

Theme-Based Instruction and Japanese EFL University Students' Syntactic Complexity and Perceptions

Naoya Shibata*

Osaka Kyoiku University

Natsuho Mizoguchi

Nagoya University of Foreign Studies

Abstract

Theme-based instruction (TBI) is one of the models of content-based instruction, in which learners study topics that are interesting and relevant to them (Brinton & Snow, 2017; Snow & Brinton, 2023). Although this approach is well-known in many English-as-a-second/foreign-language (ES/FL) educational contexts (Brown & Lee, 2015; Curtis, 2017; Yugandhar, 2016), research on the effects of TBI on students' writing performance is still scarce (Ostovar-Namaghi & Nakhaee, 2019). To address this research issue, the authors conducted a one-shot model of a quantitative study with 86 first-year university students in Japan over a 15-week semester. The course covered four thematic units. The authors collected students' perceptions of each theme before learning the unit content and their pre-/post-timed writing papers about each theme. The Wilcoxon signed-rank tests were conducted to analyze their writing samples from two perspectives (the number of tokens and syntactic complexity). Regardless of assigned themes, statistical test results revealed that the number of word tokens increased significantly, whereas syntactic complexity did not. Based on these findings, TBI does not appear to be a practical approach for facilitating learners' writing abilities to use grammatically complex sentences. Hence, other teaching approaches need to be explored and integrated with TBI when syntactic complexity development is a teaching and learning objective in writing courses.

As the necessity of foreign language proficiency for meaningful communication is noticeably growing in Japan, language teachers are expected to help learners develop their overall target language abilities (listening, reading, speaking, and writing). Theme-based instruction (TBI) is perceived as one of the most wide-spread teaching approaches to accomplish these teaching goals (Brinton & Snow, 2017; Brown & Lee, 2015; Curtis, 2017; Snow & Brinton, 2023). It has been investigated in many secondary and tertiary settings, including in Japan (e.g., Sato & Crane, 2023; Suzuki, 2022). This approach is also introduced in academic writing courses. However, as many writing courses utilize TBI along with process writing approaches, regardless of country, the pure effectiveness of TBI has not been fully revealed (Hyland, 2019; Pérez-Vidal & Lasagabaster, 2022). In order to consider the potential of TBI in writing courses, this research issue needs to be addressed.



Shibata, N. & Mizoguchi, N. (2025). Theme-based instruction and Japanese EFL university students' syntactic complexity and perceptions *TESOL Working Papers Series*, 23, 14-28.

Website: Hawaii Pacific University <http://www.hpu.edu>.

*Email: shibata-n48@ex.osaka-kyoiku.ac.jp. Address: Kashiwara Campus, Osaka Kyoiku University, 4-698-1 Asahigaoka, Kashiwara, Osaka 582-8582, Japan

Theme-Based Instruction

Theme-based instruction (TBI) is one language-driven model of content-based instruction, which aims to develop learners' overall language abilities of listening, speaking, reading, and writing with the use of topics relevant to their interests and specialties (Brinton & Snow, 2017; Lyster, 2018; Snow & Brinton, 2023). TBI can be implemented in various classroom settings, regardless of learners' age or language proficiency, and it can provide learners with a language-rich environment (Snow & Brinton, 2023). This approach is also expected to facilitate the development of learners' communication abilities in their target language, especially for learners who mostly experience grammar-focused instruction (Lyster, 2018). These factors have made TBI prevalent in many language teaching settings, including Japanese EFL university contexts.

Tedick and Lyster (2020) maintain that theme-based curriculum design integrating language and various academic subjects can foster cognitive learning engagement and content knowledge about assigned topics. Content-based instruction aims to help learners develop their language abilities and content knowledge (Brinton & Snow, 2017; Loewen & Sato, 2024; Snow & Brinton, 2023), which highlights the importance of knowledge building. Dörnyei et al. (2016) and Pinner (2019, 2022) also mention that themes relevant to students' interests and experiences can foster their learning motivation and engagement and develop their content knowledge and target language abilities. Thus, selecting appropriate themes and topics is crucial.

Nevertheless, challenges of conducting TBI in language classrooms include finding appropriate texts and student-relevant topics, as well as best arranging and organizing the themes and skills for students (Snow & Brinton, 2023). Curtis (2017) reports that many theme-based language coursebooks introduce general themes, such as food and holidays, which do not follow the principle that content-based instruction should integrate language and academic content. More importantly, when teachers and students need to utilize assigned coursebooks in class, they have to use only the themes provided. These limitations can highlight the importance of knowing whether learners perceive assigned themes as interesting or relevant to their specialties and experiences.

As TBI prevails in many ESL/EFL secondary and tertiary educational settings worldwide, including in Japan, various research studies have attempted to examine the effectiveness of TBI on learners' language abilities, including writing abilities. Osman et al. (2009) conducted a study of TBI in a writing class with students in Malaysia. They revealed that the theme-based process writing approach contributes to learners' writing fluency and motivation. Shibata (2019) also integrated TBI and process writing approaches in high school English classes and revealed that, regardless of assigned topics, students used more word tokens and sought to convey their arguments with clear reasons. Shibata (2021, 2022) conducted a one-shot design of mixed-methods study on the effectiveness of TBI on Japanese university students' lexical diversity in essay writing with 45 intermediate-level EFL learners. Results showed that, regardless of assigned themes, students utilized a more extensive vocabulary as they wrote and revised drafts whilst developing their content knowledge and receiving sociocultural scaffolding from their classmates, the teacher, and materials. However, as Hyland (2019) highlights that TBI and the process writing approach are integrated and investigated in many writing courses, the pure effects of TBI on learners' writing abilities have not been thoroughly investigated. Hence, this gap in the literature needs to be addressed to consider the usefulness of TBI in writing courses.

Syntactic Complexity

Syntactic complexity is defined as “the expansion of the capacity to use the additional language in ever more mature and skillful ways, tapping the full range of linguistic resources offered by the given

grammar in order to fulfill various communicative goals successfully” (Ortega, 2015, p. 82). This variable is also often explored in the second language writing field. For example, Ai and Lu (2013) explored the syntactic complexity differences between non-native and native speakers, analyzing 600 essays with ten syntactic complexity measures. Findings indicated significant differences between these two groups regarding the length of a production unit, amount of subordination, amount of coordination, and degree of phrasal sophistication. Casal and Lee (2019) investigated the relationship between syntactic complexity and writing quality in research papers written by first-year EFL university learners. As the data revealed that syntactic complexity varied among learner proficiency levels in statistically significant ways, the researchers concluded that syntactic complexity, especially nominal complexity, can utilize a useful benchmark to assess writing quality. Syntactic complexity development through various approaches (e.g., Marlowe, 2016; Ramzan & Alahmadi, 2024; Tai, 2015; Thi & Nikolov, 2023) and topics and genres (e.g., Ha, 2022; Pu et al., 2022; Yang et al., 2015) has been investigated. However, little research on the influence of TBI and assigned topics on syntactic complexity has been conducted. Thus, the decisive conclusion regarding the usefulness of TBI and appropriate topics has not been identified. More studies on these research foci are vital to help writing instructors employ adequate instructions and topics for their students.

Research Questions

Although the effectiveness of TBI has been discussed in many studies, there has not been much research done to examine the potential of TBI specifically in writing, nor the students’ interests in the assigned themes in the course. Based on this research issue and the literature review, this study aims to examine the following research questions:

RQ 1: To what extent does theme-based instruction facilitate Japanese university students’ EFL syntactic complexity in timed writing?

RQ 2: To what extent do learners’ perception of assigned themes affect their timed writing abilities?

Methodology

Participants

This research was conducted at a private university in Japan for one semester of 15 weeks. In the first class, we informed students about the purpose of this investigation in Japanese to avoid misunderstandings and miscommunication. They were also assured that their participation would not affect their academic grades, and they could decline to participate in the study at any time. Moreover, their writing products and responses to a questionnaire were anonymized. After the guidance, students submitted a consent form online. As a result, 86 students voluntarily participated. All participants were first-year students majoring in English-related areas (English Education, British and American Studies, and English Communication). None considered English their first language, and most were from a Japanese educational background. They were first-year students in senior high school when the pandemic emerged in 2020. Many schools in Japan faced difficulties in continuing their education and forced students to study from home. Also, the university offers a study abroad scholarship to those who do well in their schoolwork and demonstrate high English proficiency. Because of this opportunity, many students were interested in studying abroad during their university years, and their motivation to study English was fairly high. Based on the average TOEIC scores, the participants’ average proficiency was considered to be from beginner to lower-intermediate level.

Pedagogical Treatment

The study was conducted in four classes with students taking the same course and following the same syllabus for one 15-week semester. In the course, the students attended two 90-minute-long English-medium classes every week. Four main themes were taught in the semester, and each assigned theme was covered in six classes (see Table 1). Each unit consisted of one introduction class, two reading classes, one listening class, one presentation class, and one conversation recording class, where students discussed the unit content in pairs. As out-of-class work, they completed two writing assignments (an imaginary dialogue and a recorded conversation reflection) per unit. Each unit contained speaking, listening, and reading and writing activities, and the course was arranged to develop students' content knowledge and their language ability (Bradley, 2019). Reading and writing activities were separated. All units were based on a three-step approach: (1) pre-reading/listening discussions and vocabulary input, (2) reading/listening comprehension questions, and (3) post-reading/listening discussions. Neither explicit grammar focused activities nor explicit writing instruction (e.g., direct corrective feedback or process writing approaches) were provided for students. Through these activities, learners aimed to develop their English abilities for communication and content knowledge relevant to assigned themes.

Table 1
Assigned Themes and Terms

Unit Numbers	Themes	Terms
1	University Life	six classes (540 minutes)
2	Food and Health	six classes (540 minutes)
3	Living Overseas	six classes (540 minutes)
4	Japanese Culture	six classes (540 minutes)

For the textbook reading activities, students read in-house articles that are relevant to the unit theme (see Table 2). Word length and the estimated vocabulary level were measured by using the CEFR-based vocabulary level analyzer (CVLA 3.0) (Uchida, 2025; Uchida & Negishi, 2025). The vocabulary level is indicated based on the Common European Framework of Reference: Japan (CEFR-J), which is an adjusted version of CEFR for Japanese learners of English (Uchida & Negishi, 2018). In this framework, CEFR A1, A2, B1, and B2 levels are divided into nine more specific levels (A1-1, A1-2, A1-3, A2-1, A2-2, B1-1, B1-2, B2-1, and B2-2), besides Pre-A1, which is below A1 level. The grammar complexity was assessed using the L2 syntactic complexity analyzer (Ai & Lu, 2013; Lu, 2010, 2011; Lu & Ai, 2015). The number of clauses per sentence (C/S) was adopted as the index of complexity because the instrument did not provide the CEFR-aligned measurement for the text analysis. The index was the main focus of this investigation.

Table 2
Reading Text Level Analysis

Unit and Reading	Text Length (words)	Vocabulary Level	Grammar Complexity (C/S)
Unit 1 Reading 1	357	B1-1	1.5
Unit 1 Reading 2	400	B1-2	1.6
Unit 2 Reading 1	408	B1-2	1.5
Unit 2 Reading 2	397	B1-2	1.9
Unit 3 Reading 1	362	C1	1.9
Unit 3 Reading 2	396	B2-2	2.0
Unit 4 Reading 1	479	B1-2	1.7
Unit 4 Reading 2	353	B1-1	1.4

Note. As Unit 4 Reading 1 and 2 were about Japanese culture, they included some Japanese words in the text. Those Japanese words are not included in the word count in the table.

Data Collection Instruments and Procedures

Quantitative data were collected from a 6-Likert scale questionnaire (1: very boring/easy – 6: very interesting/difficult) and pre-/post-tests of timed writing to answer two research questions. The questionnaire was utilized to understand learners' interest and perceptions of difficulty in four main assigned themes (university life, food and health, living overseas, and Japanese culture) in the first class of the course, where the overall course guidelines were provided even before starting the first theme. As their thematic interest and perceptions of difficulty were not examined after each main theme was taught, the influence of TBI on their affective shift is not considered in this study, which would be necessary to consider as one of the limitations to address in future studies.

Table 3
Assigned Themes and Writing Test Prompts

Unit Numbers	Themes	Writing Test Prompts
1	University Life	What is university like in Japan? How is it different from other countries?
2	Food and Health	What can we do to stay healthy?
3	Living Overseas	Would you like to live overseas? What are the advantages and challenges?
4	Japanese Culture	In what ways do you think culture in Japan is changing? How do you feel about these changes?

Note. Adapted from Bradley et al. (2019, p. 16 for Unit 1, p. 28 for Unit 2, p. 42 for Unit 3, p. 54 for Unit 4)

Pre- and post-tests of timed writing were conducted at the beginning and end of the three-week time period to cover each main theme. Students had 20 minutes to write about the assigned prompt of each topic, which was adopted from the discussion question for the unit conversation recording (see

Table 3). In this study, the same prompt was used in pre- and post-tests in order to avoid the unexpected influence of different prompts on learners' writing performance. In addition, no immediate feedback was provided on the students' pre-tests to lessen the possible effects of teacher feedback on students' post-test writing performance. After each test, we typed out all their writing test products and saved them as digital forms to analyze data quantitatively.

Data Analysis Instruments and Procedures

All the quantitative data from the questionnaire and students' pre- and post-test writing samples were analyzed via JASP 0.16.3, free computer software for quantitative data analysis. Descriptive statistics were performed to identify the mean, mode, median, standard deviation, skewness, and kurtosis. The descriptive statistical results were used to judge whether or not the distribution could be considered normal and whether parametric or nonparametric inferential statistical testing should be conducted. In order to comprehend the data distribution and determine inferential statistical tests more objectively, the Shapiro-Wilk tests were also executed. This study identified noticeable skewness and kurtosis, and the Shapiro-Wilk test results revealed that parametric inferential statistics were inappropriate. Accordingly, nonparametric inferential statistics were used to examine learners' perceptions of assigned themes and their writing performance quantitatively. Although a p-value of 0.05 is considered a general benchmark to judge statistical significance, a p-value of 0.01 was used in this study due to a small sample size.

Regarding survey results about theme interest and difficulty, the Kruskal-Wallis test, a nonparametric model of analysis of variance test to observe three or more variables, was utilized in order to examine statistical significance among four assigned themes. Since learners' perceptions of assigned themes can affect their writing performance (Ji, 2011; Xu & Qiu, 2024), they are important variables to consider the effects of TBI on students' timed writing performance as critically as possible.

In terms of students' writing performance, the number of tokens they wrote within the assigned timeframe and syntactic complexity, which was calculated with the number of clauses and sentences, were investigated. There is no definitive definition of a clause, and thus, researchers code clauses differently (Vercellotti & Hall, 2024). In this study, clauses were considered "any structure with a subject and a finite verb" (Vajjala & Meurers, 2012, p. 167) whereas "a sentence consists of one or more clauses, and usually has at least one subject and verb" (Swan, 2018, p. xxvii). Clauses include dependent clauses, which are grammatically incomplete on their own and therefore need to be attached to main clauses to form sentences. The authors coded clauses of students' writing manually, and the inter-coder reliability was estimated with Cohen's kappa. Plonsky and Derrick (2016) suggest that 0.87 and higher kappa values are necessary. In this investigation, Cohen's kappa value was 1.00, which can be considered perfect to guarantee the inter-coder reliability. Hwang and Polio (2023) report that at least 100 words are required to ensure the reliability of syntactic complexity indices. In order to analyze syntactic complexity, however, the number of clauses was divided by the number of sentences because the total number of tokens would not be an influential factor in this analysis procedure. The following excerpt is one student's writing sample about university life in Unit 1:

(1) Japanese university schedules are very tight. // (2) My image of other countries' universities, and they don't have a true time schedule. // (3) I think Japanese is starting to do something at just time, // (4) but other country people is rude by time. // (5) Japan university has a lot of genres of studying // (6) and they have a lot of universities in many places.

This excerpt has 58 tokens, six clauses, and four sentences. The formula to calculate this student's syntactic complexity is: $6 \div 4 = 1.5$. Since this investigation did not explore the effectiveness of TBI on students' writing accuracy, their grammatical and lexical errors and mistakes were ignored. As a pre-post-test design was adopted in this research study, Wilcoxon-signed rank tests, a non-parametric model of the t-test to observe two variables within the group, were used to examine statistical significance between pre- and post-tests about each theme. After that, statistical findings from a survey about students' perceptions of themes and their writing test results were integrated to address the research questions and contemplate the effectiveness of TBI on Japanese EFL university students' abilities to produce words and write syntactically complex sentences within the allocated minutes.

Results

Descriptive statistical results indicated that students perceived all four assigned themes as interesting and somewhat difficult (see Table 4) because all mean scores were between 4 (somewhat interesting/difficult) and 5 (interesting/difficult). As student remarks as qualitative data were not collected, possible factors could not be fully identified. However, these results can still illustrate that learners had positive impressions of assigned themes.

Table 4

Descriptive Statistics Related to Students' Perceptions of Assigned Themes: Interest and Difficulty

Themes	Interest	Difficulty
	Mean (SD)	Mean (SD)
University Life	5.22 (0.76)	4.44 (0.89)
Food and Health	4.90 (0.98)	4.22 (1.12)
Living Overseas	5.38 (0.86)	4.42 (1.14)
Japanese Culture	5.01 (0.82)	4.21 (1.18)

Notes. 1: very boring/easy – 6: very interesting/difficult. 2. SD = standard deviation

Kruskal-Wallis test results revealed that no statistically significant differences were identified with a small effect size in terms of students' perceptions of theme difficulty ($p = 0.46$, $\eta^2 = 0.01$); statistical differences were found with a small effect size regarding their interests in themes ($p < 0.001$, $\eta^2 = 0.05$) (see Table 5). These results might suggest that, whilst learners' perceptions of theme difficulty would not be a noticeable factor in their timed writing performance in this research study, their interest in themes can influence their writing performance. Therefore, it is crucial to conduct a post hoc statistical test in order to further explore which group mean scores are statistically different from others and consider the possible influence of theme interest on learners' timed writing performance.

Table 5

Kruskal-Wallis Test Results Related to Students' Perceptions of Assigned Themes: Interest and Difficulty

Factor	Variables	Statistics	df	p	η^2
Themes	Interest	18.90	3	< 0.001	0.05
	Difficulty	2.59		0.46	0.01

Notes. 1. df = degrees of freedom. 2. $\eta^2 = 0.01$ (small), $\eta^2 = 0.06$ (medium), $\eta^2 = 0.14$ (large) (Cohen, 1988)

As Table 6 shows, post hoc comparisons revealed a statistically significant difference in students' thematic interest between 'Food and Health' and 'Living Overseas' with a small-to-medium effect size ($p_{\text{bonf}} = 0.001$, $d = 0.57$). These results can highlight the importance of carefully considering the possible influence of theme interest on learners' writing abilities (the number of tokens and syntactic complexity in this study), especially when they wrote about these themes (food and health, living overseas, and Japanese cultures), in order to explore the effectiveness of TBI on Japanese EFL learners' timed writing performance.

Table 6

Post Hoc Comparisons: Students' Interest in Assigned Themes

Themes 1	Themes 2	Mean Difference	t	Cohen's d	p_{bonf}
UL	F&H	0.33	2.49	0.38	0.08
	LO	-0.16	-1.24	-0.19	1.00
	JC	0.21	1.60	0.24	0.66
F&H	LO	-0.49	-3.73	-0.57	0.001
	JC	-0.12	-0.89	-0.14	1.00
LO	JC	0.37	2.84	0.43	0.03

Notes. 1. UL = University Life, F&H = Food & Health, LO = Living Overseas, JC = Japanese Culture 2. $d = 0.40$ (small), $d = 0.70$ (medium), $d = 1.00$ (large) (Plonsky & Oswald, 2014)

Regardless of assigned themes, learners wrote more tokens in post-tests than in pre-tests, even though syntactic complexity rates did not noticeably change (Table 7). Wilcoxon-signed rank test results also illustrated that the number of tokens written within the allocated minutes increased statistically significantly, whereas syntactic complexity did not (Table 8). Large effect sizes were also identified concerning the number of tokens used in writing, whilst small-to-medium effect sizes were identified regarding syntactic complexity. These findings suggest that it is easy to write more tokens after learning about the assigned themes, but difficult to use syntactically complex sentences. Correlational analysis was not performed in this study, which could be considered one of the research limitations. Nevertheless, both descriptive and inferential statistical findings illustrate that thematic interest did not have a noticeable influence on students' language production through writing. Accordingly, regardless of assigned themes, TBI had a positive effect on learners' timed writing abilities to use more tokens, but had no noticeable influence on their syntactic complexity.

Table 7
Descriptive Statistics Related to the Number of Tokens and Syntactic Complexity in Writing

Themes	Number of Token		Syntactic Complexity	
	Mean (SD)		Mean (SD)	
	Pre	Post	Pre	Post
UL	97.7 (45.4)	133.3 (41.6)	1.33 (0.26)	1.33 (0.25)
F&H	108.0 (32.7)	156.5 (42.7)	1.34 (0.25)	1.35 (0.25)
LO	145.4 (51.2)	164.2 (52.1)	1.36 (0.26)	1.39 (0.26)
JC	114.0 (35.3)	133.0 (26.6)	1.36 (0.25)	1.38 (0.26)

Notes. 1. UL = University Life, F&H = Food & Health, LO = Living Overseas, JC = Japanese Culture. 2. SD = standard deviation

Table 8
Wilcoxon-Signed Rank Test Results Related to the Number of Tokens and Syntactic Complexity in Writing

Themes	Variables	W	z	df	p	rrb
UL	Tokens	145.5	-7.43	85	< 0.001	0.92
	SC	64.5	-1.77		0.08	0.44
F&H	Tokens	105.5	-7.60		< 0.001	0.94
	SC	16.0	-1.17		0.26	0.42
LO	Tokens	643.5	-5.28		< 0.001	0.66
	SC	151.5	-1.43		0.16	0.30
JC	Tokens	549.5	-5.69		< 0.001	0.71
	SC	56.0	-1.57		0.12	0.41

Notes. 1. UL = University Life, F&H = Food & Health, LO = Living Overseas, JC = Japanese Culture, SC = Syntactic Complexity, df = degrees of freedom. 2. The rank-biserial correlations (rrb) were used to estimate effect sizes: $|rrb| = 0.10$ (a small effect), $|rrb| = 0.30$ (a medium effect), and $|rrb| = 0.50$ (a large effect) (Cohen, 1988, 1992; Field, 2005; Tabachnick & Fidell, 2006).

Discussion

In order to investigate the effectiveness of TBI on Japanese EFL learners' timed writing abilities to produce words and use grammatically complex sentences, quantitative data were collected from a 6-Likert scale questionnaire about their perception of assigned themes and pre- and post-tests of timed writing. All quantitative data were analyzed through descriptive and inferential statistical testing via JASP. Results will be discussed to answer the two research questions mentioned above.

RQ 1: To what extent does TBI facilitate Japanese university students' EFL syntactic complexity in timed writing?

This first research question examines the influence of TBI on Japanese EFL university students' syntactic complexity in timed writing. Statistical analysis illustrated that, regardless of assigned themes, learners used *more tokens* in post-tests than in pre-tests. These results support Shibata's (2019, 2021,

2022) research findings that TBI can encourage students to write more words. Brinton and Snow (2017) and Snow and Brinton (2023) mention that TBI can be an appropriate type of content-based instruction for any proficiency level students, especially intermediate proficiency level students, to develop their target language abilities. The positive effects of TBI on Japanese EFL students' language production were identified in this research study.

However, low syntactic complexity scores were identified, which may corroborate Ortega's (2003) argument that EFL learners rarely write syntactically complex sentences. Statistically, TBI did not help students utilize *syntactically complex* sentences in writing. These results support Tai's (2015) findings that TBI does not foster syntactic complexity development in writing. Assuming from Wang's (2023) findings that there is a negative correlation between clause per sentence and writing quality, TBI might not have influenced Japanese EFL learners' writing quality. In this course, no explicit language-focused activities to explore grammar and complex syntactic forms were provided through materials and instruction. Thus, this study may indicate that implicit language-focused instruction has no effects on students' syntactic complexity development in writing because no statistically significant results were identified in any assigned themes. These findings can suggest that supplementary explicit language-focused instruction might be necessary for learners to facilitate their attempts to use complex sentences in writing. Nonetheless, learners have few opportunities to examine syntax and syntactic complexity and learn simple, compound, and compound-complex sentence structures through many EFL grammar materials (Long, 2025). Accordingly, along with explicit grammar teaching, language teachers have to design and develop materials and activities to foster self-discovery grammar learning and apply students' syntactic learning outcomes to writing performance.

RQ 2: To what extent do learners' perceptions of assigned themes affect their timed writing abilities?

The second research question explores the influence of students' thematic interest on their writing abilities to produce tokens and use syntactically complex sentences. In this study, a correlation analysis between learners' perceptions of themes and their timed writing abilities was not conducted. Furthermore, no post-treatment survey was used to track down students' affective shift. Statistical significance of students' thematic interest between some themes was identified based on inferential statistical testing. These limitations can illuminate the necessity of investigations to examine the correlation between language learners' affective factors and timed writing performance (e.g., the number of tokens and syntactic complexity). However, in this study, regardless of assigned themes, the number of tokens produced in timed writing tests increased significantly, but syntactic complexity scores did not. These results can challenge Ha's (2022) and Yang et al. (2015) findings that various topics can influence writing syntactic complexity and support Ikuta et al. (2022) and Yang and Kim's (2020) findings that there were no noticeable differences among themes. In this study, students perceived all of them as 'interesting' or 'very interesting.' The fact that students had positive perceptions of the themes may have resulted in there being no noticeable differences between writing test results. When learners have firm negative impressions of themes, the findings might be different. Hence, future studies require both interesting and less interesting themes to explore the possible influence of themes covered in TBI on timed writing abilities.

This study had no control group, one of the limitations of the one-shot research design. The differences between TBI and other language teaching instruction and approaches could be considered unclear. This limitation might illustrate the possibility that simple exposure to English had some effect on learners. As Hyland (2019) highlights, due to the fact that TBI is utilized with the process writing approach (PWA) in many writing courses, TBI's unique influence has not been revealed. In future

investigations, a (quasi-)experimental research design may need to be executed, and participants would need to be divided into three groups (e.g., one TBI group, one PWA group, one control group) in order to address the issue more critically. For curriculum design and professional development, (collaborative) action research might also be an option to further comprehend the effectiveness of TBI and other writing teaching approaches. The effectiveness of TBI on Japanese EFL learners' timed writing abilities to produce more tokens and use complex sentences would need to be further investigated in future research.

Future studies should also investigate more varieties of syntactic complexity (e.g., verb phrase per T-unit, and coordinate phrase per clause) to further examine the effectiveness of TBI on students' timed writing abilities. In this study, only the number of clauses divided by the number of sentences was analyzed, and as a result, no statistical significance was identified. However, this does not necessarily indicate that TBI would not affect any syntactic complexity types. For example, TBI might have some effects on students' clausal length or phrasal complexity. Therefore, further analysis on more extensive types of syntactic complexity should be conducted in future studies.

In this investigation, regardless of assigned themes, TBI had a positive influence on Japanese EFL learners' writing production to use more tokens within allocated minutes, but no statistically significant influence on their syntactic complexity. Writing test results indicated that TBI can be an effective language teaching approach for beginner learners to foster their attempts to produce words. Nonetheless, the effectiveness of TBI on their syntactic complexity development is still uncertain. This implies that integrating TBI and other language approaches (e.g., focus-on-form instruction) would be essential to helping Japanese EFL learners improve their syntactic complexity more effectively and efficiently. In addition, no statistically significant difference among themes was identified in this study. This might indicate that assigned themes do not have a noticeable influence on learners' writing performance (Ikuta et al., 2022; Yang & Kim, 2020). Since all assigned themes were perceived as (very) interesting in this study, however, the present research findings do not necessarily suggest that teachers can utilize any themes in writing classes. In order to utilize TBI to foster students' engagement in writing activities effectively, it is important to select themes carefully. Accordingly, writing instructors need to conduct interest analysis to determine appropriate themes, and design and develop personalized materials for students so that they can improve their writing abilities more effectively and efficiently.

Conclusion

As no specific writing instruction can help learners develop their overall writing abilities in all settings (Hyland, 2022; Matsuda & Silva, 2020), instructors need to consider appropriate approaches to fulfil their needs based on their teaching goals and target writing abilities (e.g., syntactic complexity, lexical complexity, cohesion, and coherence). Although syntactic complexity can indicate parts of writing abilities, it is still perceived as one of the most important abilities to estimate learners' writing proficiency levels. Thus, adequate language instructions to facilitate the students' syntactic complexity development need to be explored and identified. TBI is perceived as one of the most prevalent language teaching approaches in many educational settings all over the world (Brinton & Snow, 2017; Snow & Brinton, 2023). As this is a language-driven model of content-based instruction (Lyster, 2018), TBI can be expected to be effective in improving learners' overall language abilities, including the use of grammatically complex sentences.

However, the present quantitative study revealed that, regardless of themes, TBI had no effect on Japanese EFL learners' syntactic complexity in writing, even though the approach facilitated their

writing production. Writing teachers may need to utilize other approaches along with TBI in order to facilitate students' syntactic complexity development in the target language. To further explore the effectiveness of integrating two or more writing approaches on learners' writing abilities to use grammatically complex sentences, more (quasi-)experimental studies would be essential. For practitioners, (collaborative) action research studies would be useful to delve into possible approaches to assist learners in developing their syntactic complexity.

The importance of theme selection was also highlighted. When learners perceive assigned themes as interesting and have other positive impressions, the influence of assigned themes on their writing performance does not vary. This may suggest that providing interesting themes for students would be the minimum requirement to conduct effective writing instruction and facilitate their active writing engagement. Thus, instructors need to conduct interest analysis to understand students' interests carefully as part of materials selection and curriculum development.

This research paper illustrates that, although TBI is a prevalent language teaching approach in many educational settings (Brinton & Snow, 2017; Snow & Brinton, 2023), it does not necessarily facilitate learners' overall language ability development, at least in writing abilities to use grammatically complex sentences. Depending on the language program and learning goals, teachers sometimes need to integrate two or more courses and approaches in order to assist students in fulfilling them. More frequent collaborations among teachers and courses, such as academic writing courses and general English courses, would be essential in providing learners with more effective language programs to maximize their learning outcomes and improve their writing and other language abilities. By doing that, more effective skills-integrated curricula would be designed and developed.

References

- Ai, H., & Lu, X. (2013). A corpus-based comparison of syntactic complexity in NNS and NS university students' writing. In A. Díaz-Negrillo., N. Ballier, & P. Thompson (Eds.), *Automatic treatment and analysis of learner corpus data* (pp. 249–264). John Benjamins Publishing.
- Bradley, N. (2019). The core English programme in the schools of foreign studies and world liberal arts [Special issue]. *Bulletin of Nagoya University of Foreign Studies*, 5, 1–14. <https://nuas.repo.nii.ac.jp/records/1366>
- Bradley, N., Marceau, E., & Hirata, E. (2019). *Core English* (2nd ed.). Nagoya University of Foreign Studies Press.
- Brinton, D. M., & Snow, M. A. (2017). The evolving architecture of content-based instruction. In M. A. Snow & D. M. Brinton (Eds.), *The content-based classroom: New perspectives on integrating language and content* (2nd ed., pp. 2–20). The University of Michigan Press.
- Brown, H. D., & Lee, H. (2015). *Teaching by principles: An interactive approach to language pedagogy* (4th ed.). Pearson.
- Casal, J. E., & Lee, J. J. (2019). Syntactic complexity and writing quality in assessed first-year L2 writing. *Journal of Second Language Writing*, 44, 51–62. <https://doi.org/10.1016/j.jslw.2019.03.005>
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Lawrence Erlbaum.
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112, 155–159. <https://doi.org/10.1037//0033-2909.112.1.155>
- Curtis, A. (2017). *Methods and methodologies for language teaching*. Palgrave.
- Dörnyei, Z., Henry, A., & Muir, C. (2016). *Motivational currents in language learning: Frameworks for focused interventions*. Routledge. <https://doi.org/10.4324/9781315772714>
- Field, A. (2005). *Discovering statistics using SPSS* (2nd ed.). Sage.

- Ha, M. J. (2022). Syntactic complexity in EFL writing: Within-genre topic and writing quality. *Computer Assisted Language Learning Electronic Journal (CALL-EJ)*, 23(1), 187–205. <https://callej.org/index.php/journal/article/view/377/305>
- Hwang, H.B., & Polio, C. (2023). Text length effects on the reliability of syntactic complexity indices. *Research Methods in Applied Linguistics*, 2(3), Article 100085. <https://doi.org/10.1016/j.rmal.2023.100085>
- Hyland, K. (2019). *Second language writing* (2nd ed.). Cambridge University Press.
- Hyland, K. (2022). *Teaching and researching writing* (4th ed.). Routledge. <https://doi.org/10.4324/9781003198451>
- Ikuta, M., Okamoto, M., & Shibata, N. (2022). A semester-long study of second language writing development and the effects of topic familiarity and difficulty. *Nagoya JALT Journal*, 3(1), 41–57. <https://doi.org/10.37546/JALTCHAPNAGOYA3.1-2>
- Ji, X. (2011). Topic effects on writing performance: What do students and their writings tell us? *The Journal of Asia TEFL*, 8(1), 23–38. http://journal.asiatefl.org/main/main.php?inx_journals=27&inx_contents=144&main=1&sub=3&submode=3&PageMode=JournalView&s_title=Topic_Effects_on_Writing_Performance_What_Do_Students_and_Their_Writings_Tell_Us
- Loewen, S., & Sato, M. (2024). *A practical guide to second language teaching and learning*. Cambridge University Press. <https://doi.org/10.1017/9781108780520>
- Long, R. (2025). A longitudinal study of Japanese learners' written complexity, accuracy, and fluency. *The Language Teacher*, 49(3), 11–18. <https://doi.org/10.37546/JALTTTLT49.3-2>
- Lu, X. (2010). Automatic analysis of syntactic complexity in second language writing. *International Journal of Corpus Linguistics*, 15(4), 474–496. <https://doi.org/10.1075/ijcl.15.4.02lu>
- Lu, X. (2011). A corpus-based evaluation of syntactic complexity measures as indices of college-level ESL writers' language development. *TESOL Quarterly*, 45(1), 36–62. <https://doi.org/10.5054/tq.2011.240859>
- Lu, X., & Ai, H. (2015). Syntactic complexity in college-level English writing: Differences among writers with diverse L1 backgrounds. *Journal of Second Language Writing*, 29, 16–27. <https://doi.org/10.1016/j.jslw.2015.06.003>
- Lyster, R. (2018). *Content-based language teaching*. Routledge.
- Marlowe, J. P. (2016). Developing syntactic complexity in L2 writing. In P. Clements, A. Krause, & H. Brown (Eds.), *Focus on the learner* (pp. 397–404). <https://jalt-publications.org/node/4/articles/5414-developing-syntactic-complexity-l2-writing>
- Matsuda, P. K., & Silva, T. (2020). Writing. In N. Schmitt & M. P. H. Rodgers (Eds.), *An introduction to applied linguistics* (3rd ed., pp. 279–293). Routledge. <https://doi.org/10.4324/9780429424465-16>
- Ortega, L. (2003). Syntactic complexity measures and their relationship to L2 proficiency: A research synthesis to college-level L2 writing. *Applied Linguistics*, 24(4), 492–518. <https://doi.org/10.1093/applin/24.4.492>
- Ortega, L. (2015). Syntactic complexity in L2 writing: Progress and expansion. *Journal of Second Language Writing*, 29, 82–94. <https://doi.org/10.1016/j.jslw.2015.06.008>
- Osman, S. R. F., Ahmad, E. A., & Jusoff, K. (2009). Nurturing writing proficiency through theme-based instruction. *International Education Studies*, 2(3), 140–146. <http://dx.doi.org/10.5539/ies.v2n3p140>

- Ostovar-Namaghi, S., & Nakhaee, S. (2019). The effect of CLIL on language skills and components: A meta-analysis. *Iranian Journal of Applied Linguistics*, 22(1), 109–144. <http://ijal.khu.ac.ir/article-1-3030-fa.html>
- Pérez-Vidal, C., & Lasagabaster, D. (2022). Learning and teaching L2 writing in content and language integrated learning (CLIL) contexts. In R. M. Manchón & C. Polio (Eds.), *The Routledge handbook of second language acquisition and writing* (pp. 241–253). Routledge. <https://doi.org/10.4324/9780429199691-26>
- Pinner, R. (2019). *Social authentication and teacher-student motivational synergy: A narrative of language teaching*. Routledge. <https://doi.org/10.4324/9781351184298>
- Pinner, R. (2022). Authenticity and motivation in soft CLIL materials. In M. Ikeda, S. Izumi, Y. Watanabe, R. Pinner, & M. Davis (Eds.), *Soft CLIL and English language teaching: Understanding Japanese policy, practice, and implications* (pp. 103–120). Routledge. <https://doi.org/10.4324/9780429032332-6-7>
- Plonsky, L., & Derrick, D. J. (2016). A meta-analysis of reliability coefficients in second language research. *The Modern Language Journal*, 100(2), 538–553. <https://doi.org/10.1111/modl.12335>
- Plonsky, L., & Oswald, F. L. (2014). How big is “big”? Interpreting effect sizes in L2 research. *Language Learning*, 64, 878–912. <https://doi.org/10.1111/lang.12079>
- Pu, L., Heng, R., & Cao, C. (2022). The effects of genre on the syntactic complexity of argumentative and expository writing by Chinese EFL learners. *Frontiers in Psychology*, 13, Article 1047117. <https://doi.org/10.3389/fpsyg.2022.1047117>
- Ramzan, M., & Alahmadi, A. (2024). The effect of syntax instruction on the development of complex sentences in ESL writing. *World Journal of English Language*, 14(4), 25–32. <https://doi.org/10.5430/wjel.v14n4p25>
- Sato, K., & Crane, P. (2023). Developing EFL learners’ interactional competence through discursive practice: A longitudinal classroom study using mixed methods. *International Journal of English Language Teaching*, 11(3), 13–51. <https://doi.org/10.37745/ijelt.13/vol11n31351>
- Shibata, N. (2019). The effectiveness of content-based instruction on beginners’ writing skills. In P. Clements, A. Krause, & P. Bennett (Eds.), *Diversity and inclusion* (pp. 352–359). JALT. <https://doi.org/10.37546/JALTPCP2018-47>
- Shibata, N. (2021). Selected poster presentations from the American Association of Applied Linguistics conference 2021: Japanese university students’ lexical diversity development in essay writing through theme-based instruction. *Language Teaching*, 54(4), 583–586. <https://doi.org/10.1017/S0261444821000306>
- Shibata, N. (2022). The effectiveness of theme-based instruction on Japanese university students’ lexical diversity in writing. *Nagoya JALT Journal*, 3(1), 78–105. <https://doi.org/10.37546/JALTCHAPNAGOYA3.1-4>
- Snow, A. M., & Brinton, D. M. (2023). *Content-based instruction: What every ESL teacher needs to know*. [paperbook]. University of Michigan Press. <https://doi.org/10.3998/mpub.10138077>
- Suzuki, N. (2022). Effects of content-based instruction (CBI) on EFL secondary school learners’ writing: Linguistic and functional aspects. *Journal of Immersion and Content-Based Language Education*, 10(1), 5–32. <https://doi.org/10.1075/jicb.20006.suz>
- Swan, M. (2018). *Practical English usage (4th ed.)*. Oxford University Press.
- Tabachnick, B. G., & Fidell, L. S. (2006). *Using multivariate statistics* (5th international ed.). Pearson.

- Tai, H.Y. (2015). Writing development in syntactic complexity, accuracy and fluency in a content and language integrated learning class. *International Journal of Language and Linguistics*, 2(3), 149–156. <https://www.ijllnet.com/journal/index/2190>
- Tedick, D. J., & Lyster, R. (2020). *Scaffolding language development in immersion and dual language classrooms*. Routledge. <https://doi.org/10.4324/9780429428319>
- Thi, N. K., & Nikolov, M. (2023). Effects of teacher, automated, and combined feedback on syntactic complexity in EFL students' writing. *Asian-Pacific Journal of Second and Foreign Language Education*, 8, Article 6. <https://doi.org/10.1186/s40862-022-00182-1>
- Uchida, S. (2025). CEFR-based vocabulary analyzer [online analysis tool]. <https://cvla.langedu.jp/> [released on February 9, 2025].
- Uchida, S., & Negishi, M. (2018). Assigning CEFR-J levels to English texts based on textual features. In Y. Tono & H. Isahara (Eds.), *Proceedings of the 4th Asia Pacific Corpus Linguistics Conference (APCLC 2018)* (pp. 463–467).
- Uchida, S., & Negishi, M. (2025). Estimating the CEFR-J level of English reading passages: Development and accuracy of CVLA3. *English Corpus Studies*, 32, 165–174. https://doi.org/10.69193/ecs.32.0_165
- Vajjala, S., & Meurers, D. (2012). On improving the accuracy of readability classification using insights from second language acquisition. In J. Tetreault, J. Burstein, & C. Leacock (Eds.), *The 7th Workshop on the Innovative Use of NLP for Building Educational Applications* (pp. 163–173). <https://aclanthology.org/W12-2019/>
- Vercellotti, M., & Hall, S. (2024). Coding all clauses in L2 data: A call for consistency. *Research Methods in Applied Linguistics*, 3, Article 100132. <https://doi.org/10.1016/j.rmal.2024.100132>
- Wang, Y. (2023). Does complexity mean quality? Association between popular automatic linguistic complexity measures and L2 writing quality features. *The Journal of Asia TEFL*, 20(2), 397–406. <http://dx.doi.org/10.18823/asiatefl.2023.20.2.10.396>
- Xu, J., & Qiu, X. (2024). Engaging L2 learners in information-gap tasks: How task type and topic familiarity affect learner engagement. *RELC Journal*, 55(1), 29–45. <https://doi.org/10.1177/00336882211061628>
- Yang, W. & Kim, Y. (2020). The effect of topic familiarity on the complexity, accuracy, and fluency of second language writing. *Applied Linguistics Review*, 11(1), 79–108. <https://doi.org/10.1515/applirev-2017-0017>
- Yang, W., Lu, X., & Weigle, S. C. (2015). Different topics, different discourse: Relationships among writing topic, measures of syntactic complexity, and judgments of writing quality. *Journal of Second Language Writing*, 28, 53–67. <https://doi.org/10.1016/j.jslw.2015.02.002>
- Yugandhar, K. (2016). Content-theme-based instruction to increase the quality of EFL class. *International Journal on Studies in English Language and Literature*, 4(8), 86–90. <http://dx.doi.org/10.20431/2347-3134.0408012>

About the Authors

Naoya Shibata holds an Ed.D. in TESOL from Anaheim University in the US and teaches at Osaka Kyoiku University in Japan. His research interests include second language writing, content and language integrated learning, curriculum design, materials development, and teacher training.

Natsuho Mizoguchi currently teaches at Nagoya University of Foreign Studies in Japan. Her research focuses on EFL writing, learners' self-efficacy, and learner autonomy.