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Logical Relations and Noun Phrase Complexity of EFL Students' Academic Writing to Promote *Literacy Development Cycle Teaching Model*

Katharina Rustipa* 

Universitas Stikubank (UNISBANK) Semarang, Indonesia

Kristophorus Hadiono 

Universitas Stikubank (UNISBANK) Semarang, Indonesia

Amirul Mukminin 

Universitas Jambi, Jambi, Indonesia

Elisabeth Oseanita Pukan 

Universitas Sanata Dharma, Indonesia

Raden Arief Nugroho 

Universitas Dian Nuswantoro, Semarang, Indonesia

Abstract. Academic writing has become more important, especially for academicians who are required to publish articles in a reputable journal. However, meeting journals' quality standards is not an easy task. Graduate students as prospective academicians need to improve their writing style to be competent academic writers because previous studies revealed that writing style covering clause simple, clause complex, and complex noun phrase are problematic for them. This qualitative case study explored the logical relations of clause complexes and complex noun phrases of clause simplexes found in graduate students' unpublished academic writing. It employed genre analysis for examining 20 graduate students' unpublished research papers collected using purposive sampling technique. The findings revealed that the students mostly produced choppy texts. They utilized parataxis (47.3%) and hypotaxis (52.7%). Concerning logico-semantic relation, the expansion relation is dominant (76.8%). In terms of complex noun phrase, 20.7% occurrences were found in clause simplexes, in which attributive adjective pre-modifiers and prepositional phrase post modifiers were dominant. Furthermore, the interviews revealed that the students' writing problems derived from their lack of awareness and low literacy

*Corresponding author: *Katharina Rustipa*; katrin@edu.unisbank.ac.id

of academic writing characteristics. Based on the research findings, a teaching model of the literacy development cycle is recommended to enhance students' skills in academic writing.

Keywords: clause complex; complex noun phrase; clause simplex; logical relation; literacy development cycle

1. Introduction

Proficiency in academic writing among English as a Foreign Language (EFL) students is a significant indicator of the success of English teaching education in non-native English-speaking countries. The production of coherent academic writing requires a comprehensive understanding of complex language knowledge and skills, the ability to generate and organize ideas, proficiency in constructing both simple and complex sentences, utilization of complex noun phrases to convey information effectively, and paraphrasing logical arguments. In the current global era, effective written communication across cultures is essential in various fields such as business and education; thus, academic writing becomes more important than ever (Lau, 2017). Academic writing refers to the writing style used in research papers at college level and scholarly publications, adhering to scientific rules and ethics (Yulia et al, 2020). It encompasses the use of scientific writing style (Gaber & Ali, 2022).

Academicians aspiring to advance their careers often regard the publication of a research article in a prestigious journal as an achievement. However, attaining this objective is not easy primarily due to the stringent quality standards, including the writing styles. Graduate students as prospective academicians need to enhance their knowledge and proficiency in writing (Rofiqoh et al., 2022) to be competent academic writers. Therefore, the academic writing style is an aspect that must be practiced. The pivotal role of academic writing has garnered substantial interest from applied linguists because educational institutions are responsible for the improvement of academic writing proficiency (Yuliarti et al., 2023).

Previous studies indicated that writing style covering clause simplex, clause complex, and complex noun phrase (NP) construction is problematic for many EFL students (Dartey, 2023; Peng & Azmi, 2022; Princess & Syarif, 2021; Shen et al., 2023). They often produce choppy texts with many short simple sentences that can be combined into effective compound or complex sentences. This results in a much higher number of clause simplexes in proportion to the clause complexes affecting the flow of ideas and readability of the text. Complex sentence structure contributes to the quality, depth, and sophistication of a text. Ngongo (2018) revealed the significance of logico syntactic and semantic relation in clause complex for text cohesiveness and coherence.

To create an engaging academic writing style, balancing clause simplexes with more clause complexes structures is recommended. Additionally, balanced and varied use of logico-semantic relations can enhance the text's effectiveness and style. The balance can vary, depending on the purpose and the target audience of the academic writing. However, many experts recommend that the number of

simple sentences is around 30-40 %, and the number of complex sentences is around 60-70%. A study examining logical relations in high-quality IELTS sample texts with scores ranging from 7.0 to 7.5 revealed that clause simplexes accounted for 45.4% of the text, while clause complexes comprised 54.6%. Among the occurrences of clause complexes, 74.8% were expansion types and 25.5% were projection types. In terms of syntactic relationships, 73.5% were hypotactic, and 26.5% were paratactic. Additionally, the study highlighted a significant occurrence of embedding, reaching up to 28.9% (Nguyen & Quynh, 2020).

Excessive use of short and simple clause simplexes often leads to choppy academic writing, although not all clause simplexes pose this issue. Clause simplexes with high lexical density contribute to the coherence of the text. Lexical density is achieved by incorporating embedded noun phrases (NPs) into simple sentences to convey more meaning. Embedding, as a feature of phrasal complexity, enables writers to condense richer meaning into a noun and enhance the complexity of the NP. The ability to employ diverse NP structures serves as an indicator of writing complexity, a requirement in academic journals (Eggins, 2004; Lau, 2017). Embedding refers to words around a noun contributing to the specificity and detail in writing. A noun modified by such a complex embedding is referred to as a complex noun phrase. Syntactic complexity covering clausal complexity and phrasal complexity is an important writing index, besides accuracy and fluency.

The explanation above highlights the significance of EFL students' proficiency in constructing clause complex and effective clause simplex attached with complex noun phrases. Studies on second language writing revealed that syntactic complexity is an important aspect for writing proficiency (Dartey, 2023).

The primary objective of this study is to enhance our understanding of the linguistic characteristics present in the academic writing genre of EFL students, with a specific focus on syntactic complexity within clause complexes, clause simplexes, and noun phrase constructions. This research aims to contribute to functional grammar studies. Moreover, the findings of this study have practical implications, as they have the potential to assist graduate students, who are novice academic writers, in improving their writing proficiency and enabling them to publish research articles in their target journals. From a pedagogical standpoint, the outcomes of this research can be utilized to enhance teaching materials and instructional models for academic writing.

This genre analysis study is grounded in systemic functional linguistic/grammar theory, which posits that language functions as a social semiotic and that language usage is influenced by cultural and situational contexts (Hasan, 2014). Systemic functional grammar provides a framework for understanding how meaning is construed in language usage, emphasizing the role of lexicogrammar and linguistic features in expressing meanings. Each genre or text type possesses its unique communicative purpose, schematic structure, and linguistic features. Certain linguistic features, such as clause complexes and complex noun phrases that exhibit high lexical density, are associated with academic writing genres, including research papers and research paper introductions (Eggins, 2004).

Studies of clause complexes in academic writing are rare. Some previous studies on logico-semantic and syntactic relation of clause complexes in theses and research papers revealed the use of logico-semantic and taxis relations in the clause complexes (Jomaa & Bidin, 2019; Ngongo, 2018; Rukmini, 2010). The first study investigating the review of related literature of Ph.D. dissertations in information technology and theses in applied linguistics revealed that there were more than 73% clause complex occurrences. The logico-semantic relations included expansion, projection, and a combination of expansion and projection. The second study revealed that 68% of the clause complexes found in the discussion section of the EFL students' theses were hypotaxis. The third study exploring the clause complexes in the abstracts of English undergraduate final project reports revealed that the students employed parataxis, hypotaxis, elaboration, extension, enhancement, and idea projection.

The research objects of the previous studies are the literature review section, discussion section, and abstract section of final project reports written under the supervision of the advisors. Different from the previous studies, the present research explored clause complexes in the introduction section of unpublished graduate students' research papers written without intervention. Thus, the students' papers reflect their real competence. Further, the current study explored not only the taxis and logico-semantic relation of clause complexes, but also how the graduate students constructed NP in the clause simplexes.

Previous studies on NP in academic writing focused on NP construction and the syntactic complexity (Lau, 2017; Parkinson & Musgrave, 2014; Shen et al., 2023). Lau (2017) investigating NP in TESOL research articles found that complex NP was embedded with pre-modifier and post-modifier. Parkinson and Musgrave's (2014) study found that less proficient students tended to use attributive adjective modifiers while the more proficient students tended to use noun modifiers. Shen et al.'s (2023) study found that L1 English students tended to employ more NP in their academic writing than L1 Chinese students.

Similar to the previous studies, this present study examined the complexity of NP by evaluating the embedding, namely the pre-modifier and the post-modifier. However, it is different in terms of the area of the study. This current study only focused on NP of clause simplexes to see the lexical density of the clause simplex as one of the features of academic writing.

Based on this reason, this current research explored the logical relations of clause complexes and complex noun phrases of clause simplexes found in graduate students' unpublished academic writing and address the following questions:

1. What syntactic and logico-semantic features are used in the clause complexes of graduate students' unpublished academic writing?
2. How are noun phrases used in clause simplexes of graduate students' unpublished academic writing constructed?
3. How do students perceive clause complexes and noun phrase construction in academic writing?

2. Method

2.1. Research design

This current study is a qualitative case study focusing on a small number of entities (Creswell & Creswell, 2017; Gerring, 2016). It employed the discourse or genre analysis approach, exploring the linguistic features of EFL students' academic writing. The study aimed at finding how they realized their ideas linguistically. The genre analysis approach emphasizes the analysis of both the schematic structure and linguistic features of a particular genre (Eggins, 2004).

Discourse or genre analysis studies corpus or text type, focusing on discourse units. A genre is a text type characterized by communicative purpose (goal-oriented), generic structure (staged), and linguistic features (Agustien, 2020). There is an association between a particular genre and lexicogrammar or linguistic features. Logical relations of clause complexes and complex noun phrases of clause simplexes are parts of academic writing linguistic features.

2.2. Materials

With the students' consent, corpora were obtained from 20 graduate students' introduction section of unpublished research papers, produced as a final task of academic writing course in the English Language Study Program, Semarang State University, Indonesia in January 2023. The small number of samples is relevant to the case study design which enabled the researchers to conduct an in-depth study (Tight, 2017). Purposive sampling technique was employed because the research was conducted in a classroom context.

2.3. Research Instruments

The main instruments used in this research were test and interview. The test was administered to 20 students to obtain the corpus/materials as the research object. The students were instructed to choose a research topic, and wrote a research paper introduction based on the research topic. To identify the clause complex and clause simplex, and to classify the logical relation of each clause complex into certain types of syntactic and logico-semantic relation, the scheme of clause complex system (see figure 1) was applied.

To get the data of complex noun phrase construction in each clause simplex, a table was used.

No	Pre-modifier	Head	Post-modifier
1			
2			

Twenty students were interviewed using open-ended questions to gather data on their perceptions. The questions asked were as follows: (1) How important is academic writing for your career as a prospective teacher?; and (2) What are the linguistic features of qualified academic writing? These questions aimed to assess the students' understanding of the importance and linguistic aspects of academic writing. Question (3) What issues do you face in the construction of clause

complexes and NP? This question was used to reveal their writing problems and the reasons underlying the problems.

2.4. Research procedure

This research investigated the clause complex logico-semantic and syntactic relation to identify the interdependency relation and the type of meaning relationship in writing using the framework of functional grammar as displayed in figure 1 (Halliday & Matthiessen, 2014); Eggins, 2004). It also investigated the noun phrase complexity of the clause simplexes and the students' perceptions of the related matters. Thus, the data of this study were clause complexes, complex NP in clause simplexes, and the students' perceptions.

The steps to achieve the objectives of the study were identification, classification, description, and explanation. The researchers identified the clause complexes and clause simplexes of each text. Then, the taxis and logico-semantic relations of the clause complexes were identified and classified based on the functional grammar framework by using UAM CorpusTool. The qualitative analysis of the clause complexity features was based on the taxonomy of Halliday and Matthiessen (2014), Staples et al. (2016), and Pérez-Guerra and Smirnova (2023).

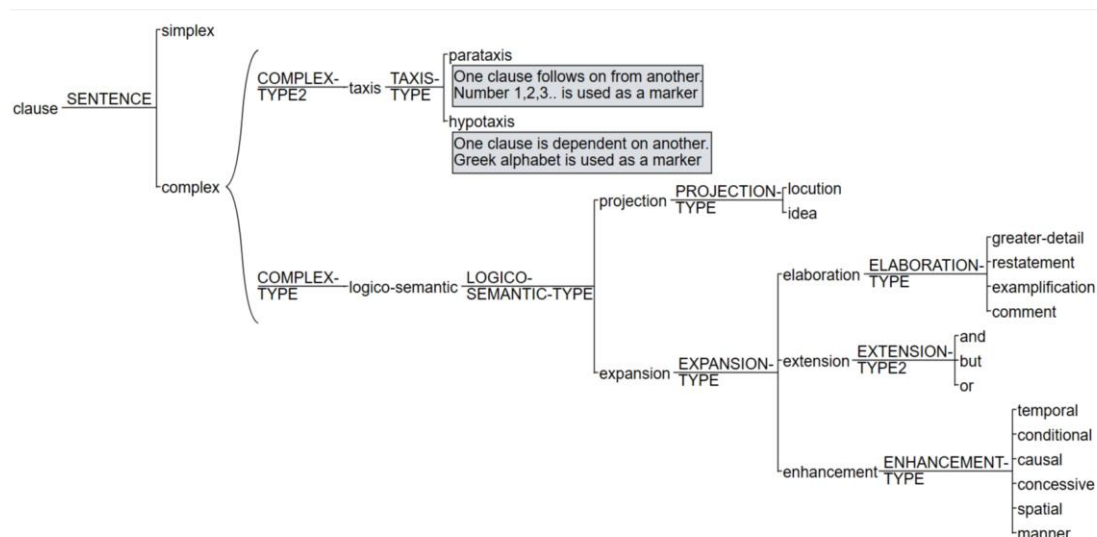


Figure 1: Clause complex system (Halliday & Matthiessen, 2014)

After analyzing the clause complexes, complex NP in each clause simplex was identified and classified based on its modifying elements: pre-modifiers (attributive adjective, noun) and post-modifiers (prepositional phrase, infinitive, participial) (Peng & Azmi, 2022; Biber et al., 2011; Eggins, 2004; Lau, 2017). Complexity refers to grammatical elements modifying the NP (Dartey, 2023). NP complexity was measured in terms of its modifiers. In this research, complex NP is defined as NP with multiple modifiers, pre-modifiers, and post-modifiers that specify the head noun. The modifiers are classified into pre-modifiers and post-modifiers, consisting of attributive adjectives, participial (-ed participle, -ing participle), infinitive, prepositional phrases, and noun phrases.

The students' perceptions related to clause complexity, NP construction, and academic writing role in their future career were collected using the following open-ended interview questions:

1. How important is academic writing for your career as a prospective teacher?
2. What are the linguistic features of qualified academic writing? (Do you know that clause complexes and complex NP are the characteristics of qualified academic writing?)
3. What issues do you face in the construction of clause complexes and complex NP in your academic Writing?

The first and the second research questions explore the students' awareness of the significance and the linguistic features of academic writing. The third question is to reveal their writing problems and the reasons underlying the problems. The interview involved all of the research participants (20 students).

3. Results and Discussion

3.1. Syntactic and logico-semantic features found in the clause complexes of graduate students' unpublished academic writing

The effective use of taxis/syntactic and logico-semantic systems of clauses plays a crucial role in maintaining a smooth flow of ideas in writing. The dominant use of the taxis and logico semantic relation types reveals how authors tend to support their ideas. The findings of how the research participants used the taxis and logico semantic relation types are presented below.

The length of the academic writing samples varies from 29 to 50 sentences. In the light of systemic functional linguistics (Halliday & Matthiessen, 2014), the analysis shows that in 20 texts, there are 769 sentences, 340 (44.2%) of which are clause complexes, while the remainder 429 (55.8%) are clause simplexes (See table 1). This means that most students utilized more clause simplexes than clause complexes to build up logical relations between experiential entities. This finding is irrelevant with the general guideline which recommends balancing clause simplexes with a greater use of clause complex structures. It is different from previous studies by Jomaa and Bidin (2019), Ngongo, (2018); Nguyen and Quynh (2020) which indicated a higher proportion of clause complexes usage of 73%, 68%, and 54.6%.

Table 1: Distribution of clause complexes and clause simplexes

<i>Text</i>	<i>Number of clause complexes</i>	<i>Number of clause simplexes</i>	<i>Number of sentences</i>
1	24	25	49
2	12	23	35
3	14	19	33
4	9	20	29
5	10	21	31
6	23	17	40
7	24	19	43
8	12	26	38
9	25	20	45
10	13	19	32

11	12	24	36
12	28	22	50
13	13	17	30
14	10	24	34
15	24	18	42
16	13	24	37
17	22	19	41
18	15	23	38
19	25	22	47
20	12	27	39
	340 (44.2%)	429 (55.8%)	769 (100%)

In terms of taxis or interdependency relations, the students utilized parataxis and hypotaxis to develop logical relationships in their academic writing, but the number of hypotaxis (52.7%) is slightly higher than that of parataxis (47.3%), meaning that they often used arguments of unequal status in structuring the experiential entities to achieve their communicative purpose (See table 2). This finding is different from the previous studies investigating students' theses and IELTS academic writing samples, revealing the use of hypotactic systems up to 66%, and 73.5% (Ngongo, 2018; Nguyen & Quynh, 2020). However, it is similar to a previous study investigating abstract samples that found 47% parataxis relation (Rukmini, 2010). The taxis' relationship, either hypotaxis or parataxis employed by the students, indicates not only the clauses' relationship but also the meaning relationship of the messages written.

Table 2: Distribution of syntactic relation system

<i>Text</i>	<i>Number of parataxis</i>	<i>Number of hypotaxis</i>	<i>Number of clause complexes</i>
1	14	10	24
2	7	5	12
3	8	6	14
4	4	5	9
5	6	4	10
6	9	14	23
7	8	16	24
8	7	5	12
9	10	15	25
10	6	7	13
11	7	5	12
12	12	16	28
13	6	7	13
14	6	4	10
15	10	14	24
16	7	6	13
17	9	13	22
18	8	7	15
19	10	15	25
20	7	5	12
	161 (47.3%)	179 (52.7%)	340 (100%)

The analysis of logico-semantic relation shows that the expansion relation is dominant to indicate a wide range of relationships between clauses. The finding reveals 261 (76.8%) occurrences of expansion relation, and 79 (23.2%) occurrences of projection relation (See table 3). This finding aligns with a previous study conducted by Nguyen and Quynh (2020) which found 74.8% and 25.2% occurrences of expansion and projection relation.

Table 3: Distribution of logico-semantic relation system

<i>Text</i>	<i>Number of projection</i>	<i>Number of expansion</i>	<i>Number of clause complexes</i>
1	4	20	24
2	2	10	12
3	3	11	14
4	2	7	9
5	2	8	10
6	4	19	23
7	6	18	24
8	3	9	12
9	5	20	25
10	4	9	13
11	3	9	12
12	6	22	28
13	4	9	13
14	3	7	10
15	5	19	24
16	3	10	13
17	5	17	22
18	4	11	15
19	7	18	25
20	4	8	12
	79 (23.2%)	261 (76.8%)	340

Specifically, hypotactic enhancement expansion occurred dominantly while paratactic idea projection was not found (See Table 4). The varied usage of parataxis and hypotaxis relation is a grammatical strategy for the rhetorical development of a text. It is an attempt to achieve an appropriate writing style.

Table 4: Distribution of syntactic and logico-semantic relation

Logico-semantic relation	Expansion			Projection		Total
	Extension	Elaboration	Enhancement	Locution	Idea	
Hypotaxis	22	7	85	40	25	179 (52.7%)
Parataxis	91	4	52	14	0	161 (47.3%)
Total	33.4%	3.2%	40.2%	15.8%	7.4%	340 (100%)
	113	11	137	54	25	
	261 (76.8%)			79 (23.2%)		

Data samples on the logical relation of hypotactic extension, paratactic extension, hypotactic elaboration, paratactic elaboration, hypotactic enhancement, paratactic enhancement, hypotactic locution, paratactic locution, and hypotactic idea are presented and explained below.

(1) Hypotactic extension

T1

α	The previous studies explored the nature and concepts of tense and aspect in English,
+ β	while the selection of appropriate tense or aspect in English writing.

The clause complex above consists of two unequal status clauses, independent and dependent clauses. The dependent clause (β), *while the selection of appropriate tense or aspect in English writing*, cannot stand alone as a complete thought. It needs the dominant clause (α), *the previous studies explored the nature and concepts of tense and aspect in English*, to have a complete meaning. The dependent clause starts with the adversative subordinator '*while*' as a hypotactic clause marker which marks that the clause following it is contradictory with the preceding clause. The dependent clause, *while the selection of appropriate tense or aspect in English writing*, extends the independent clause by presenting different information.

(2) Paratactic extension

T3

1	Slogans are easy-to-remember words,
+2	and they attract people's attention.

The two clauses have equal status, each of which can stand alone as a complete simple sentence. The first clause, *slogans are easy-to-remember words*, is the initiating clause. The second clause, *which attracts people's attention*, is the continuing clause starting with '*and*' as a paratactic, extending coordinator marker. Thus, the second clause extends the first clause by adding more information.

(3) Hypotactic elaboration

T5

α	Proposition in lyrics refers to the underlying message
= β	which the songwriter aims to convey through the song.

The two clauses have unequal status, independent and dependent clauses starting with the hypotactic elaborating marker '*which*'. The dependent clause, *which the songwriter aims to convey through the song*, elaborates the phrase '*the underlying message*' as part of the independent clause, *proposition in lyrics refers to the underlying message*. Particularly, it specifies the phrase in greater details.

(4) Paratactic elaboration

T6

1	Music with its universal language connects people on a profound emotional level,
=2	namely through lyrics and melodies, musicians can convey intricate emotions.

The clause complex consists of two independent clauses functioning as initiating and continuing clauses. Each of them can stand alone with a complete thought. The continuing clause starts with 'namely' as a coordinator or paratactic elaborating marker. The second clause, *namely through lyrics and melodies, musicians can convey intricate emotions*, elaborates the first clause, *music with its universal language connects people on a profound emotional level*. In particular, it exemplifies the phrase 'a profound emotional level'.

(5) Hypotactic enhancement

T4

α	Meaning is an important aspect of a language
$x\beta$	because it can give an understanding of the matters talked on that spot.

The two clauses have unequal status, as dominant or independent clauses and dependent clauses. The complete meaning of the dependent clause, *because it can give an understanding of the matters talked about on that spot*, depends on the dominant clause, *meaning is an important aspect in a language*. The dependent clause starts with the subordinator or causal enhancement marker 'because', meaning that it functions as an adverbial clause of reason.

(6) Paratactic enhancement expansion

T12

1	This research aims to explore the meaning in the lyrics of a song
$x2$	so that it can enrich the theory of types of meaning.

The two clauses have equal status as initiating and continuing clauses, each of which can stand alone as a simple sentence. The second clause starts with a coordinator 'so that' which conveys a purpose *so that it can enrich the theory of types of meaning*. It is a purpose-enhancing marker, indicating that the second clause functions as an adverbial clause of purpose.

(7) Hypotactic locution projection

T17

α	The previous study claimed
" β "	that understanding reference is essential to comprehend how language expresses meaning.

The clause complex above is a report hypotactic projection since the student reported the finding of a previous study. The dominant clause, *the previous study claimed*, projects the dependent clause, *that understanding reference is essential to comprehend how language expresses meaning*, with a verbal process 'claimed' in hypotactic speech construing the hypotactic locution.

(8) Paratactic locution projection

T13

1	Susanto (2018) states,
"2"	"Both speaker and listener negotiate meaning in communication."

The clause complex above is quote hypotactic projection since the student quotes the expert's words. The first clause, *Susanto (2018) states*, is the initiating clause projecting the continuing clause, *"both speaker and listener negotiate meaning in communication"* with a verbal process 'states'. Traditionally, this is termed as direct speech. The two clauses have equal status and they are reversible.

(9) Hypotactic idea projection

T20

α	I think
β	that this current study will make a significant contribution.

The dominant clause, *I think*, projects the dependent clause, *that this current study will give a significant contribution*, using mental 'think'. The word 'that' is a subordinator marked in the hypotactic clause. These two clauses are irreversible.

3.2. Constructed noun phrases in clause simplexes of graduate students' unpublished academic writing

The NP complexity was measured by its syntactic complexity in light of its pre-modifiers and post-modifiers. Thus, complex NP is embedded with multiple or complex pre-modifiers and post-modifiers such as attributive adjectives, participial (-ed participle, -ing participle), infinitive, prepositional phrases, and noun phrases. The complex NP occurrences in clause simplexes found in the research data are presented in Table 5.

Table 5: Distribution of complex NP

Text	Number of clause simplexes	Number of complex NP
1	25	5
2	23	4
3	19	3
4	20	3
5	21	4
6	17	4
7	19	5
8	26	5
9	20	6
10	19	3
11	24	5
12	22	7
13	17	3
14	24	4
15	18	6
16	24	4
17	19	4
18	23	4
19	22	5
20	27	5
	429 (100%)	89 (20.7)%

The table above shows that the complex NP occurred in 89 (20.7) sentences, while simple NP with simple embedding was found in other 340 sentences. This finding

is different from the previous study that found up to 28.9% complex embedding (Nguyen & Quynh, 2020). The structure and components of the complex NP are varied as can be seen in the table below.

Table 6: Constructions of complex NP

No	Pre-modifier	Head	Post-modifier	Total
1	Attributive adjective	Noun	Prepositional phrase	43 (47.8%)
2	Attributive adjective	Noun	Infinitive	11 (12.7%)
3	Attributive adjective	Noun	Participial	6 (6.9%)
4	Noun	Noun	Prepositional phrase	15 (16.9%)
5	Noun	Noun	Infinitive	9 (9.8%)
6	Noun	Noun	Participial	5 (5.9%)
				89 (100%)

The pre- and post-modifiers serve the function of defining more precisely the participant or noun being referred to. The example and explanation of each structure are presented below.

- (1) very important and useful **role** of learning tenses and aspects in middle school (T15)

The words '*very important and useful*' describe the quality of the headword '*role*'. There are two post-modifiers '*of learning tenses and aspects*' and '*in middle school*'. The former functions as a classifier, while the latter indicates place.

- (2) complex syntactic analysis **skills** to provide a good basic understanding of language (T7)

The word '*complex*' provides information on the quality of the headword '*skills*' as opposed to '*simple*'. The word '*syntactic*' functions as a classifier that categorizes the word '*analysis*' into certain types. The headword is followed by infinitive post-modifier, *to provide a good basic understanding of language*, functioning as a purpose.

- (3) special and meaningful literary **language** expressed in poetry by the poet (T11)

The pre-modifiers '*special and meaningful*' describe the quality of the headword '*language*'. The word '*literary*' categorizes the headword. The participial post-modifier '*expressed in poetry by the poet*' functions as a complement.

- (4) language **evolution** in the new era to accommodate language user's needs (T4)

The word '*language*' classifies the headword '*evolution*' into a certain type. There are two postmodifiers, *in the new era*, and, *to accommodate language user's needs*. The former shows the time while the latter indicates the purpose.

- (5) a communication **tool** to convey ideas, messages, intentions, feelings, and opinions to others (T.18)

The pre-modifier '*communication*' classifies the headword '**tool**' into certain types. The post modifier, *to convey ideas, messages, intentions, feelings, and opinions to others*, is a complement indicating the purpose of the headword.

- (6) human communication '**system**' evolving in human culture and society (T14)

The word '*human communication*' classifies the headword '*system*' into certain types. The post-modifier, *evolving in human culture and society*, is a complement.

The research finding reveals that attributive adjective pre-modifiers were more dominantly utilized by the students, up to 67.4%. They defined or specified the head noun by describing it. The noun pre-modifiers were less dominantly utilized by the students, only 32.6%. They classified the headwords into certain types. This finding is relevant to the study of Dartey (2023), but different from the study by Peng and Azmi (2022) that found more noun pre-modifiers than the attributive adjective pre-modifiers.

The current research also found that prepositional phrase post-modifiers were dominantly utilized by the students, up to 58%. They complement the head noun by providing the context such as time, and place. This finding align with previous studies by Dartey (2023) and Peng and Azmi (2022).

3.3. Students' perceptions of clause complexes and noun phrase construction in academic writing

The interview aimed at eliciting students' literacy, challenges in academic writing, and their view of academic writing role for their future career. The interview revealed that all the 20 research participants explained that academic writing proficiency is crucial to promote their future career as prospective English teachers since there is a government regulation that requires them to disseminate their experience and their classroom research with their colleagues and the world. However, they realized that their academic writing skill and proficiency are still low.

Here are some sample perceptions:

Table 7: Students' sample perceptions on the importance of academic writing for their career as a prospective teacher

Participants	Perceptions
7	Skill to write academic paper such as research report and article is very important in my future career. If I never write, I will not get allowance from the government later. Therefore, I must upgrade my writing ability because I realize that my academic writing proficiency is still low.
12	As a prospective teacher, I am aware that academic writing skill has a crucial role to support my career because writing cannot be separated from my future job. If I never write and publish, I will be left behind. But scientific writing is not easy.

In terms of the linguistic features of qualified academic writing, most of them mentioned 'formal', 'accurate grammar', and 'fluent flow of ideas'. Only 4 (20%)

students mentioned 'writing style', namely the use of various sentence structures, simple, compound, complex, and compound complexes. Thus, they were aware of the clausal complexity. Then, in terms of phrasal complexity, only 2 (10%) students used the feature of phrasal complexity in academic writing. Most students were not aware that clause complexes and complex NP are among the characteristics of academic writing.

Here are some sample perceptions:

Table 8: Students' sample perceptions on the linguistic features of qualified academic writing

Participants	Perceptions
5	Linguistic features of qualified academic writing are formal writing with accurate grammar such tenses and subject-verb agreement. I never think the need of lexical density in academic writing, by the use of clause complexes and complex noun phrase.
13	The most crucial thing in academic writing is flow of ideas; there should be unity of title, introduction, body, and conclusion. The other important characteristic is the use of appropriate tenses in each section. I don't know that using variations of sentence types and complex noun phrase to dense information is other important linguistic features of academic writing.

Concerning the issues they faced in the construction of clause complexes and complex NP, most of them stated that while writing, they were rarely aware of producing the writing style demanded by academic writing, including clause complexes and complex NP. They were often unaware of the need to blend simple sentences into clause complexes, to pack information into complex NP that highly possibly resulted in choppy text. From the interview results, the matters mostly faced by the students include literacy of academic writing features.

Table 9: Students' sample perceptions of the matters in constructing clause complexes and complex noun phrase

Participants	Perceptions
14	While writing, I rarely consider the writing style in conveying meanings. Mostly, I use simple sentences because it is the easiest way. I use small number of clause complexes. Blending simple sentences into compound, complex, compound complex sentences needs more thinking. And sometimes I am confused. For the noun phrase in my paper, I mostly use simple noun phrase consisting two or three words. I rarely think the need to form complex noun phrase consisting of pre-modifier, head, post-modifier.
20	I am not so aware with the use of clause complexes and complex noun phrase in my academic writing because, while writing, I mostly more focus on the flow of ideas and tenses. Even I am not familiar with the term of complex noun phrase. Yes, I use noun phrase of course but mostly I use simple noun phrase consisting two or three words.

The results of the interviews above imply that the students are aware of the important role of academic writing in their future career. However, they were not

aware that clause complexes and complex noun phrase are important linguistic features of qualified academic writing, to pack more information. The lack of reading academic texts and inadequate writing practices most possibly become the causes of the literacy problem.

Based on the finding above, the alternative teaching model of the *literacy development cycle* (LDC) is recommended for academic writing instructions (Unsworth & Bush, 2009). As the name indicates, the model is used to develop students' literacy skills, the proficiency to read and write which cannot be separated because reading and writing are like two sides of a coin. Academic reading is a crucial task in tertiary education (Yulia et al., 2020). LDC teaching model refers to a text/genre-based approach (GBA) deriving from Halliday's systemic functional linguistics theory of language as social semiotic (Hasan, 2014).

The reason to propose LDC, a modified GBA, is that it has pedagogical and political aims. It is a pedagogical model motivated by a political project to facilitate students to be successful in school and beyond, and to be literate in this new era. The principles of GBA are the students learn about the language knowledge or meta-language, learn various topics and fields through language, and learn to use language (Agustien, 2020; Derewianka, 2015; Kress, 1993).

Academic writing, specifically research report writing, belongs to the argumentative or persuasive genre. Its primary communicative purpose is to persuade and convince readers by presenting logical and interconnected propositions. This genre is characterized by various linguistic features, including a formal and scientific style, the use of a range of clause simplexes and clause complexes, grammatical accuracy, and lexical density achieved through techniques such as nominalization and complex noun phrases (Eggs, 2004; Swales & Feak, 2012).

Adapted from Agustien (2020), Feez and Joyce (1998) and Unsworth and Bush (2009), the syntax of the LDC model to teach academic writing is as follows.

Syntax

1. Building the field

This stage is an orientation to the text that students will read, to activate their schemata and brainstorm the lexico-grammar that they will meet, to grow their self-confidence, and to give the impression that the text makes sense for them. Technical terms such as taxis, hypotaxis, parataxis, logico-semantic relation, projection, expansion, complex NP, pre-modifier, post-modifier, academic writing linguistic features, and schematic structure are explained to make them aware and increase their knowledge about academic writing characteristics.

2. Modelling

The students are exposed to qualified academic writing texts, taken from reputable journals. Using their knowledge about the context of the texts that has been learned in the 'Building the field' stage, they read the texts. To optimize their understanding of the information in the texts, they also

need to read tables, figures, diagrams, layouts, and headings. Utilizing the texts, in this stage, the teacher explains the academic writing genre, the communicative purpose, lexico-grammatical features, and the schematic structure. Different from 'Building the field' stage which focuses on explaining the context of the text, the 'Modelling' stage focuses on explaining the genre.

3. Working with the text

The issues mostly faced by the students include the lack of awareness and literacy of academic writing features, especially clause complexes and complex NP. To compensate for these issues, text analysis activity is recommended since it is an awareness-raising task that increase students' awareness (Svalberg & Askham, 2020). Text analysis promotes deeper comprehension. Empirical evidence revealed that consciousness-raising tasks have a positive impact on EFL learners' performance (Atai & Khatibi, 2010). To enhance the students' awareness and literacy on clause complexes and complex NP, they are asked to identify clause complexes and complex NP of the texts and analyse them in terms of the syntactic and semantic logico-relation, pre, and post-modifiers, and their functions. They work in groups.

4. Joint construction: researching and writing

Researching here means doing mini research in groups with small data; then, writing the research report, reviewing and editing the research report. The teacher helps the students finish the project. This can be assigned as a mid-test project.

5. Independent construction: researching, writing, and publishing

Working independently, the students do mini-research, write the research report, review, edit the research report, and publish it. This can be assigned as a final test project. The students are allowed to get minimum assistance from the teacher if needed.

4. Conclusion

This research aims to reveal the writing style employed by graduate students in their unpublished academic writing. Specifically, it focuses on the use of logical relations within clause complexes and complex noun phrases in clause simplexes. Additionally, the study aims to explore the students' perceptions of these aspects. The findings indicate that the students encounter challenges in adopting an appropriate academic writing style. Excessive use of short and simple clause simplexes leads to choppy texts. Regarding taxis, students primarily utilize parataxis and hypotaxis to establish logical relationships in their academic writing, with a slight predominance of hypotaxis (52.7% vs. 47.3%). The dominant logico-semantic relation observed is expansion (76.8%). In terms of complex noun phrases, they appear in 20.7% of clause simplexes, predominantly featuring attributive adjective pre-modifiers and prepositional phrase post-modifiers. Interviews conducted with the students shed light on their perception of academic writing's role in their future careers and identified their specific writing problems. It is evident that becoming proficient academic writers presented challenges for

EFL students, as it required a multifaceted effort. Significantly, many students were unaware that achieving a qualified academic writing style requires the use of complex clausal and phrasal structures. This lack of awareness and understanding of the characteristics of quality academic writing hindered their progress. Based on these findings, a novel teaching model called the Literacy Development Cycle (LDC) is proposed as an alternative approach to teaching academic writing to graduate students. The model comprises several stages: building the field, modelling, working with text, joint construction: researching and writing, and independent construction: researching, writing, and publishing. Despite the findings, this study has some limitations which include the use of samples from only one university and a relatively limited analysis of complex noun phrases. Therefore, future research should include samples from multiple universities and conduct a more comprehensive exploration of complex noun phrases.

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