IDENTIFICATION OF LEXICAL COHESION IN ACADEMIC WRITING: A SYSTEMIC FUNCTIONAL ANALYSIS

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ABSTRACT

This study examines the utilization of lexical cohesion in the writings of Pakistani English learners. The participants for this investigation were English language learners from Government College University Faisalabad. The research explores the organization and patterns of lexical cohesion in the academic writing of Pakistani learners. The study involves the collection of student writings from MPhil scholars at Government College University Faisalabad, with a focus on analyzing the "introductions" of ten theses. The UAM software was employed for coding, and quantitative results provided by the UAM corpus tool were further scrutinized through the lens of Halliday's Systemic Functional Theory. The findings of this study unveil insights into the unity, overuse, under-use, distribution, frequencies, and categories of lexical cohesion in research projects. This research holds significance as it offers non-native writers recommendations on incorporating Systemic Functional Grammar to enhance cohesion in their writings. It elucidates the reasons and methods for employing cohesive lexical devices, emphasizing the importance of coherence in establishing a strong, continuous impression on the reader.

Keywords: Lexical Cohesion, Academic writings, Second Language Learners, UAM tool

INTRODUCTION

In numerous countries, the prioritization of "English as a foreign language" and "English as a second language" for educational purposes has become evident. In Pakistan, it is now a compulsory subject for non-native students, essential to meet economic needs and pursue higher education. However, challenges persist as non-native students face difficulties in achieving fluency in spoken English (Adil, 2018), and a lack of versatility is observed in the writings of ESL learners, contributing to an overall decline in the proficiency of Pakistani students, including their writing skills.

According to Grossberg and Wiley (2006), writing serves the purpose of generating ideas and acquiring the skill of effective lettering. McKay (2013) emphasizes that teaching writing rules can lead to a loss of interest among learners, especially when demanding flawless writing, perfect punctuation, and artistic lettering. Instead, he suggests an approach where learners are taught independently through activities, emphasizing the purpose of writing and the appropriate use of words in context. McKay also underscores the importance of cohesion as a crucial aspect of writing, used to create coherence and links within the text.

Non-native writings differ from native writings due to a lack of flow in their semantic structure, primarily because non-native writers often lack awareness of lexical cohesion. Second language learners tend to repeatedly use familiar words either due to a lack of awareness of new words or a fear of making mistakes. Michael Halliday introduced the concept of Systemic Functional Linguistics, which studies the relationship between language and its function in a social setting. Halliday (2014) proposed a model where cohesion is categorized into grammatical cohesion and lexical cohesion. Cohesive ties are formed through collocation and reiteration, with reiteration having sub-types such as elaborating relations (synonym, repetition, hyponymy) and extending relations (meronymy).

Recognizing the significance of lexical cohesion for text generation and language processing, it is crucial for acquiring language proficiency. The production of a cohesive textual structure in writing yields positive effects. Learning and applying a lexical approach have numerous advantages, particularly for educational purposes and spoken languages. The use of lexical cohesion makes language comprehensible and natural-sounding, serving as one of the most effective ways to communicate ideas and concepts in writing. Encouraging students to pay attention to reiteration and collocations is a highly proficient method for enhancing their informative power, as lexical expressions and collocations meet informational needs and empower academic writers to reuse and create cohesive units.

Research Questions

What students utilize semantic structures to produce lexical cohesion?

How second language learners utilize lexical cohesion devices?

What are the crucial implications for second language learners to amend their writing qualities emerging from this dissertation?

Objectives

To check out the semantic structure of second language learners while creating cohesion in academic writings

To find out the utilization, functional role, and distribution of lexical cohesive devices in second language learners' writings.

To find out second language learners use proper lexical cohesion or not.

LITERATURE REVIEW

Utilizing Gutwinski's Model for research, Kadiri (2016) investigated the use of lexical cohesion in English essays. Essays from students at the University of Nigeria were collected for analysis through a mixed-method approach, employing Gutwinski's (1976) stratification framework. Results revealed that ESL learners employed three lexical elements—collocation, repetition, and synonym—suggested by Gutwinski. Repetition was predominantly used by students to establish cohesion in their work. However, limited use of lexical sets and synonyms indicated a need for improved knowledge among second language learners regarding lexical cohesion. Kadiri recommended the explicit teaching of lexical elements to enhance the cohesion of ESL learners' writings.

The English language, crucial for

communication and academic writing, places a premium on cohesion. Fatimah (2014) explored the application of lexical cohesion in the academic writing of postgraduate students using a qualitative method. The study found that postgraduate second language learners tended to use repetition more than other types of lexical cohesion, indicating a weakness in their understanding of lexical cohesion. The study suggested the necessity of teaching various lexical elements to enhance the writing skills of ESL learners.

Cahyono (2012) examined the thematic patterns in the writings of second language learners, analyzing ten student writing samples qualitatively based on Halliday and Hassan's (1976) Systemic Functional Grammar. The results demonstrated that thematic patterns contribute to cohesion in the writings of second language learners. Cahyono recommended the teaching of Systemic Functional Linguistics to enhance the cohesion of second language learners' writings.

Textual meta-function is crucial for writing continuity, and Paziraie (2012) investigated the impact of teaching textual meta-functions to EFL learners. Employing a qualitative method, Paziraie divided 60 female students into experimental and control groups. The experimental group received instruction on cohesion and coherence in writing, while the control group did not. Results indicated a higher level of cohesion in the experimental group, highlighting the positive influence of teaching textual meta-functions on cohesion and coherence in EFL learners' writings.

Kuncahya (2015) employed Hallidayan and Bloor and Bloor's models to analyze the types of cohesion in grade X textbooks in Nigeria. The qualitative research identified reiteration as the most prevalent type of cohesion, suggesting that teachers should be knowledgeable about cohesion while instructing language.

To address writing problems, Arunsamran, Authok, and Poonpon (2011) examined graduate students' writing issues at Khon Kaen University, Thailand. Using linguistic error analysis, the researchers employed a mixed-method approach, concluding that word-centered approaches, lack of vocabulary knowledge, overuse of specific words, and grammatical shortcomings were key problems. The study emphasized the importance of

focusing on grammatical and lexical features in writing instruction.

Supplementary materials play a vital role in improvement, as Anuyahong (2011) investigated the development of EFL reading materials. The study revealed positive learner responses and the significant impact of EFL reading materials on learners' development.

When learners lack awareness of cohesive ties, Bagheri and Riasati (2015) explored writing problems and proposed solutions for enhancing writing skills among EFL/ESL learners. The study concluded that both graduate and post-graduate learners could improve their writing by addressing identified problems and suggested solutions for cohesive writing.

Xuefan (2007) conducted a mixed-method approach to investigate cohesive ties in Chinese writings, concluding that EFL learners' writings exhibited a reliance on repetition, indicating a lack of vocabulary knowledge. The study emphasized the strong relationship between lexical cohesion devices and vocabulary acquisition.

Repetition, while a device for cohesion, can be flawed when overused. Wu (2010) explored low-quality and high-quality discourse, finding that learners frequently used repetition and general terms. The study suggested that English learners should improve their knowledge of lexical ties for more cohesive oral English.

In a recent study, Chanyoo (2018) examined Thai undergraduate learners' essays, identifying the frequency and types of cohesive ties. The study revealed that learners predominantly used reiteration among various types of ties.

Akogbeto and Amoussa (2019) analyzed newspapers to illustrate the functions of cohesive devices for second language learners' understanding. Reiteration was found to be the most frequently used cohesive device.

Crossley and Kyle (2016) employed a mixed-method approach to investigate cohesive devices in student writings. Using Coh-Merix, TAACO, and Wordnet database tools, the study concluded that second language learners demonstrated improvement in writing quality throughout the semester.

Ebrahimpourtaher and Eissaei (2013) divided intermediate learners into control and experimental groups, teaching the experimental group Halliday and Hassan's (1976) model. The study revealed an improvement in the

experimental group, emphasizing the need to teach Systemic Functional Grammar for enhancing coherence in writings. Vantonder (1999) examined the impact of lexical ties on coherence in academic writing, suggesting that Second Language Learners should be taught the use of prefixes, suffixes, and proper vocabulary utilization. The study emphasized that further research could focus on reader inference-making. Mahlberg (2006) emphasized the role of cohesion in English language teaching textbooks for non-native learners. The study suggested a relationship between cohesion and English language teaching, highlighting its positive impact on learners.

Sequence is crucial in reading and writing, as Muto (2006) thoroughly analyzed lexical cohesion's impact on ESL learners' writing and reading skills. Short stories were found to assist second language learners in understanding lexical cohesion, improving their comprehension of story sequences.

Janjua (2011) stressed the importance of cohesion in writing for creating meaning and comprehension. The study concluded that knowledge of cohesion is significant for decoding the meaning of writings and arranging semantic links to give meaning to texts.

Farrokh (2012) focused on the problematic areas of writing for EFL/ESL learners, highlighting the importance of teaching collocations for improved writing skills.

Cohesion plays a vital role in text logical progression, as Abdulrahman (2018) scrutinized the use of substitution and ellipsis in students' writings. The study concluded that ellipses were underused, while substitution served three main purposes: clarity, recommendation, and emphasis. The study implied a need for meaningful activities to teach cohesive devices.

Stede (2003) argued for the best model for analysis, advocating for robust analysis to properly analyze large data sets. Siddharthan (2006) utilized WordNet and Rhetorical Structural Theory to suggest methods for text simplification.

Understanding language removes complexity, as Ann Arbor (2006) focused on "Focusing on Language and Meaning." The study suggested that language can be made approachable through the construction of vocabulary, using Halliday, Eggins, and Matthiessan's (2004) systemic functional grammar.

Zoghi (2013) conducted a comparative study, comparing native and non-native articles. The study emphasized the importance of lexical ties in creating a coherent text.

Sadighi and Sahragard (2013) used a mixed-method approach to investigate the effect of lexical collocation on EFL learners. The study concluded that providing information about lexical cohesion positively affected reading skills and improved vocabulary.

METHODOLOGY

This study employed a mixed-method approach, utilizing academic writing for analysis. A total of 44,314 words were examined, focusing specifically on the aspect of reiteration. The analysis of these words was conducted using UAM software, a tool that offers statistical information. Donnel (2008) highlighted the utility of UAM software, emphasizing its "Human Annotated" feature, which proved invaluable in exploring linguistic patterns. Researchers can annotate text following a designated scheme created on UAM, aligned with Halliday's Model (2014).

The primary objective was to assess the knowledge of cohesive devices among Second Language Learners (SLL). Tables were generated to present the frequency and percentage of words categorized as repetition, synonyms, superordinates, same-level synonyms, and antonyms.
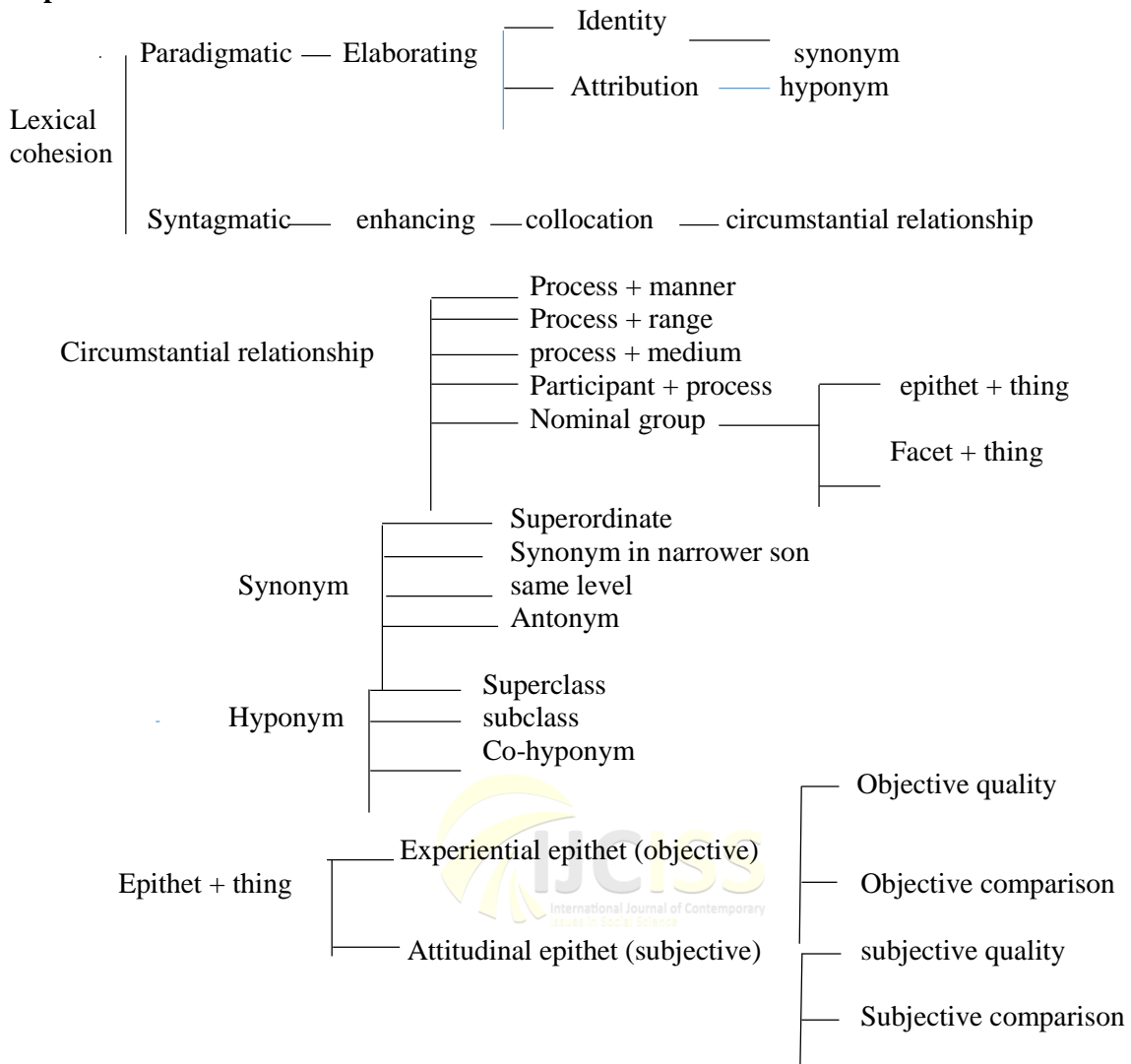
The analysis focused on paradigmatic relations, exploring the elaborating relations that underpin identity, including repetition, synonyms, and antonyms. Synonyms were further categorized into three types:
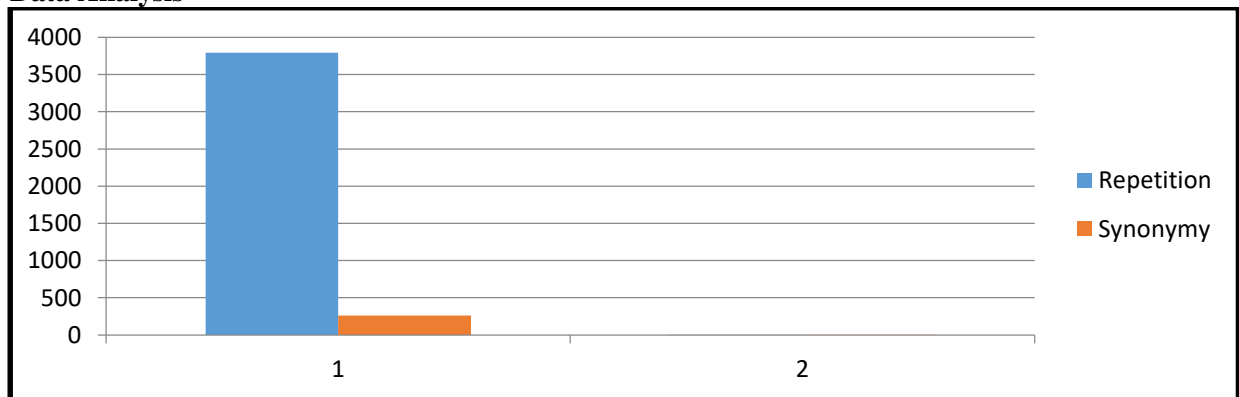
Same-level synonym
Superordinate
Synonym used in a narrow sense

Repetition

Lexical cohesion
- Paradigmatic — Elaborating
  - Identity
    - synonym
  - Attribution — hyponym
- Syntagmatic — enhancing — collocation — circumstantial relationship

Circumstantial relationship
- Process + manner
- Process + range
- process + medium
- Participant + process
- Nominal group
  - epithet + thing
  - Facet + thing

Synonym
- Superordinate
- Synonym in narrower son
- same level
- Antonym

Hyponym
- Superclass
- subclass
- Co-hyponym

Epithet + thing
- Experiential epithet (objective)
  - Objective quality
  - Objective comparison
- Attitudinal epithet (subjective)
  - subjective quality
  - Subjective comparison

Data Analysis

In the analysis of academic writing, lexical devices such as synonyms and repetitions were scrutinized. Second Language Learners (SLL) exhibited a predominant use of repetition, accounting for 93.58%, while synonyms were employed to a lesser extent at 6.42%. This prevalent reliance on repetition signals a potential lack of familiarity with new English words or, to some extent, a hesitation to experiment with unfamiliar vocabulary due to the fear of making mistakes. This fear may hinder SLLs from incorporating new words into their writing, impacting the flow of ideas. Consequently, their written expression may lack coherence, revealing a linguistic barrier and potential conflicts in language usage. To address these issues, it is recommended that SLLs embrace the Systemic Functional Theory of Halliday.

4.1 Repetition

4.1.1 Repetition with referential link

According to Halliday (2014) types of reference are the following.

Reference

Exophoric reference   Endophoric reference

According to Halliday (2014), reference plays a crucial role in establishing connections within a text. There are two main types of references: exophoric reference and endophoric reference. While exophoric reference links items with their environment, it does not contribute significantly to cohesion. On the other hand, endophoric reference is textual and actively enhances cohesion. The sub-features of endophoric reference include anaphora and cataphora (refer to Table 4.1), and these are integral components of the logogenesis chain as outlined by Halliday (2014).

In the logogenesis chain, an anaphoric word serves as an antecedent, establishing a connection with an item that already exists in the text. An illustrative example of an anaphoric reference is provided in Table 4.2, where "the food" serves as an anaphoric reference.

Additionally, reference can also anticipate forthcoming words in the text, exemplifying cataphoric reference. Halliday noted that anaphoric references are more prevalent in text compared to cataphoric references.

Table 4.1

Representation of Endophoric reference and its sub-types

Reference to:	backward		Afterward
Text	anaphoric	Reference element	Cataphoric

Table 4.2

Results of repetition with referential link

Text	Repetition	Referential link
Junk-food is slang word that is used to represent the food items that do not have a lot of nutrients- the substances, which are necessary for keeping one healthy (Cobb & Gold, 2006). The food with little nutritional value and with high levels of fat/sugar and high caloric food is informally termed as junk-food.	1 "the food items that do not have a lot of nutrients" 2 "The food with little nutritional value"	In first sentence and in second sentence the word "the" is making referential link. It is making anaphoric relation. According to Halliday (2014) each sentence is making two ties in given example. In first sentence "junk-food" with "the food" and in second the sentence "the food" is making link with the pervious word "junk-food".

Repetition with the different morphological shape

Table 4.1

Results and Example of simple repetition

Text	Repetition	Repetition through different morphological shape
"What are their views about a new method of teaching writing?" What are their views about teaching methodology?" Do different teaching methodologies help solve students' problems in writing?"	It is not a simple repetition.	Method, methodology, and methodologies: These words in text are analyzed through Hallidayan Model, and proof repetition needs not to have the same morphological shape. Hoey (1991) named these types of repetition as "complex repetition". It occurs when a lexical morpheme is shared.

It was inferred that Halliday (2014) underscored the importance of utilizing repetition as a tool for establishing cohesion. However, he cautioned against the overuse of repetition, deeming it a flaw in writing. In addition to repetition, Halliday also emphasized the relevance of other features of lexical ties, particularly sub-features of reiteration such as synonym and hyponym. Halliday highlighted the significance of these lexical ties in fostering cohesion in writing.

Synonym

Synonyms with identical referenc

Table 4.4

Use of Synonyms as repetition across writing

Types of synonyms	Examples selected from the text	Qualitative description	Quantitative
Superordinate General noun	"As a result, though students successfully get a degree at the end of the courses, they remain unable to process and manipulate information, synthesize and evaluate ideas, make connections between classroom learning and the practical world outside, or generate personal and innovative ideas."	The word "they" is used for all Pakistani students. This word is general.	
Narrower sense of synonym	The status of language, whether native or second, shapes the social climate	In this sentence, native or second is used in a narrower sense. This is how a chain can be made of cohesive ties. A chain is not made in sentences but all sentences for spontaneity and continuity.	
The same level of the synonym	Social organization is more directly reflected in the language distance - the grammatical and lexical distinctions among the languages, dialects, and speech styles - and the community linguistic repertoire than in the structure of a single language	Speech and dialects are the same levels of synonyms	
Antonym	"In recent years, there has been an attempt to study the pace of economic growth drawing on certain non-economic factors, which are referred to as social capital". "The division caused differential modes that can be symbolized as literate and illiterate and even religious and irreligious". "Language is crucially important in the lives of men and women".	Here literate and illiterate, religious and irreligious, men and women, words are used as antonym; it helps to create cohesion in writing.	

Hyponyms

type of hyponymy

super class 30%
sub class 26%
co hyponym 44%
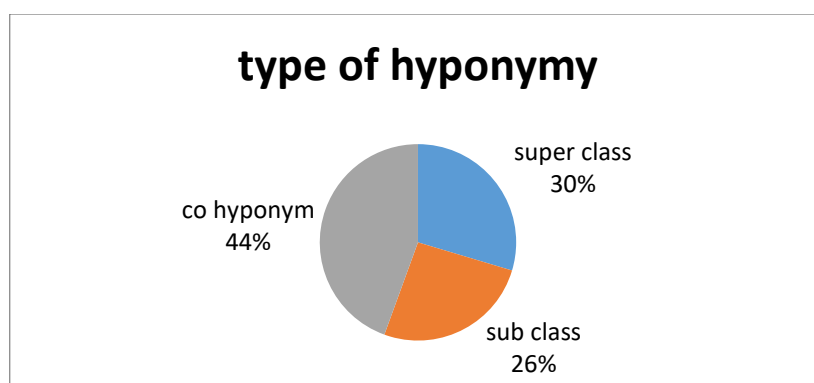
These lexical devices contribute to the formation of a chain of thoughts in writing, providing meaning to the text. The relationship among them is hierarchical, with information presented in interconnected parts, where one part elucidates another. This involves three sub-features: super-class, sub-class, and co-hyponym

Table 4.7

Example of hyponym

Types of hyponyms	Examples selected from text	Qualitative description	Quantitative
Super-class Sub class Co-hyponym	"The similarities are so numerous that Sherani (1928) was led to claim that Urdu developed from the Punjabi Punjabi language. Pashto and Urdu hardly share any feature. A notable feature of Pashto is that it is gender-neutral. It is a small wonder that the speakers of Pashto find the gender of Urdu difficult o master. Balochi language is very close to the Persian, perhaps due to the geographical proximity with Iran. Sindhi shares some portion of vocabulary and sounds with Urdu. Other regional languages have small numbers of speakers. A few are highly endangered languages, such as Aer and Gowro, which may soon have no speakers and thus become extinct. All the languages of Pakistan are written in a modified Perso-Arabic script which, though a remnant of the Mughal era, creates an impression of visual similarity among the various languages spoken in Pakistan".	"Urdu, Pashto, Sindhi, Balochi, Persian, regional languages, endangered languages, Perso-Arabic" and etc are co-hyponym. "All the languages of Pakistan" is used as super-class. Consequently, the above-mentioned languages became the sub-class of "All the languages of Pakistan." This passage went from specific to general, and the above example is the classification of types of hyponyms.	Super-class 29.63% Sub class 25.93% Co-hyponym 44.44%
	"Mobile phone has rapidly spread over the world faster than any other communication technology."	"Mobile phone" is used as a subclass of "communication technology" Halliday (2014) accentuated hyponym is utilized in hierarchical manner and one statement is broader than other.	

Hyponyms, such as general words, co-hyponyms, sub-class, and superclass words, are systematically employed. This structured use enables the writing to progress from the general to the specific, employing appropriate words in an organized manner. Despite being scholars, academic writers may not necessarily be proficient in writing.

Referential communication is the skill of using language to convey ideas and provide explanations. A nuanced understanding of collocations enhances referential communication. The less coherent use of collocations by non-native speakers compared to natives renders their writing unnatural and less comprehensible. Non-native writers often focus on individual word meanings, becoming word-centered, neglecting the importance of meaning within phrases for achieving coherence in their writing.

Repetition is a crucial tool for establishing cohesion and coherence in written text. This study explored collocational understanding and investigated the knowledge and usage of single words. Second Language Learners (SLLs) demonstrated a lesser grasp compared to native speakers. Due to a limited understanding of collocations, SLLs tended to use both collocation and repetition inappropriately. According to Halliday (2014), words are connected in a semantic order, and he further asserted that synonyms rely heavily on collocation.

Words are interconnected through cohesion, and features of lexical cohesion contribute to establishing links. Hyponymy, used in a general sense with words in a narrower sense, creates a link. Synonymy, involving words at the same level and antonyms, establishes links from clause to clause. Following cohesion, coherence is achieved in writing, presenting a comprehensive picture of interconnected ideas.

Results and Discussion
Text processing with the reiteration
5.2.1 Cohesion by lexical repetition
Repetition serves as a cohesive device, and it can be employed either in an identical or modified form. Halliday's Model (2014) categorizes repetition into three types. The first type involves simple repetition, while the second type introduces a change in morphological shape, such as through inflection or derivation, creating non-identical forms. This serves as a tool for maintaining consistency in writing. As noted by Tanskanen (2006), repetition, particularly the use of the same word, is fundamental for cohesion, as it preserves meaning in the text. The third type establishes cohesion through referential links, where endophoric reference contributes to textuality. Overusing repetition in academic writing, however, is not conducive to effective cohesion. Reynolds (2001) argued that a writer's efficiency, proficiency, and skill level are reflected in their writing. Reynolds further demonstrated that repetitive use of words may be indicative of non-native and inefficient writing.

The train of reference, comprising a chain of nouns, can be either cataphoric or endophoric, referring to the same entity. The referential linkage may be broadened or narrowed, as analyzed in the results. Chains of reference may involve two or more words, creating knots of cohesion and contributing to linearity in writing.

Organizing text hierarchically and generating text based on similar words is a method of text processing with synonyms.

Cohesion by the identical synonym
Mastery of synonymy is crucial, as the repetitive use of the same word can render writing monotonous. To alleviate this monotony, writers should employ synonyms. When incorporating same-level synonyms, the meaning is sustained, akin to substituting one word for another. The use of connectors enhances the comprehensibility of writing. To avoid reliance on a minimal set of words, writers must introduce vocabulary variation. Inexact synonyms, specifically superordinate synonyms, were also employed. For instance, the phrase "severe issues of the country" can encompass "poverty, unemployment, and other prevailing challenges."

Cohesion through Non-identical Synonyms
Non-identical synonyms establish connections from line to line and, subsequently, from paragraph to paragraph, fostering spontaneity. While this type does not adhere strictly to synonym identity, it contributes to cohesion as a reiteration tool. Cohesion establishes interdependency in writing, enhancing overall coherence. Antonyms, serving as a device connecting two contrasting items, were utilized by academic writers at a rate of 6.42%. This finding indicates a limited use of synonyms, with repetition prevailing at 93.58%. Reynolds (2001) argued that excessive repetition reflects insufficient knowledge and a lack of understanding of connectors. Thus, understanding cohesive ties is deemed necessary for creating cohesion in academic writing.

Cohesion by hyponym
Cohesion is also established through the presence of hyponyms. In hyponyms, one class is introduced, while the other serves as either a superclass or a subclass. For instance, "social media" is employed as a superclass, encompassing a subclass consisting of "wikis, videos, web blogs, podcasts, picture rating, microblogging, social blogs, and bookmarking." Within this subclass, "wikis, videos, web blogs, podcasts, picture rating, microblogging, social blogs, and bookmarking" function as co-hyponyms of each other.

CONCLUSION
In accordance with Halliday's Model, students have employed reiteration and collocation in their writing. Both quantitative and qualitative data have been explored, with subsequent discussion of statistical results and their interpretation. The findings indicate that an overreliance on a single tool, in this case, repetition, results in redundancy within the writing. With a staggering 93.58% overutilization of repetition, the connectedness of meaning is disrupted. This overemphasis on repetition leads learners to neglect other cohesive tools, limiting their vocabulary usage and competence in employing linguistic ties effectively. Despite having studied English as a compulsory subject in school, Second

Language Learners (SLLs) demonstrated a restricted range of linguistic ties. The primary reason for their inability to acquire accurate knowledge of lexical cohesion lies in their reliance on a single-word approach.

This research contributes to the establishment of logical connections among paragraphs, enabling academic writers to employ meaningful words purposefully. To enhance academic writing, it is recommended that writers use appropriate synonyms and incorporate new lexis into their work. Furthermore, the utilization of hyponyms and personal references, instead of repetitive words, can aid in conveying ideas effectively. By recognizing and understanding these linguistic patterns, readers can comprehend the discourse more easily. As emphasized by McCarthy (1991), writers should establish textual relations, and readers should be attentive to these signals. The systematic relationship among clauses, sentences, and paragraphs is essential for creating a coherent text that centers around a singular topic and avoids vague understanding.

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