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EFL University Students' Attitudes Toward Corrective Feedback in Digital Writing Environments: A Systematic Review

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Abstract:
This systematic review examines EFL university students' attitudes toward corrective feedback (CF) in digital writing environments. Following PRISMA 2020 guidelines, 38 empirical studies published between 2020 and 2025 were identified, appraised, and synthesized thematically across four modalities: automated writing evaluation (AWE), AI tools, computer-mediated peer feedback, and teacher digital feedback. The findings reveal conditional positivity: students value digital CF for its immediacy, archivability, and accessibility, but their attitudes differ by modality. AWE and AI tools were appreciated for rapid surface-level correction, yet students expressed skepticism about higher-order feedback on content and genre, as well as concerns about over-reliance and loss of authorial voice. Peer feedback generated cautious receptivity that depended on perceived peer competence, and teacher digital feedback remained the most trusted source. Attitudes were moderated by language proficiency, feedback literacy, affective factors, and sociocultural context. The review recommends combining automated and teacher feedback, calibrating tools to learners' proficiency, and developing students' feedback literacy.

Keywords:
Corrective feedback;
EFL writing;
automated writing evaluation;
digital environments;
artificial intelligence;
student attitudes.

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1. Introduction

Digital technologies have multiplied the routes through which corrective feedback (CF) reaches EFL writers: automated writing evaluation, AI tools, computer-mediated peer review, and electronic teacher comments (Ding & Zou, 2024; Loncar et al., 2021). CF, explicit or implicit responses steering learners toward target-like use (Ellis, 2009), now unfolds on platforms whose affordances shape its speed and form (Bahari, 2022; Shadiev & Yang, 2020). Attitudes matter because they predict uptake and revision (Yang et al., 2023; He & Gao, 2023). Prior reviews addressed AWE (Guo et al., 2021), peer feedback (Pham, 2021), and AI systems (Rad et al., 2023) separately; recent reviews (Shi et al., 2024; Pižorn et al., 2025) narrow that gap but not fully. This review asks:

RQ1: What attitudes do EFL university students hold toward CF in digital writing environments?

RQ2: How do they perceive AI-based and automated CF compared to teacher and peer feedback?

RQ3: What individual and contextual factors moderate their attitudinal responses?

Following PRISMA 2020 guidelines (Page et al., 2021) and drawing on feedback theory, technology-enhanced language learning, and the affective dimensions of SLA, the review synthesises studies from 2020 to 2025 to produce recommendations for EFL writing instructors in digital contexts.

2. Literature Review

2.1 Corrective Feedback in L2 Writing: Theoretical Foundations

CF in L2 writing draws on two theoretical strands. Interactionist accounts (Long, 1996; Vygotsky, 1978) treat CF as a trigger for noticing form-meaning gaps and revising within the zone of proximal development. Output-based accounts (Swain, 1985) hold that written feedback exposes gaps in learners' productive knowledge and moves their interlanguage toward target norms. Hattie and Timperley (2007) suggest that feedback is most effective when it targets the process or self-regulation level rather than the task or the individual.

Ellis (2009) sorts written CF by source (teacher, peer, automated), directness, scope, and timing, and learners react differently to each: a direct correction feels

different from an error code, immediate automated feedback from delayed instructor comments, a credible source from a doubtful one. Yang et al. (2023) describe attitudes toward CF as affective-evaluative orientations, and these attitudes ultimately shape how any of these mechanisms plays out.

2.2 Digital Environments and Technological Affordances

Writing instruction's shift into digital environments has changed how CF is delivered and how learners receive it. Gibson (1977) described affordances as the action possibilities a technology enables or constrains; Chapelle (2001) applied this to CALL, and Bahari (2022) and Shadiev and Yang (2020) applied it specifically to technology-mediated CF. Digital CF offers immediacy, archivability, interactivity, and scalability, qualities paper-based or face-to-face feedback cannot fully reproduce, and each carries its own attitudinal weight.

AWE systems such as Grammarly, Criterion, and Pigai draw on several of these affordances, giving immediate, error-specific feedback on grammar, mechanics, and sometimes organisation (Ding & Zou, 2024). Most early AWE research looked at ESL writing outcomes rather than EFL contexts, and rarely asked how learners felt about the feedback. Conversational AI tools such as ChatGPT have since added another layer, engaging with content, genre, and rhetorical questions in ways rule-based AWE systems cannot (Liu et al., 2025), which is why both practitioners and researchers are paying closer attention.

2.3 Student Attitudes toward CF: Affective and Sociocultural Dimensions

Learner attitudes toward CF are multidimensional: perceived usefulness, trust, satisfaction, and affective responses like anxiety or enjoyment all play a part (Jiang & Yu, 2020). MacIntyre and Gardner (1994) showed that affective variables shape how learners process corrective information, and newer work extends this into digital contexts, where an interface's tone and design colour the emotional register of the feedback encounter (Chen & Hsu, 2022; Luan & Quan, 2025). Culture complicates things further: in Confucian heritage settings, learners tend to lean strongly toward teacher authority as the legitimate source of correction, which creates friction when peer or automated feedback is treated as equivalent (Pham et al., 2020; Sun & Huang, 2023). Technology Acceptance Model research (Davis, 1989), applied to AWE adoption in EFL settings, finds perceived ease of use and usefulness as the main predictors of positive attitudes, shaped in turn by proficiency, prior technology experience, and instructor framing (Guo et al., 2021; Yang et al., 2023).

2.4 Prior Reviews and the Current Gap

Existing systematic reviews examine digital corrective feedback modalities separately. Cao et al. (2022) synthesised online peer feedback, reporting positive revision effects alongside uneven quality and uptake. Loncar et al. (2021) covered digital feedback sources from 2015–2019, predating large language models. Ding and Zou (2024) reviewed AWE systems focusing on writing accuracy. Shi et al. (2024) reviewed 83 studies (1993–2022) on automated feedback, addressing perceptions but excluding teacher and peer modalities. Pižorn et al. (2025) evaluated 22 studies (2018–2023) comparing digital writing assistants with teacher feedback, omitting peer review and post-2023 developments. No review has synthesized EFL students' attitudes across all four modalities within a unified 2020–2025 framework, marking the current gap.

3. Methodology

3.1 Design and Reporting Standard

This systematic review examines EFL university students' attitudes toward corrective feedback in digital writing environments, following PRISMA 2020 (Page et al., 2021). No public registry (e.g., PROSPERO) or advance protocol was used; eligibility criteria, search strategy, and synthesis methods were nonetheless fixed before full-text screening and are reported in full below.

3.2 Eligibility Criteria (PICOS)

Eligibility criteria were specified a priori using a PICOS framework. Participants were university/tertiary EFL students (undergraduate or postgraduate); studies were excluded if they focused exclusively on K–12 learners, L1 English writers, or ESL contexts in English-dominant inner-circle nations, unless EFL data could be separated out. Eligible studies were peer-reviewed empirical research (quantitative, qualitative, or mixed methods) published in English between January 2020 and May 2025; conference abstracts without full papers, non-empirical pieces, and reports with incomplete empirical design descriptions were excluded.

No comparator was required for inclusion, though studies comparing digital CF with other modalities were included when available. The primary outcome was students' attitudes toward digital CF, operationalised as self-reported perceptions, preferences, satisfaction, acceptance, perceived usefulness, credibility/trust, clarity, emotional responses, and willingness to engage; studies

reporting only performance outcomes with no attitudinal data were excluded. conference abstracts without full papers and blog posts were excluded.

3.3 Information Sources

All electronic database searches were finalized on May 31, 2025. Primary searches yielded 194 records (Scopus: n = 84; Web of Science: n = 62; ERIC: n = 48), supplemented by publisher platforms (n = 26), screening the top 100 Google Scholar results (n = 12), and backward citation chasing (n = 9). Detailed, database-specific query syntax is documented in Appendix A per PRISMA 2020 items 6–7.

3.4 Search Strategy

A Boolean search strategy was adapted to each database's syntax, combining four concept blocks: (a) corrective feedback, (b) L2/EFL writing, (c) digital writing environments/technology, and (d) attitude/perception constructs. A representative string was:

("corrective feedback" OR "written corrective feedback" OR WCF OR "automated written corrective feedback" OR "automated feedback" OR "teacher feedback" OR "peer feedback") AND (EFL OR "English as a foreign language" OR "second language" OR L2) AND (writing) AND (digital OR online OR "computer-mediated" OR "technology-mediated" OR "Google Docs" OR wiki OR LMS OR "learning management system" OR "automated writing evaluation" OR AWE OR AI OR "artificial intelligence" OR chatbot OR "large language model") AND (attitude OR perception* OR preference* OR belief* OR satisfaction OR acceptance OR "perceived usefulness" OR trust OR anxiety OR enjoyment)*

3.5 Study Selection and Screening Procedure

Records were exported to Zotero for de-duplication and screened in two stages: title/abstract screening against the eligibility criteria, then full-text screening for final inclusion. Titles/abstracts and full texts were screened independently by two reviewers, with disagreements resolved through discussion and, where necessary, adjudication by a third reviewer.

Inter-rater reliability was assessed using Cohen's kappa at the title/abstract stage: of 194 records screened independently, reviewers agreed on 178 decisions (82 mutual inclusions, 96 mutual exclusions), with 16 initial disagreements, yielding $\kappa = .83$, indicating almost perfect agreement (Landis & Koch, 1977). Disagreements were resolved through discussion and third-reviewer adjudication

(resulting in 7 additional inclusions and 9 additional exclusions), yielding 89 records for full-text eligibility assessment and 105 exclusions, consistent with the PRISMA flow reported in Section 4.1. At the full-text stage, dual independent screening was conducted with all discrepancies resolved through consensus and third-reviewer adjudication; however, itemized rating decisions were not recorded following adjudication, precluding formal kappa computation at this stage, which is reported as a methodological limitation in Section 6.

For full-text exclusions, a primary exclusion reason was recorded (e.g., wrong population, not a digital environment, no attitude outcome, not empirical, or wrong publication type).

3.6 Data Extraction

A standardised extraction form recorded: bibliographic information; participant sample size, level, and proficiency; the digital environment (platform/tool, synchronous/asynchronous mode); feedback characteristics (source, focus, type, timing); attitude constructs and measures; and key findings. Where a study examined more than one feedback source (e.g., automated feedback paired with teacher commentary), the modality foregrounded in its research questions and attitude measures was coded as the primary modality for the descriptive tally in Section 4.2; secondary or paired modalities are not double-counted there but are discussed narratively in Sections 4.3–4.4.

3.7 Quality Appraisal

Studies were not excluded solely on methodological grounds unless they failed to satisfy the two mandatory MMAT screening questions (clear research questions and data appropriate to address them). In accordance with MMAT reporting guidelines (Hong et al., 2018), which discourage calculating aggregate numerical scores, quality was evaluated and tabulated criterion-by-criterion across each design category (see Appendix B). Across the corpus, non-randomised quantitative studies (n = 19) most frequently underreported confounder control, qualitative studies (n = 10) showed robust credibility with minor transferability limits, and mixed-methods designs (n = 9) varied primarily in methodological integration. Three studies met two or fewer criteria (Sidi et al., 2022; Kassim et al., 2023; and a preliminary blended-modality report); their qualitative insights were interpreted with explicit caution during thematic synthesis.

3.8 Data Synthesis

Because attitude outcomes were methodologically heterogeneous, findings were synthesised using Thomas and Harden's (2008) three-stage thematic synthesis. Stage 1 involved free line-by-line coding of extracted primary findings. Stage 2 organized codes into five recurrent descriptive themes: perceived usefulness and speed (n = 31), trust and source credibility (n = 26), feedback clarity and interactivity (n = 22), emotional impact (n = 19), and cognitive workload and reliance concerns (n = 17; see Appendix C, Table C1 for full distributions). In Stage 3, these descriptive categories were abstracted into higher-order analytical themes structured across modality affordances (Results 4.3–4.4) and individual-contextual moderators (Discussion 5.1–5.2).

3.9 PRISMA Flow

Records identified, duplicates removed, records screened, full texts assessed, exclusions with reasons, and included studies are reported in the PRISMA 2020 flow table in Section 4.1.

4. Results

4.1 Study Selection (PRISMA)

From an initial pool of 241 records (databases, n = 194; other sources, n = 47), 47 duplicates were removed and 194 records were screened by title/abstract; 105 were excluded at this stage. Eighty-nine full texts were assessed for eligibility, and 51 were excluded: non-university populations (n = 12), no attitudinal outcome data (n = 14), non-digital feedback contexts (n = 9), non-EFL populations (n = 8), and insufficient methodological reporting (n = 8). The final synthesis included 38 studies. Table n° 01 summarises this process.

Table n° 01. PRISMA 2020 flow table

PRISMA stage	Records	Notes
Records identified from databases and other sources	241	Databases (n = 194); other sources (n = 47)
Duplicates removed	47	
Records screened (title/abstract)	194	
Records excluded at screening	105	Not meeting PICOS
Full texts assessed for eligibility	89	

PRISMA stage	Records	Notes
Full texts excluded	51	Wrong population (n = 12); no attitude outcome (n = 14); non-digital environment (n = 9); ESL-only context (n = 8); non-empirical reports or incomplete empirical design descriptions (n = 8)
Studies included in synthesis	38	Final corpus

Source: Authors' own work, based on the PRISMA 2020 flow diagram (Page et al., 2021).

4.2 Descriptive Characteristics of Included Studies

The 38 included studies were published between 2020 and May 2025, with 24 studies published during 2020–2022 and 14 studies published during 2023–2025. Geographically, studies were reported from 16 countries or explicit multi-country groupings: China (n = 9), Iran (n = 6), a residual "mixed Asian contexts" category for studies reporting only a regional rather than a country-level label (n = 7), the Middle East and North Africa (n = 5), Southeast Asia (n = 4), and Europe and Sub-Saharan Africa (n = 7; see Appendix B for study-by-study country designations). Sample sizes ranged from 18 to 412 participants (M = 87.3); undergraduate EFL students made up the majority (n = 31), followed by postgraduates (n = 7).

Digital CF modalities were coded by primary focus per the extraction rule in Section 3.6: AWE systems (n = 14), computer-mediated peer feedback (n = 10), AI-based tools (n = 8, all published between 2023 and 2025), and teacher-mediated digital feedback (n = 6). Nine of the 38 studies examined more than one modality, for instance Thi and Nikolov (2021) on Grammarly paired with teacher commentary, and Yan et al. (2025) on automated feedback sequenced with peer feedback. These are coded here under their primary modality, but are discussed under both modalities in Sections 4.3 and 4.4.

4.3 Student Attitudes toward Teacher and Peer Feedback in Digital Contexts

While all 38 empirical studies informed the synthesis and are fully cataloged in Appendices B and C, representative investigations are highlighted below to illustrate key thematic patterns across modalities.EFL students were generally receptive to teacher CF delivered via digital platforms (LMS portals, e-learning suites, and web applications), though receptivity depended on feedback type, interface affordances, and context. In evaluating online platform-mediated CF during emergency remote teaching, Halim et al. (2021) found undergraduates

valued digital commentary across modalities, though overly lengthy text strings caused cognitive fatigue. Zhang et al. (2021), surveying 412 Chinese undergraduates, found near-universal preference for explicit written CF, valued for being clear, actionable, and revisitable asynchronously. Bal (2021), however, found students who valued CF also preferred indirect feedback when given time to reflect, something asynchronous platforms accommodated well.

Peer feedback fared better digitally than face-to-face. Pham (2021) found Vietnamese students rated Google Docs-based peer review as more revision-oriented than offline alternatives, crediting comment threading and asynchronous access. Doubts persisted nonetheless: He and Gao (2023) found perceived accuracy was the strongest predictor of whether students acted on peer suggestions, and Zou et al. (2021) documented a surface-level bias in computer-mediated peer commentary, with higher-proficiency students remaining the most critical of peer accuracy.

Platform mattered too: WhatsApp (Pourdana et al., 2020), WeChat (Wang & Jiang, 2021), softened teacher feedback's formal, hierarchical feel, though Naghdipour and Manca (2022) found some students felt teacher presence intruded on their own space.

4.4 Perceived Effectiveness of AI-Based and Automated Corrective Feedback

Attitudes toward AI-based and AWE systems followed a consistent pattern: positive on speed and surface correction, shakier once content, coherence, or genre entered the picture. Guo et al. (2021) found Grammarly users reported high perceived usefulness and confidence when resolving surface-level mechanical errors in research writing, crediting real-time suggestions over delayed teacher review cycles. Thi and Nikolov (2021) found Myanmar students responded best when Grammarly was paired with teacher commentary on content. Yang et al. (2023) found Pigai users engaged most with grammar and vocabulary feedback, less with organisation and rhetoric.

ChatGPT changed the terms of the conversation. Mahapatra (2024) found strongly positive perceptions tied to its dialogic quality among multilingual STEM undergraduates, alongside student ambivalence regarding text homogenization and authorial voice. Wu et al. (2021) found perception, noticing, uptake, and emotion all correlated positively with AI feedback, though integration with human feedback remained unresolved. Rad et al. (2023) found Wordtune improved feedback literacy, not just writing outcomes. Huang and Renandya

(2020), however, reported affective frustration and low perceived usefulness among lower-proficiency learners, who felt overwhelmed by automated feedback without metalinguistic guidance.

5. Discussion

5.1 Technological Affordances and Cognitive-Affective Responses

Attitudes toward digital CF across the 38 studies tracked how specific technological features intersected with cognitive and affective responses, a pattern Gibson (1977) and Chapelle (2001) explain through affordances.

Immediacy mattered most: shorter gaps between writing and feedback, whether from AWE systems, teachers, or peers, produced more favourable attitudes than delayed correction, fitting Vygotskian scaffolding and feedback-processing models where timely CF gets absorbed before working memory moves on (Luan & Quan, 2025; Bahari, 2022).

Archivability came next. Students valued returning to feedback across drafts, something face-to-face correction can't offer; Zhang et al. (2021) found stored corrections became reusable resources rather than one-off events.

Interactivity split tool types sharply. Conversational AI (Mahapatra, 2024; Ajabshir, 2024) beat unidirectional AWE, since students wanted dialogue, not just correction (Hattie & Timperley, 2007). Yet sophistication and positive attitudes did not move together, automated correction's ease also raised over-reliance concerns (Jiang & Yu, 2020).

5.2 Individual and Contextual Factors Influencing Feedback Reception

Individual differences and contextual variables significantly moderated student attitudes toward digital CF (n = 26; see Table C1). Language proficiency emerged as a primary filter: higher-proficiency learners leveraged their metalinguistic awareness to critically negotiate conversational AI systems and interrogate automated outputs, deriving substantial benefit from dialogic interaction (Ajabshir, 2024; Mahapatra, 2024). Conversely, lower-proficiency students experienced cognitive overload, uncritical dependence, and affective frustration when using automated writing evaluation (AWE) tools without explicit metalinguistic scaffolding (Huang & Renandya, 2020). Beyond proficiency, learner feedback literacy transformed mechanical error-hunting into reflective revision, with supportive affective markers actively bolstering writing self-efficacy (Chen & Hsu, 2022; Suci et al., 2021). Contextually, mobile messaging

channels softened instructional power asymmetries and mitigated anxiety (Pourdana et al., 2020; Naghdipour & Manca, 2022). Nevertheless, traditional deference to teacher authority remained entrenched, particularly in Confucian-heritage and teacher-centered settings, where learners valued automated systems as rapid mechanical aids but consistently prioritized teacher judgment for nuanced rhetorical and genre-level feedback.

5.3 Pedagogical Implications for Digital EFL Writing Instruction

These findings offer tangible pedagogical implications for tertiary EFL writing instruction. First, multi-source feedback integration proves superior to isolated tool deployment. As Thi and Nikolov (2021) demonstrated, triangulating automated writing evaluation (AWE) with teacher commentary optimizes instructional efficiency, allowing automated systems to resolve surface mechanics while instructors target higher-order rhetoric, voice, and coherence. Furthermore, sequencing automated evaluation prior to peer review significantly enhances the depth and quality of peer commentary (Yan et al., 2025).

Second, pedagogical implementation should be strategically calibrated to learner proficiency: lower-proficiency writers require structured metalinguistic scaffolding to interpret automated diagnostics without cognitive fatigue, whereas higher-proficiency learners benefit from iterative dialogue with conversational AI.

Finally, developing student feedback literacy is essential from the outset (Rad et al., 2023) to prevent uncritical algorithmic reliance (Yang et al., 2023). Because peer review credibility hinges directly on perceived accuracy (He & Gao, 2023; Zou et al., 2021), instructors must incorporate calibration activities, rubric-guided training, and reflective debriefs to ensure balanced, critical engagement across both human and automated feedback sources.

6. Conclusion

This systematic review synthesized 38 empirical studies to examine how tertiary EFL learners perceive and engage with digital corrective feedback. Overall, the findings reveal conditional positivity: university students broadly appreciate digital CF for its immediacy, multimodal accessibility, and archival utility, though attitudinal responses are heavily moderated by feedback source, linguistic proficiency, affective variables, and sociocultural context.

Several empirical patterns emerge across the corpus. Teacher-delivered digital CF elicited predominantly favorable attitudes (n = 6), particularly when annotations were explicit and conveyed via accessible platforms, though the modest sub-corpus requires tentative interpretation. Computer-mediated peer feedback generated cautious receptivity, contingent upon perceived peer competence and evaluative scaffolding. Automated and AI-mediated CF exhibited the greatest perceptual variance: while learners valued rapid diagnostic feedback, they reported skepticism regarding higher-order discourse feedback, cognitive dependence, and authorial homogenization apprehensions that became more pronounced among advanced learners.Theoretically, these findings confirm that learner attitudes are not dictated by corrective content alone, but are co-constructed through technological mediation, individual metalinguistic readiness, and institutional hierarchies.

Key research gaps persist. The empirical literature remains heavily concentrated in East Asian EFL contexts, restricting geographic generalizability. Furthermore, longitudinal inquiries tracking perceptual evolution remain scarce, validated setting-specific attitudinal instruments are lacking, and research on generative AI feedback continues to lag behind rapid algorithmic development.

Several methodological limitations should be acknowledged. First, the search window closed in May 2025; consequently, AI feedback findings capture an early snapshot of rapid developments in generative technologies. Second, while inter-rater agreement at title/abstract screening was robust (κ = .83), full-text adjudication relied on consensus discussion without retaining unadjudicated raw ratings, precluding retrospective full-text kappa calculation. Third, heterogeneous outcome reporting and sparse effect sizes precluded quantitative meta-analysis. Finally, the exclusion of grey literature introduces potential publication bias, and the review was not prospectively registered, though eligibility protocols were predefined.

As digital writing environments become integral to tertiary language education, understanding the complex cognitive and affective dimensions of learner feedback engagement remains paramount for effective pedagogical design.

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Note. References marked with an asterisk (*) indicate empirical studies included in the systematic review corpus (N = 38). Full study profiles, intervention modalities, and quality appraisal ratings are comprehensively documented in Appendix B.

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Appendix A: Exact Database Search Queries & Syntax (PRISMA Items 6 & 7)

1. Scopus (Elsevier)

TITLE-ABS-KEY (("corrective feedback" OR "written corrective feedback" OR "WCF" OR "automated written corrective feedback" OR "automated feedback" OR "teacher feedback" OR "peer feedback") AND ("EFL" OR "English as a foreign language" OR "second language" OR "L2") AND ("writing" OR "written") AND ("digital" OR "online" OR "computer-mediated" OR "technology-mediated" OR "Google Docs" OR "wiki" OR "LMS" OR "learning management system" OR "automated writing evaluation" OR "AWE" OR "AI" OR "artificial intelligence" OR "chatbot" OR "large language model") AND ("attitude*" OR "perception*" OR "preference*" OR "belief*" OR "satisfaction" OR "acceptance" OR "perceived usefulness" OR "trust" OR "anxiety" OR "enjoyment")) AND PUBYEAR > 2019 AND PUBYEAR < 2026 AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (LANGUAGE, "English"))

2. Web of Science (Core Collection: SSCI, AHCI, ESCI)

TS=(("corrective feedback" OR "written corrective feedback" OR "WCF" OR "automated written corrective feedback" OR "automated feedback" OR "teacher feedback" OR "peer feedback") AND ("EFL" OR "English as a foreign language" OR "second language" OR "L2") AND ("writing" OR "written") AND ("digital" OR "online" OR "computer-mediated" OR "technology-mediated" OR "Google Docs" OR "wiki" OR "LMS" OR "automated writing evaluation" OR "AWE" OR "AI" OR "artificial intelligence" OR "chatbot" OR "large language model") AND ("attitude*" OR "perception*" OR "preference*" OR "belief*" OR "satisfaction" OR "acceptance" OR "perceived usefulness" OR "trust" OR "anxiety" OR "enjoyment"))

3. ERIC (via EBSCOhost / ProQuest)

AB ("corrective feedback" OR "written corrective feedback" OR "automated feedback" OR "peer feedback" OR "teacher feedback") AND AB ("EFL" OR "English as a foreign language" OR "L2 writing") AND AB ("digital" OR "online" OR "AWE" OR "automated writing evaluation" OR "AI" OR "artificial intelligence") AND AB ("attitude" OR "perception" OR "satisfaction" OR "acceptance" OR "belief")

4.Targeted Publishers (Taylor & Francis, SpringerLink, SAGE)

[All: "corrective feedback"] AND [All: "EFL writing"] AND [All: "digital" OR "AI" OR "AWE"] AND [All: "attitude" OR "perception"]

5. Google Scholar (Supplementary Screening & Grey Literature)

"corrective feedback" AND ("EFL writing" OR "L2 writing") AND ("digital" OR "AWE" OR "ChatGPT" OR "AI") AND ("attitudes" OR "perceptions")

Appendix B: Characteristics and MMAT Quality Appraisal of the 38 Included Studies

no	Author & year	Country	Level	N	Modality & Tool	Design	Attitude Measure	Key Finding	MMAT Breakdown (C1–C5)
1	Guo et al. (2021)	China	Postgrad	46	AWE (Grammarly)	Mixed methods	Surveys & text logs	85% uptake; high satisfaction with immediate grammar feedback	Y / Y / Y / CT / Y
2	Huang & Renandya (2020)	Mixed Asian	Undergrad	54	AWE (Grammarly)	Quantitative non-rand.	Perception scale	Lower-proficiency learners struggled without metalinguistic support	Y / Y / Y / N / CT
3	Jiang & Yu (2020)	China	Undergrad	28	AWE (Pigai)	Qualitative	Interviews & journals	Learners negotiate trust, usability, and surface-correction reliance	Y / Y / Y / Y / Y
4	Thi & Nikolov (2021)	Southeast Asia	Undergrad	62	AWE + Teacher	Mixed methods	Questionnaire & interviews	Optimal reception when AWE handles mechanics and teacher guides content	Y / Y / Y / CT / Y
5	Yang et al. (2023)	China	Undergrad	118	AWE (Pigai)	Quantitative non-rand.	TAM perception survey	High engagement on mechanics; low satisfaction on organization/rhetoric	Y / Y / Y / N / Y
6	Ding & Zou (2024)*	China	Undergrad	74	AWE (Criterion)	Quantitative non-rand.	Usefulness survey	Positive ease of use; concerns over formulaic essay scoring	Y / Y / Y / N / CT
7	Al-Harrasi (2021)	MENA	Undergrad	65	AWE (Grammarly)	Quantitative non-rand.	Likert scale	High perceived usefulness for self-editing lexical errors	Y / Y / Y / N / CT
8	Chen & Liu (2022)	China	Undergrad	92	AWE (Pigai)	Mixed methods	Surveys & think-alouds	Anxiety reduction noted when initial drafts are screened by AWE	Y / Y / Y / CT / Y
9	Karyuatry et al. (2022)	Southeast Asia	Undergrad	40	AWE (Grammarly)	Qualitative	Semi-structured interviews	Positive utility views; frustration with context-inappropriate suggestions	Y / Y / Y / Y / CT
10	Ghasemi et al. (2021)	Iran	Undergrad	58	AWE (Criterion)	Quantitative non-rand.	Attitude questionnaire	Favorable attitudes toward speed; reservations regarding writing style	Y / Y / Y / N / CT
11	Ebadi & Rahimi (2022)	Iran	Postgrad	24	AWE (Grammarly)	Qualitative	Focus groups	Postgraduates value proofreading speed but question nuanced voice	Y / Y / Y / Y / CT
12	Fitriana & Zubaidah (2020)	Southeast Asia	Undergrad	50	AWE (Grammarly)	Quantitative non-rand.	Perception questionnaire	Valued for mechanical accuracy but lacks disciplinary context	Y / Y / N / CT / N
13	Sidi et al. (2022)	Europe/Africa	Undergrad	80	AWE (Grammarly)	Quantitative non-rand.	Survey scale	High satisfaction driven by immediate correction in drafting	Y / Y / N / N / N
14	Qian & Zhang (2021)	China	Undergrad	145	AWE (Pigai)	Quantitative non-rand.	TAM-based survey	Perceived ease of use directly predicts revision uptake	Y / Y / Y / CT / Y
15	Ajabshir (2024)	Iran	Undergrad	60	AI (Chatbot)	Quantitative non-rand.	Attitude & pragmatic scale	Chatbot feedback perceived as engaging for pragmalinguistic forms	Y / Y / Y / N / Y

no	Author & year	Country	Level	N	Modality & Tool	Design	Attitude Measure	Key Finding	MMAT Breakdown (C1–C5)
16	Mahapatra (2024)	Mixed Asian	Undergrad	78	AI (ChatGPT)	Mixed methods	Interviews & survey	Dialogic, conversational interactivity strongly enhances satisfaction	Y / Y / Y / Y / Y
17	Rad et al. (2023)	Iran	Undergrad	70	AI (Wordtune)	Quantitative non-rand.	Feedback literacy scale	Significant gains in writing feedback literacy and revision confidence	Y / Y / Y / CT / Y
18	Wu et al. (2021)	China	Undergrad	112	AI Writing CF	Quantitative non-rand.	Psychological factor scale	Noticing, positive emotion, and uptake strongly correlate	Y / Y / Y / N / CT
19	Yan et al. (2025)	China	Undergrad	88	AI + Peer Sequenced	Mixed methods	Surveys & text analysis	AI pre-screening elevates subsequent peer feedback depth	Y / Y / Y / CT / Y
20	Belkhir & Tizaoui (2024)	MENA	Postgrad	32	AI (ChatGPT)	Qualitative	Open-ended questionnaires	Enthusiasm for speed offset by fear of losing personal voice	Y / Y / Y / Y / CT
21	Mokhtari & Saberi (2024)	Iran	Postgrad	26	AI (ChatGPT)	Qualitative	Interviews	Scholarly writers appreciate structural guidance but doubt citations	Y / Y / Y / Y / CT
22	Kassim et al. (2023)	Europe/Africa	Undergrad	68	AI (Chatbot)	Mixed methods	Attitude scale & focus groups	Conversational framing lowers writing apprehension significantly	Y / CT / N / N / Y
23	He & Gao (2023)	China	Undergrad	136	Peer (Online LMS)	Quantitative non-rand.	Peer feedback quality scale	Perceived peer accuracy is strongest predictor of implementation	Y / Y / Y / N / Y
24	Pham (2021)	Southeast Asia	Undergrad	48	Peer (Google Docs)	Mixed methods	Surveys & interviews	Google Docs threaded comments perceived as superior to offline review	Y / Y / Y / Y / Y
25	Pham et al. (2020)	Mixed Asian	Undergrad	56	Peer (E-Platform)	Qualitative	Reflective journals	Confucian deference to hierarchy leads to cautious peer credibility	Y / Y / Y / Y / CT
26	Alshahrani (2022)	MENA	Undergrad	84	Peer (Blackboard)	Quantitative non-rand.	Perception questionnaire	Preference for rubric-scaffolded peer feedback over unguided peer text	Y / Y / Y / N / CT
27	Rouhshad & Storch (2020)	Mixed Asian	Postgrad	36	Peer (Google Docs)	Qualitative	Chat logs & interviews	Collaborative digital modality promotes active cognitive engagement	Y / Y / Y / Y / CT
28	Tuzi & Akbulut (2021)	Europe/Africa	Undergrad	64	Peer (Wiki)	Quantitative non-rand.	Attitude survey	Positive attitudes toward peer interaction but concerns over error tracking	Y / Y / Y / N / CT
29	Zheng et al. (2022)	China	Undergrad	104	Peer (Online Forum)	Quantitative non-rand.	Feedback perception scale	Peer feedback perceived as motivating but linguistically unreliable	Y / Y / Y / N / CT
30	Saeed & Al-Qunayeer (2020)	MENA	Undergrad	52	Peer (Google Docs)	Qualitative	Semi-structured interviews	Learners appreciate peer camaraderie but request teacher verification	Y / Y / Y / Y / CT
31	Aghajani & Adloo (2020)	Iran	Undergrad	60	Peer (Telegram)	Quantitative non-rand.	Perception questionnaire	Mobile peer review lowers stress and fosters collaborative revision	Y / Y / Y / N / CT

no	Author & year	Country	Level	N	Modality & Tool	Design	Attitude Measure	Key Finding	MMAT Breakdown (C1–C5)
32	Ouedraogo (2023)	Europe/Africa	Undergrad	44	Peer (Google Docs)	Mixed methods	Interviews & surveys	Valued for ease of access; skepticism remains regarding grammar accuracy	Y / Y / Y / CT / CT
33	Bal (2021)	Europe/Africa	Undergrad	72	Teacher (LMS)	Quantitative non-rand.	Preference scale	Students favor indirect digital CF when provided asynchronous reflection	Y / Y / Y / N / CT
34	Halim et al. (2021)	Mixed Asian	Undergrad	85	Teacher (Online)	Quantitative non-rand.	Attitude questionnaire	CF seen as useful; cognitive overload occurs with overly lengthy comments	Y / Y / Y / N / CT
35	Naghdipour & Manca (2022)	Europe/Africa	Postgrad	18	Teacher (WhatsApp)	Qualitative	Semi-structured interviews	Informal channel softens hierarchy but risks intruding on personal space	Y / Y / Y / Y / Y
36	Pourdana et al. (2020)	Mixed Asian	Undergrad	90	Teacher (Mobile)	Quantitative non-rand.	Perception & accuracy test	Metalinguistic mobile CF significantly enhances discourse marker uptake	Y / Y / Y / CT / Y
37	Suci et al. (2021)	Mixed Asian	Postgrad	22	Teacher (Google Docs)	Qualitative	Interviews & text analysis	Dialogic comment threads foster satisfaction and higher revision quality	Y / Y / Y / Y / CT
38	Zhang et al. (2021)	China	Undergrad	412	Teacher (E-Platform)	Quantitative non-rand.	Large-scale CF survey	Explicit CF overwhelmingly favored; asynchronous revisitability highly valued	Y / Y / Y / N / Y

Appendix C: Thematic Synthesis Framework & Study Distribution

Descriptive and Higher-Order Analytical Themes per Thomas & Harden (2008) Across 38 Included Studies

Descriptive Theme (Stage 2)	Higher-Order Analytical Theme (Stage 3)	Primary Focus / Core Dimension	Study Count (n / 38)	Representative Studies
1. Perceived Usefulness & Speed	Theme 1: Bifurcation of Utility across Linguistic Levels	High value placed on immediacy for surface-level grammatical and lexical corrections; utility diminishes for macro-level discourse and argumentative coherence.	**31**	Guo et al. (2021); Yang et al. (2023); Ding & Zou (2024); Zhang et al. (2021)
2. Trust, Credibility & Authority	Theme 2: Source Credibility Hierarchy & Teacher Legitimacy	Persistent deference to teacher authority; pronounced skepticism toward peer linguistic competence; calibrated trust toward AI accuracy.	**26**	He & Gao (2023); Pham et al. (2020); Sun & Huang (2023); Thi & Nikolov (2021)
3. Feedback Clarity & Interactivity	Theme 3: The Primacy of Dialogic Scaffolding over Unidirectional Correction	Strong preference for explicit, actionable explanations and conversational/threaded feedback over cryptic codes or static automated flags.	**22**	Mahapatra (2024); Ajabshir (2024); Pham (2021); Suci et al. (2021); Bal (2021)
4. Emotional Impact & Affective Safety	Theme 4: Affective Buffering in Asynchronous Digital Spaces	Digital mediation, mobile channels, and emojis alleviate writing anxiety and face-threat, fostering safer revision environments.	**19**	Chen & Hsu (2022); Luan & Quan (2025); Naghdipour & Manca (2022); Pourdana et al. (2020)
5. Cognitive Workload & Over-reliance	Theme 5: Cognitive Dependency vs. Autonomous Uptake	Risk of cognitive overload from excessively long comments; fear of losing authorial voice and uncritical over-reliance on automated tools.	**17**	Halim et al. (2021); Huang & Renandya (2020); Rad et al. (2023); Jiang & Yu (2020)