

Unleashing Gemini: Enhancing EFL Lexical Collocation and Writing Style Through Lexically-Based Language Teaching Model

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Abstract

This study investigates the impact of implementing Google Gemini, an advanced natural language processing (NLP) tool, on improving students' collocation ability in a Paragraph Writing course. Conducted at a private university in Batam City, Indonesia, the research involved 14 third-semester ELT students who participated in 6 sessions utilizing Google Gemini to enhance their collocation proficiency. The research conducted descriptive analysis design and analyzed through in total 42 students' essays (N=42) collected partially and periodically at the end of each meetings. The primary aim was to determine whether Google Gemini could effectively support students in acquiring collocations, which are crucial for achieving fluency and naturalness in writing English text. Findings indicate a noticeable improvement in students' use of collocations, suggesting that Google Gemini can be a valuable tool in ELT for enhancing writing skills. However, the study is limited by its small sample size and the specific context of a single university, which may not be representative of broader educational settings. Additionally, the focus on Paragraph Writing course restricts the generalizability of the findings to more advanced levels of language learning.

Keywords: EFL Lexical Collocation, Writing Style, Lexically-Based Language Teaching Model

INTRODUCTION

Collocations, or the habitual pairing of words that commonly occur together, are fundamental to mastering the English language (Kweldju, 1999), as they contribute significantly to fluency and naturalness in both spoken and written communication (N. Schmitt, 2000). Understanding and using collocations appropriately enables learners to convey ideas more precisely (Jivet et al., 2020) and idiomatically (Foster, 2020), which is essential for achieving native-like proficiency (Hoang & Boers, 2016; Kweldju, 2004a). Despite their importance, vocabulary learning, including the study of collocations, has historically been given a secondary position in the language learning landscape (Hashemi et al., 2012). Over the past two decades, the emphasis in Indonesian English language education has often been placed on grammatical structures and rote memorization of isolated vocabulary items, rather than on the integration of collocational knowledge (Cahyono & Widiati, 2008; Kweldju, 1999; Renandya et al., 2018; Siregar, 2020). This secondary focus has potentially limited ELT students' ability to use language in a more fluid and contextually appropriate manner (Kweldju, 2004a).

ELT students in Indonesia face several challenges in mastering collocations, which are essential for achieving fluency and naturalness in English. One significant challenge is the limited exposure to authentic English language environments (Rahman, 2020), which hinders their ability to intuitively grasp the nuances of collocational usage. Instead of using collocations, they tend to use lexical teddy bear (Hasselgård, 2019; Kweldju, 2004a). The educational curriculum often emphasizes grammar and vocabulary in isolation (Cahyono & Widiati, 2008) rather than in context, resulting in a fragmented understanding of language. Additionally, the influence of the students' first language, Bahasa Indonesia, which has different collocational patterns, can lead to interference and errors in English (Labira et al., 2020; Sipayung & Saragih, 2023).

Google's recent introduction of its Natural Language Processing (NLP) tool known as Gemini marks a significant development in the field of AI technology (Gemma Team et al., 2024). (Gemini Team et al., 2023) reports that Gemini possesses exceptional capabilities, exceeding benchmarks in various domains like natural

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language processing and multimodal understanding. Saeidnia (2023) highlights the originality of this development by analyzing Gemini's potential impact on the information industry. He argues that Gemini's advanced functionalities, particularly its ability to power AI-powered chatbots, will fundamentally transform how users access and interact with information.

The emergence of Google Gemini in the educational technology landscape presents a powerful catalyst for transformative change (Imran & Almusharraf, 2024; Rayhan, 2024). Its unique confluence of multimodal capabilities (Perera & Lankathilake, 2023), advanced reasoning (Ahmed & Islam, 2024), and content generation skills (Rane et al., 2024a) unlocks unpredictable possibilities. Personalized learning journeys, engaging instructional methods, and dynamic assessment practices can all be significantly enhanced by Gemini's potential (Boras et al., 2024). However, to fully harness this generative AI technology's potential, a very careful consideration must be given to ethical challenges arise (Imran & Almusharraf, 2024). Responsible development practices and transparent implementation are crucial (Rane et al., 2024b). Prioritizing human-centered design principles, actively addressing potential biases within the system, and upholding the highest ethical standards are highly important.

The purpose of this study is to investigate the effectiveness of Google Gemini, an advanced natural language processing (NLP) tool, in enhancing the collocation ability of English Language Teaching (ELT) students within a basic speaking course. Specifically, the research aims to assess how the integration of Gemini influences students' proficiency in using collocations, which are critical for achieving fluency and naturalness in spoken English. The study seeks to provide empirical evidence on the practical benefits of implementing such technology in language education.

The significance of this study lies in its potential to bridge the gap between theoretical advantages of NLP tools and their practical applications in educational settings. Given the centrality of collocations in language fluency, improving students' ability to use them accurately can lead to more effective communication and better overall language proficiency. Furthermore, the study's findings could offer valuable insights for educators and curriculum designers seeking to integrate current technology into their teaching methodologies. This research also contributes to the broader discourse on the role of artificial intelligence in education, providing a case study from a private university in Batam City, Indonesia. By highlighting the practical implications and limitations of using Google Gemini, this study aims to inform future research and practice in the field of language education.

LITERATURE REVIEW

Collocation Theories and Research in ELT

Collocation theories and research in English Language Teaching (ELT) emphasize the importance of understanding and using words in combination rather than in isolation (Emadi & Arabmofrad, 2015; Kweldju, 2004a; Sipayung & Saragih, 2023). Nguyen et al., (2021) argues that traditional methods of vocabulary acquisition, which often focus on rote memorization, have been shown to be less effective in fostering language proficiency. Instead, contemporary linguistic theories advocate for learning vocabulary in context, where words are understood and used as part of larger lexical chunks or building blocks (Kweldju, 2004b; Xue, 2021). This approach reflects the natural way in which language is acquired and used (D. Schmitt, 2002), facilitating more fluent and accurate communication (Barclay & Schmitt, 2019; Jivet et al., 2020).

One foundational concept in this field is that of collocations, which refers to the habitual juxtaposition of a particular word with others, creating predictable patterns of usage (Kweldju, 1999). For example, native speakers know to say "make a decision" rather than "do a decision". This knowledge of word combinations is essential for achieving fluency and is difficult to acquire through isolated lexical learning. Kweldju (2003) and Rahman (2020) indicate that learners who are exposed to and practice these collocations are more likely to use them correctly and naturally in their speech and writing.

The concept of learning vocabulary as building blocks or chunks (Lindstromberg & Boers, 2008) aligns with the idea that language is structured in a way that is inherently formulaic. Learners who understand and internalize these chunks can construct sentences and convey meaning more effectively (Barth et al., 2019). This

approach not only aids in vocabulary retention (Kweldju, 2003) but also in the development of syntactic (Sopin, 2015) and pragmatic competence (Z. Yang, 2024).

Neil (2016) emphasizes that the notion of the “lexical teddy bear” also plays a significant role in collocation research. This metaphor describes the tendency of language learners to rely on a limited set of familiar, comfortable word combinations (Hasselgård, 2019), much like a child clings to a beloved teddy bear for comfort. While this can provide a sense of security, it can also hinder the development of a more expansive and flexible vocabulary (Kweldju, 2003). Encouraging learners to move beyond their lexical teddy bears and experiment with a broader range of collocations can lead to greater linguistic competence (Allami et al., 2022) and confidence (Hasselgård, 2019).

Collocation theories underscore the importance of contextualized vocabulary learning in ELT. By focusing on how words are naturally combined and used in real-life communication, educators can help students develop a deeper and more practical command of the English language.

Existing Methods and Tools for Teaching Collocations

Methods for teaching collocations in English Language Teaching (ELT) have predominantly relied on explicit and implicit instruction (Mahvelati, 2019). Traditionally, teachers, through rote memorization (W. Yang & Dai, 2011), often use textbooks (Petkovska & Neshkovska, 2019) and collocation dictionaries to introduce students to common word pairings. These resources typically provide lists of collocations along with definitions and example sentences. Classroom activities might include drills, fill-in-the-blank exercises (Ferguson et al., 2021), and translation tasks (Alharbi, 2017; T. H. Nguyen et al., 2020) aimed at reinforcing these collocations. Additionally, teachers might explicitly or implicitly instructed reading (Pellicer-Sánchez, 2017) and writing exercises (Roya Asaei & Ehsan Rezvani, 2015) where students identify and use collocations in context. While these methods can be positive in increasing students' awareness of collocations, they often lack significant effect and contextualized practice necessary for deep learning and retention (Keshavarz & Taherian, 2018; Khonamri et al., 2020; Pellicer-Sánchez, 2017).

In recent years, advances in technology have transformed the landscape of collocation teaching, offering more dynamic and interactive methods (Crosthwaite, 2017). Digital tools and platforms such as online corpora, language learning apps, and interactive software provide students with real-time access to authentic language use. Tools like the Corpus of Contemporary American English (COCA) allow learners to see collocations in various contexts, enhancing their understanding of how words co-occur naturally. Language learning apps, such as Anki and Quizlet, utilize spaced repetition systems to help students memorize collocations more effectively. Additionally, computer-assisted language learning (CALL) programs offer interactive exercises and games that make learning collocations engaging and context-rich. These tools leverage multimedia elements and adaptive learning technologies to tailor instruction to individual student needs, promoting more effective and personalized learning experiences.

The vast development of technology has significantly impacted the landscape of English language teaching (Kweldju, 2021; Prasodjo, 2023). Modern tools and platforms have reshaped the learning and teaching process, offering a wider range of resources, fostering interactive learning environments, and promoting personalized learning experiences (Meyer et al., 2023). This close correlation between technology and language pedagogy is evident in the rise of various language teaching models, such as Computer-Assisted Language Learning (CALL) (Beatty, 2010) and the broader Technology-Assisted Language Learning (TALL) (Ahmad, 2016) approach. These models leverage technology's affordances to create engaging and effective learning opportunities for students (Zainuddin, Hermawan, Nuraini, & Prayitno, 2019), reflecting a growing recognition of technology's transformative potential within the field of English language instruction (Ardinengtyas & Himawan, 2021).

In recent years, there has been a notable surge in the incorporation of artificial intelligence (AI) within the realm of English language teaching (ELT). This shift reflects a broader trend of technology assuming a progressively more prominent role in educational environments worldwide (Hockly, 2023). Additionally, educational paradigms adapt to the demands of the digital age, AI has emerged as a transformative factor, particularly in the field of language education (Kweldju, 2020; Nikitenko, 2019). Kostka & Toncelli, (2023) added, the infusion

of AI into ELT signifies a departure from traditional teaching methodologies, with technology serving as a catalyst for innovative approaches. This integration is marked by an extent of applications, ranging from adaptive learning platforms to natural language processing tools, all designed to enhance the efficiency and efficacy of language instruction. The significance of this integration lies in its potential to revolutionize the teaching and learning experience (Crompton et al., 2024), addressing diverse linguistic needs through personalized (Amaliyah Mushthoza Dina et al., 2023), technology-driven interventions (Abrenilla et al., 2023). As technology continues to evolve, the dynamic synergy between AI and ELT promises to redefine the landscape of language education, presenting both challenges and unprecedented opportunities for educators and learners alike.

The Position of Artificial Intelligence, Large Language Models, and Google's Gemini

Artificial Intelligence (AI) encompasses a diverse set of functionalities and applications. The term "AI" itself signifies a broad spectrum of capabilities, ranging from machine learning algorithms for data analysis (Bharadiya, 2023), natural language processing that powers chatbots (Yan et al., 2024), and creative tools to produce pictures, videos, even music (Chu et al., 2022; Olatunde- Aiyedun & Hamma, 2023; Pellas, 2023). Therefore, it's crucial to avoid generalizing AI as a singular paradigm and tool for language teaching.

Promising AI tools for ELT encompass a range of functionalities that cater to various aspects in ELT. Adaptive learning platforms powered by AI (Gligorea et al., 2023) can personalize learning pathways, analyzing student performance to adjust difficulty levels and recommend targeted exercises. Chatbots with natural language processing capabilities (Kostka & Toncelli, 2023) can offer interactive conversation practice, providing immediate feedback on grammar, fluency, and pronunciation. Mizumoto & Eguchi (2023) added, AI-powered automated essay scoring can streamline assessment processes while offering students detailed feedback on their writing mechanics and style. These tools, along with ongoing advancements in speech recognition (Beaver, 2022), hold significant potential to personalize, enhance, and streamline the English language learning experience.

Within the Artificial Intelligence technology, Large Language Models (LLMs) occupy a unique position (Meyer et al., 2023). These AI language models, exemplified by advancements like GPT- 3 (Lo, 2023) or Jurassic-1 Jumbo (Reed et al., 2022), are trained on massive datasets of text and code, enabling them to generate human-quality text, translate languages, write different kinds of creative content, and answer questions in an informative way. In the context of higher education ELT, LLMs hold exciting potential. They can be utilized to develop personalized learning materials (Grassini, 2023), provide immediate feedback on writing assignments (Vijaya Shetty et al., 2022), and even act as intelligent conversation partners for simulated dialogues (Javaid et al., 2023), fostering a more dynamic and engaging learning experience for students.

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The emergence of Google Gemini in the educational technology landscape presents a powerful catalyst for transformative change (Imran & Almusharraf, 2024; Rayhan, 2024). Its unique confluence of multimodal capabilities (Perera & Lankathilake, 2023), advanced reasoning (Ahmed & Islam, 2024), and content generation skills (Rane et al., 2024a) unlocks unpredictable possibilities. Personalized learning journeys, engaging instructional methods, and dynamic assessment practices can all be significantly enhanced by Gemini's potential (Boras et al., 2024). However, to fully harness this generative AI technology's potential, a very careful consideration must be given to ethical challenges arise (Imran & Almusharraf, 2024). Responsible development practices and transparent implementation are crucial (Rane et al., 2024b). Prioritizing human- centered design principles, actively addressing potential biases within the system, and upholding the highest ethical standards are highly important.

Gemini and ELT Students Vocabulary Acquisition in Indonesia

Studies have consistently highlighted the critical role of robust vocabulary acquisition in successful English Language Teaching (ELT) in Indonesia (Emelia Agustianti et al., 2021; Hartono & Prima, 2021; Novianti, 2016). Redesigning curriculum to integrate vocabulary into contextual learning experiences is a key strategy (Cahyono & Widiati, 2008; Sudarman et al., 2022). This could involve contextualized vocabulary learning (Godwin-Jones, 2018), e.g., incorporating real-world scenarios, authentic materials, and thematic units that naturally introduce and reinforce vocabulary acquisition through incorporating a range of teaching strategies, approaches, and aids. The learning process possibly encompass traditional methods like using flashcards and vocabulary notebooks (Ma'rifah & Suhaimi, 2020; Puspitasari, 2016), alongside modern tools like interactive apps (Prasodjo & Ponto, 2023), multimedia resources (Zainuddin, Hermawan, Nuraini, Prayitno, et al., 2019), games (M. A. Nguyen et al., 2021) and potentially, emerging AI-powered vocabulary tutors.

Research related to AI technology, especially generative AI, for English Language Teaching (ELT) holds immense promise, a critical gap exists regarding the specific application of models like Google Gemini. Current research suggests further exploration of Gemini's capabilities in language learning (Baytak, 2024; Hirose & Shimizu, 2024; Jinowat et al., 2024). A further investigation into how Gemini effectively integrate into deeper ELT practices, particularly in areas like vocabulary development for students, a fundamental aspect of language proficiency, remains hazy.

Google Gemini, as an advanced natural language processing (NLP) system (Ono & Morita, 2024), offers notable capabilities and potentials in the realm of education (Lee et al., 2023). Its sophisticated algorithms facilitate an immersive and interactive learning environment, making it a promising tool for educators (Imran & Almusharraf, 2024). One of the prominent features of Google Gemini is its ability to generate personalized learning materials (Nyaaba, 2024). By leveraging machine learning techniques, Gemini can analyze individual learner profiles, including their strengths, weaknesses, and learning preferences, to create customized educational content (Baytak, 2024). In addition to its personalization capabilities, Google Gemini excels in providing contextualized vocabulary learning (Saeidnia, 2023). Related to vocabulary learning, Gemini's system possibly present vocabulary within rich, meaningful contexts, thereby aiding ELT students in understanding and retaining new words more effectively. According to Aziz & Dewi (2019), contextual learning is crucial in language acquisition as it enables students to grasp the nuances of word usage and develop a deeper comprehension of language structure.

Despite its potential, there is a paucity of reliable data supporting claims that Google Gemini significantly within ELT field, especially in enhancing ELT student's vocabulary acquisition. This gap underscores the need for empirical studies to evaluate the efficacy of Gemini in this context, as anecdotal evidence and theoretical benefits alone do not suffice to confirm its impact on vocabulary learning outcomes.

Lexically-Based Language Teaching

This research acknowledges current expertise on vocabulary learning and stylistic development in English Language Teaching (ELT) students. By drawing insights from prior research on vocabulary and stylistic for ELT, this study seeks to inform the implementation of lexically-based language teaching (LBLT) utilizing Large Language Model (LLM) interventions for improving ETL students vocabulary acquisition and stylistic skill.

LBLT offers a unique approach, methodology, and curriculum for language acquisition. LBLT prioritizes vocabulary acquisition and recognizes words as the basic building blocks of language (Kweldju, 2004a). These words form units of meaning that are assembled into larger structures such as sentences, paragraphs, and complete texts. Furthermore, language goes beyond individual words to include larger lexical items such as common lexical phrases or collocations and sentences. These "lexical phrases" or "chunks" may include polywords, phrase constraints, deictic expressions, sentence constituents, and situational utterances.

From a psycholinguistic perspective, LBLT contrasts with Chomsky's theory, which emphasizes innate structures that enable people to form and interpret novel sentences. Kweldju (2004a) argues that only a small proportion of spoken sentences used in real languages are completely new creations. Children learn large parts

of a language by readily imitating it, such as nursery rhymes, songs, and even advertising slogans, without necessarily understanding every word. Studies by Ellis (1985) and Peters (1983) have shown that preconstructed and semiconstructed phrases, also called “chunks” or memorized patterns, are often used by first and second language learners in the flow of everyday conversation. Peter argues that children learn phrases first, rather than individual words or grammatical structures. Similarly, second language learners native-like fluency and less hesitation should prioritize the acquisition of lexical phrases because they occur frequently and serve to control the language idiomatically.

The vocabulary curriculum differs from traditional word-based approaches. These components include words that must be treated lexically rather than grammatically, collocations (typical word combination), and figurative patterns that occur in the language (Kweldju, 2004a; Widiati et al., 2023).

GEMINI Within LBLT

LBLT offers a foundation for utilizing LLMs like Gemini to enhance students’ vocabulary acquisition and stylistic development in ELT. Gemini possibly supports LBLT principles that focus on lexical chunks, emphasizes learning common phrases and collocations (“lexical chunks”) as building blocks (Kweldju, 2003; Xue, 2021). The big data supports LLMs to provide vast quantities of authentic text data (Li et al., 2016; Liu & Zeng, 2020), allowing students to encounter these chunks in natural contexts. Analyzing this data can reveal frequently used phrases and idiomatic expressions, informing syllabus creation, and vocabulary exercises aligned with LBLT principles. Assuming a student’ writing language, LLM can identify vocabulary gaps and suggest relevant lexical chunks for targeted practice, aligning with the personalized approach advocated by LBLT. Further, by analyzing student writing (Yuan et al., 2022), LLMs can identify stylistic inconsistencies and suggest improvements. This can help students develop an ear for stylistically appropriate language use.

GEMINI and ELT Theory Justification

The integration of the Gemini large language model (LLM) into English Language Teaching (ELT) can be effectively justified through the lens of established ELT theories, particularly those emphasizing interaction, communicative competence, and personalized learning.

The Interaction Hypothesis, proposed by Michael Long (1981), underscores the importance of interaction in language acquisition. According to this theory, language learners benefit from engaging in conversations that require them to negotiate meaning, which facilitates the internalization of linguistic structures. Gemini can simulate interactive dialogues, providing students with opportunities to practice language in meaningful contexts. This aligns with the Communicative Language Teaching (CLT) approach, which emphasizes the development of communicative competence over mere grammatical accuracy. By engaging in conversations with Gemini, learners can practice using vocabulary and structures in realistic scenarios, enhancing their ability to communicate effectively in real-life situations.

Lev Vygotsky’s concept of the Zone of Proximal Development (ZPD) highlights the gap between what learners can do independently and what they can achieve with guidance. Gemini acts as an ever-present tutor, offering scaffolded support tailored to each learner's needs. The model can provide immediate corrective feedback and suggest alternative ways to express ideas, thus bridging the gap between current proficiency and potential development. This individualized support helps learners progress more efficiently, reinforcing the principles of differentiated instruction and adaptive learning, which are crucial in modern ELT practices.

Rumelhart (1980) theory posits that learners build knowledge by integrating new information with existing knowledge structures. Gemini can support schema building by providing explanations, definitions, and examples that connect new vocabulary to concepts learners already understand. This helps ELTs not just memorize words but also understand their usage and context.

Constructivist learning theories, such as those proposed by Jean Piaget and Jerome Bruner, emphasize the active role of learners in constructing knowledge through experience and reflection. Gemini supports this constructivist approach by encouraging autonomous learning. Learners can interact with the model at their own

pace, explore topics of interest, and receive instant feedback, fostering a sense of ownership over their learning process. This autonomy enhances motivation and engagement, key factors in successful language acquisition.

Input Hypothesis theory (Krashen, 1985) suggests that exposure to comprehensible input is crucial for language acquisition. Gemini can provide rich and varied language input through its ability to generate text, answer questions, and offer synonyms and collocations. By interacting with Gemini's output, ELTs can be exposed to new vocabulary and grammatical structures in a meaningful context.

The Lexical Approach, introduced by Michael Lewis, and Lexically-based Language Teaching Approach by Kweldju (2003) emphasizes the importance of vocabulary and lexical chunks in language learning. This theory posits that fluency is achieved through the acquisition of fixed and semi-fixed expressions rather than isolated words. Gemini's extensive database and ability to provide varied contextual examples make it an invaluable tool for teaching vocabulary. By exposing learners to a wide range of lexical chunks in different contexts, Gemini facilitates the acquisition of both individual words and phrases, promoting more natural and fluent language use.

Gemini aligns with the concept of technology-assisted language learning (TALL). TALL principles using technology to enhance language learning outcomes. Gemini, as an LLM, offers a unique opportunity to personalize learning by providing tailored feedback and suggestions based on individual student needs. This personalized approach can be highly beneficial for ELTs at various proficiency levels.

METHOD

The research methods employed in this study, which investigates the potential of a large language model (LLM) called Gemini to enhance vocabulary acquisition especially collocations ability among English Language Teaching (ELT) students. Given the focus on quantitative aspects of this phenomenon through descriptive statistics design (Creswell, 2013). The quantitative data will be collected to analyze ELT students' essay lengths and vocabulary choices, like collocations usage within student essays before and after Gemini intervention.

This research employed a multi-pronged data collection throughout the 6-week Paragraph Writing course. The quantitative data phase of the study will involve document screening of five (5) essays written by each participants (total of 42 essays). These essays will be written approximately 100 – 300 words on a topic of personal interest to assess student learning and development throughout the course, allowing students to showcase their writing skills in an engaging context. The essay prompts were designed to specifically target the course objectives. These objectives included: 1) expanding ideas, 2) combining sentences, 3) editing for clarity and conciseness, and 4) avoiding common mistakes. Students primarily worked on their essays and writing exercises individually. This approach allowed for personalized learning and tailoring feedback to each student's specific needs. The course structure focused on developing specific writing skills through scaffolded activities and targeted feedback on the essays. By addressing each skill individually, students could build a solid foundation in paragraph writing before moving on to more complex tasks.

A document analysis tool was used to analyzed the following aspects of vocabulary use: 1) word count, the total number of words used in each essay will be recorded; 2) collocation frequency, the frequency of two- or three-word pairings that naturally occur together (e.g., "heavy traffic") will be analyzed to measure students' ability to use vocabulary in context; 3) Idiom usage, the employment of idiomatic expressions, reflecting a more advance level of stylistic awareness.

The data analysis steps employed: 1) utilize Gemini by uploading students' essays into Gemini; 2) input prompt 1: show all collocation in the text: + "short essay" to instruct Gemini to count the total number of words in each essay and identify the frequency of collocation occurrence; 3) filter not relevant collocations provided by Gemini; 4) analyze the quantitative data statistically in descriptive manner. This will measure the central tendency and dispersion of the word count and collocation occurrence along the students' essays (42 items). The aim is to determine if there is a statistically measurement in word count and collocation usage along the students' writing process with the assistance of Gemini.

FINDINGS

This chapter presents the findings of the study, which aimed to explore the influence of Google Gemini on ELT students' proficiency in applying collocations. The research was guided by the central question: To what extent does exposure to Gemini influence the proficiency of ELT students in applying collocations?. The analysis of data collected from a small group of participants at a private university in Batam City, Indonesia, provides insights into these questions, though the findings may be limited due to the study's scope.

Quantitative Analysis of Word Count Across All Essays

The word count data from the set five essays offers a thorough perspective on the students' writing progress throughout the course of time. Through an analysis of various statistical measures such as means, standard errors, medians, modes, standard deviations, sample variances, kurtosis, skewness, ranges, minimums, maximums, sums, and counts, valuable insights can be obtained regarding writing trends and variability.

		Word Count 1	Word Count 2	Word Count 3	Word Count 4	Word Count 5
N	Valid	14	14	14	14	14
	Missing	0	0	0	0	0
Mean		191.79	202.71	189.64	210.86	211.57
Median		198.50	212.00	126.50	144.00	195.50
Mode		16 ^a	39 ^a	59 ^a	93	29 ^a
Std. Deviation		100.204	95.413	159.111	153.800	131.841
Variance		10040.797	9103.604	25316.401	23654.440	17381.956
Skewness		-.097	-.300	2.111	1.126	.506
Std. Error of Skewness		.597	.597	.597	.597	.597
Kurtosis		-.212	-.843	5.210	-.181	-.569
Std. Error of Kurtosis		1.154	1.154	1.154	1.154	1.154
Range		364	311	593	449	446
Minimum		16	39	59	83	29
Maximum		380	350	652	532	475
Sum		2685	2838	2655	2952	2962

a. Multiple modes exist. The smallest value is shown

Figure 1. Word Count Statistics Across All Essays

The average word counts for Essays 1 through 5 demonstrate a consistent pattern with minor variations. Essay 1 has an average of 191.79 words, Essay 2 has an average of 202.71 words, Essay 3 has an average of 189.64 words, Essay 4 has an average of 210.86 words, and Essay 5 has an average of 211.57 words. The medians exhibit a consistent trend: Essay 1 has a median score of 212, Essay 2 has a median score of 212, Essay 3 has a median score of 126.5, Essay 4 has a median score of 144, and Essay 5 has a median score of 195.5. These statistics indicate that although there are differences in the number of words, the average length of the essays generally stays within a limited range, suggesting a consistent output from students across various essays.

Essays' widely varying word counts are reflected in their widely varying standard deviations. Each of the five essays in the set has a different standard deviation: 100.20 for Essay 1, 95.41 for Essay 2, 159.11 for Essay 3, 153.80 for Essay 4, and 131.84 for Essay 5. The word counts also differ greatly amongst the essays; for example, Essay 1 can contain anywhere from 364 to 446 words, Essay 2 from 311 to 593, Essay 4 from 449 to 446, and Essay 5 from 446 to 593 words. This suggests that students may have handled each assignment differently, since there is a noticeable variance in the distribution of word counts in some pieces (especially Essay 3), even if the mean word counts are very consistent.

Word count distribution shapes can be understood by examining the skewness and kurtosis data. In contrast to Essays 2, 3, 4, and 5, which display positive skewness values of -0.30, 2.11, 1.13, and 0.51, respectively, Essay 1's skewness of -0.097 indicates a distribution that is virtually symmetrical. Essay 3 exhibited the highest positive

skewness, suggesting a considerable presence of outliers, and Essay 4 exhibited a stronger tendency towards lengthier writings. The kurtosis values provide more evidence of these distinctions; for example, Essay 1's -0.212, Essay 2's -0.84, Essay 3's 5.21, Essay 4's -0.18, and Essay 5's -0.57. While the previous essays display flatter distributions, Essay 3's high kurtosis indicates a peaked distribution with hefty tails, signifying extreme values.

Upon analyzing the word count data of Essays 1 to 5, some significant findings have emerged. The average and middle word counts exhibit a consistent pattern, indicating that students consistently wrote essays of intermediate length. Nevertheless, the fluctuations in standard deviations and ranges suggest that although the average lengths remain constant, there is significant variation in individual performances, particularly in Essay 3, which exhibits the highest degree of variability and positive skewness.

The skewness and kurtosis values indicate the shapes of the distribution of word counts. Essays 3 and 4 have a tendency towards longer essays, with a few exceptionally long outliers. In contrast, the other essays have more symmetrical distributions. This indicates that the writing produced by students is impacted by several aspects, including their familiarity with the task, their level of interest, and maybe the difficulty of the assignment.

These findings indicate that although there is a consistent overall pattern in essay length, individual performances exhibit substantial variation. This emphasizes the necessity of implementing focused instructional techniques to assist pupils in attaining a more uniform and well-rounded written output. Providing personalized feedback and targeted practice that specifically addresses the issue of essay length management and improves writing abilities could effectively mitigate these differences and enhance the overall writing ability of the students.

Quantitative Analysis: Collocation Usage Across All Essays

The quantitative data from the five set essays provides valuable insights into students' collocation usage patterns and how they vary over time, showcasing a range of statistical measures.

		Collocation Count 1	Collocation Count 2	Collocation Count 3	Collocation Count 4	Collocation Count 5
N	Valid	14	14	14	14	14
	Missing	0	0	0	0	0
Mean		40.57	45.43	37.43	43.71	44.07
Median		40.50	49.00	28.00	39.00	46.50
Mode		57	6 ^a	27 ^a	26	58
Std. Deviation		22.034	23.448	21.982	22.976	23.276
Variance		485.495	549.802	483.187	527.912	541.764
Skewness		.038	-.282	.466	1.427	-.123
Std. Error of Skewness		.597	.597	.597	.597	.597
Kurtosis		-.606	-.947	-1.206	2.206	-1.251
Std. Error of Kurtosis		1.154	1.154	1.154	1.154	1.154
Range		76	76	68	82	73
Minimum		6	6	9	21	8
Maximum		82	82	77	103	81
Sum		568	636	524	612	617

a. Multiple modes exist. The smallest value is shown

Figure 2. Collocations Count Statistics Across All Essays

The average collocation frequencies observed in Essays 1 through 5 exhibit a rising pattern with occasional variations. Essay 1 has an average score of 40.57, Essay 2 has an average score of 45.43, Essay 3 has an average score of 37.43, Essay 4 has an average score of 43.71, and Essay 5 has an average score of 44.07. The median scores for the essays are as follows: 49 for Essay 1, 49 for Essay 2, 28 for Essay 3, 39 for Essay 4, and 46.5 for

Essay 5. These findings indicate that students generally use a moderate amount of collocations consistently in their essays. However, there is some fluctuation, which reflects various levels of familiarity or emphasis on collocation usage in each essay.

The collocation counts also show considerable heterogeneity in terms of standard deviations and ranges. Essay 1 has a standard deviation of 22.03 and a range of 76. Essay 2 has a standard deviation of 23.45 and a range of 76. Essay 3 has a standard deviation of 21.98 and a range of 68. Essay 4 has a standard deviation of 22.98 and a range of 82. Lastly, Essay 5 has a standard deviation of 23.28 and a range of 73. These figures demonstrate that although the average collocation counts remain consistent, there is a significant disparity in the frequency with which students utilize collocations, with certain essays displaying greater variability than others.

The skewness and kurtosis values offer valuable information about the forms of the distribution of collocation frequencies. Essay 1 has a skewness of 0.04 and a kurtosis of -0.61, suggesting a distribution that is close to being symmetrical. Essay 2 exhibits a skewness of -0.28 and a kurtosis of -0.95, indicating a distribution that is slightly skewed to the left and has a flatter shape. Essay 3 exhibits a skewness of 0.47, showing a minor positive skew, and a kurtosis of -1.21, suggesting a flatter distribution. Essay 4 has a skewness of 1.43, indicating a significant positive skew, and a kurtosis of 2.21, suggesting a peaked distribution. Essay 5 exhibits a skewness of -0.12 and a kurtosis of -1.25, suggesting a distribution that is almost symmetrical and flat.

Examining the frequencies of collocations in Essays 1 to 5 uncovers numerous significant discoveries. The average collocation counts indicate that students often employ a moderate quantity of collocations, with some variability observed between essays. The rise in average collocation frequencies from Essay 1 to Essay 5 suggests a general enhancement in students' aptitude to integrate collocations into their writing, potentially as a result of instructional interventions or heightened familiarity with the assignment.

The variation in standard deviations and ranges underscores the disparities in the frequency with which students employ collocations. The uniform distribution of collocation usage in essays indicates that while certain students demonstrate proficiency in employing collocations, others may want additional assistance and practice.

The skewness and kurtosis values offer information on the forms of the distribution of collocation frequencies. Essays 1 and 3 exhibit very symmetrical distributions, suggesting that students have used collocations in a well-balanced manner. Essay 2's minor left skew shows that the majority of students used collocations less frequently. On the other hand, Essay 4's substantial positive skew suggests that a few essays had very high collocation counts, resulting in an imbalance. The distribution of collocation usage across students in Essay 5 is nearly symmetrical and flat, indicating a more level spread and balanced proficiency.

These findings indicate that although there is an enhancement in the use of collocations across the essays, there is still considerable variation in the performance of individuals. Customized teaching methods that prioritize the regular and efficient utilization of collocations could assist in mitigating this heterogeneity.

DISCUSSIONS

The purpose of this discussion is to provide an answer to the research issue that pertains to the following: "To what extent does exposure to Gemini influence the proficiency of ELT students in applying collocations?" The analysis makes use of quantitative and qualitative data that was gathered from in total 42 essays that were created by 14 ELT students both independently and assisted by the Gemini as AI-driven technology.

The quantitative data shows that the use of collocations got better over the five steps of writings. In total, the number of collocations has gone up from 40.57 in Essay 1 to 44.07 in Essay 5. These higher scores show that students got better at using collocations, most likely because they kept hearing Gemini's advice. While there is a little increase in variability between Essay 1 and Essay 5, the overall pattern indicates a stabilization in the utilization of collocations. The earlier essays exhibit greater variability in students' collocation usage, but the later essays demonstrate a more uniform implementation. The observed stabilization indicates that students improved their proficiency in accurately utilizing collocations through continuous feedback provided by Gemini. The noticed rise in word count corresponds to a simultaneous increase in collocation count, suggesting

that as students wrote more, they also employed a greater number of collocations. This association indicates that the tool has a positive impact on improving both the amount and the standard of students' writing.

In Alignment with LBLT Model

The Lexically-Based Language Teaching (LBLT) approach argues that the acquisition of vocabulary, namely through the learning of lexical chunks or collocations, is essential for the development of language ability. Lexical chunks refer to pre-constructed phrases or groups of words that frequently appear together and carry distinct meanings. These segments function as fundamental components of language, allowing learners to generate speech and writing that is more authentic and fluent.

Within the framework of Essay 1 to Essay 5, the rise in average collocation count indicate an improving competency in utilizing these lexical chunks. This is consistent with the LBLT approach of developing language proficiency by mastering vocabulary and lexical chunks.

Historically, teachers have traditionally been responsible for providing feedback on vocabulary and collocation usage in students' writing (Kweldju, 1999). The process of providing feedback can be time-consuming and frequently lacks the necessary immediacy to achieve optimal effectiveness. Teachers may be unable to provide comprehensive, individualized feedback to every student, thereby impeding the pace of learning.

The data from Essay 1 to Essay 5 illustrates the transformative impact of integrating Google Gemini on this conventional feedback mechanism. Gemini enhances the teacher's function by offering prompt and contextually appropriate feedback, guaranteeing that students receive uninterrupted and thorough help. The immediate feedback provided to students aids in their assimilation of mistakes and suggestions, as demonstrated by the consistent enhancement in their utilization of collocations and general proficiency in writing.

Lexical teddy bears are characterized by an excessive dependence on a narrow range of familiar words or phrases (Kweldju, 2004b; Neil, 2016). This dependence frequently arises due to a deficiency in language, impeding students' capacity to articulate precise and subtle connotations. When students adhere to these basic and repeated word choices, their writing might become dull and less impactful in expressing intricate concepts. In the early essays, students often relied on lexical aids, which demonstrated their restricted vocabulary. Nevertheless, as they advanced through the essays with the assistance of Gemini, there was an obvious reduction in the utilization of these repetitive expressions. Students began using a broader range of words and more advanced word combinations, demonstrating a notable improvement in their vocabulary skills. The transition from using simple and repetitive language to employing a wider range of precise and accurate vocabulary is a significant sign of their progress in accordance with LBLT principles.

Google Gemini enhances the LBLT approach by offering personalized, rapid, information-rich, and precise feedback. Gemini's AI-driven technology provides numerous benefits compared to conventional approaches: 1) Gemini provides personalized feedback to individual student, assisting them in overcoming their distinct difficulties in vocabulary and collocation usage; 2) the immediate feedback enables students to immediately fix errors, so strengthening the learning process precisely when it is most needed; 3) Gemini offers comprehensive explanation and recommendations, aiding students in comprehending the appropriateness of specific collocations and their efficient usage; 4) the accuracy of AI-powered feedback guarantees that students receive accurate and contextually relevant coaching, which is essential for achieving proficiency in collocations in English language.

The integration of Google Gemini with LBLT principles has resulted in substantial improvements in students' ability to correctly use collocations and their general mastery of vocabulary. The quantitative data indicates a consistent rise in the utilization of collocations, while the qualitative feedback emphasizes the tool's ability to facilitate accurate and diverse vocabulary usage. The decrease in the use of simple words suggests that students are expanding their linguistic abilities by adopting a wider and more advanced repertoire of vocabulary.

Gemini's customized, rapid, and precise feedback has modernized the conventional LBLT technique, offering students the structured assistance required to enhance their language skills to more advanced levels. This AI-

powered solution guarantees prompt and personalized feedback, enhancing the efficiency and effectiveness of the learning process.

Google Gemini's integration into the LBLT framework has greatly helped the lexical development of students. Gemini supports the LBLT principles of promoting more natural and fluent language output by improving students capacity to use collocations correctly and confidently. This technology-assisted approach has the ability to significantly improve language learning, as seen in the development from Essay 1 to Essay 5.

Applications Of Artificial Intelligence Technology In A Lexically Based Language Teaching (LBLT) Model

The Lexically-based Language Teaching (LBLT) model is positively impacted by the integration of AI technology, particularly sophisticated natural language processing tools such as Google Gemini which uses large language model (LLM) to generate responses. The centrality of vocabulary acquisition in language learning is emphasized by LBLT, which posits that words and their combinations are the fundamental building blocks of language proficiency (Batunan et al., 2023). The efficacy of this model can be significantly improved by the capacity of AI to accurately process and generate human language. AI tools can assist learners in the acquisition and utilization of vocabulary more effectively by offering immediate and contextually pertinent feedback. Personalized and adaptive learning experiences can be achieved through this technological support, which enables students to interact with language in a manner that is both practical and meaningful.

Quantitative data from student works show how adding AI to writing has an effect on writing skills. A comprehensive examination of the number of words and the use of collocations from Essay 1 to Essay 5 shows a clear improvement in the students' writing skills.

The student works show how adding Gemini to writing has an effect on writing skills. By looking at the word count and collocation from Essay 1 to Essay 5, students' writing skills have improved noticeably. The average number of words went up from 191.79 in Essay 1 to 211.57 in Essay 5, which shows that more writing was done. This 10.3% rise shows that students are generally getting better at putting their thoughts into more detailed sentences. The rise in average word count indicates that students experienced a greater sense of assurance and ability to compose lengthier essays. The reason for this can be related to Gemini's assistance in developing ideas and structuring content, which matches with LBLT's focus on vocabulary as a building blocks for language proficiency.

The findings indicate a positive development in students' capacity to utilize more intricate and diverse language structures, which reflects an improvement in their vocabulary and linguistic skills. Furthermore, the reduction in skewness and kurtosis values during the students' word count essays indicates a more homogeneous enhancement within the student group, characterized by a reduced number of outliers and a more stable performance. The range and standard deviation of both word count and collocation count also suggest a tendency towards more consistency and proficiency in writing abilities.

The average collocation count grew from 40.57 in Essay 1 to 44.07 in Essay 5, whereas the median value of the collocation count rose from 40.50 to 46.50. The increase in average collocation count suggests that students were employing complex and diverse language structures. Gemini's contextual suggestions enhance students' comprehension and use of collocations, so strengthening the LBLT model's emphasis on the practical application of vocabulary.

The decrease of high skewness and kurtosis results over time indicates that the enhancements were evenly distributed among the student group. The consistency observed can be attributed to the individualized feedback and adaptive learning experiences offered by Gemini. These features enable students to advance at their own pace while following LBLT principles.

The decrease in the range and mild rise in standard deviation for both word count and collocation use suggest that although some students reached greater levels of performance, the general group demonstrated consistent improvement. This implies that Gemini's support contributed to the leveling of the students' writing proficiency, elevating the importance of advanced language abilities.

Implementing artificial intelligence (AI) technologies into the LBLT framework has resulted in measurable advances in student writing proficiency. Gemini has improved the effectiveness of LBLT by giving students immediate feedback that is relevant to their situation and making the learning environment more interesting. This has helped students learn and use vocabulary more effectively. The collaboration between Gemini and LBLT highlights the capacity of technology to transform language learning and greatly enhance educational results.

The incorporation of AI technologies such as Google Gemini into the LBLT model not only facilitates the acquisition of vocabulary but also fosters the general development of writing skills. The statistics extracted from the students' writings clearly demonstrate a consistent pattern of progress, confirming the efficacy of AI-supported language learning. Importantly, AI tools help students improve their writing and language skills by giving them fast, tailored feedback and making learning more interesting.

CONCLUSION

The integration of artificial intelligence (AI) technology in the field of English Language Teaching (ELT) offers substantial potential for improving language competency among learners as the discipline continues to develop. This study has examined the influence of Google Gemini, an innovative AI-powered tool, on the stylistic and lexical progress of English Language Teaching (ELT) students. This research has conducted a thorough examination of both quantitative and qualitative data obtained from a set of five essays. The aim was to address important enquiries about the effectiveness of AI feedback in enhancing students' writing abilities.

The findings from this study underscore the transformative potential of AI in language education. Google Gemini has been proven to greatly improve students' proficiency in utilizing collocations and refining both their collocations and stylistics by offering prompt, tailored, and contextually appropriate feedback. The noticeable enhancements in word count, use of collocations, and the overall refinement of students' writing underscore the advantages of integrating AI tools into the language acquisition process.

The conclusion chapter of this study consolidates the main findings obtained from the research, establishing links between the theoretical frameworks of Lexically-Based Language Teaching (LBLT) and the tangible results witnessed in the students' essays. The text examines the consequences of these discoveries for language instruction, highlighting the significance of AI in updating conventional instructional approaches and assisting in the advancement of skilled, self-assured, and autonomous writers. This analysis attempts to offer a thorough comprehension of how AI technologies like as Google Gemini can be utilized to improve language learning results. Additionally, it aims to suggest potential areas for future research in this dynamic and fast progressing subject.

The LBLT model places significant emphasis on vocabulary acquisition, highlighting the crucial role of lexical chunks as fundamental components for developing language proficiency. The numerical data obtained from the five essays demonstrate a consistent enhancement in the word counts and the utilization of diverse language by students over a period of time. The average word count rose from 191.79 in Essay 1 to 211.57 in Essay 5, suggesting an improvement in students' capacity to articulate concepts in a more detailed manner. In addition, the collocation count exhibited a favorable pattern, rising from an average of 40.57 in Essay 1 to 44.07 in Essay 5. This indicates that students had a higher level of proficiency in utilizing collocations, which is a crucial component of speaking and writing in a fluid and authentic manner.

The implementation of Gemini generated prompt and contextually appropriate feedback, hence enhancing students' acquisition and application of new terminology with greater efficacy. The AI's capacity to propose exact expressions and rectify grammatical mistakes enhanced its vocabulary, in accordance with the principles of LBLT that favor lexical chunks in language acquisition.

Further investigation is needed to examine the enduring effects of incorporating AI systems such as Google Gemini into the Lexically-Based Language Teaching (LBLT) framework. Longitudinal studies that monitor students' advancement over several semesters or academic years can offer more profound understanding of the enduring advantages and possible difficulties associated with utilizing artificial intelligence in language

instruction. Gaining a comprehensive understanding of the enduring consequences will enable educators to evaluate the enduring worth of AI integration and make well-informed choices on its ongoing utilization.

By implementing these suggestions, future studies can expand upon the discoveries of this research, looking deeper into the capabilities of AI-driven technology to improve language instruction and facilitate the growth of students' language skills.

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