

The Effects of Reflective Learning on the Quality of English Writing in Chinese University Students: An Analysis Based on Coh-Metrix and Reflective Journals

Yaojing Xie, Yanxian Wu

Guangxi University of Foreign Languages, Nanning 530222, Guangxi, China

Abstract: *This study aims to examine the effects of reflective learning on the quality of English writing in Chinese university students using the Coh-Metrix tool and the students' reflective journals. According to its research findings, reflective learning had significantly positive effects on the students' quality of English writing in terms of content/ideas, organization/development, and language. Furthermore, reflective learning significantly improved the lexical diversity of their English writing; it also enhanced the cohesion and coherence of their writing through the improvement in referential coherence and semantic overlapping. Thematic analysis of the subjects' reflective journals corresponds to these findings while also indicating that reflective learning helps elevate their self-efficacy in English writing.*

Science Insights Education Frontiers 2025; 26(1):4281-4296

DOI: 10.15354/sief.25.re453

How to Cite: Xie, Y., & Wu, Y. (2025). The effects of reflective learning on the quality of English writing in Chinese university students: An analysis based on Coh-Metrix and reflective journals. *Science Insights Education Frontiers*, 26(1):4281-4296.

Keywords: *Reflective Learning, Reflective Journal, English Writing, Coh-Metrix*

About the Author: Yaojing Xie, Guangxi University of Foreign Languages, Nanning 530222, Guangxi, China, E-mail: 416381594@qq.com

Yanxian Wu, Guangxi University of Foreign Languages, Nanning 530222, Guangxi, China, E-mail: 674200688@qq.com

Correspondence to: Yaojing Xie at Guangxi University of Foreign Languages in China.

Conflict of Interests: None

Funding: No funding sources declared.

AI Declaration: The authors affirm that artificial intelligence did not contribute to the process of preparing the work.

© 2025 Insights Publisher. All rights reserved.



Creative Commons NonCommercial CC BY-NC: This article is distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 License

(<http://www.creativecommons.org/licenses/by-nc/4.0/>) which permits non-commercial use, reproduction and distribution of the work without further permission provided the original work is attributed by the Insights Publisher.

Introduction

REFLECTIVE Learning is an instructional approach based on the student-centered philosophy of education, aimed at improving students' learning outcomes by prompting their deep contemplations. Underlying this learning method is the experiential learning theory and lifelong learning theory. It places heavy weight on the learner's self-adjustment and self-regulation with a special emphasis on the value of reflection in the whole learning cycle. Ongoing reflection contributes to the results of learning by optimizing the learning process and supporting self-directed learning (Ren, 2017). Despite the many studies of the application of reflective learning and its effects in various areas, there has been inadequate research on its effectiveness in English writing instruction, particularly in the Chinese context. This study focuses on examining the effects of reflective learning on the quality of English writing in Chinese university students, drawing on the Coh-Metrix tool and the students' reflective journals, with the view of providing valuable insights into college English writing instruction improvement and writing proficiency enhancement in this group.

Literature Review

Among the multiple theoretical underpinnings of reflective learning, Dewey's (1933) reflective thinking theory could be the earliest source. Dewey defined reflection as the process of combining current ideas with past experiences to solve problems. He contended that even though a positive learning environment could help engage students in meaningful learning, learning experience alone was not enough to enable the student to develop a deep understanding of knowledge and stressed that reflection was an essential factor in successful learning. Kolb (1984), in his research on experiential learning, claimed that the learning process consists of four basic steps: experience, reflection, abstraction, and application, with reflection being the core step in acquiring new knowledge. Schön (1987) described the individual's reflective ability as the bedrock of knowledge application and professional development, with the potential to improve their self-awareness, problem-solving, and critical thinking. Hatton and Smith (1995) emphasized that critical reflection is crucial for fostering the student's critical thinking ability, which was supported by Alfaro-Lefevre's (1995) and Kennison and Misselwitz's (2002) studies, both of which suggest that reflection assists students in deepening their understanding of knowledge and developing critical thinking by prompting deep contemplations and logical analyses.

Researchers have looked into the application of reflective learning from various perspectives. For instance, Cui (2006) argued that reflection training could enable the student to transition from fact presentation-focused

reflection to higher-order reflection with a noticeable improvement in metacognition in language learning. Barney and Mackinlay's (2021) and Liu et al.'s (2021) studies suggest that reflective learning has significantly positive effects on critical thinking development and learning outcomes in students. As per Zhao and Sun (2019), WeChat-assisted reflective learning could help promote mutual learning among students and enhance their critical thinking ability. Regarding the roles of reflective journals in learning, Vygotsky (1986) emphasized that they could facilitate students connecting their thoughts and actions through inner dialogue. Moon (1999) and Boud (2001) argued that reflective journals have the potential to engender deep-level critical thinking and optimize learning outcomes. Xue's study (2021) is a practical validation of the effectiveness of reflective journals in enhancing writing instruction.

As a valuable tool for recording and analyzing the student's learning process, reflective journals play a salient role in upgrading their metacognition, which is of extraordinary significance in language teaching. According to Lin's (2012) study, reflective journals are favorable for critical thinking development and language proficiency improvement in English majors while also facilitating the English teacher's understanding of their learning needs and difficulties. In language instruction, reflective journals are conducive to the cultivation of analysis, reasoning, and evaluation abilities (Chang & Lin, 2014; Zhang, 2014; Li, 2021), as well as the development of metacognitive strategies and emotional attitudes in students (Cazan, 2018; Lina, 2019). Li and Li's (2023) study finds that reflective journals can assist students in lesson review and self-monitoring as well as weakness and gap identification in language learning, who can seek out resolutions and create targeted learning schemes accordingly.

To recap, with solid theoretical foundations and salient practical value, reflective learning has showcased significant effects in enhancing knowledge comprehension, metacognition, and self-directed learning. Nevertheless, research on its application in English writing instruction in Chinese universities remains scarce. More exploration of the effects of reflective learning on the quality of English writing of Chinese college students is, therefore, of practical significance.

Research Design

Research Questions

Q 1: What are the effects of reflective learning in improving the overall quality of English writing of Chinese university students?

Q 2: What are the specific effects of reflective learning on lexical diversity, syntactic complexity, and cohesion and coherence of English writing?

Q 3: What are the improvements that reflective learning makes on students' English writing as indicated by the self-evaluation and feedback in their reflective journals?

Research Subjects

This study includes as subjects seven undergraduates majoring in English at Guangxi University of Foreign Languages, who were promoted as the participants of the provincial-level English language preliminaries of the "2023 National Talent Cup" Foreign Language Proficiency Competition sponsored by the Foreign Language Teaching and Research Press. A pretest was administered to them on September 26th of 2023, and a posttest on October 31st of the same year. During the interval, we offered them intensive writing training applying the reflective learning theory. The training program included the delivery of basic concepts of writing and writing techniques, analyses of writing topics from previous competitions, elaborations on excellent model essays, and sharing of relevant experiences. Every week, the students did 1-2 writing exercises with a time limit and compared their writing with model essays. They were required to write a reflective journal as well as modify their writing after each exercise. The content of the reflective journal entails multifarious aspects, such as the initial conception, choice of words, themes, and techniques of their writing; challenges of writing; the progress they make; the assistance they need from the instructor; and the value of the reflective journal itself. Subsequently, we gave them both collective feedback and one-on-one direction on writing and reflection. Finally, a total of 192 essays, including the 28 pretest and posttest essays (14 pieces of argumentative writing and 14 pieces of expository writing) and 49 reflective journals were obtained. We included the 14 argumentative essays from the pretest and posttest and 49 reflective journals in our analysis to examine the effects of reflective learning on the students' quality of writing.

Research Instruments

In this study, Coh-Metrix, a language processing program, was used to analyze the students' English essays. Coh-Metrix 3.0 is a free, automated evaluation tool that can extract data on language features from texts and discourse (McNamara et al., 2014). It was adopted to calculate 29 linguistic indices of the texts of the subjects' writing in five dimensions: lexical diversity, syntactic complexity, use of connectives, referential cohesion, and

Table 1. Variables and Indices from Coh-Metrix Relevant to the Study.

Nos.	Indices in Coh-Metrix 3.0	Description	Variables
1	LDTTRc	Lexical diversity, type-token ratio, content word lemmas	Lexical Diversity
2	LDTTRa	Lexical diversity, type-token ratio, all words	
3	LDMTLD	Lexical diversity, measure of textual lexical diversity (MTLD)	
4	LDVOCD	Lexical diversity, vocabulary diversity (VOCD)	
5	SYNLE	Left embeddedness, words before main verb, mean	Syntactic Complexity
6	SYNNP	Number of modifiers per noun phrase, mean	
7	SYNMEDpos	Minimal Edit Distance, part of speech	
8	SYNMEDwrd	Minimal Edit Distance, all word	
9	SYNMEDlem	Minimal Edit Distance, lemmas	
10	SYNSTRUTa	Sentence syntax similarity, adjacent sentences, mean	Connectives
11	SYNSTRUTt	Sentence syntax similarity, all combinations, across paragraphs, mean	
12	CNCAII	All connectives incidence	Connectives
13	CNCCaus	Causal connectives incidence	
14	CNCLogic	Logical connectives incidence	
15	CNCADC	Adversative and contrastive connectives incidence	
16	CNCTemp	Temporal connectives incidence	
17	CNCAdd	Additive connectives incidence	Referential Cohesion
18	CRFNO1	Noun overlap, adjacent sentences, binary, mean	
19	CRFAO1	Argument overlap, adjacent sentences, binary, mean	
20	CRFSO1	Stem overlap, adjacent sentences, binary, mean	
21	CRFCWO1	Content word overlap, adjacent sentences, proportional, mean	
22	CRFNOa	Noun overlap, all sentences, binary, mean	
23	CRFAOa	Argument overlap, all sentences, binary, mean	LSA (Latent Semantic Analysis)
24	CRFSOa	Stem overlap, all sentences, binary, mean	
25	CRFCWOa	Content word overlap, all sentences, proportional, mean	
26	LSASS1	LSA overlap, adjacent sentences, mean	
27	LSASSp	LSA overlap, all sentences in paragraph, mean	
28	LSAPP1	LSA overlap, adjacent paragraphs, mean	
29	LSAGN	LSA given/new, sentences, mean	

latent semantic analysis (**Table 1**), for the purpose of evaluating the quality of their writing from multiple aspects. We also conducted thematic analysis on the subjects’ reflective journals to obtain an in-depth understanding of the impact of reflective learning on their quality of writing. The combination of quantitative and qualitative analysis is to lend credence to the findings of our research.

Research Procedures

Table 2. The Rating Scale for Argumentative Writing.

Content/Ideas 40points	<ul style="list-style-type: none"> ◆ Writing effectively addresses the topic and the task; ◆ Writing presents an insightful position on the issue; ◆ The position is strongly and substantially supported or argued.
Organization/ Development 30 points	<ul style="list-style-type: none"> ◆ Writing is well-organized and well-developed, using appropriate rhetorical devices (e.g. exemplification, classification, analysis, comparison/contrast, etc.) to support the thesis or to illustrate ideas; ◆ Writing displays coherence, progression, consistency and unity; ◆ Textual elements are well-connected through explicit logical and/or linguistic transition.
Language 30 points	<ul style="list-style-type: none"> ◆ Spelling is accurate; ◆ Writing displays consistent facility in use of language; ◆ Writing demonstrates appropriate register, syntactic variety, and effective use of vocabulary.

First, we engaged two senior English writing instructors to separately rate the 14 argumentative essays using the rating scale for argumentative writing developed by the organizing committee of the “2023 National Talent Cup” Foreign Language Proficiency Competition. The scale evaluates argumentative writing in three dimensions: content/ideas, organization/development, and language (**Table 2**). The two raters received necessary training to ensure they have an identical understanding of the rating criteria. Also, a reliability test was conducted on the scoring results to generate a Cronbach’s Alpha coefficient of 0.916, which indicates a high level of agreement between the ratings of the two graders. The average of the scores given by the two raters to each essay was seen as an indicator of its overall quality standard.

Subsequently, we conducted thorough analysis of the textual features of the subjects’ essays using Coh-Metrix and saved the results with Excel spreadsheets for the following data processing and analysis. Data on the 29 indices went through statistical analysis with SPSS 21.0. Specifically, paired samples t-tests were carried out to determine whether the differences between pretest and posttest data are statistically significant, in order to establish evidence for the impact of reflective learning on the students’ quality of English writing.

After that, thematic analysis was applied to the subjects’ reflective journals with software NVivo12, a qualitative analysis tool, using methods like word frequency identification and text screening. Thematic analysis is a process of identifying recurring patterns of meaning or themes that are relevant to research objectives and conceptually categorizing these patterns of meaning to interpret the phenomenon presented in the study (Merriam, 1998). Additionally, we engaged two specialists to review the extracted themes to avoid the potential subjective biases of the researchers.

Findings and Discussion

The Effect of Reflective Learning on the Overall Quality of Students' English Writing

According to the paired samples t-test results (**Table 3**), there are statistically significant score differences between pretest and posttest writing ($t = -10.856$, $p < 0.001$), showing significant improvement after the intervention. Moreover, there are also statistically significant score differences in the specific dimensions of content/ideas ($t = -8.741$, $p < 0.001$), organization/development ($t = -3.382$, $p < 0.01$), and language ($t = -7.129$, $p < 0.001$). These results indicate that reflective learning had a significantly positive effect on the students' quality of English writing. The paired samples t-test results also show that the effect sizes of the intervention in the dimensions of organization/development (Cohen's $d = 0.636$) and language (Cohen's $d = 0.690$) are both above the moderate level. The effect sizes for the overall quality of writing and the dimension of content/ideas are both above 0.8, which are of high levels according to Yockey's (2010) standards, indicating substantial improvement of the subjects' English writing in these two aspects.

The Effect of Reflective Learning on Lexical Diversity of Students' English Writing

In the Coh-Metrix system, MTLD and VOCD are measures of lexical diversity, manifesting the degrees of lexical richness and variety of a text. The type-token ratio (TTR) is also a common indicator of lexical diversity, which measures lexical diversity by calculating the ratio of various words (types) to total words (tokens) used in a text. The higher the TTR value, the larger the vocabulary and the fewer repeated words in the text. **Table 4** displays that all indices of lexical diversity had higher values in the posttest than in the pretest, with statistically significant differences in MTLD ($t = -4.340$, $p < 0.01$) and VOCD ($t = -4.575$, $p < 0.01$), indicating that the subjects used a bigger range of vocabulary in their posttest essays. This demonstrates the positive effect of reflective learning on the lexical diversity of students' English writing.

The Effect of Reflective Learning on Syntactic Complexity of Students' English Writing

Table 3. Paired Samples T-test Results of English Writing Scores.

Variables	Pretest		Posttest		Mean deviations	T-value	P-value	Cohen's d
	Means	SD	Means	SD				
Average Scores	81.929	2.335	87.714	1.912	-5.786	-10.856	0.000***	1.409
Content/Ideas	32.500	1.354	35.427	0.787	-2.929	-8.741	0.000***	0.886
Organization/Development	25.357	0.852	26.500	1.041	-1.143	-4.382	0.005**	0.690
Language	24.071	1.305	25.786	0.951	-1.714	-7.129	0.000***	0.636

Note: $p^{***}<0.001$, $p^{**}<0.01$, $p^{*}<0.05$

Table 4. Paired Samples T-test Results of Lexical Diversity of Students' English Writing.

Variable	Indices	Pretest		Posttest		Mean deviations	T-value	P-value
		Means	SD	Means	SD			
Lexical Diversity	LDTT Rc	0.653	0.0750	0.656	0.0588	-0.003	-0.212	0.839
	LDTT Ra	0.449	0.0516	0.476	0.0364	-0.027	-1.845	0.115
	MTLD	64.707	23.3572	94.804	16.7834	-30.097	-4.340	0.005**
	VOCD	67.749	20.9577	103.873	12.0923	-36.124	-4.575	0.004**

Note: $p^{***}<0.001$, $p^{**}<0.01$, $p^{*}<0.05$

Table 5. Paired Samples T-test Results of Syntactic Complexity of Students' English Writing.

Variable	Indices	Pretest		Posttest		Mean deviations	T-value	P-value
		Means	SD	Means	SD			
Syntactic Complexity	SYNLE	5.108	1.4926	4.845	0.7704	0.263	0.500	0.635
	SYNNP	0.905	0.1206	0.904	0.0560	0.001	0.025	0.981
	SYNMEDpos	0.658	0.0188	0.637	0.0161	0.021	2.429	0.051
	SYNMEDwrd	0.898	0.0172	0.864	0.0291	0.034	2.973	0.025*
	SYNMEDlem	0.885	0.0187	0.841	0.0307	0.044	3.817	0.009**
	SYNSTRUTa	0.111	0.0157	0.105	0.0342	0.006	0.540	0.609
	SYNSTRUTt	0.106	0.0193	0.102	0.0294	0.004	0.433	0.680

Note: $p^{***}<0.001$, $p^{**}<0.01$, $p^{*}<0.05$

Table 5 displays that all indices of syntactic complexity had slightly lower values in the posttest than in the pretest, indicating that there was no improvement in syntactic complexity of the subjects' English writing after the training program. Among these indices, only SYNMEDwrd ($t = 2.973$, $p < 0.05$) and SYNMEDlem ($t = 3.817$, $p < 0.01$) exhibit significant variations in the value between the pretest and posttest writing. SYNMEDwrd is to measure the minimal edit distance between words, i.e., syntactic similarity at the vocabulary level. The decreased value of SYNMEDwrd in the subjects' posttest writing implies that they used more identical grammatical structures in wording. SYNMEDlem is an indicator of the minimal edit distance between lemmas (the basic form of a word). The significant decrease in the value of SYNMEDlem in the posttest writing indicates the use of reduced lemmas by the subjects. Overall, the decreased values of the indices of syntactic complexity, particularly SYNMEDwrd and SYNMEDlem, are emblematic of simpler syntactic structures in the posttest essays.

The Effect of Reflective Learning on the Cohesion and Coherence of Students' English Writing

According to the paired samples t-test results (**Table 6**), 13 out of the 18 indices related to cohesion and coherence in writing had higher values in the subjects' posttest writing than in their pretest writing, with eight of them showing significant enhancement, indicating the students' improved capacity for increasing the cohesion and coherence in writing via more diverse devices after the intervention. Specifically, in the posttest, their writing showed improvement in referential coherence and semantic overlapping, especially in CRFNO1 ($t = -3.993$, $p < 0.05$), CRFAO1 ($t = -2.811$, $p < 0.05$), CRFSO1 ($t = -4.295$, $p < 0.01$), CRFCWO1 ($t = -2.758$, $p < 0.05$), CRFNOa ($t = -2.524$, $p < 0.05$), CRFAOa ($t = -2.443$, $p < 0.05$), and CRFSOa ($t = -2.814$, $p < 0.05$), which exhibited statistical significance. This suggests that the students bolstered the cohesion of their writing mainly by semantic and syntactic overlapping and the recurrence of keywords. Despite the increased devices for coherence, the overall incidence of connectives was lower in the posttest writing than in the pretest writing, with a considerable decrease in the number of causal, logical, temporal, and additive connectives and substantially decreased use of adversative and contrastive connectives ($t = 3.277$, $p < 0.05$). This implies that the subjects became less dependent on explicit connectives with their increased use of more latent devices for cohesion after the training program. Broadly, the students showcased more delicate handling of coherence through using more covert devices such as lexical, syntactic, and structural cohesion. As Liang (2006) noted, the frequency of connectives as overt discourse cohesion markers is not necessarily a comprehensive manifestation of the strength of cohesion and

Table 6. Paired Samples T-test Results of Connective Use, Referential Cohesion, LSA Overlapping in Students' English Writing.

Variables	Indices	Pretest		Posttest		Mean deviations	T-value	P-value
		Means	SD	Means	SD			
Connectives	CNCAI	103.771	23.0915	102.106	19.3354	1.665	0.225	0.829
	CNCAus	29.216	9.2473	27.451	6.5675	1.765	0.630	0.552
	CNCLogic	47.079	10.2871	34.436	10.8943	12.643	2.301	0.061
	CNCADC	18.446	5.2662	10.606	4.7414	7.840	3.277	0.017 [†]
	CNCTemp	12.873	2.8854	17.388	9.0735	-4.515	-1.016	0.349
	CNCAdd	64.161	22.0862	62.078	16.8719	2.083	0.504	0.632
Referential Cohesion	CRFNO1	0.370	0.0985	0.635	0.1363	-0.265	-3.993	0.007 [†]
	CRFAO1	0.471	0.1504	0.684	0.1274	-0.213	-2.811	0.031 [†]
	CRFSO1	0.466	0.1606	0.732	0.0958	-0.266	-4.295	0.005 ^{**}
	CRFCWO1	0.099	0.0262	0.129	0.0358	-0.030	-2.758	0.033 [†]
	CRFNOa	0.318	0.1143	0.523	0.1592	-0.205	-2.524	0.045 [†]
	CRFAOa	0.396	0.0929	0.569	0.1558	-0.173	-2.443	0.050 [†]
	CRFSOa	0.385	0.1448	0.626	0.1477	-0.241	-2.814	0.031 [†]
	CRFCWOa	0.070	0.0173	0.095	0.0305	-0.025	-2.075	0.083
LSA Overlap	LSASS1	0.197	0.0496	0.223	0.0385	-0.026	-1.098	0.314
	LSASSp	0.164	0.0496	0.198	0.0573	-0.034	-1.139	0.298
	LSAPP1	0.464	0.0861	0.494	0.0882	-0.030	-1.375	0.218
	LSAGN	0.319	0.0338	0.321	0.0324	-0.002	-0.217	0.836

Note: p^{***}<0.001, p^{**}<0.01, p^{*}<0.05

Table 7. Frequent Words for the Evaluation of Reflective Learning in the Subjects' Reflective Journals.

Types	Frequent Words	Frequency	Percentages
Conception	Well-crafted structure, creating outlines, establishing arguments, argumentative methods, example use	39	41.05%
Writing Improvement Tactics	Expanding reading, studying model essays, increased writing practice, writing habit, repeated modification	25	26.32%
Language	An expanded range of vocabulary, synonyms, syntactic complexity, sentence structure	22	23.16%
Self-efficacy	Self-motivation, confidence, calmness, perseverance, carefulness	9	9.47%

coherence of the discourse. In the dimension of LSA, the four indices show modestly higher values in the posttest writing than in the pretest writing, but with no significant differences, which may imply that the students' expanded vocabulary and discourse knowledge had not been given full play due to the limited training period.

Table 8. Students' Self-Evaluation of Lexical Diversity and Expression Accuracy of their Writing.

	Self-rating	RJ 1 (# of persons)	RJ 2 (# of persons)	RJ 3 (# of persons)	RJ 4 (# of persons)	RJ 5 (# of persons)	RJ 6 (# of persons)	RJ 7 (# of persons)
Lexical Diversity	Low	6	2	1	1	1	1	0
	Medium	1	5	6	5	5	5	6
	High	0	0	0	1	1	1	1
Expression Accuracy	Low	3	2	1	0	0	0	0
	Medium	4	5	5	6	6	6	6
	High	0	0	1	1	1	1	1

RJ: Reflective Journal

Self-Evaluation and Feedback from Students' Reflective Journals

In their reflective journals, all the subjects stated that reflective learning facilitated their identifying weaknesses in writing, modifying their writing, and elevating their writing standards. **Table 7** encapsulates frequent words in their reflective journals regarding the roles of reflective learning in enhancing conception ability, representation, writing improvement tactics, and self-efficacy in English writing.

The subjects heavily emphasized the importance of reflective learning for enhancing their conception ability in writing in terms of interpreting the topic, establishing the thesis statement and arguments, arguing through examples, and pinpointing the connections between topic sentences. For example, Qingqing, one of the seven students, stated, "Reflective learning is effective in improving the overall standard of my writing, particularly in enhancing the basic structure of my argumentative essays, which have more concise and accurate representations of topic sentences now." Jiji highlighted the value of reflective learning for her mastery of the method of arguing with examples, "I tended to make up stories as supporting examples, which did not lend credence to my arguments at all. Recently, I learned to cite well-recognized facts to make my argumentation persuasive. Also, I have developed the awareness of memorizing those examples that are potentially useful to my writing."

In the meantime, the subjects successfully improved their English representation through reflective learning. **Table 8** shows the subjects' self-evaluation on the lexical diversity and expression accuracy of their writing. In their first reflective journals, the majority of the students were rated the level of lexical diversity of their writing as low, with only one rating it as medium. In their last reflective journals, in contrast, the majority of them rated it as medium, with one elevating the rating to high. Regarding the level of expression accuracy of their writing, three and four of them rated it as low and medium, respectively, in their first reflective journals, whereas, in their last reflective journals, six and one rated it as medium and high, respectively. The coding results imply that reflective learning facilitated the subjects identifying the gaps in lexical diversity and expression accuracy of their writing, prompting them to make targeted improvements. The positive effects of reflective learning on their English representation have been mentioned many times in their journals. For example, Lianlian said, "In the past, I could only use simple sentences and colloquial vocabulary in my writing. Reflective learning has helped improve my syntactic standards. Now I begin to learn to use more complex sentences and academic vocabulary." Jiajia emphasized the impact of reflective learning on her expression accuracy, stating, "Reflective learning made me realize the inadequacies in my expressions and the necessity of rendering them more explicit."

Furthermore, the subjects claimed that reflective learning assisted them in developing writing improvement tactics, such as studying model essays, being mindful of everyday life, and expanding reading. For instance, Lianlian noted, "Reflections make me a better observer." Jiajia said, "Reflective learning prompts me to be more open-minded to new information and document my thoughts in a timely manner." The subjects also agreed that reflective learning helped broaden the scope of subject matter in their writing. Manman stated, "Through the reflection on the question of highlighting Chinese contexts in writing, I increased the awareness of citing distinctive Chinese major events in my essay writing."

Additionally, the subjects reported increased levels of self-efficacy in English writing as a result of reflective learning. Self-efficacy refers to an individual's belief in their ability to complete specific tasks or respond properly to challenges. The subjects emphasized in their journals that they had become more confident, careful, and calm in writing through reflective learning. For example, Linlin said, "Reflective learning is helpful in developing the ability to remain cool and calm in dealing with challenges in writing competitions, from the word count to the difficulty of topics. These competition experiences are valuable for my future writing practices, enabling me to handle various writing topics with ease and confidence." Jiajia also mentioned that reflective learning boosted her confidence in writing. "In prior writing exercises, I often felt nervous and uneasy,

especially when encountering topics new to me, but now, the tension felt in writing has been significantly eased.”

To sum up, reflective learning was effective in improving the students’ quality of English writing and their self-efficacy in writing according to their self-evaluation. Through writing reflective journals, the subjects enhanced their conception ability, lexical diversity, and expression accuracy, which made their representations more colorful and powerful. Their self-evaluation corresponds to the results of the paired samples t-tests. Also, reflective learning assisted with the development of writing improvement tactics, laying the groundwork for further enhancement of their writing proficiency.

Conclusion

Given the positive effects of reflective learning on students’ quality of English writing, we propose the following recommendations for English writing instruction: (i) Increase activities that promote student reflective learning in writing education, such as regular writing workshops, inter-peer evaluation, and teacher-student communication. (ii) Encourage students to reflect on and develop skills in word choice through vocabulary games like synonym replacement exercises to understand the impact of word choice on the meaning and tone of the sentence; provide students with direction on how to conduct self-assessment in sentence pattern exercises and complex sentence analyses as well as how to identify and learn from the use of complex sentences in model essays; require students to review the referential cohesion, use of connectives, and lexical overlapping in their writing in the teaching of textual cohesion and coherence. (iii) Arrange group conversations to enable students to share their writing and obtain peer feedback; help them develop the habit of keeping reflective journals on writing to document their thoughts, challenges, and solutions during the writing process as records of their progress in English writing. (iv) Administer regular self-efficacy assessments to students to track the growth of confidence in writing in them to make them aware of the significance of reflective learning for improving writing competence.

The limitations of the study should be acknowledged. First, the small sample used may hamper the statistical validity and generalizability of the study’s research results. Second, the analysis results of the reflective journals as a form of student self-reports may bear certain subjective biases. Third, due to the short experimental period, this study can only serve as a preliminary exploration of the topic in question. Future research should expand the sample size to include students in different grades and with distinct levels of English proficiency, as well as extending the experimental period to evaluate the long-term impact of reflective learning on the students’

quality of English writing. In addition, a more elaborate qualitative analysis of reflective journals is warranted to explore the effects of reflective learning on writing of various genres and in distinct cultural contexts to provide a broader perspective on this research area to writing instructors.

Note

All statements of the subjects are direct quotations from their reflective journals without any modification from the authors.

References

- Alfaro-Lefevre, R. (1995). *Critical Thinking in Nursing: A Practical Approach*. Philadelphia: Saunders.
- Barney, K. & Mackinlay, E. (2010). Creating rainbows from words and transforming understandings: Enhancing student learning through reflective writing in an Aboriginal music course. *Teaching in Higher Education*, 2010(2),161-173. DOI: <http://dx.doi.org/10.1080/13562511003619995>
- Boud, D. (2001). Using journal writing to enhance reflective practice. *New Directions for Adult and Continuing Education*, 2001(90),9-18. DOI: <https://doi.org/10.1002/ace.16>
- Cazan, A. M. Enhancing self-regulated learning by learning journals. *Procedia: Social and Behavioral Sciences*, 2012(1),413-417. DOI: <https://doi.org/10.1016/j.sbspro.2012.01.154>
- Chang, M.M. & Lin, M.C. (2014). The effect of reflective learning e-journals on reading comprehension and communication in language learning. *Computers & Education*, 71(1),124-132. Available at: <https://www.learntechlib.org/p/200577/>
- Cui, L. (2006). The development of reflective thinking and strategic learning through journal writing. *Teaching English in China*, 29(1),84-111.
- Dewey, J. (1933). *How We Think: A Restatement of Reflective Thinking to the Educative Process*. Boston: D. C. Heath.
- Hatton, N. & Smith, D. (1995). Reflection in teacher education: Towards definition and implementation. *Teacher and Teacher Education*, 11(1),33-49. DOI: [https://doi.org/10.1016/0742-051X\(94\)00012-U](https://doi.org/10.1016/0742-051X(94)00012-U)
- Kennison, M. & Misselwitz, S. (2002). Evaluating reflective writing for appropriateness, fairness and consistency. *Nursing Education Perspectives*, 23(5),238-242.
- Kolb, D. (1984). *Experiential learning: Experience as the Source of Learning and Development*. Englewood Cliffs: Prentice-Hall.
- Li, N. (2019). Developing English Majors' Critical Thinking Ability through the application of reflective journals. *Contemporary Education Research and Teaching Practice*, 2019(17),58+131.
- Li, N. & Li, Z. (2023). The application of reflective journals that incorporate metacognitive training in Chinese-Korean translation instruction. *Theory and Practice of Education*, 2023(2),115-117.
- Li, R. (2021). A practical study of the effects of reflective journals in improving college students' reading competence from the perspective of promoting learning through assessment. *Journal of Tianjin Agricultural University*, 28(1),97-101.

- DOI:
<https://doi.org/10.19640/j.cnki.jtau.2021.10.019>
- Liang, M. (2006). Coherence in EFL Learners' written production. *Modern Foreign Languages*, 29(1),284-330.
- Lin, Y. (2012). Oral English teaching and the cultivation of critical thinking ability: The use of students' reflective journals in an English debate course. *Foreign Languages and Their Teaching*, 2012(5),29-33.
- Liu, Q., Zheng, X., & Deng, W. (2021). Scaffolding based on reflective journals and its application outcomes. *Modern Distance Education*, 2021(5),3-11. DOI: <https://doi.org/10.13927/j.cnki.yuan.20210831.001>
- McNamara, D., Graesser, A. C., McCarthy, P. M., & Cai, Z. (2014). Automated evaluation of text and discourse with Coh-Metrix. Cambridge University Press. DOI: <https://doi.org/10.1017/CBO9780511894664>
- Merriam, S.B. (1998). *Qualitative Research and Case Study Applications in Education*. San Francisco: Jossey-Bass Publishers.
- Moon, J. (1999). *Learning Journal: A Handbook for Academics, Students and Professional Development*. London: Kogan Page.
- Ren, H. (2017). Reflective learning and listening proficiency development in college English learning. *Testing and Evaluation*, 89(4),72-75.
- Vygotsky, L. (1986). *Thought and Language*. Cambridge: MIT Press.
- Xue, S. (2021). The effectiveness of reflective journals in developing critical thinking in English writing. *Journal of Weifang Engineering Vocational College*, 34(6),29-36,42. DOI: <https://doi.org/10.3969/j.issn.1009-2080.2021.06.05>
- Yockey, R. D. (2010). *SPSS Demystified: A Simple Guide and Reference*. (Chinese Translation by Chao Liu & Zheng Wu). Beijing: China Renmin University Press.
- Zhang, W. (2014). Translation Teaching and the Cultivation of Critical Thinking Ability: The role of reflective journals in translation instruction. *Journal of Hefei University (Social Sciences Edition)*, 2014(6),127-130.
- Zhao, X. & Sun, B. (2019). WeChat-assisted reflective learning in English writing instruction. *Journal of Qiqihar University (Philosophy and Social Sciences Edition)*, 2019(3),177-183.

Received: December 02, 2024

Revised: December 17, 2024

Accepted: January 11, 2025