 1 provided details information regarding to the sources of data as well as the number of articles and words.

Table 1. Data Sources

| Journals | Year | Number of Articles |
|---|-----------|--------------------|
| IJAL (<i>Indonesian Journal of Applied Linguistics</i>) | 2020-2021 | 62 |
| JOALL (<i>Journal of Applied Linguistics and Literature</i>) | 2020-2021 | 22 |
| IJELLTAL (<i>Indonesian Journal of Language Teaching and Applied Linguistics</i>) | 2020-2021 | 19 |
| Parole (<i>Journal of Linguistics and Education</i>) | 2020-2021 | 19 |
| PRASASTI (<i>Journal of Linguistics</i>) | 2020-2021 | 16 |
| Total | | 138 |

There are several steps in collecting the data of this research. Firstly, all the articles were downloaded based on the screening criterion of the linguistics field, publication of the year, and the language. Then, the default step was adopted from Cortes (2004) in cleaning the articles by removing the complementary elements of the references, appendixes, notes, headers, footers, tables, and figures. Because, the corpus tool only provides txt files, the data were exported to txt. Then, the feature of n-gram in by Anthony (2019) *AntConc* (3.5.8) was used to identify four-word bundles by load the corpus text into *Antcon* (3.5.8) firstly. Then set the cluster size into four words with the frequency and the range of which have been determined in this study.

2.2. Lexical Bundles Investigation

The four-word string bundles were selected to be analyzed in this study. This focused criterion was selected because prior research has proven that four-word bundles have high probability to appear in academic setting (Biber et al., 2004; Biber & Barbieri, 2007; Chen & Baker, 2010; Cortes, 2004; Dahunsi & Ewata, 2022; Hyland, 2008a). To identify the lexical bundles in the data that had been extracted, hereafter two common criteria were applied, namely frequency and dispersion (Biber et al., 2004; Cortes, 2004; Hyland, 2008a; Hyland & Jiang, 2018). The typical frequency of lexical bundles studies ranges from ten per million words to forty occurrences per million words (Biber et al., 2004; Biber & Barbieri, 2007). However, Yin & Li (2021) applied higher frequency threshold of 50 times appearance of bundles per million words. In contrast, the present study followed the cut-off frequency threshold by Kashiha & Heng (2014) by applying the frequency which occurs 20 times per hundred thousand words because this research has a small corpus so that the distribution frequency is also in line with the number of corpus owned.

The next criteria of lexical bundles identification are dispersion criteria which are used to exclude the writer's idiosyncrasies (Biber et al., 2004). The different studies used different criteria of dispersion. Some of those took at least 20 different text distributions of lexical bundles (Biber et al., 2004; Biber & Barbieri, 2007). Some of them used percentages to include the text dispersion of 10% (Nasrabad et al., 2020; Pan & Liu, 2019; Yin & Li, 2021). And other used the raw of 5 different texts (Hyland, 2008a; Kashiha & Heng, 2014). Since the present study has a small number of corpus so the lowest dispersion was applied in the range of 5 occurrences in different texts.

After that, the investigation of four-word lexical bundles structure used classifications which proposed by Biber et al., (2004). This approach was adopted because it is developed from the previous research by Biber & Conrad (1999) which noted as the most widely used and comprehensive of structural classification of lexical bundles (Pan & Liu, 2019; Yin & Li, 2021)). Regarding to the structural classification of lexical bundles, they divided into three main categories which incorporate "verb phrase fragment", "Dependent clause fragment", and "noun phrase and prepositional phrase fragment". Table 1 shows a detail classification of the structural taxonomy approach by Biber et al., (2004).

Table 2. structural taxonomy approach and the sample bundles by Biber et al., (2004, p.381)

| Structural categories | Sub-categories | Sample bundles |
|---|---|------------------------|
| Lexical bundles that incorporate with verb phrase fragments | 1 st /2 nd person pronoun + VP fragment | "you don't have to" |
| | 3 rd person pronoun + VP fragment | "it's going to be" |
| | Discourse marker + VP fragment | "you know it was" |
| | Verb phrase (with non-passive verb) | "take a look at" |
| | Verb phrase (with passive verb) | "shown in figure N" |
| | Yes/no questions fragment | "does that make sense" |
| | WH-questions fragment | "how many of you" |
| Lexical bundles which incorporate with dependent | 1 st /2 nd person pronoun + dependent clause fragment | "you might want to" |

| | | |
|--|--|---------------------------------|
| clause fragment | WH-clause fragment | <i>"what's going to happen"</i> |
| | If-clause fragment | <i>"if you have a"</i> |
| | To-clause fragment | <i>"to sum up the"</i> |
| | That-clause fragment | <i>"that I want to"</i> |
| Lexical bundles that incorporate with noun phrase and prepositional phrase fragment | Noun phrase with of-phrase fragment | <i>"one of the things"</i> |
| | Noun phrase with other post-modifier fragment | <i>"those of you who"</i> |
| | Other noun phrase expression | <i>"and thing like that"</i> |
| | Prepositional phrase expression | <i>"at the moment of"</i> |
| | Comparative expression | <i>"as big as the"</i> |

For the functional classification of lexical bundles, the present study adopted Hyland's (2008a). This approach was chosen because he developed an approach of functional classification of lexical bundles focusing on academic disciplinary variation. This consideration is used because this research analyzes articles which were published in the academic genre. He divided it into three main functional categories and those are research-oriented, text-oriented, and participant-oriented (p.49-50). Research-oriented "help the writers to structure the activities and experiences of the world"; text-oriented of lexical bundles is the cluster that "concerned with the organization of the text and the meaning of its elements as a message or argument"; The last type of the functional taxonomy of lexical bundles is participant-oriented which "focused on the writer or reader of the text" (Hyland, 2008a). Table 3 conveys the detailed classification and categorization of lexical bundles proposed by Hyland (2008).

Table 3. Functional classification of lexical bundles by Hyland (2008a, p. 49)

| Categories | Sub-categories | Functions | Examples |
|--------------------------|-----------------------|--|-------------------------------|
| Research-oriented | Location | Indicating time and place | <i>"at the same time"</i> |
| | Procedure | Indicating events, actions, and methods | <i>"the use of the"</i> |
| | Quantification | Indicating quantities | <i>"a wide range of"</i> |
| | Description | Indicating property | <i>"an important role in"</i> |
| Text-oriented | Transitional signals | Establishing additive or contrastive links between element | <i>"on the other hand"</i> |
| | Resultative signals | Making inferential or causative relations between elements | <i>"the result of the"</i> |
| | Structuring signals | Organizing stretches of discourse or direct reader elsewhere in text | <i>"as hown in table"</i> |

| | | | |
|-----------------------------|---------------------|--|------------------------------|
| | Framing signal | Situating arguments by specifying limiting conditons | <i>"in the case of"</i> |
| Participant-oriented | Stance features | Convyng writer's attitudes and evaluations | <i>"it is possible that"</i> |
| | Engagement features | Addressing reader directly | <i>"it should be noted"</i> |

3. Result and Discussion

The Frequency of Lexical Bundles

Based on the results of corpus identification on academic research in the field of applied linguistics written by Indonesian authors, it shows that there are 505 types of lexical bundles from the total tokens of 9836. Table 4 Present detail information on the rank of the 25-most widely used lexical bundles in the article on applied linguistics by Indonesian writers. As shown in table 4, the bundles of *in the term of* and *on the other hand* are highly used regarding the frequency and range. This result also supports the previous research from Cortes (2004) and Lee et al., (2020) that prepositional phrase which incorporate with "off" phrase is widely used in academic prose, included in the academic prose by Indonesian writers. However, several lexical bundles show the same frequency but different ranges such as *at the end of*, *can be concluded that*, *in terms of the*, and *in the context of*.

Table 4. The top 25 lexical bundles in *AntConc*

| Rank | Lexical bundles | Frequency | Range |
|------|--------------------------------|-----------|-------|
| 1 | <i>"in the form of"</i> | 219 | 62 |
| 2 | <i>"on the other hand"</i> | 177 | 78 |
| 3 | <i>"the result of the"</i> | 114 | 54 |
| 4 | <i>"can be seen in"</i> | 87 | 55 |
| 5 | <i>"is one of the"</i> | 85 | 59 |
| 6 | <i>"it can be seen"</i> | 84 | 45 |
| 7 | <i>"as well as the"</i> | 71 | 41 |
| 8 | <i>"it can be concluded"</i> | 66 | 30 |
| 9 | <i>"is in line with"</i> | 65 | 41 |
| 10 | <i>"can be seen from"</i> | 64 | 43 |
| 11 | <i>"the other hand the"</i> | 62 | 45 |
| 12 | <i>"at the end of"</i> | 61 | 35 |
| 13 | <i>"can be concluded that"</i> | 61 | 28 |
| 14 | <i>"in terms of the"</i> | 61 | 37 |
| 15 | <i>"in the context of"</i> | 61 | 35 |
| 16 | <i>"in line with the"</i> | 59 | 38 |
| 17 | <i>"the findings of the"</i> | 58 | 35 |
| 18 | <i>"can be seen that"</i> | 54 | 28 |

| | | | |
|----|----------------------|----|----|
| 19 | "in the use of" | 54 | 21 |
| 20 | "the end of the" | 54 | 33 |
| 21 | "the meaning of the" | 54 | 23 |
| 22 | "it was found that" | 53 | 25 |
| 23 | "the use of the" | 53 | 29 |
| 24 | "the result of the" | 52 | 22 |
| 25 | "used in this study" | 52 | 33 |

Structural Analysis of Lexical bundles

The structural investigation of lexical bundles used in this article is proposed by Biber et al., (2004) which is divided into lexical bundles that integrating with verb fragment, lexical bundles that integrating with dependent clause fragment, lexical bundles that integrating with noun phrase fragment, and lexical bundles that integrating with prepositional phrase. Overall, all types of structures of lexical bundles were found in the journal that wrote by Indonesian. This show writers flexibility in using the disparate structures of lexical bundles in their article of academic writing genre (Kashiha & Heng, 2014).

The most highly used of lexical bundles from the identification of the corpus is lexical bundles that incorporate with noun phrase fragment with total type of 203. This result is also in line with the result from Biber & Berbieri (2007), Shirazizadeh & Amirfazlian (2020), and Pan et al. (2016) that academic prose tend to use noun phrase fragments. This also shows the key characteristic of lexical bundles which used in academic writing. In contrast, this result of the study is different from Kwary et al. (2017) who found that prepositional-based is the most highly used while the noun phrase fragment is the lowest bundles used in journal articles which published by Elsevier (2016) which a total bundles 74.2%.

The similarities and differences in the findings of this study with previous research can be drawn to several conclusions. First, the similarity which was found in Shirazizadeh & Amirfazlian (2020) show that the highly used of noun phrase fragment in the research article of applied linguistics by Indonesian writers is because they came from same study field even though in different academic writing such as articles, theses, and textbooks, where different disciplines tend to have different lexical bundle used in term of 'mapping territory' (Durrant, 2017). In addition, the similarity to those of pan et al., (2016) shows that applied linguistics articles share similarities to telecommunication articles of the highly used of noun phrase fragment. While the different results with Kwary et al. (2017) are because the data from their study is across discipline such as *health science, life science, physical science, and social science* and they do not differs whether the writer of the articles comes from L1 or L2 English learners.

For instance, writers also use more noun phrase fragment variations in the subcategory of noun phrase with other post-modifier fragment such as *the result of the, the other hand the, and the finding of this*. Based on the study by Kwary et al. (2017), the sub-category of post-modifier fragment *the result of the* is only found in Social Science where applied linguistics is also a discipline from Social Science. Interestingly, based on the 25-top rank of bundles, prepositional phrase fragment is in the first and second list regarding to the frequency and dispersion as seen in table 4 (e.g. *in the form of* and *on the other hand*). This result indicates that the highly used of prepositional phrase fragment of *in the form of* and *on the other hand* show the characteristic of Indonesian academic writers since the previous study also found that those bundles is highly used whether in undergraduate thesis, graduate thesis, and argumentative essays (Oktavianti & Prayogi, 2022; Wachidah et al., 2020).

The second most varied lexical bundles found in this study were verb phrase fragment with a total of 163 types of bundles. The second highest result is actually different from the research by

Shirazizadeh & Amirfazlian (2020) where the second highest structure of lexical bundles in their study is prepositional fragments. This difference is most likely because they analyze L1 English writers while this present study identifies L2 English writers. However, the result of this current study is in line with those by Qin (2014) where verb phrase fragment is the second highest lexical bundles emergence in published articles. The indication of this similarity is due to the same object of research of Applied Linguistics article which wrote by non-native. This result also could be used as a mark of disciplinary variation of Applied Linguistics academic discourse by L2 English writers.

In addition, passive verbs form as the sub-category of verb phrase fragment is the second highest bundles used in this present study. This finding indicates that many Indonesian writers use passive voice such as *can be seen in*, *it can be concluded*, and *can be seen from* as the key genre of academic writing. Different of the study which was conducted by Kashiha & Heng (2014) where verb phrase fragment dominate the lexical bundle's structure in academic lectures while in this study verb phrase fragment was the second most used after noun phrase fragment. However, completing the previous studies, the widely used of verb phrase fragment which was found in this study have possibility that academic lectures and academic writing might influence one another.

Based on the analysis done by Pan & Liu (2019), the subcategory of anticipatory 'it' + verb phrase was highly found in the L1 expert writers rather than L2 expert writers. The indication of this result is might be other languages do not have the counterpart of 'it', especially in Chinese, since the object of their study is Chinese L2 expert writers. However, this study found that the subcategory of anticipatory 'it' + verb phrase is the second highest appearance of lexical bundles by Indonesian writers of applied linguistics. Even the anticipatory 'it' might cause problems to non-native writers because in Indonesia has no this counterpart (Hewing & Hewings, 2002), the way Indonesian writer of applied linguistics used this pattern most often shows the author's ability in choosing linguistics features that are close to the nativity level of English in academic discourse.

Besides, several bundles also show similarities such as *can been seen in* and *it can be seen*, *can be concluded that* and *it can be concluded*, *the other hand the* and *on the other hand*. These inventions increase the variety of lexical bundles used by Indonesian writers, structurally. However, those similar structures of lexical bundles were actually formed from the wider and the same structures based on the concordance identification.

Lastly, the lowest structural classification of academic writing by Indonesian writers are lexical bundles that integrate with dependent clause fragment for a total of 21 types. Those consists of the subcategory of *to*-clause fragment (e.g. *to be able to*) and *that*-clause fragment (e.g. *that the use of*). However, the present study did not find the dependent clause structure of the subcategory of 1st or 2nd person pronoun + dependent clause fragment, WH-clause fragment, and *if*-clause fragment. This shows that Indonesian writers of academic prose have a low variety of lexical bundles of dependent clause.

Functional Analysis of Lexical Bundles

In the analysis of functional categories of lexical bundles, three main categories were carried out from the approach by Hyland (2008a) which are divided into *research-oriented*, *text-oriented*, and *participant-oriented*. Based on the corpus result of concordance identification, text-oriented shows the most functional category of lexical bundles in articles written by Indonesian. With the subcategories of framing signals, Indonesian writers tend to use 'prepositional phrase expressions' to specify their argument.

- 1) *The violation comes in the form of adding irrelevant or unnecessary...*
- 2) *The negotiation in German could be in the form of words, phrases, sentences, ...*

The current study shows that Indonesian writers use considerably more prepositional phrase expression which shows a preference that situates and limit their argument in specific conditions.

The prepositional phrase expressions indicates several functions of text-oriented where it is used to connect ideas in research article, direct readers in a specific need of the text, and also could specify research limitations (Hyland, 2008b). In so forth, Hyland (2008b) claimed that this prepositional phrase expression reflects more discursive patterns of arguments where this is usually found in academic discourse of the soft science. In addition, as a study in the humanities field, the use of these expressions in the academic discourse of applied linguistics which were wrote by Indonesian writers are also reflecting a discourse on real-world phenomena so that the orientation of bundles functions are more to make argumentative writings.

The appearance of these prepositional phrases (e.g. *in the term of*) are also functioned to specify or framing the writers idea to make a persuasive sentence and involve this function into professional world (Hyland, 2012). The most highly percentage of text-oriented bundles in academic research articles which were written by Indonesian writers show genre-specific as social-based research and link between literature engagement and directing the reader in the text. Even though prepositional phrase expressions are found in the top rank of 4-word bundles used with the most frequency in Indonesian writers, noun phrase fragment exist overwhelmingly in the journal articles of lexical bundles as a whole. This also revealed that Indonesian writers used more variation in the noun phrase for several functions.

- 3) *The results of the study demonstrate that learners...*
- 4) *Table 3 shows the results of the correct identification.*
- 5) *it was found that speakers modify their speech*

The examples above show the structure of text-oriented function of resultive signals, where Indonesian writers use to make a logical connection between methodology and finding in their article. For instance, Indonesian writers tend to use noun phrase fragment in order to describe their finding in their research articles. The use of these signals is mostly found in research articles of hard science (Hyland, 2008b).

However, the fact that resultive signals are also found in research articles of applied linguistics indicates that Indonesian writers tend to direct readers focused on one main result in their research so that readers could highlight the main conclusions in the article. Although the reader will focus more on one main conclusion in an article, the use of resultive signals by Indonesian writers still opens a discursive space where the reader could respond to or refute the results through various interpretations. This result is another fact which shows that Indonesian writers of applied linguistics 'more often proceeded a more conciliatory stance' (Hyland, 2008b, p. 17). This result reinforces previous findings from Oktavianti & Sarage (2021) that Indonesian writer widely used noun phrase-based to establish their structural writing comprehensively whether in an argumentative essay or a research article. This difference might be because a different subject of academic discourse where they analyze essays while the current study is research articles.

Although noun phrase fragment was the most familiar structure in the whole cluster of lexical bundles by Indonesian writers, they also made considerable use of verb phrase fragment.

- 6) *The results of each statement can be seen in table 7*
- 7) *it can be concluded that bilingualism does not improve*

The verb phrase with passive verbs dominate the structure of the verb phrase fragment. Even Biber & Conrad (1999) point out that verb phrase bundles is rare in academic writing, this study shows a contrast result where verb phrase is the second most common structure of bundle used by Indonesian writer. Further, Biber & Conrad (1999) explain that passive voice plays an important rule to express "logical view, locative relations, signifying graphical information, and highlighting research observation" (p. 1020). It means that the majority of the verb phrase used by Indonesian writers indicate that they express their logical view and locative relations in their research articles. In line with Hyland (2008a) of functional taxonomy, the use of the verb phrase fragment by Indonesian writers express participant-oriented which focused on writers or readers and evaluate

the writer's attitude. This research supported previous research from Shirazizadeh & Amirfazlian (2020) that participant-oriented, especially the stance feature, was common in research article rather than other academic writing because it functions as promoting their articles of the journal they published.

4. Conclusion

This study attempted to explore a corpus study of structural and functional classifications of lexical bundles in published research articles by Indonesian writers focusing on applied linguistics. First of all, it was found that all varieties of the structure of lexical bundles was found in the research article of applied linguistics which wrote by Indonesian. The result was also supporting previous study in the highly used of noun phrase fragment. On the other hand, the second highly used of verb phrase fragment was contrast to the previous study. It should be noted that Indonesian writers have more variations in the way they express their logical view in their research article. This study showed new perspective of lexical bundles used by Indonesian writer especially in the research article.

Regarding to the functional of lexical bundles, this research seems to reveal that academic genre shows an inclusive function of their genre and style regarding to get reader attentions in their research article. Since there is no comparison of this study, the level of expertise and proficiency of Indonesian writers could not be revealed respectively, but the way they used more lexical bundles variation shows that their pedagogical implication of English in academic writing is well structured. The list of lexical bundles which found in this study of also have potential application for teaching Indonesian academic writer due to variation of lexical bundles type used by previous writers.

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