

Content and language integrated learning (CLIL) on the acquisition of writing skills in secondary education: a systematic literature review

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ABSTRACT

The concept of content and language integrated learning (CLIL) for English as a foreign language (EFL) writing has been extensively investigated to aid language acquisition; however, there is a paucity of knowledge regarding its impact on a specific element of writing development. This systematic literature review aimed at exploring the impacts of CLIL on EFL writing acquisition in secondary education. Grounded in three databases (i.e., Scopus, Google Scholar, and EBSCO), 43 research articles were extracted from 2015 to 2023 with certain exclusion and inclusion criteria. Findings show that Spain has practiced CLIL the most with various outcomes of specific writing measurement using a range of methods for measuring language through CLIL impacts. However, CLIL shows a dynamic gain in the specific element of writing as it positively impacts all the outcomes of writing measurement. It is suggested that future studies use new techniques for measuring discipline-specific content in writing and focus more on measuring both the language and content dimensions of writing.

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1. INTRODUCTION

Globalization has increased research on foreign language (FL) learning [1]–[3], with methods like content and language integrated learning (CLIL) facilitating simultaneous learning of a FL and specialized knowledge [4], [5]. CLIL balances structure-based instruction and immersion, integrating grammar teaching with practical language use to develop English as foreign language (EFL) writing skills [6], [7]. It emphasizes language use in education and teaching non-linguistic subjects in a second or FL. As English has become a global language, many countries, including China, Japan, Indonesia, and Spain [8], [9], have adopted CLIL, shifting from teaching EFL to using it as a medium of instruction [10], [11].

To determine the impact of a CLIL program, it is essential to assess relevant skills and knowledge, such as EFL learners' writing abilities in secondary schools. The dual-focused teaching style of CLIL supports versatile content and language learning in real-world classrooms [4]. CLIL often involves content teachers instructing in a second or FL, integrating knowledge from various disciplines [12], [13]. Unlike immersion programs, CLIL aims to develop English skills for use as a lingua franca [14]. Although evidence on CLIL's effect on L1 competence is limited, it is believed to help learners achieve personal, educational, social, and intercultural goals.

Implementing CLIL in EFL writing instruction presents challenges due to its dual focus on language and content learning. Students may experience cognitive overload as they try to develop writing skills while understanding complex subject matter [15], [16]. Teachers need specialized training in both content and EFL teaching strategies, which can strain resources [2], [17]. Additionally, finding or creating materials that meet both language and content objectives is difficult [18]. Traditional assessment methods may not effectively measure both content understanding and language skills [19], necessitating differentiated instruction to address varying language proficiency levels.

This study examined the impacts of CLIL on EFL writing in secondary education. Research indicates that CLIL positively impacts EFL writing, enhancing students' skills in content, organization, and vocabulary more effectively than conventional methods [15], [20]. However, these studies often overlook specific linguistic features and long-term retention of writing skills. They focus on overall writing ability and motivation but do not address grammatical accuracy, syntactic complexity, or genre-specific skills [21], [22]. The interplay between cognitive processes in content learning and language acquisition in writing contexts remains underexplored.

Following Polio's [23] calling for a balanced approach to writing instruction, this review emphasizes the equal importance of content and language in CLIL. By examining current empirical data, it aims to fill gaps in understanding the impact of CLIL on EFL writing in secondary education. The study seeks to clarify long-term developmental patterns in CLIL and answer the research question: to what extent does CLIL impact the ability of EFL secondary school learners to acquire writing skills?

2. METHOD

This study analyzed 43 articles published between 2015 and 2023 from Scopus, Google Scholar, and EBSCO, known for their high impact factors and rigorous peer review. Using the PRISMA guidelines, the study ensured practical and reliable review findings [24]. An initial search identified 552 documents with keywords like "CLIL," "writing," "EFL," and "secondary education." After removing duplicates, 497 documents were filtered, excluding reviews, book chapters, opinion papers, and conference papers. The sample was narrowed to 110 documents to focus on recent CLIL research. Titles and abstracts were screened to evaluate their inclusion, eliminating 59 irrelevant articles. Ultimately, 51 records were assessed for eligibility, excluding "false positives" and ensuring full-text availability, resulting in 43 studies for comprehensive examination. For inclusion, articles had to meet specific criteria: reference CLIL or writing in titles and keywords, be published in accessible academic journals between 2015 and 2023, focus on social sciences, pertain to EFL contexts, and have full-text availability. The PRISMA diagram in Figure 1 illustrates the selection process, leading to the final subset of 43 articles for this review.

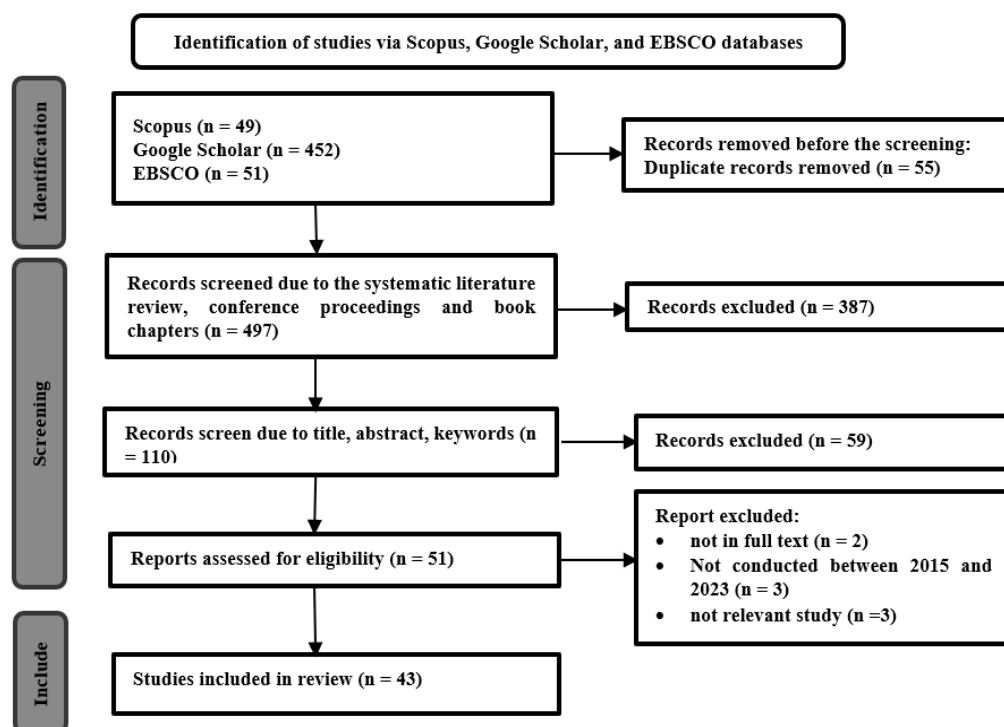


Figure 1. PRISMA diagram of articles included in the review

3. RESULTS AND DISCUSSION

This investigation reviewed 43 articles from 2015 to 2023 to understand how CLIL impacts EFL secondary school learners' writing skills. Table 1 (see Appendix) [25]–[67] summarizes the studies, countries, education levels, types of writing, measurements, and findings related to the impact of CLIL on EFL writing. This systematic review focuses on a single research question, highlighting the effects of CLIL on acquiring EFL writing elements in secondary education.

3.1. The distribution of CLIL impacts on English as a foreign language writing among countries

Between 2015 and 2023, Spain published the most articles on CLIL and writing skills in secondary education, with 24 articles. Sweden and Japan followed with four and three articles, respectively. Indonesia and Ecuador each published two articles, while South Korea, Taiwan, Iran, France, Netherlands, Germany, Switzerland, Thailand, and Canada each published one. The publishing trends were stable in 2015, 2017, 2020, and 2021, primarily in Spain. However, countries like South Korea, Taiwan, Iran, France, Netherlands, Germany, and Canada have recently focused more on CLIL for EFL writing skills, possibly due to the COVID-19 pandemic. The study reviewed only English-language empirical journal articles, excluding other types of literature and non-English articles.

Table 2 shows the distribution of articles by country. Spain's interest in CLIL for writing skills is notable, as Spanish scholars coined the term and conducted early studies. Sweden, Japan, Indonesia, and Ecuador also showed significant interest, along with smaller contributions from South Korea, Taiwan, Iran, France, Netherlands, Germany, and Canada. Publications on CLIL's impact on EFL writing are found across various Asian, European, American, and Latin American countries.

Table 2. Distribution of articles based on countries

Countries	15	16	17	18	19	20	21	22	23	Total
Spain	6		4	1	2	6	3	1	1	24
Sweden	1	1	1				1			4
Japan				1		1			1	3
Indonesia			1					1		2
Ecuador						1			1	2
South Korea						1				1
Taiwan	1									1
Iran					1					1
France			1							1
The Netherlands					1					1
Germany							1			1
Canada				1						1
Thailand		1								1
Total	7	2	6	3	4	7	6	4	2	43

3.2. The extent of CLIL impacts the ability of English as a foreign language secondary school learners to acquire writing skills

This section reveals the various types of writing aspects analysis caused by CLIL impacts, such as complexity, accuracy, and fluency (CAF) and vocabulary, content and systemic functional linguistics (SFL) components, linguistics aspects and error analysis, rubrics and genres analysis. The following sections provide detailed descriptions of measures related to language and content. These measures are essential for understanding how CLIL influences learners' linguistic and cognitive development.

3.2.1. Complexity, accuracy and fluency, and vocabulary impacts

We used CAF metrics and vocabulary analysis to assess how CLIL impacts the EFL writing of secondary school learners. Studies by [25]–[27] assessed learners in Spain and Taiwan using descriptive and expository texts, while [28], [29] focused on narrative and persuasive exams in Spain. Our findings showed that CLIL positively impacted fluency and complexity but not accuracy, with substantial effects on all CAF measures over three years. Greater CLIL exposure led to significant improvements in writing CAF, aligning with [30].

We also found a positive correlation between enhanced lexical diversity and improved writing fluency and accuracy, maintaining grammatical complexity. This is consistent with Roquet and Pérez-Vidal [25], who observed improvements in grammatical complexity and accuracy in CLIL programs. CLIL enhances vocabulary richness, grammatical precision, and fluency, as evidenced by [29], [30]. The method resulted in more advanced grammatical structures, lexical variety, fewer errors, and more coherent writing.

Out of 43 research articles, 8 used different techniques to examine language in CLIL writing, including type/token ratios (TTR) and its variations like the moving average type–token ratio (MATTR) [31]–[33], the measure of textual lexical diversity (MTLD), and the MTLD wrap-around (MTLD-W) [34], [35]. Our study found a positive correlation between CLIL and vocabulary skills in writing, with participants showing more lexical diversity and sophistication in their written compositions than their counterparts who did not join CLIL. This aligns with [36], [37], emphasizing comparable vocabulary acquisition and usage enhancements. Additionally, vocabulary-level lists and lexical frequency profiles highlighted enhanced lexical sophistication in CLIL contexts, significantly improving across age groups [38]–[40]. These studies suggest that CLIL enhances vocabulary without affecting comprehension or writing clarity.

Researchers examined the link between CLIL and writing, focusing on vocabulary types like lexical repetition and L1 transfer errors. Lexical reiteration, as measured by [35], [37], creates cohesion through word repetition, hyponyms, synonyms, general nouns, meronyms, and antonyms. Other studies examined the L1 influence on English writing via lexical transfer errors [40]. The lexical borrowings and inventions, where L1 words are used or adapted in L2 writing [41]. Studies generally found a decrease in lexical transfer errors as evidence of L2 writing growth. Our study suggests that frequent lexical borrowings and creative word formations do not decrease writing quality, aligning with [42], [43], who found that lexical innovation in CLIL promotes creativity without compromising accuracy. CLIL reduces L1 transfer errors while enhancing vocabulary diversity [39], supporting the idea that CLIL improves language proficiency and subject knowledge by balancing creativity and academic rigor.

3.2.2. Content analysis and SFL impacts

CLIL programs significantly enhance language skills and content comprehension [40], enabling students to perform complex linguistic tasks while understanding the subject matter. CLIL fosters deeper learning experiences and improves writing accuracy and fluency [44]. Studies showed that CLIL enhances vocabulary acquisition, coherence, and organization in writing, promoting concurrent language and content development [37], [42], [45]. It indicates that CLIL has provided positive impacts on developing both grammatical sensitivity and English-language cognitive capacity.

Several recent studies [46]–[48] demonstrated that CLIL improves lexical diversity, syntactic complexity, and cognitive skills, leading to better language awareness and content retention. However, the long-term improvements in writing skills due to CLIL's integrated approach, which fosters active learning and critical thinking without compromising content learning [49]–[52]. Therefore, CLIL is an effective educational approach that benefits both language learning and content mastery.

The correlation between SFL and CLIL's impact on EFL writing reveals that CLIL enhances practical language use, genre adaptation, and advanced textual skills. The studies [53]–[55] have found that CLIL improves ideational, interpersonal, and textual functions in writing, facilitating cohesive and contextually appropriate texts. This aligns with previous research emphasizing CLIL positive influence on academic language proficiency without negatively affecting subject performance [56].

3.2.3. Linguistics aspects and error analysis impacts

Error analysis of CLIL's impact on EFL writing shows that CLIL learners make fewer lexical and syntactic errors compared to non-CLIL learners, indicating better language understanding and use [57]. Conversely, CLIL students have enhanced grammatical precision and complexity [58]. In addition, CLIL reduces errors from first-language interference [43], [59], leading to more accurate and fluent writing.

CLIL students exhibit improved grammatical accuracy and lexical diversity, indicating higher linguistic competence [60], [61]. These findings confirmed that CLIL students have greater syntactic complexity and diverse language use [62]. Some other researchers [63], [64], also found that CLIL learners produce more cohesive and coherent writing, demonstrating superior language skills.

Recent studies, including those by [43], [58], [59], consistently show that CLIL improves writing proficiency and reduces grammatical errors. These improvements are attributed to increased exposure to content-specific language and meaningful use of English. While studies like Cañado [60] provided mixed results, the overall evidence supports the effectiveness of CLIL in enhancing EFL writing skills.

3.2.4. Rubrics and genres impact

Rubrics systematically evaluate CLIL's impact on writing by assessing language proficiency and subject-specific skills. Rubrics have been used to measure the CLIL writing quality in Thai university students [65]. This method contrasts with previous studies that focused solely on linguistic accuracy or content knowledge as in [25], [30], highlighted CLIL's benefits for language proficiency but did not use rubric-based assessments.

Researchers like [29], [47], [60], [66] employed rubrics to evaluate CLIL's impact on writing, emphasizing both content knowledge and language proficiency. The studies as in [63], [67] confirmed the effectiveness of rubrics in providing comprehensive feedback on students' progress. In addition, other studies [50], [51] also supported rubric-based assessments, showing improvements in writing skills and content understanding.

Genre-based assessments are crucial for measuring the impact of CLIL on writing, providing frameworks for evaluating coherent, purpose-driven texts [27]. Research conducted by [29], [60] likewise highlighted genre-based assessments effective in CLIL contexts, observing comparable enhancements in academic writing and subject understanding. Other research [25], [30] emphasized genre analysis for understanding writing skills. However, rigid genre conventions may limit creativity. Recent research [51], [66] support genre-based rubrics, showing improved writing abilities and content integration in CLIL environments. These findings suggest that genre-based assessments are effective in measuring the combined influence of CLIL on language and content acquisition.

When interpreting these findings, it is crucial to consider certain limitations. Firstly, this study only included papers written in English, excluding research in other languages that might have influenced the results. Since CLIL is implemented worldwide, relevant studies are likely documented in various languages. The researchers acknowledge their linguistic limitations and recognize that including studies in different languages could have impacted the findings. We encourage researchers with diverse linguistic skills to conduct additional reviews, incorporating research in multiple languages to validate these findings and interpretations.

Additionally, systematic reviews often rely on narrative analysis, which can introduce subjectivity from the researchers. Despite efforts to maintain objectivity by involving multiple researchers at each stage, unconscious bias may still be present. To validate the results, a quantitative meta-analysis of the reviewed papers could be conducted. This approach would offer a more objective evaluation of the research, potentially confirming or challenging the conclusions presented.

3. CONCLUSION

These findings highlight the need to explore the impact of CLIL on EFL writing in various contexts. This review focused on secondary education, particularly in Europe (e.g., Spain), and other regions like Asia, America, and Latin America, reflecting publishing trends from 2015 to 2023. Metrics such as CAF, and vocabulary analysis were used to assess language features, while content analysis addressed writing aspects. Rubrics were employed to evaluate both dimensions. Generally, CLIL settings provide equivalent or better writing outcomes than typical language classrooms, though CLIL students often lack discipline-specific writing skills.

The study emphasizes the importance of focusing on writing in content-based classes for EFL and CLIL students. Teachers should allocate instructional time to teach students how to communicate within their discipline, regardless of their stance on explicit language instruction. This is crucial for effectively expressing disciplinary knowledge through writing. "Content has always entailed language, and language has always involved content."

Ultimately, students' inability to use language academically indicates a lack of mastery. CLIL and EFL teachers should integrate disciplinary language into their lessons to enhance students' writing about their learning. This study demonstrates CLIL's impact on secondary school EFL writing and English learning outcomes in non-English-speaking countries. Future CLIL and EFL writers and practitioners are advised to adopt a balanced approach to the language and content aspects of writing.

APPENDIX

Table 1. A succinct summary of the studies included in the systematic review

No	Study	Countries	Level	Writing	Measurement	Major findings
1	Roquet and Pérez-Vidal [25]	Spain	S	Des	CAF and rubric	No statistical difference was found between CLIL and non-CLIL, except for accuracy, in which CLIL showed a higher.
2	Tai [26]	Taiwan	U	Exp	CAF	CLIL improved students' accuracy and fluency but not complexity.
3	Kusmayadi and Suryana [27]	Indonesia	S	Exp	NR	CLIL is effective in improving students' writing skills from their overall scores.
4	Gené-Gil <i>et al.</i> [28]	Spain	S	Nar	CAF	Over three years, CLIL improved in all measures, while non-CLIL only in lexical complexity and accuracy. Non-CLIL progressed more in lexical complexity, but CLIL remained higher overall.

NB: For the level column, P=primary, S=secondary, US=upper secondary, U=university or adult learners. For the writing column, Nar=narrative, Exp=expository, Per=persuasive, Des=descriptive, WLC=writing to learn content, NR=not reported. For the measurement column, SFL=systemic functional linguistics, CAF=complexity, accuracy, and fluency.

Table 1. A succinct summary of the studies included in the systematic review (continue)

No	Study	Countries	Level	Writing	Measurement	Major findings
5	Cristina and Martínez [29]	Spain	P	Per	CAF and rubric	CLIL programs positively influence all the language aspects measured over the non-CLIL group.
6	Pérez-Vidal and Roquet [30]	Spain	S	Nar	CAF and rubric	CLIL showed improvement in students' writing accuracy and lexico-grammatical.
7	Olsson and Sylvéén [31]	Sweden	S	Per/Exp	Vocabulary	CLIL students did not use more academic vocabulary than non-CLIL students.
8	Vidal and Jarvis [32]	Spain	U	Per	Error analysis	CLIL showed greater error improvement. Non-CLIL had more errors, with no differences by error type.
9	Bulon <i>et al.</i> [33]	France	S	Per	Complexity	CLIL has shown a variant measurement on texts between L1 and L2.
10	Ohlsson [34]	Sweden	US	Per and Exp	Vocabulary	No significant differences among the three CLIL schools due to varying L2 English exposure and L1 use.
11	Catalán and Llach [35]	Spain	S	Nar	Vocabulary	No significant difference in CLIL and non-CLIL lexical production.
12	Falk and Holmberg [36]	Sweden	US	Exp/Per	Vocabulary	CLIL is at risk due to the limitation of L1 use, but partial CLIL implementation showed the largest development of vocabulary in the group.
13	Rashtchi and Baniardalani [37]	Iran	S	Exp.	Vocabulary and rubric	CLIL showed the efficacy of lexical reiteration in enhancing coherence in students' composition after the post-test.
14	Villarreal and Lázaro-Ibarrola [38]	Sweden	US	Per and Exp	Vocabulary	Despite temporal differences in the use of academic word list and academic vocabulary list words between CLIL and non-CLIL, regression analysis shows similar development rates.
15	Agustin-Llach [39]	Spain	P and S	Nar	Vocabulary	No significant difference in CLIL and non-CLIL lexical production.
16	Crossman [40]	Canada	U	NR	Vocabulary	A variety of tools used in the CLIL classroom improved students' vocabulary gains between reading and writing skills.
17	Agustín-Llach [41]	Spain	P	Nar	Vocabulary	No notable differences were found in lexical borrowings, lexical creations, and lexical profiles between CLIL and non-CLIL groups.
18	Robles [42]	Spain	S	Nar	Content analysis	CLIL improves students' written performance, writing accuracy in particular, except coherence, and cohesion.
19	Moore and Stoelting [43]	Spain	S	Nar	Error analysis	Over 3.5 years, L1-infused CLIL writing showed equal translations and foreignization. L1 borrowing decreased, while L1 influences increased.
20	McBride [44]	Spain	S	NR	Content analysis	Writing to learn content (WLC) tasks performed slightly better in post-task assessments and may improve content knowledge acquisition for History students in a CLIL setting.
21	Breeze and Jiménez-Villarejo [45]	Spain	S	Nar	Content analysis	There is a significant difference between pre-and-post-test discourse markers and textual organization in CLIL and non-CLIL.
22	Chumbay and Ochoa [46]	Ecuador	S	NR	Content analysis	CLIL and non-CLIL groups differ significantly in all examined writing parameters.
23	Nieto [47]	Spain	S	Nar	Content analysis and rubric	CLIL students outperformed non-CLIL students in all areas of written production.
24	Pfenninger [48]	Germany	P	Nar	Content analysis	CLIL shows dynamic gains in accuracy and complexity with age exposure, but not in lexical richness and fluency.
25	Granados <i>et al.</i> [49]	Spain	S	Nar	Content analysis	CLIL was more efficient in improving the learners' lexical items and history literacy skills along with developing writing skills.
26	Gerns [50]	Spain	S	Exp.	Content analysis and rubric	There is a significant difference in CDF "comparing" between pre-and post-tests in CLIL science classrooms on writing productivity.
27	Hao <i>et al.</i> [51]	Japan	U	Exp.	Content Analysis and rubric	CLIL flexibility can enhance students' Japanese writing abilities, even with first principles of instruction (FPI).

NB: For the level column, P=primary, S=secondary, US=upper secondary, U=university or adult learners. For the writing column, Nar=narrative, Exp=expository, Per=persuasive, Des=descriptive, WLC=writing to learn content, NR=not reported. For the measurement column, SFL=systemic functional linguistics, CAF=complexity, accuracy, and fluency.

Table 1. A succinct summary of the studies included in the systematic review (continue)

No	Study	Countries	Level	Writing	Measurement	Major findings
28	Reinoso [52]	Ecuador	NR	NR	Content analysis	CLIL allows learners and teachers to learn and explore more effectively in developing teaching-learning, including writing activities.
29	Myskow and Underwood [53]	Japan	U	Exp	SFL	Through the concept-application assignment, CLIL-based international relations courses produced both high-graded and low-graded essays.
30	Whittaker and McCabe [54]	Spain	P and S	Exp	SFL	There has been some progress in the direction of suitable field + evaluation couplings for CLIL multilingual education.
31	Llinares and McCabe [55]	Spain	NR	NR	SFL	CLIL spans various educational levels, content areas, modes (spoken, written, classroom interaction), and bilingual/multilingual contexts.
32	Montaner-Villalba [56]	Spain	S	Des	Content analysis and rubric	CLIL was more efficient than traditional foreign language teaching methods to improve the variables of interest.
33	Artieda <i>et al.</i> [57]	Spain	S	Nar	Error analysis	CLIL and non-CLIL groups differ in age and additional English exposure measurements.
34	Lahuerta [58]	Spain	S	Per	Error analysis	CLIL significantly reduced errors. Non-CLIL had a higher error rate, with no differences by error type.
35	Segura <i>et al.</i> [59]	Spain	S	Nar, Des, and Exp	Error analysis and rubric	CLIL improved older students' classroom practice in reading and grammar but not in terms of linguistics gains.
36	Cañado [60]	Spain	S	NR	Linguistics aspects and rubric	There are no differences between primary and secondary students in several aspects of linguistics in written assignments.
37	Kashiwagi and Kobayashi [61]	Japan	S	Take notes	Content analysis	CLIL positively impacts grammatical sensitivity and English-language cognitive capacity.
38	Bulté and Housen [62]	Netherlands	S	Nar	Linguistic complexity	There is no significant difference in CLIL and non-CLIL linguistic complexity.
39	Lee [63]	South Korea	S	Nar	Linguistics elements and rubric	There is a significant mean increase on all measures for CLIL, but only semantic cohesion for non-CLIL.
40	Merino and Lasagabaster [64]	Spain	S	Essay	NR	CLIL outperforms the non-CLIL group in all measures, including linguistic written productivity.
41	Chansri and Wasanasomsithi [65]	Thailand	U	Exp	Rubric	The CLIL group demonstrated a considerable improvement in writing between the pre-and post-tests.
42	Navarro-Pablo and Gándara [66]	Spain	P and S	NR	Content analysis and rubric	CLIL positively impacts Spanish language and literature assessments, including writing development, compared to non-CLIL students.
43	Kristianto <i>et al.</i> [67]	Indonesia	S	Exp	Rubric	CLIL group showed a significant improvement in writing between a pre-and post-test.

NB: For the level column, P=primary, S=secondary, US=upper secondary, U=university or adult learners. For the writing column, Nar=narrative, Exp=expository, Per=persuasive, Des=descriptive, WLC=writing to learn content, NR=not reported. For the measurement column, SFL=systemic functional linguistics, CAF=complexity, accuracy, and fluency.

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