



Language Teaching Research Quarterly

2025, Vol. 49, 133–150



A Bibliometric Analysis of Written Corrective Feedback in Second Language Writing

Wen Liu

City University of Macau, China

Received 18 March 2025

Accepted 03 August 2025

Abstract

Written corrective feedback is a hot topic in the field of L2 writing and second language acquisition. Citespace, one of the bibliometric analysis software, was used to investigate the number of publications, productive authors, influential journals and institutions, major themes, and research trends of written corrective feedback in L2 writing from 2014 to 2024. This study employed WoS core collection as a data source for selecting relevant articles. The results showed the finalized 321 eligible articles, two influential authors, Yu Shulin and Lee Icy, two leading journals, *Assessing writing* and *Journal of second language writing*, the leading institution, University of Macau. Meanwhile, the findings of this research revealed that the major research themes were students' engagement, factors that influenced students' engagement, theoretical foundations underpinning written corrective feedback, teachers' written corrective feedback practices, and factors that impact their implementation of feedback, students' perception, and motivation. Future research might continue to investigate students' agentic engagement and teachers' role in written corrective feedback research, which could better understand written corrective feedback and adjust teachers' implementation of feedback.

Keywords: *Written Corrective Feedback, L2 Writing, Bibliometrics, Research Themes*

How to cite this article (APA 7th Edition):

Liu, W. (2025). A bibliometric analysis of written corrective feedback in second language writing. *Language Teaching Research Quarterly*, 49, 133-150.
<https://doi.org/10.32038/ltrq.2025.49.07>

Introduction

Written corrective feedback (WCF) was an important subtopic within the domain of second language (L2) writing (Ferris, 2022) and second language (L2) acquisition (Crosthwaite et al., 2022; Leow, 2023). Since Truscott's (1996) proposal of the futility of grammar correction in L2 writing, research into WCF was conducted from experimental and naturalistic situations, with heavy attention on the experimental context to examine the effectiveness of different types

* Corresponding author.

E-mail address: h24092110021@cityu.edu.mo

<https://doi.org/10.32038/ltrq.2025.49.07>

of WCF (Bitchener & Storch, 2016; Mohebbi & Panahi, 2024; Reinders & Mohebbi, 2018). However, the extant experimental research findings were inconclusive about what the specific feedback strategies, and the feedback scope should be employed. Some scholars argued that this research domain failed to provide pedagogical value because the research context was not the authentic ecological context (e.g., Lee, 2020; Storch, 2018; Truscott, 2023). Therefore, the authentic classroom-based research, one type of experimental research, has emerged to evaluate the efficacy of WCF. Such studies tended to be ecologically valid in that they revealed the real context of teaching and language learning (Loewen & Plonsky, 2017). However, this research strand was quite challenging because it was hard to control several variables (Li, 2022).

Apart from WCF research situated in the classroom-based context, other WCF studies were conducted in the naturalistic contexts, which did not control the independent variables (e.g., the type and number of feedback). The naturalistic studies have provided evidence for documenting the intricate and contextual features of WCF (Crosthwaite et al., 2022). Differed from experimental research, which focuses on exploring the effectiveness and usefulness of WCF, naturalistic research aimed at exploring teachers' WCF practice, students' responses to WCF, and learners' attitudes, beliefs, and motivation about the feedback based on "how" and "why" perspectives (Mao et al., 2024). With a deep understanding of the nature of WCF, studies on WCF in a natural context could provide guidance for teachers' implementation of writing practices.

With the surging research on WCF, it was worth analyzing the dynamics and complexity of WCF research in the L2 writing area, providing insights for pedagogical implications and future research. However, few studies have reviewed the findings of WCF study in the field of L2 writing. Among these reviews, they put emphasis on examining the efficacy of WCF through meta-analyses on the basis of experimental context (e.g., Brown et al., 2023; Kang & Han, 2015) and summarizing methodologies in relevant research (e.g., Liu & Brown, 2015). Overall, these reviews generally prioritized WCF studies based on experimental research, which ignored the review of naturalistic classroom research in the L2 writing domain. To the best of my knowledge, one recent review began centering on the scope of WCF based on a naturalistic context (Mao & Lee, 2020).

To comprehensively review WCF in L2 writing over the past decade, this study attempted to use bibliometrics to review WCF research in both experimental and naturalistic settings and provided implications for future WCF research. The research questions were proposed:

RQ1: What are the publication outputs of WCF research in second-language writing?

RQ2: Who are the influential authors, fruitful journals, and leading institutions in examining WCF in second-language writing?

RQ3: What are the major themes and research trends of WCF research in second-language writing?

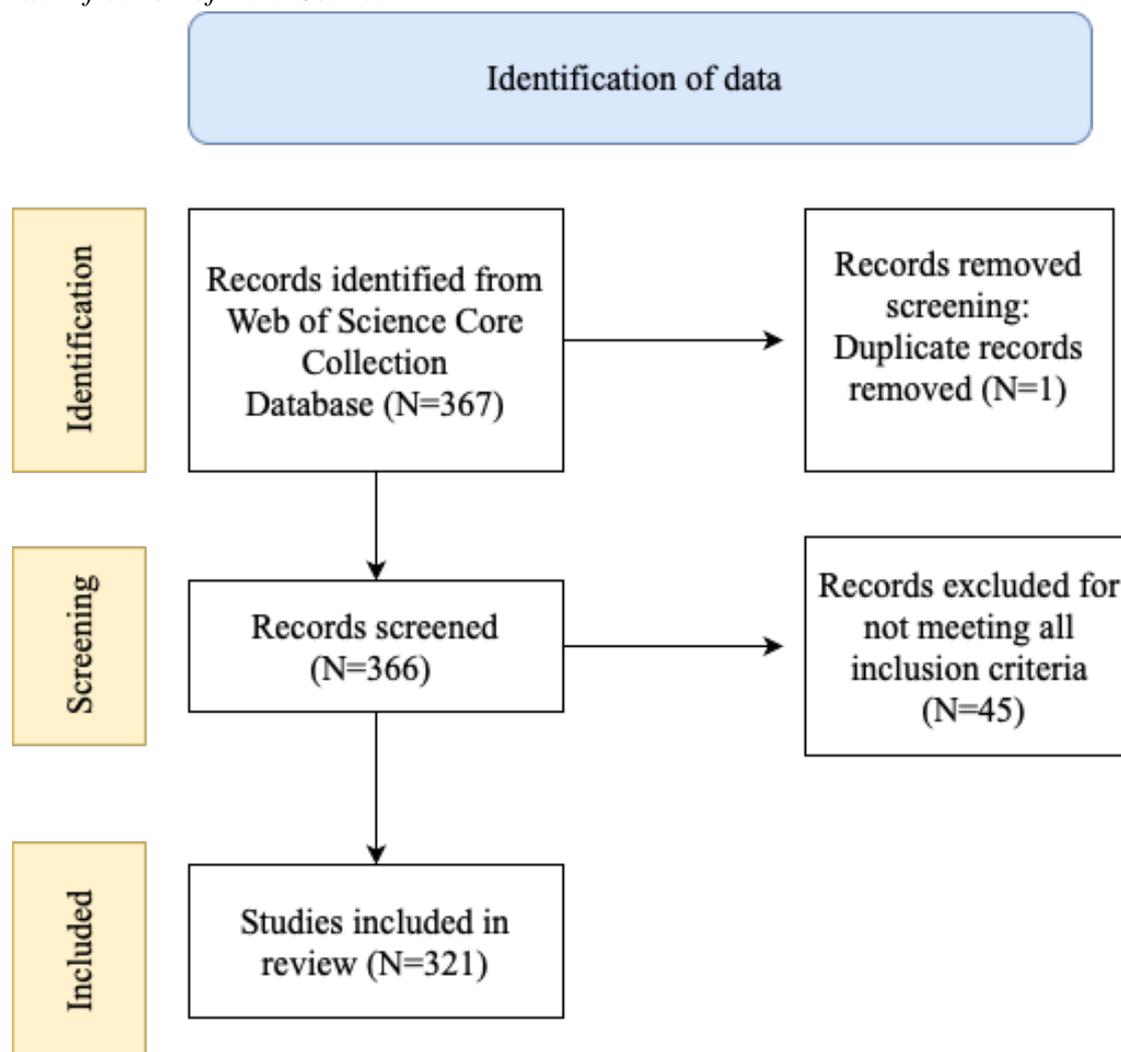
Data Collections and Methods

This research selected data from the Web of Science Core Collection Database, including the indexed data of the Social Science Citation Index, Art and Humanities, and Science Citation Index Extension. This research adopted research string: TS=((“written corrective feedback*” OR “corrective feedback*” OR “WCF*” OR “error correction*” OR “grammar correction*” OR

“response to writing*”OR “revision*”) AND (“second language writing” OR “L2 writing*”)) to search the data from January 1, 2014 to June 30, 2024, resulting 366 publications. After screening, 1 duplicate was removed. Then, data type was set as article and language was confined in English, which refined 321 eligible references in total (see Figure 1). All the articles were downloaded for data collection and transformed into plain text format. Titles, abstracts, and keywords were contained in these files.

Bibliometrics, a kind of quantitative analysis of the pattern of scientific literature, was proposed by Pritchard (1969). It is used to know about the current literacy and research hotspots and trends in a specific research area (Mayr et al., 2014). Citespace, a bibliometric analysis software designed by Chen (2006), could generate a visualized knowledge map consisting of links and nodes. Node types could reveal author information, some leading institutions, influential countries, keywords, sources, cited authors and journals, etc. The time slice in Citespace is usually 1 year per slice. This study mainly utilized Citespace’s visualized keyword co-occurrence map and clusters analysis. As for links, strength was set as Cosine, the default value. The selection criteria of G-index and top N were determined as k=23, top 50, and top 10, respectively.

Figure 1
Identification of Data Source



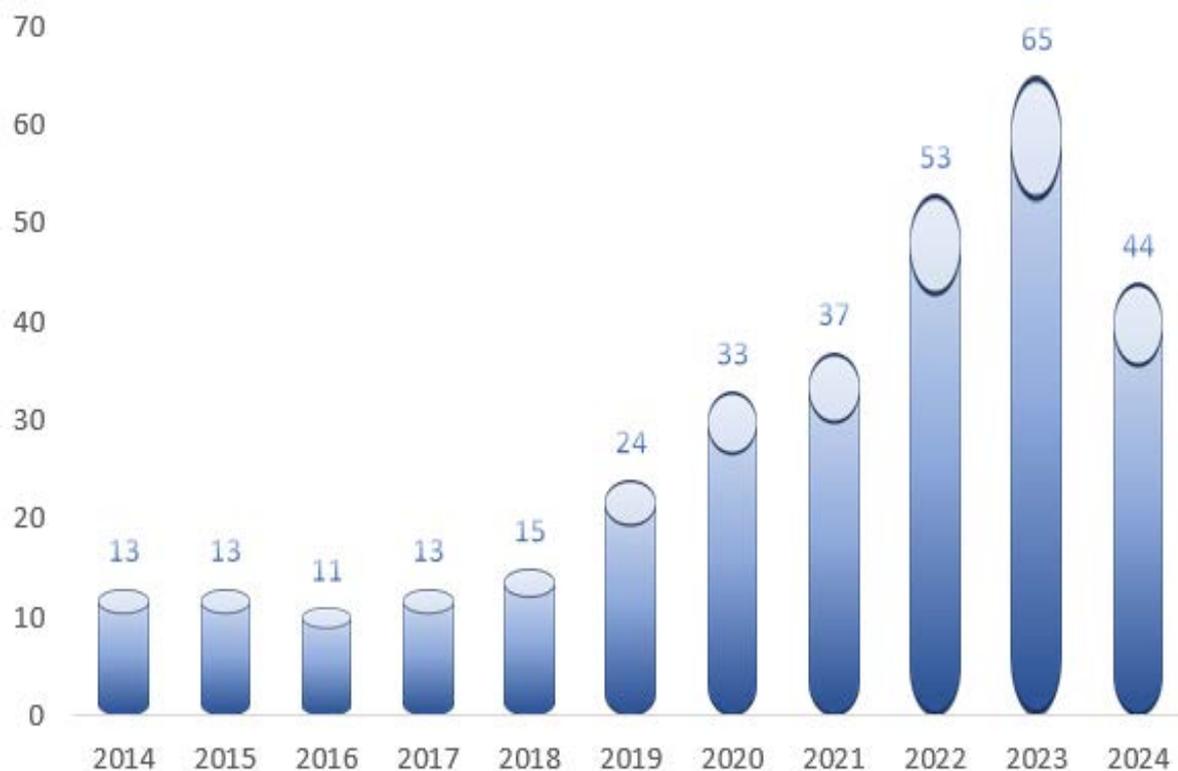
Results

The Number of Publications

This study made use of bibliometrics to undertake a descriptive analysis of 321 eligible articles in the research field of WCF in the L2 writing area (see Figure 2). Overall, the volume of research papers in this area gradually increased, signifying increasing interest in WCF research in the L2 writing over the past decade. The theoretical and practical significance of this field was likely to draw researchers’ attention to continually conduct deeper research. This suggested there was still a potential space for innovative development in the study of WCF in the L2 writing. To be specific, the number of publications could be categorized into two phases. The total number of publications at the first stage was comparatively small from 2014 to 2018. However, some articles from that period were highly cited, such as Dikli and Bleyle (2014) and Han and Hyland (2015), indicating that the works in the period laid a theoretical foundation for the later related research. After 2019, the number of publications surged, which peaked in 2023. If the momentum remained, it was seen that the volume of publications in 2024 would surpass the number of publications in 2023. It was reasonable to expect that the studies of WCF in L2 writing would continue to grow and become fruitful. Scholars would keep delving into WCF research with new research perspectives. In a nutshell, research into WCF in L2 writing remains to be a hot topic in the academic field.

Figure 2

Distribution of Publications Related to WCF in L2 Writing



Top 10 Fruitful Journals

Table 1 presented the top 10 fruitful journals that published at least 6 papers on WCF in L2 writing from January 1, 2014 to June 30, 2024. The table consists of 5 sections: rank, names of

journals, numbers of publications, citations and impact factor. The journal *Assessing writing* took the lead with 35 publications and its citations of 1255 and an impact factor of 4.2, reflecting its influential place for presenting the high-impact study. Following this, *Journal of second language writing* published 31 articles in the WCF research area, with 1243 citations and an impact factor of 5, highlighting its vital role in evaluating WCF in the L2 writing. The number of publications of the remaining 7 journals was between 22 and 6 papers on WCF. Meanwhile, their citations and impact factor also shed light on their high recognition in the research of WCF in L2 writing.

Table 1

Top 10 Fruitful Journals for WCF in L2 Writing

Rank	Journals	Publications	Citations	Impact factor
1	Assessing writing	35	1255	4.2
2	Journal of second language writing	31	1243	5
3	Language teaching research	25	393	3.3
4	System	22	375	4.9
5	Computer assisted language learning	14	592	6
6	Language learning & technology	13	189	3.5
7	Frontiers in psychology	9	88	2.6
8	Reading and writing	7	90	2
9	Asia-pacific education researcher	6	101	3.6
10	Asian-pacific journal of second and foreign language education	6	27	1.5

Top 10 Productive Authors

Table 2 listed the top 10 authors with at least 6 papers in WCF in L2 writing from January 1, 2014 to June 30, 2024. Table 3 showed the rank of the productive authors in the first section, their names in the second section, the number of their publications in the third section and the citations that they obtained in the fourth column. The most fruitful author was Yu Shulin, who published 22 articles with 644 citations investigating WCF in L2 writing between 2014 and 2024. The second productive author was Lee Icy, who published 13 articles with 317 citations. Table 3 also showed some influential authors with a comparatively small number of publications, including scholars like Zheng Yao, Jiang Lianjiang and Zhou Nan, who have provided insights for the stakeholders in analyzing WCF in L2 writing. Among these productive authors, the empirical research showed that scholars Yu Shulin and Lee Icy were influential in studying WCF.

Table 2*Top 10 Productive Authors for WCF in L2 Writing*

Rank	Authors	Publications	Citations
1	Yu, S	22	644
2	Lee, I	13	317
3	Zhang, L	10	170
4	Zheng, Y	9	246
5	Jiang, L	8	195
6	Cheng, X	8	136
7	Zhou, N	6	178
8	Liu, C	6	105
9	Reynolds, B	6	49
10	Storch, N	6	36

Top 10 Productive Institutions

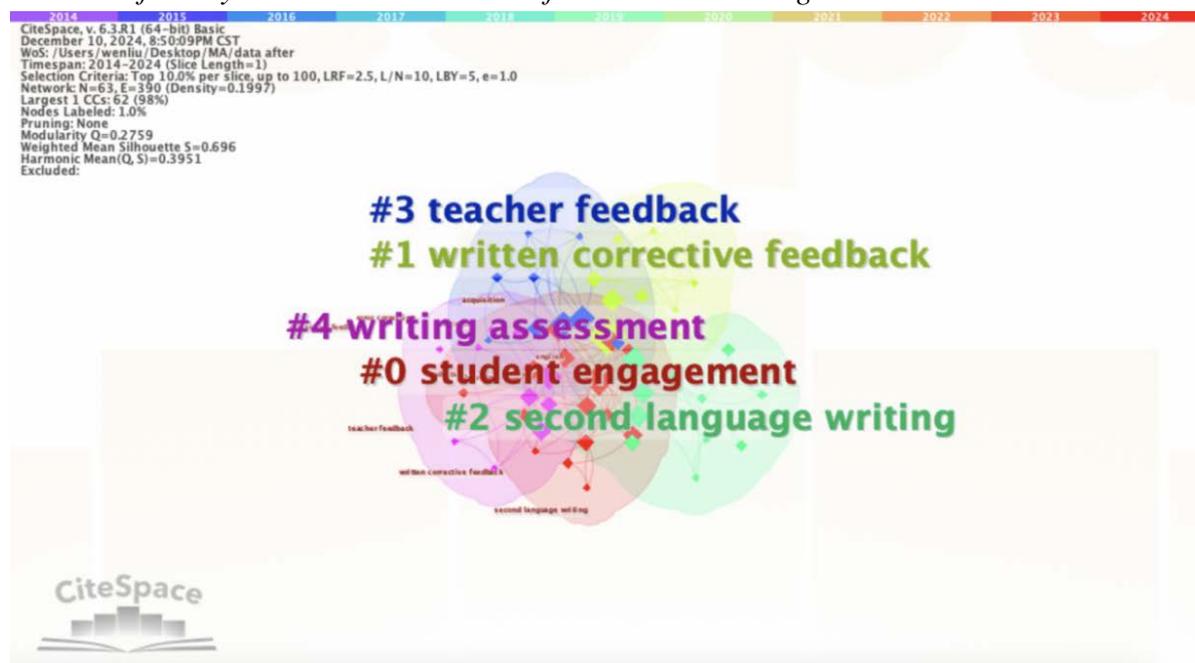
Table 3 showed the the top 10 influential institutions involved in WCF in L2 writing with the least 6 papers from January 1, 2014 to June 30, 2024. It was noticed that the University of Macau and University of Auckland seemed to be the leaders in WCF research in L2 writing, with 29 and 14 publications, respectively. Table 3 also demonstrated the rest of the 8 influential institutions from different areas, reflecting a gradual global interest in exploring the effect of WCF in L2 writing.

Table 3*Top 10 Productive Institutions for WCF in L2 Writing*

Rank	Institutions	Regions	Number of publications
1	University of Macau	China	29
2	University of Auckland	New Zealand	14
3	Chinese University of Hongkong	China	14
4	Education University of Hongkong	China	11
5	Islamic Azad University	Iran	11
6	Hubei University of Technology	China	8
7	University of Melbourne	Australia	7
8	Chongqing University	China	6
9	University of Hongkong	China	6
10	University of Queensland	Australia	6

Research Themes of WCF in L2 Writing

Keywords could reflect the main themes of any paper and the summary of the research topic. The co-occurrence of two keywords in any article reflected that these keywords were highly associated with one another in the current research field. The general opinion showed that if two or more keywords frequently appeared together, they were highly closely related to each other. Centrality, one of the important functions of CiteSpace, suggested the strength of the association between two or more keywords, which helped to present the occurrence of a specific word with another word within the domain of a research topic. The higher the Centrality value of the keyword was, the more important the keyword was. In this research, the research themes could be induced by keyword co-occurrence analysis. The keywords that co-occurred in at least two articles were identified. In this research, the time slice in Citespace was

Figure 4*A Cluster for Keywords Co-Occurrence of WCF in L2 Writing*

Clusters Interpretation

This study used Citespace to carry out a cluster analysis on the basis of the keywords co-occurrence. A total of 627 nodes in the co-occurrence with a one-year time slice were generated from Citespace. The five major clusters in written corrective feedback research were showed in Figure 4. The red color showed the present research hotspot, while purple represented the older research theme.

Cluster #0 the present research hot area was marked as student engagement. Student engagement with WCF was an important component in the automated writing evaluative (AWE) study in the L2 writing (Koltovskaia, 2020; Zhang & Hyland, 2018). Scholars reached a consensus that student engagement could consist of cognition, affect, and behavior (Tian & Zhou, 2020). The concept of student engagement was employed as the theoretical model for conducting a case study, examining how students engaged with Pigai feedback from cognitive, affective, and behavioral perspectives (Zhang, 2017). In this study, behavioral engagement was measured by the number of writing submissions and the time students spent on the revision process. Regarding affective engagement, it was concerned with students' motivational changes and affective responses. Cognitive engagement focused on students' interpretation of the feedback information, students' monitoring of revision practice and self-regulating strategy. In Koltovskaia's (2020) study, cognitive engagement could be described as the degree of processing the feedback, which contained cognitive and meta-cognitive aspects. The findings of this research indicated that students' behavioral engagement could result in students' successful revision under the conditions that the information of AWE feedback was correct and the feedback was also uptake by students. However, these findings contradicted the commonsensical concept that students' behavioral engagement could not directly achieve true learning. That is to say, negative emotional responses to feedback enhanced students' cognitive

engagement, whereas those who responded positively to feedback exhibited less cognitive engagement. Additionally, the study revealed that students with greater language proficiency were more likely to critically evaluate the feedback given by AWE. They also tended to invest more time in processing the feedback and selectively integrated the automated suggestions. If students conducted few cognitive and meta-cognitive actions, it suggested his or her minimal cognitive engagement with automated feedback. Meanwhile, students' low language proficiency might hinder them from understanding and processing feedback, leading to a few revision actions (Zheng & Yu, 2018). Zhai and Ma (2023) examined the elements that influence university students' adoption of automated feedback and the reasons behind its use. Utilizing the technology acceptance model, they aimed to formulate a predictive framework for behavioral engagement. Their findings indicated that students' perceptions of automated feedback were influenced by their personal experiences, trust, and cognitive processes. Furthermore, other research looked into how students utilized automated feedback and how this usage was affected by various resources and internalization strategies as outlined in activity theory (Jiang & Yu, 2022). The concept of appropriation was deemed as the mechanism of internalization, which turned the inter-psychological form of social interactions with socially constructed entities into an intra-psychological form. In this way, the uptake of automated feedback could be regarded as social appropriation with an internalization process and organization of resources, which expanded the level of cognitive perspective on the uptake of automated feedback.

Cluster #1 was labeled as written corrective feedback. WCF was responses to students' essays in a second language. This research area emphasized students' key agents in dealing with WCF and the factors influencing students' responses to WCF. Some scholars examined the way students responded to WCF in the revision process. Lee (2008) examined HK secondary students' actions toward teacher-WCF using mixed methods. The findings suggested that students with low language proficiency showed a limited preference for teacher feedback compared with students with higher language proficiency. Link et al. (2022) examined students' reactions to teacher feedback and computer-teacher feedback from acts of revision and text modifications using a quantitative method. The findings showed that students were more likely to revise teachers' lower-level feedback compared with lower-level feedback from automated writing systems.

Research into factors that influenced students' acts to WCF has gained attention. Factors such as learning objectives (Han, 2017; Pearson, 2022), belief, feedback literacy (Han & Xu, 2021), and English language proficiency (Zhang & Hyland, 2018) were identified to explain individual differences. Based on the findings of this research, students who have low target linguistic knowledge and limited capability of feedback literacy are incapable of understanding linguistic problems and correcting errors (Zheng & Yu, 2018).. In this way, students were less cognitively engaged with and the uptake of WCF. Students' beliefs, one of the emotional factors, could also influence students' reaction to WCF and students' writing could be improved if students highly agreed with the information of WCF (Han, 2017). Apart from the above factors, some scholars focused on the contextual factors that influenced students' responses to WCF. For instance, Han (2019) took an ecological perspective, viewing students' engagement with WCF as a process and emphasizing the interaction between students and the specific context, which greatly impacted adjusting students' engagement process. When accounting for

students' responses to WCF, the specific context should be considered, such as learning objectives and institutional practice.

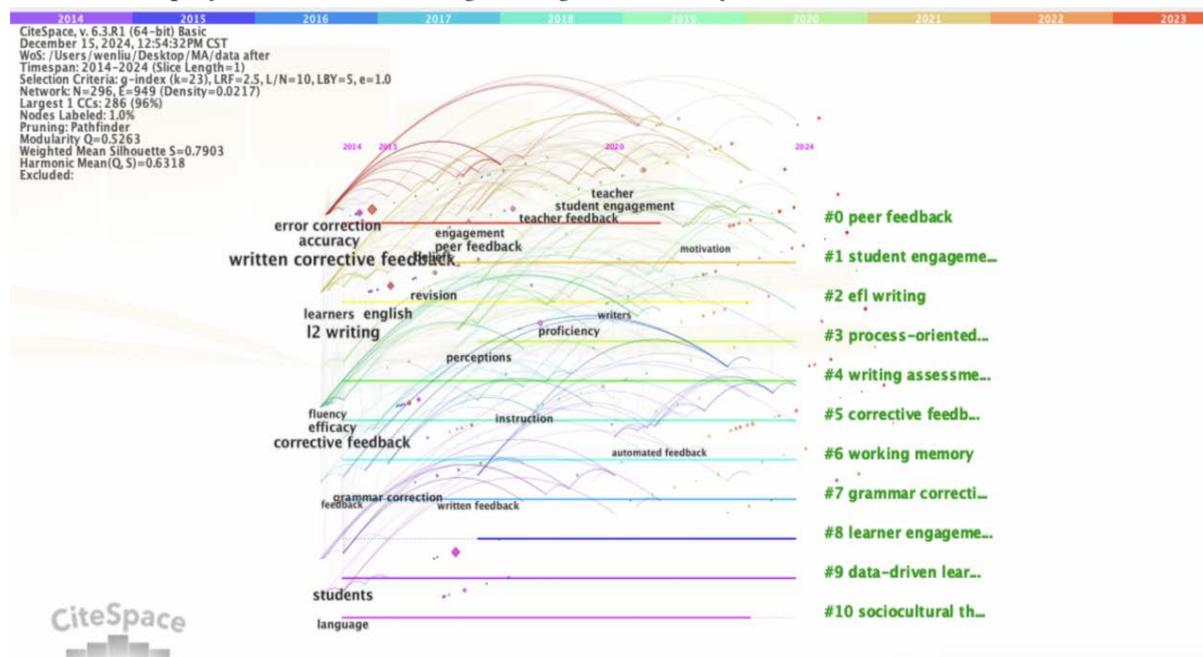
Cluster #2 was second language writing. This cluster highlighted the key theoretical foundations underpinning WCF research in L2, such as complexity theory, sociocultural theory, and active theory. Complexity theory emphasized the complex dynamic feature of language learning with constant changes in response to different factors (Larsen-Freeman, 2023). This theory differed from the traditional opinion that language was stable and emphasized that language was intertwined with cultural, societal, environmental, and cognitive factors. Chen (2023) used complexity theory, investigating how teachers' beliefs were associated with and interacted with teachers' WCF practices in different contexts. Based on the same theory, Lee et al. (2021a) examined how teachers attempted to apply WCF to certain error types in practice. The findings from these two studies suggested that it is advisable to explore teachers' beliefs about WCF within a specific context, as these beliefs are influenced by various factors, including teachers' teaching experience. Other studies were conducted based on the sociocultural theory proposed by Vygotsky (1978) with an emphasis on language development and writing feedback as a process in a socially situated context. Yu et al. (2021) examined EFL teachers' beliefs toward feedback in the Iranian context and Chinese EFL teachers' attitudinal experience in providing feedback, respectively. Saeli and Rahmati's (2022) research found that teachers' belief about written feedback was shaped by various factors, including students' preference for feedback and teachers' teaching experience. Yu et al. (2021) took the teacher's emotional factors as a sociocultural experience, which could facilitate uncovering the emotional rationale behind teachers' providing feedback. Ecological theory was used in some studies, and it defined language learning as the outcome of the interaction between students and the teaching/learning context (Van Lier, 2004). Han (2019) highlighted the active role of L2 students and teachers in engaging with different environments, such as students' engagement with WCF. Using ecological theory could illustrate how WCF provided the potential for learning and affordances and constraints for both teachers and students. Motivation also caught scholars' attention (e.g., Papi et al., 2020; Waller & Papi, 2017). They explored the relation between L2 learners' motivational features and their preferences for WCF, revealing individual differences in learning to write L2 essays and motivations' determinants in influencing L2 learners' purposes for WCF. The view of activity theory described human activity as a dynamic and socially contextualized phenomenon and was concerned with the interaction between the aim, subject, mediation, and guidance. This theory could better explain the interaction of actions and written corrective feedback by describing students' and teachers' perspectives on writing activities (Liu et al., 2022). Their research found that objects, rules, and labor were the vital factors that determined the teacher-student relationship in WCF activity.

Cluster #3 teacher feedback concentrated on exploring teachers' implementation of WCF in different L2 learning contexts (e.g., Cheng & Zhang, 2021), teachers' changes in providing WCF (e.g., Hyland & Hyland, 2019), and factors that influence teachers' provision of WCF practice (e.g., Liu et al., 2022). Teachers provided different scopes of WCF in various learning contexts. For example, in the EFL context, teachers preferred to provide WCF, a comprehensive approach to correcting students' errors (Cheng & Zhang, 2021; Lee, 2003). On the contrary, teachers in the ESL context showed an inclination to provide feedback on target

linguistics issues with the selective approach. In terms of the application of WCF strategies in the field of teachers' feedback practice, the two major types of WCF could be mentioned: direct WCF and indirect WCF. The former referred to explicit provision of corrections on students' errors. The latter was the provision of suggestions without the correct form, using error codes and underlines, etc. Some showed preference for providing direct WCF (e.g., Lee, 2011; Mikulski et al., 2019), and others primarily provided more indirect WCF (e.g., Ene & Kosobucki, 2016). In order to oppose the traditional conventional approach in providing WCF, some research focused on giving focused WCF, showing that the focused WCF could be effectively implemented in writing classrooms if the feedback aligned with the specific error type and students' needs (Lee, 2021b). Such feedback empowered teachers to underpin their teaching activity and provide feedback on other writing issues. In addition, some studies focused on exploring the factors that impact teachers' provision of WCF (e.g., Guénette & Lyster, 2013; Liu et al., 2022), showing that teachers' beliefs, training, examination culture, values, and relations between teachers and students were the influential factors that could shape the institutional context in turn. As some studies reported, teachers were responsible for students who had expectations and requirements regarding WCF. The teacher's belief about the priority of linguistic accuracy was entrenched because language accuracy was emphasized during the examination. Thus, teachers were driven to mainly focus on solving language issues and correcting students' errors.

Cluster #4 was marked as a writing assessment. The cluster with some keywords of motivation and perception has attended to students' motivation and emotion in WCF orientation. Some studies investigate students' motivation and their motivation in WCF situations through interview or questionnaire approach (e.g., Papi et al., 2020; Yu et al., 2020). Busse (2013) interviewed 12 first-year students in 2 British universities and found the most frequent items in the interview data. This research showed that comprehensive WCF influenced students' self-efficacy. Students mentioned that the comprehensive WCF discouraged them, and some of them showed a preference for focused WCF. Meanwhile, Yu et al. (2020) constructed an L2 writing scale to check how the feedback practice could to some extent impact students' motivation and engagement in the context of Chinese EFL writing. They found that WCF provided by teachers might cause self-sabotage accompanied by uncertain control and undervaluing in EFL students who failed to use avoidance strategies and WCF. In order to understand the motivational mechanisms behind students' usage of strategies and actions to achieve their aims, the study adopted questionnaires to examine the relation between L2 students' motivational features and their orientations to WCF. The questionnaire data collected from American ESL university students was analyzed by multiple regression (Waller & Papi, 2017). This study a positive correlation between learners' motivation and their orientations toward WCF, with over 40% of the variance.

Studies of students' emotional experiences toward WCF have been examined (e.g., Yu et al., 2021a). Although WCF has been affirmed by its demotivating effects on students' writing motivation and emotions, a study conducted by Han and Hyland (2019) found that WCF had positive and neutral effects on Chinese EFL college students' emotions. Specifically, the negative emotions were shown at the primary stage, and later, their emotion became positive or neutral. The findings suggested the development of awareness of both positive and negative impacts of WCF on L2 learner writers.

Figure 5*Timeline Map of WCF in L2 Writing during the Period from 2014 to 2024*

Research Trends of WCF in L2 Writing

The distribution of keywords in studies into WCF in L2 writing from 2014 to 2024 was visualized in a timezone map (see Figure 5). Through the analysis of the timezone map, the keywords were “accuracy” and “error correction” at the early stage. It could be induced that the early research into WCF gradually affirmed its role in helping students improve writing accuracy and took it as fuel to improve students’ writing development. Later, studies into WCF in L2 writing were inspired to explore Truscott’s (1996) view about useless grammar correction in writing instruction. Since then, the following studies emphasized investigating the efficacy of WCF. These studies centered on analyzing different WCF strategies, including direct, indirect, and metalinguistic WCF (e.g., Bitchener et al., 2005; Ferris & Roberts, 2001). Meanwhile, they also highlighted the investigation of WCF’s scope, covering whether the provision of WCF should be either comprehensive or focused (e.g., Frear & Chiu, 2015; Rahimi, 2021). Subsequently, research into WCF was concentrated on teachers’ practices and beliefs in providing feedback (e.g., S. S. Mao & Crosthwaite, 2019) and student perception (e.g., Kim et al., 2020). Student and teacher motivation also became a research hotspot in the area of WCF (e.g., Yu et al., 2021b). More recently, WCF research mainly discussed student engagement (e.g., Zhang & Hyland, 2018) and computer-generated feedback or automated writing feedback (e.g., Koltovskaia, 2020).

From the theoretical perspective, cognitive theory was used to reveal how students processed with WCF. Bitchener and Storch (2016) argued that WCF benefited students in their accumulation of language knowledge and improvement of writing accuracy. From a cognitive perspective, the processing information of WCF was affected by various factors. Besides, sociocultural domains such as scaffolding and zone of proximity development were used to explore WCF research. The increasing recognition of students and teachers as active agents in WCF was shown in recent research on student and teacher feedback literacy, emphasizing that

the effect of WCF should be studied in a specific context. Ecological concept, thus, had been employed to examine WCF in pedagogic instruction (e.g., Lee et al., 2021b).

Although research into WCF in L2 writing has proliferated in the past years, the impact of this research was quite limited because most studies were carried out in a laboratory-like context. This led to a wide gap between research and research practice (Lee, 2024). Future research could place greater emphasis on the role of students in WCF studies conducted in natural classroom settings, as the effects of WCF depend on students' reactions and their level of engagement with it. Moreover, the teacher has the role of implementing WCF in writing activities. Future research on teachers' decision-making could reveal reasons behind teachers' provision of WCF and how WCF could affect students' writing proficiency.

Discussion

During the past 10 years, WCF in L2 writing has received great attention in second language (L2) writing and second language acquisition. Through keyword occurrence analysis and a visualized cluster map, which CiteSpace generated, this study found research into WCF in L2 writing mainly focuses on the following aspects. One of the main themes centered on examining students' engagement with WCF (e.g., Ellis, 2010; Han & Hyland, 2015) because students were not purely the passive receivers of feedback (Han, 2019) and they were the active agents to adopt cognitive and metacognitive strategies. Analyzing students' revision actions and the reasons behind the revision actions could explain students' processes and responses to feedback. Other research has examined the factors affecting students' engagement from psychological and emotional perspectives. Certain sources of demotivation could impact students' interaction with written WCF. Therefore, much research focuses on providing a positive emotional experience for students when they process the feedback they receive (e.g., Han & Hyland, 2019; Yu, 2021). Other studies focused on teachers' WCF practices and teachers' implementation of WCF techniques in writing instruction, such as the effective type of feedback. From a theoretical perspective, some researchers employed complexity theory, sociocultural theory, and active theory to explore why and how WCF could improve students' writing quality. The study of WCF was moving from a single discipline to an interdisciplinary and mixed approach. In other words, education, psychology, and linguistics were interconnected fields in WCF research. Earlier research predominantly relied on linguistic explanations. From a behaviorist viewpoint, feedback alone cannot directly enhance students' writing accuracy. From a cognitive view, dealing with WCF was regarded as a process of underpinning students' attention (Hanaoka & Izumi, 2012). In the context of ZPD in sociocultural concepts, WCF facilitates the realization of students' current writing proficiency and future writing progress (Storch, 2018). Meanwhile, with computer-assisted language teaching, research into automated WCF uncovered more data for a comprehensive understanding of corrective feedback practice.

Generally speaking, research on students' engagement with WCF uncovered how students engaged with feedback with the tripartite engagement concepts (Zhang & Hyland, 2018). although these studies emphasized students' active role in process feedback, agentic engagement was to some degree overlooked. Future research should emphasize agentic engagement in WCF research. Agentic engagement was described as students' reciprocal, constructive, and proactive actions to put forward their writing progress and construct a

supportive learning context for learners (Reeve et al., 2020), such as collaboration between learners, peers and teachers.

Another key variable in WCF research was the teacher, who was the agent who implemented written corrective feedback. Research on teachers' metacognition and decision-making in providing feedback could uncover the reasons why teachers provided feedback in this way and how this feedback could impact students' writing quality. To make full potential of the positive effect of WCF in writing practices, more studies needed to be done from the perspective of teachers. Besides, the relationship between students and teachers was intricate. Future research could explore such complex relationships by focusing on how teachers could provide WCF for the whole class while meeting individual needs. Meanwhile, WCF was dynamic; research attention could be paid to how teachers provided feedback in the scope of students' ZPD and employed different feedback strategies based on different individual needs and different writing assignments.

In addition, maximizing WCF pedagogical potential necessitates a tripartite commitment from instructors, students, and educational institutions. Teachers need strong feedback literacy to properly support students in processing and applying feedback. Simultaneously, developing students' feedback literacy is equally vital, as their ability to understand and act on feedback determines its ultimate effectiveness. Furthermore, educators must carefully consider potential demotivating factors that may hinder student engagement with feedback. Teachers should strategically develop approaches that foster positive emotional experiences during students' processing of WCF to facilitate meaningful learning outcomes.

Conclusion

This research reviewed 321 articles related to WCF in L2 writing in the past 10 years. Based on bibliometrics and Citespace's visualization, the productive authors, influential journals and institutions, major themes, and research trends of written corrective feedback in L2 writing from 2014 to 2024 were presented. This research found two influential authors, Yu Shulin and Lee Icy, two leading journals, *Assessing writing* and *Journal of second language writing*, the leading institution, University of Macau. Meanwhile, based on keywords co-occurrence analysis and clusters of keywords co-occurrence, the research themes were mainly divided into student engagement, factors that influenced student engagement, theoretical foundations underpinning WCF, teachers' WCF practices and factors that impact their implementation of feedback and students' perception and motivation. Future research should continue to investigate the teacher's role in WCF research, which could better understand WCF and adjust their feedback implementation. Research into student agentic engagement deserves attention in the future.

Some limitations existed in this research. Only the WoS core database was included, and the document type was set as an article. Future reviews could be suggested to expand the database and cover other document types, such as books and conferences. Only functions of keyword occurrence and clustering were used in this study; future research might continue to explore other functions of Citespace. Despite the limitations, this study provided a bibliometric analysis of research themes and trends of WCF in L2 writing.

ORCID

 <https://orcid.org/0009-0001-6564-9607>

Acknowledgements

Not applicable.

Funding

Not applicable.

Ethics Declarations

Competing Interests

No, there are no conflicting interests.

Rights and Permissions

Open Access

This article is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/), which grants permission to use, share, adapt, distribute and reproduce in any medium or format provided that proper credit is given to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if any changes were made.

References

- Bitchener, J., & Storch, N. (2016). *Written corrective feedback for L2 development* (Vol. 96). Multilingual Matters.
- Bitchener, J., Young, S., & Cameron, D. (2005). The effect of different types of corrective feedback on ESL student writing. *Journal of Second Language Writing*, 14(3), 191-205. <https://doi.org/10.1016/j.jslw.2005.08.001>
- Brown, D., Liu, Q., & Norouzian, R. (2023). Effectiveness of written corrective feedback in developing L2 accuracy: A Bayesian meta-analysis. *Language Teaching Research*, 13621688221147374. <https://doi.org/10.1177/13621688221147374>
- Busse, V. (2013). How do students of German perceive feedback practices at university? A motivational exploration. *Journal of Second Language Writing*, 22(4), 406-424. <https://doi.org/10.1016/j.jslw.2013.09.005>
- Chen, C. (2006). CiteSpace II: Detecting and visualizing emerging trends and transient patterns in scientific literature. *Journal of the American Society for Information Science and Technology*, 57(3), 359-377. <https://doi.org/10.1002/asi.20317>
- Chen, W. (2023). Investigating novice EFL writing teachers' beliefs and practices concerning written corrective feedback across contexts: A case study from a complexity theory perspective. *Language Awareness*, 32(3), 465-486. <https://doi.org/10.1080/09658416.2022.2119993>
- Cheng, X., & Zhang, L. J. (2021). Teacher written feedback on English as a foreign language learners' writing: Examining native and nonnative English-speaking teachers' practices in feedback provision. *Frontiers in Psychology*, 12, 1-16. <https://doi.org/10.3389/fpsyg.2021.629921>
- Crosthwaite, P., Ningrum, S., & Lee, I. (2022). Research trends in L2 written corrective feedback: A bibliometric analysis of three decades of Scopus-indexed research on L2 WCF. *Journal of Second Language Writing*, 58, Article 100934. <https://doi.org/10.1016/j.jslw.2022.100934>
- Dikli, S., & Bleyle, S. (2014). Automated essay scoring feedback for second language writers: How does it compare to instructor feedback? *Assessing Writing*, 22, 1-17. <https://doi.org/10.1016/j.asw.2014.03.006>
- Ellis, R. (2010). Epilogue: A framework for investigating oral and written corrective feedback. *Studies in Second Language Acquisition*, 32(2), 335-349. <https://doi.org/10.1017/S0272263109990544>
- Ene, E., & Kosobucki, V. (2016). Rubrics and corrective feedback in ESL writing: A longitudinal case study of an L2 writer. *Assessing Writing*, 30, 3-20. <https://doi.org/10.1016/j.asw.2016.06.003>
- Ferris, D., & Roberts, B. (2001). Error feedback in L2 writing classes: How explicit does it need to be? *Journal of Second Language Writing*, 10(3), 161-184. [https://doi.org/10.1016/s1060-3743\(01\)00039-x](https://doi.org/10.1016/s1060-3743(01)00039-x)
- Ferris, D. R. (2022). *Feedback on L2 student writing: Current trends and future directions*. In E. Hinkel (Ed.), *Handbook of practical second language teaching and learning* (pp. 344-356). Routledge.
- Frear, D., & Chiu, Y. H. (2015). The effect of focused and unfocused indirect written corrective feedback on EFL learners' accuracy in new pieces of writing. *System*, 53, 24-34. <https://doi.org/10.1016/j.system.2015.06.006>

- Gu nette, D., & Lyster, R. (2013). Written corrective feedback and its challenges for pre-service ESL teachers. *The Canadian Modern Language Review*, 69(2), 129–153. <https://doi.org/10.3138/cmlr.1346>
- Han, Y. (2017). Mediating and being mediated: Learner beliefs and learner engagement with written corrective feedback. *System*, 69, 133-142. <https://doi.org/10.1016/j.system.2017.07.003>
- Han, Y. (2019). Written corrective feedback from an ecological perspective: The interaction between the context and individual learners. *System*, 80, 288–303. <https://doi.org/10.1016/j.system.2018.12.009>
- Han, Y., & Hyland, F. (2015). Exploring learner engagement with written corrective feedback in a Chinese tertiary EFL classroom. *Journal of Second Language Writing*, 30, 31–44. <https://doi.org/10.1016/j.jslw.2015.08.002>
- Han, Y., & Hyland, F. (2019). Academic emotions in written corrective feedback situations. *Journal of English for Academic Purposes*, 38, 1–13. <https://doi.org/10.1016/j.jeap.2018.12.003>
- Han, Y., & Xu, Y. (2021). Student feedback literacy and engagement with feedback: A case study of Chinese undergraduate students. *Teaching in Higher Education*, 26(2), 181–196. <https://doi.org/10.1080/13562517.2019.1648410>
- Hanaoka, O., & Izumi, S. (2012). Noticing and uptake: Addressing pre-articulated covert problems in L2 writing. *Journal of Second Language Writing*, 21(4), 332-347. <https://doi.org/10.1016/j.jslw.2012.09.008>
- Hyland, K., & Hyland, F. (Eds.). (2019). *Feedback in second language writing: Contexts and issues*. Cambridge university press.
- Jiang, L., & Yu, S. (2022). Appropriating automated feedback in L2 writing: Experiences of Chinese EFL student writers. *Computer Assisted Language Learning*, 35(7), 1329–1353. <https://doi.org/10.1080/09588221.2020.1799824>
- Kang, E., & Han, Z. (2015). The efficacy of written corrective feedback in improving L2 written accuracy: A meta-analysis. *The Modern Language Journal*, 99(1), 1-18. <https://doi.org/10.1111/modl.12189>
- Kim, Y., Choi, B., Kang, S., Kim, B., & Yun, H. (2020). Comparing the effects of direct and indirect synchronous written corrective feedback: Learning outcomes and students' perceptions. *Foreign Language Annals*, 53(1), 176-199. <https://doi.org/10.1111/flan.12443>
- Koltovskaia, S. (2020). Student engagement with automated written corrective feedback (AWCF) provided by Grammarly: A multiple case study. *Assessing Writing*, 44, Article 100450. <https://doi.org/10.1016/j.asw.2020.100450>
- Larsen-Freeman, D. (2023). Complex dynamic systems theory: A webinar with Diane Larsen-Freeman. *Language Teaching*, 56(3), 402–419. <https://doi.org/10.1017/S0261444822000362>
- Lee, I. (2003). L2 writing teachers' perspectives, practices and problems regarding error feedback. *Assessing Writing*, 8(3), 216–237. <https://doi.org/10.1016/j.asw.2003.08.002>
- Lee, I. (2008). Student reactions to teacher feedback in two Hong Kong secondary classrooms. *Journal of Second Language Writing*, 17(3), 144–164. <https://doi.org/10.1016/j.jslw.2007.12.001>
- Lee, I. (2011). Working smarter, not working harder: Revisiting teacher feedback in the L2 writing classroom. *The Canadian Modern Language Review*, 67(3), 377–399. <https://doi.org/10.3138/cmlr.67.3.377>
- Lee, I. (2020). Utility of focused/comprehensive written corrective feedback research for authentic L2 writing classrooms. *Journal of Second Language Writing*, 49, 100734. <https://doi.org/10.1016/j.jslw.2020.100734>
- Lee, I. (2024). The future of written corrective feedback research. *Pedagogies: An International Journal*, 19(4), 660-669. <https://doi.org/10.1080/1554480x.2024.2388068>
- Lee, I., Luo, N., & Mak, P. (2021a). Teachers' attempts at focused written corrective feedback in situ. *Journal of Second Language Writing*, 54, Article 100809. <https://doi.org/10.1016/j.jslw.2021.100809>
- Lee, I., Luo, N., & Mak, P. (2023). Issues of error selection for focused written corrective feedback in authentic classroom contexts. *RELC Journal*, 54(3), 616-629. <https://doi.org/10.1177/00336882211028425>
- Leow, R. P. (2023). Written corrective feedback and the language curriculum: Theory, research, curricular issues, and the researcher-teacher interface. *Feedback Research in Second Language*, 1, 109-128. <https://doi.org/10.32038/frsl.2023.01.07>
- Li, S. (2022). *Quantitative research methods in instructed second language acquisition*. In L. Gurzynski-Weiss, & Y. Kim (Eds.), *Instructed second language acquisition research methods* (pp. 31–53). John Benjamins.
- Liu, Q., & Brown, D. (2015). Methodological synthesis of research on the effectiveness of corrective feedback in L2 writing. *Journal of Second Language Writing*, 30, 66–81. <https://doi.org/10.1016/j.jslw.2015.08.011>
- Liu, Y., Storch, N., & Morton, J. (2022). It takes two to tango: Investigating teacher-student interactions related to written corrective feedback with activity theory. *Assessing Writing*, 53, Article 100647. <https://doi.org/10.1016/j.asw.2022.100647>
- Loewen, S., & Plonsky, L. (2017). *An A-Z of applied linguistics research methods*. Palgrave Macmillan.
- Mao, S. S., & Crosthwaite, P. (2019). Investigating written corrective feedback: (Mis)alignment of teachers' beliefs and practice. *Journal of Second Language Writing*, 45, 46-60. <https://doi.org/10.1016/j.jslw.2019.05.004>
- Mao, Z., & Lee, I. (2020). Feedback scope in written corrective feedback: Analysis of empirical research in L2 contexts. *Assessing Writing*, 45, Article 100469. <https://doi.org/10.1016/j.asw.2020.100469>

- Mao Z, Lee I, Li S. (2024). Written corrective feedback in second language writing: A synthesis of naturalistic classroom studies. *Language Teaching*, 57(4):449-477. <https://doi.org/10.1017/S0261444823000393>
- Mayr, P., Scharnhorst, A., Larsen, B., Schaer, P., & Mutschke, P. (2014). Bibliometric-enhanced information retrieval. In *Advances in Information Retrieval: 36th European Conference on IR Research, ECIR 2014, Amsterdam, The Netherlands, April 13-16, 2014. Proceedings 36* (pp. 798-801). Springer International Publishing.
- Mikulski, A. M., Elola, I., Padial, A., & Berry, G. (2019). Written feedback in heritage Spanish classrooms: A national survey of students and instructors. *Spanish Journal of Applied Linguistics*, 32, 543-572. <https://doi.org/10.1075/resla.18018.mik>
- Mohebbi, H., & Panahi, A. (2024). Written corrective feedback. *Reference Module in Social Sciences*. <https://doi.org/10.1016/B978-0-323-95504-1.00359-8>
- Papi, M., Bondarenko, A. V., Wawire, B., Jiang, C., & Zhou, S. (2020). Feedback-seeking behavior in second language writing: Motivational mechanisms. *Reading and Writing*, 33, 485-505. <https://doi.org/10.1007/s11145-019-09971-6>
- Pearson, W. S. (2022). The mediating effects of student beliefs on engagement with written feedback in preparation for high-stakes English writing assessment. *Assessing Writing*, 52, 100611. <https://doi.org/10.1016/j.asw.2022.100611>
- Pritchard, A. (1969). Statistical bibliography or bibliometrics? *Journal of Documentation*, 25(4), 348-349.
- Rahimi, M. (2021). A comparative study of the impact of focused vs. comprehensive corrective feedback and revision on ESL learners' writing accuracy and quality. *Language Teaching Research*, 25(5), 687-710. <https://doi.org/10.1177/1362168819879182>
- Reeve, J., Cheon, S. H., & Jang, H. (2020). How and why students make academic progress: Reconceptualizing the student engagement construct to increase its explanatory power. *Contemporary Educational Psychology*, 62, Article 101899. <https://doi.org/10.1016/j.cedpsych.2020.101899>
- Reinders, H., & Mohebbi, H. (2018). Written corrective feedback: The road ahead. *Language Teaching Research Quarterly*, 6, 1-6. <https://doi.org/10.32038/ltrq.2018.06.01>
- Stephanie Link, Mohaddeseh Mehrzad & Mohammad Rahimi (2022) Impact of automated writing evaluation on teacher feedback, student revision, and writing improvement. *Computer Assisted Language Learning*, 35(4), 605-634, <https://doi.org/10.1080/09588221.2020.1743323>
- Storch, N. (2018). Written corrective feedback from sociocultural theoretical perspectives: A research agenda. *Language Teaching*, 51(2), 262-277. <https://doi.org/10.1017/S0261444818000034>
- Tian, L., & Zhou, Y. (2020). Learner engagement with automated feedback, peer feedback and teacher feedback in an online EFL writing context. *System*, 91, Article 102247. <https://doi.org/10.1016/j.system.2020.102247>
- Truscott. (1996). The case against grammar correction in L2 writing classes. *Language Learning*, 46(2), 327-369. <https://doi.org/10.1111/j.1467-1770.1996.tb01238.x>
- Truscott, J. (2023). What about validity? Thoughts on the state of research on written corrective feedback. *Feedback in Second Language*, 1, 33-53. <https://doi.org/10.32038/frsl.2023.01.03>
- Van Lier, L. (2004). *The ecology and semiotics of language learning: A sociocultural perspective*. Kluwer Academic Publishers.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.
- Waller, L., & Papi, M. (2017). Motivation and feedback: How implicit theories of intelligence predict L2 writers' motivation and feedback orientation. *Journal of Second Language Writing*, 35, 54-65. <https://doi.org/10.1016/j.jslw.2017.01.004>
- Yu, S. (2021). Feedback-giving practice for L2 writing teachers: Friend or foe? *Journal of Second Language Writing*, 52, Article 100798. <https://doi.org/10.1016/j.jslw.2021.100798>
- Yu, S., Geng, F., Liu, C., & Zheng, Y. (2021a). What works may hurt: The negative side of feedback in second language writing. *Journal of Second Language Writing*, 54, Article 100850. <https://doi.org/10.1016/j.jslw.2021.100850>
- Yu, S., Zheng, Y., Jiang, L., Liu, C., & Xu, Y. (2021b). "I even feel annoyed and angry": Teacher emotional experiences in giving feedback on student writing. *Assessing Writing*, 48, Article 100528. <https://doi.org/10.1016/j.asw.2021.100528>
- Yu, S., Jiang, L., & Zhou, N. (2020). Investigating what feedback practices contribute to students' writing motivation and engagement in Chinese EFL context: A large scale study. *Assessing Writing*, 44, Article 100451. <https://doi.org/10.1016/j.asw.2020.100451>
- Yu, S., Zheng, Y., Jiang, L., Liu, C., & Xu, Y. (2021). "I even feel annoyed and angry?": Teacher emotional experiences in giving feedback on student writing. *Assessing Writing*, 48, Article 100528. <https://doi.org/10.1016/j.asw.2021.100528>
- Zhai, N., & Ma, X. (2023). The effectiveness of automated writing evaluation on writing quality: A meta-analysis. *Journal of Educational Computing Research*, 61(4), 875-900. <https://doi.org/10.1177/07356331221127300>

- Zhang, Z. (2017). Student engagement with computer-generated feedback: A case study. *ELT Journal*, 71(3), 317-328. <https://doi.org/10.1093/elt/ccw089>
- Zhang, Z., & Hyland, K. (2018). Student engagement with teacher and automated feedback on L2 writing. *Assessing Writing*, 36, 90–102. <https://doi.org/10.1016/j.asw.2018.02.004>
- Zheng, Y., & Yu, S. (2018). Student engagement with teacher written corrective feedback in EFL writing: A case study of Chinese lower-proficiency students. *Assessing Writing*, 37, 13–24. <https://doi.org/10.1016/j.asw.2018.03.001>