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English Education Students' Engagement on Narrative Text Lexical Density Analysis through Project-Based Learning

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Abstract

This research explores the use of lexical density of narrative texts in the context of Project-Based Learning. It applies a qualitative research method with a case study investigating 13 English Education Study Program students in three groups in learning the use of lexical density of narrative texts found in three online English textbooks published by the Government for 10th-12th grade students in Indonesia. The technique of the data analysis it uses is three interactive activities of the qualitative researcher, i.e., data collection/reduction, data display, and conclusion draw/verification. The results show that in the context of PBL, the lexical densities of three texts the students could invent are moderate, i.e., 4.45 or 55.64% in text-1, 3.15 or 52.12% in text-2, and 3.89 or 55.69% in text-3. In the classroom setting, the students could construct knowledge on the use of lexical density in narrative texts found in the online English textbooks for 10th-12th grade students in Indonesia. Since this research was a qualitative method with a case study design in the investigation on how a small number of research subjects analysed the use of lexical density of a small number of narrative texts in a classroom reality, it is suggested to apply other research type to investigate the use of lexical density in the narrative texts found in online English textbooks to shed reliable and indispensable pedagogical light to improve the capacity of the prospective English language teacher to face the communicative challenges in the 21st century.

KEYWORDS

project-based learning, lexical density, narrative texts, online english tex books, english education students.

Introduction

Communicative competence helps people participate economic activities in the 21st century. Vocabulary mastery has the role to acquire the communicative skills (Tomen & Kose, 2023). It refers to the knowledge on the use of lexical density of a text (Fadhil et al., 2023). It contributes the acquisition of listening, reading, speaking, and writing skill (Abu-Rabiah, 2023). It helps students acquire communicative competence (Maamujav, 2021) to challenge the globalization in the 21st century.

Narrative text is one of a number of cultural texts which is taught at all levels of education at school in Indonesia. Students need to learn it because it functions to communicate a moral message by entertaining the readers. Its generic structure includes orientation, complication, evaluation, resolution, and reorientation (Gerot & Wignell, 1994). It entertains the readers by telling them an actual experience in a problematic sequence of events (Suri et al., 2023). It also functions to investigate issues of concern to scholars, communication, politics and power, learning and change, as well as identity and identification (Mieroop et al., 2021). It is important to learn narrative texts to understand human activities, stories, social issues, fund-raising appeals, and political speeches (Hineline, 2018).

The smallest meaningful linguistic unit of a text is a clause. One clause represents one human experience (Gerot & Wignell, 1994). A simple clause is independent for its meaning is complete. A complex clauses can be either paratactic or hypotactic. A

paratactic clause has two or more than two simple clauses. A hypotactic clause has at least one simple clause with one or more than one dependent clauses (Gerot & Wignell, 1994). Both paratactic and hypotactic clauses are classified into elaboration, extension, enhancement, and projection. Elaboration is the function of a clause to explain another clause. Extension is the type of a clause to continue the meaning of another clause. Enhancement is the type of a clause with an adverbial clause. A projection clause is categorized into paratactic projection clause and hypotactic projection clause. They are the type of clauses which project the another clauses (Gerot & Wignell, 1994).

Lexical density is the stretch of meanings in a clause. According to Halliday, it is the ratio of content word total to the sentence total in a text ((Ismail et al., 2023). It is the ratio of all content words total to a sentence ((Gerot & Wignell, 1994). Halliday and Gerot & Wignell view it as the ratio of content word total to the sentence at clause ranking. Sentence is a term in the written language and clause refers to the spoken language. Traditionally, it is a group of words which is initiated by a capital letter and ended by a period. According to Ure, it is the ratio of the total of content words to all running words in a sentence (Zora et al., 1994; Prawianto & Bram, 2020). Content words include nouns, verbs, adjectives, and adverbs; while function words are prepositions, conjunctions, quantifiers, pronouns, numbers, and determiners (Rabiah, 2023).

Ure uses percentage to describe the lexical density of a text and notes that the lexical density of a spoken text is commonly fewer than 40%; while the lexical density of a written text is higher than 40% (Rabiah, 2023; Abbasian & Afrazi, 2018)). It reflects how general information is loaded in a text; how it is packed with information which is expressed by percentage to denote the total of lexical items in a text (To et al., 2013). Content words include nouns, adjective, verbs, and adjectives (Maufiroh et al., 2024). The higher the lexical density a text has, the more information it has, and it is more difficult to process its comprehension (Liu & Dou, 2023). Ure classifies lexical density levels into: 41-50% (low lexical density), 51-60% (moderate lexical density), 61-70% (high lexical density), and 70% or > 70% (very high lexical density (Ismail et al., 2023). Linguistics views lexical density as an effective text complexity predictor and it refers to the ratio of content words per number of words in a text (Gatiyatullina et al., 2023). It can be used as the tool to measure the text complexity and the general readability of texts (Bakuuro, 2024).

Prospective English education students need to learn the use of lexical density in textbooks to helps them understand how they teach the stretches of meanings across the clauses throughout a text in the textbooks in the future. There is a research showing that the lexical density of the conversation parts of some textbooks is appropriate (Abbasian & Afrazi, 2018). Another research shows that the lexical densities of both of an English textbook for 7th grade students and another one for 11th grade students are good (Amer, 2021). Another research shows that it affects the comprehension of the textbook readers in educational contexts (Suminih et al., 2024). However, another research shows that it is low in some chapters of "English for Nusantara" textbook for eighth-grade students (Basir et al., 2025). The majority of texts for high school students have high lexical density (Rizkiani et al., 2022). Besides, the lexical density of the majority of the non-government textbooks are denser than the lexical density of the government books (Fadhil et al., 2023). It is low in some reading materials in textbooks; but, it is medium and high in the others (Maufiroh et al., 2024). Further, it ranged between 48.54% and 56.07% in the students' writings (Ilma et al., 2025). Ure and Halliday say that the lexical density of a text is related to its readability ((Bakuuro, 2024).

Project-Based Learning (PBL) can engage students to learn the use of lexical density of a text from an authentic situation. It helps them learn the new knowledge on the use of lexical density of a text by seeking information from online English textbooks actively, independently, collaboratively, critically, analytically, synthetically, creatively, and communicatively (Aldabbus, 2018). Seeking information from authentic situation helps them have positive personality towards classroom activities (Hussein & Bassam, 2021). It helps them have academic achievement (Maros et al., 2021). It helps them solve and evaluate problems and encourage them acquire new knowledge by searching solutions, asking questions, debating ideas, designing plans, and communicating with others (Maros et al., 2021).

Some researches show how some students can learn language skills in the context of Project-Based Learning (PBL). It can develop the mutual respect, confidence, and self-regulation among some students (Wahbeh et al., 2021). It could positively affect the speaking ability of 35 students (Firdaus & Septiady, 2023). It improves the motivation of 20 students in the reading skills (Imbaquingo & Cárdenas, 2023). It enhances the critical thinking skills of some students more effectively (Song et al., 2024).

The current research focuses on the use of lexical density in the narrative texts found in English textbooks for Indonesian students. It investigates how the English education students analyse the use of lexical density in the narrative texts in the context of PBL. So, it explores how they construct new knowledge on the use of lexical density in the narrative text found in the online English textbooks published by the Government for 10th-12th grade students in Indonesia in the context of PBL as a classroom reality. Accordingly, the problem formulation investigated in this research is "How do the students of English Education Study Program of Teacher Training and Education Faculty of the University of HKBP Nommensen Pematangsiantar, Indonesia, analyse the lexical density of the narrative texts found in the online English Textbooks published by the Government for 10th-12th grade students in the context of Project-Based Learning?" This research is to prepare those students to be professional to teach narrative texts as a part of the communicative competence aspects needed in the 21st century.

Methods

This research applies a qualitative research method which includes a case study. A Case study investigates an object as a single phenomenon with multiple realities in small group of subjects (Busetto et al., 2023). The object investigated is focused on the use of the lexical density found in the narrative texts. The multiple realities refer to the lexical density in the communication of setting in the orientation, complication experienced by the characters, the evaluation made by the characters on the complication, a course of actions as the resolution of the complication, and how the characters live at the end of the story (Gerot & Wignell, 1994). The subjects engaged in this research is a group of 13 students who registered in "Research in the English Language Teaching" course in the Odd Semester of the 2025/2026 Academic Year of English Language Study Program in the University of HKBP Nommensen Pematangsiantar, Indonesia. The object of this research includes how the research subject analyse the use of lexical density across the generic structure of the narrative texts found in the online English textbooks published by the Government for 10th-12th grade students in Indonesia. It applies the researchers as the key instrument in the data analysis (Pandey, 2025; Ruslin et al., 2022). The technique of data analysis it applies contains three interactive activities of the qualitative researcher: data collection/reduction, data

display, and conclusion draw/verification (Bhangu et al., 2023). Here, the three activities of the searchers can be presented as in the following three stages.

Stage 1: Data Collection/Reduction

Step-1

Thirteen students are grouped into 3 groups in the context of PBL to seek new knowledge [5] on the use of lexical density across the generic structure of the narrative texts found in three online English Textbooks published by the Government for 10th-12th grade students in Indonesia, i.e., [buku-siswa-bahasa-inggris-sma-smk-kls-x-rev-2017.pdf](#) (Widiati et al., 2017); (Bashir, 2017) [B Inggris Kelas XI BS press.pdf](#) (Bashir, 2017); [Inggris BS KLS XII.pdf](#) (Hardini et al., 2020).

Step-2:

They learn the new knowledge by observing the use of lexical density in the generic structures of the narrative texts actively, individually, collaboratively, critically, analytically, synthetically, applicatively, creatively, and communicatively.

Step-3:

Each of the groups learn to complete a project, based on their new knowledge, on the analysis of the use of lexical density in the generic structure of one narrative text found in one of the textbooks for 10th-12th grade students.

Step-4:

Each of the groups break the narrative text for them to analyse down into its generic structure components, they are: Orientation (ORT), Complication (CPL), Evaluation (EVL), Resolution (RSL), and Reorientation (ROT). Then they break each of the generic structure components down into Sentence (STC), Simple Clause (SC), Paratactic Clause as (PC), Hypotactic Clause (HC), Paratactic Projection Clause (PPJC), Hypotactic Projection Clause (HPPJC), Content Word (CW), and Function Word (FW).

Stage 2: Data Display

Stage 5

Each of the groups display the frequency total of STC, SC, PCHC, PPJC, HPPJC, CW, FW, RW, running words (RW), they are all content words and function words, in every generic structure component of the narrative text: ORT, CPL, EVL, RSL, and ROT.

Step 6:

Each of the groups calculates the lexical density of the narrative text based on Halliday Lexical Density (HLD) and Ure Lexical Density (ULD) in the same matrix table mentioned in Step 5.

Stage 3: Conclusion Draw/Verification

Step-7

Each of the groups draw conclusions on the use of lexical density in the narrative text they investigated in reference to the matrix table mentioned in Step 6.

Step-8:

Each of the groups verifies the conclusion to the matrix table, then to the data reduction, and to the narrative text they analysed or vice versa.

Step-9

Each of the groups reports the project they have completed to the researchers.

Result and Discussion

The results of this research indicate that the lexical densities in Text-1, Text-2, and Text-3 are moderate. Text-1 has 4.45 or 55.64%; Text-2 has 3.15 or 52.12%; and Text-3 has 3.89 or 55.69% as in Table 1 below.

Text-1: The Legend of Malin Kundang

The results show that the lexical densities across the generic structure components of Tex-1 are as follows: Orientation: 5.55 or 59.26%, Complication: 4.85 or 58.87%, Evaluation: 3.82 or 53.16%, Resolution: 3.67 or 55%, and Resolution: 4 or 50% presented as in Table 2 below.

Text-2: The Enchanted Fish

The results uncover that the lexical densities across the generic structure components of Tex-2 are 3.82 or 55.56% in the orientation, 2.92 or 54.29% in the complication, 3.18 or 54,29% in the evaluation, 3 or 73% in the resolution, and 2.5

Table 1. Lexical Density in Tex-1, Text-2, and Text-3

Lexical Density in Tex-1, Text-2, and Text-3											
TEXT	STC	SC	PT	HT	PPJ	HPJ	CLS	CW	FW	HLD	ULD
TEXT-1	29	13	6-12	9-24	1-2	0	51	227	181	4.45	55.64%
TEXT-2	51	6	3-10	11-30	21-70	10-75	191	603	553	3.15	52.12%
TEXT-3	47	15	6-15	2-4	16-58	8-31	123	479	381	3.89	55.69%

Table 2. Text-1 Lexical Density

Text-1 Lexical Density											
TEXT	STC	SC	PT	HT	PPJ	HPJ	CLS	CW	FW	HLD	ULD
TEXT-1	29	4	1-2	2-5	0	0	52	227	181	4.45	55.64%.
ORT	7	4	1-2	2-5	0	0	11	61	46	5.55	59.26%.
CPL	9	6	1-3	2-4	0	0	13	63	44	4.85	58.87%.
EVL	10	1	2-4	5-14	1-3	0	22	84	74	3.82	53.16%.
RSL	2	1	1-2	0	0	0	3	11	9	3.67	55%.
RORT	1	0	1-2	0	0	0	2	8	8	4	50%.

Table 3. Text-2 Lexical Density

Text-2 Lexical Density											
TEXT	STC	SC	PT	HT	PPJ	HPJ	CLS	CW	FW	HLD	ULD
TEXT-2	51	9	3-10	10-30	20-70	11-72	191	603	553	3.15	52.12%
ORT	4	1	2-8	1-2	0	0	11	42	33	3.82	55.56%
CPL	3	1	0	0	2-12	0	13	38	32	2.92	54.29%
EVL	42	7	1-2	9-28	17-56	10-70	163	518	461	3.18	52.91%
RSL	1	0	0	0	0	1-2	2	6	2	3	73%
RORT	1	0	0	0	1-2	0	2	5	5	2.5	50%

or 50% in the reorientation presented as in Table 5 below.

Text-3: The Breakers of Limitation from Gunung Mali

The lexical densities across the generic structure components of Tex-3 are 6.83 or 61.43% in the orientation, 4.86 or 52.71% in the complication, 3.17 or 54.41% in the evaluation, 5 or 53.71% in the resolution, and 3.43 or 64.86% in the reorientation presented as in Table 4 below.

In this research, the 13 students of English Education Study Program of Teacher Training and Education Faculty of the University of HKBP Nommensen Pematangsiantar, Indonesia, could analyse the use of lexical density in three narrative texts found in three online English Textbooks published by the Government for 10th-12th grade students in Indonesia. They could analyse the lexical density of those three narrative texts because they could construct new knowledge about it by seeking information from the authentic situation; then, analyse, synthesize, and apply the new knowledge on the analysis of the use of lexical density of each of the three narrative texts found in each of the three online English textbooks published by the government. They apply the new knowledge actively, independently, collaboratively, and critically on the analysis on how the lexical density stretches across the clauses through the generic structures of the narrative texts in three online English textbooks. They could complete the analysis as their projects, because they could learn it by seeking information from its contextual situation actively, individually, collaboratively, critically, analytically, synthetically, applicatively, creatively, and communicatively.

In the context of PBL, they could analyse the lexical density of the narrative texts because they could make in-depth analysis on the texts. They analyse the texts by breaking them down into components. First, they could make the reduction of the texts into their generic structure components, they are: orientation, complication, evaluation, resolution, and reorientation. Then they break each of the generic structure components down into sentences, simple clauses, paratactic clauses, hypotactic clauses, paratactic projection clauses, hypotactic projection clauses, content words, and function words. Afterwards, each of the student groups display the frequency total of the sentences, clause types, content words, function words, and running words in every generic structure component of each of the texts into matrix tables.

After having experience on the use of lexical density from the authentic situation, the students collaboratively learn the new knowledge about it, then apply it to analyse the use of lexical density in the clauses across the generic structures of the narrative texts found in the three online English textbooks published by the Government for grade 10th-12th students actively, individually, critically, analytically, synthetically, creatively, and communicatively. Each of the group member make contribution to participate the calculation of the lexical density of the narrative text based on Halliday Lexical Density and Ure Lexical Density in the same matrix tables. They learn together in their groups to enable them to draw conclusions on the use of lexical density in the narrative text they investigated in reference to the matrix table. They also learn together in their group to verify the conclusion to the matrix table, then to the data reduction, and to the narrative text they analysed or vice versa. Each of the group members also participate to make the report of the project they have completed.

By sharing experience from the authentic situation for the construction of the new knowledge on the use of lexical density in the context of PBL, the students could analyse, synthesize, and apply it to the analysis of the narrative texts found in the three online English textbooks as in the following. Table 2 shows that the lexical density of Text-1 which is entitled "The Legend of Malin Kundang" is 4.45 or 55.64% or moderate level. Table 3 shows that Tex-2 which is entitled "The Enchanted Fish" is 3.15 or 52.12% and also a moderate level. It is a little lower than the lexical density of Text-1. They could assess the dynamic movement of lexical density throughout the generic parts of the text. Table 4 shows that the students can find that the lexical density of Text-3 which is entitled "The Breakers of Limitation from Gunung Mali" is also a moderate level of lexical density, i.e., 3.89 or 55.69%. They can determine that it is a little bit lower than the lexical density of Text-1 and Text-2. They could invent the lexical density of the three texts based on in-depth analysis by breaking them down into their sentences, clauses, content words, function words, and running words in each of their generic structure components, i.e., orientation, complication, evaluation, resolution, and reorientation.

In the context of PBL, the students learn that based on Ure in (Rabiah, 2023) (Abbasian & Afrazi, 2018)), Text-1, Text-3, and Text-3 reflect how they load information to denote the total of lexical items (To et al., 2013). The research findings show that Text-1, Text-2, and Text-3 have the same lexical density level category. They are at moderate lexical density. The length of each of the text is different from each other based on their linguistic unit properties. The number of clauses in Text-2 is a little less than 4 times than the number of clauses in Text-1. The case is almost the same in Text-3. Its clause number is almost 2 and a half times than the number of sentences in Text-3. The phenomenon creates the three texts have the same lexical density category level. Its consistency is realized by the calculation ratio of the content word to the number of clauses per text and the ratio of the number of the content words to the running words, i.e., the total number of content words and function words. The findings of this research show that the three narrative texts found in the three online English textbooks investigated in this research have different different linguistic properties, i.e., the different number of clause categories such as in simple clause, paratactic and hypotactic clauses in the online English textbooks for grade 10th-12th students.

Through the context of PBL, the students learn that based on Halliday (in (Ismail et al., 2023)), lexical density is the ratio of content word total to the sentence total in a text. The findings in Table 2 show the students that the majority of the clauses distribute in the evaluation, complication, and orientation of Text-1. There are 4 clauses in 2 paratactic clauses and 14 clauses in 5 hypotactic clauses in the evaluation of the complication experienced by the characters. In addition, there are 3 clauses in 1 paratactic clause about the complication experienced by the character. There are also 2 clauses in 1 paratactic clause and 5 clauses in 2 hypotactic clauses about the character in the orientation. Those clauses mostly represent the communicative interaction between the text author and the text audience.

Table 4. Text-3 Lexical Density

Text-3 Lexical Density											
TEXT-3	STC	SC	PT	HP	PPJ	HPJ	CLS	CW	FW	HLD	ULD
TEXT-3	47	15	6-15	2-4	16-58	8=31	123	479	381	3.89	55.69%
ORT	4	3	0	0	1-3	0	6	35	22	6.83	61.43%
CPL	7	3	4-11	0	0	0	14	68	61	4.86	52.71%
EVL	20	1	1-2	0	11-41	7-26	70	222	186	3.17	54.41%
RSL	14	8	0	2-4	4-14	0	26	130	112	5	53.71%
RORT	2	0	1-2	0	0	1-5	7	24	13	3.43	64.86%

The findings in Table 3 also show that the majority of the clauses distribute in the evaluation part of the generic structure of Text-2. Most of the clauses are dominated by projection clauses, i.e., 56 clauses in 17 paratactic clauses and 70 clauses in 10 hypotactic clauses. These majority clauses represent the communicative interaction made by characters in the story.

The findings in Table 4 also show that Text-3 is mainly dominated by projection clauses, i.e., 58 clauses within 16 paratactic clauses and 31 clauses in 8 hypotactic clauses. The majority of these clauses distribute in the evaluation part of the generic structure of Text-3 to represent the communicative interaction made by the characters in the story. The next majority distribute in the resolution part which also present the communicative interaction made by characters in the story.

Conclusion

The students of the English Language Study Program who registered in "Research in English Language Teaching" course in the Odd Semester of the 2025/2026 Academic Year of the University of HKBP Nommensen Pematangsiatar, Indonesia, could analyse the use of lexical density in the narrative texts found in the online English textbooks for grade 10th-12th students in Indonesia in the context of Project-Based Learning as a classroom reality. They invented the use of those lexical densities by analysing the texts into their linguistic units, synthesizing them by their categories, and applying the knowledge in the linguistic data collection/reduction, data display, and conclusion draw/verification on the use of lexical density of those narrative texts. Based on the projects they accomplished in this research, they could invent that the lexical densities of those three narrative texts were at moderate comprehension level, they were 4.45 or 55.64% in text-1, 3.15 or 52.12% in text-2, and 3.89 or 55.69% in text-3. In the context of PBL as a classroom reality, the students

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invented that the lexical densities of the three narrative texts they learned are moderate level emerged from how the content word and the function words spread up across the clause types within the sentences across the generic structure of each of those narrative texts. For this research was limited in the qualitative research design method, 13 research subjects, online English textbooks as sources of the data, and the three concurrent activities as the technique of the data collection and analysis, so future researches on the use of lexical density in narrative texts need to apply other research method designs, larger subjects and variable contexts of the object, and the stronger technique of data analysis to shed more indispensable results which can shed multifaceted pedagogical light.

Author contributions

The authors of this article have contribution to the process of the research and the completion of the manuscript of this article. The author is responsible for the data analysis, i.e., collection/reduction, display, conclusion draw/verification, and the completion of the manuscript of this article. The first co-author is responsible to assist the author in the completion of the data analysis, i.e., data collection/reduction, display, conclusion draw/verification, and the manuscript of this article. The second co-author is responsible to assist the author in the completion of the data analysis, i.e., data collection/reduction, display, conclusion draw/verification, and the completion of the manuscript of this article.

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