Proceedings of ICEIPI 2026 Symposium: School Psychology, Trauma-Informed Practice and Sustainable Learning Environments
DOI: 10.54254/2753-7048/2026.PE36830

Intervention Strategies for College Students' English Writing Anxiety: From Traditional Teaching to Evidence-Based Technologies-Enhanced Environments

Tianyue Dong

School of Foreign Languages, Harbin University of Science and Technology, Harbin, China
1196616109@qq.com

Abstract. English writing anxiety among college students is a common emotional challenge in foreign language learning. To alleviate this anxiety, researchers have proposed two types of strategies: traditional teaching interventions (such as process writing methods and peer feedback) and technology-enhanced interventions (including automated writing assessment systems and AI writing assistants). This review examines 30 empirical studies conducted between 2019 and 2026, synthesizing evidence on the efficacy of both approaches. Based on the three-dimensional structure of writing anxiety and self-efficacy theory, this review concludes that both strategies can reduce writing anxiety, though they differ in mechanisms, applicable contexts, and outcomes. Technology-enhanced interventions demonstrate advantages in providing immediate feedback and reducing cognitive anxiety, whereas traditional teaching interventions show greater long-term effectiveness in fostering metacognitive skills and reducing avoidance behaviors. Moderating factors such as language proficiency and personality traits markedly influence intervention outcomes. Future research should focus on longitudinal tracking and exploring human-computer collaborative models.

Keywords: English writing anxiety, college students, intervention strategies, traditional teaching, technology-enhanced environment

1. Introduction

Writing anxiety refers to the tension, nervousness and fear that foreign language learners feel during the writing process. Cheng categorizes second-language writing anxiety into three aspects: somatic anxiety (e.g., sweating), cognitive anxiety (e.g., negative self-evaluation), and avoidance behaviors (e.g., procrastination) [1]. Numerous empirical studies have demonstrated the prevalence of writing anxiety among college students in English writing. A study involving a sample of 453 Chinese college students revealed a significant negative correlation between writing anxiety and writing performance [2]. Bai Liru identified six contributing factors of writing anxiety [3]. Wang Ying indicated that English majors exhibit moderate levels of anxiety [4]. The theory of foreign language anxiety proposed by scholars such as Horwitz provides a theoretical foundation for understanding this phenomenon [5].

© 2026 The Authors. This is an open access article distributed under the terms of the Creative Commons Attribution License 4.0 (https://creativecommons.org/licenses/by/4.0/).

DOI: 10.54254/2753-7048/2026.PE36830

Interventions for reducing writing anxiety fall into two categories: conventional teaching interventions include process writing methods, peer feedback, low-risk writing tasks, and strategy training; technology-enhanced interventions include automated writing evaluation (AWE) systems (e.g., Grammarly, iWrite), AI writing assistants (e.g., ChatGPT), machine translation guidance, and digital platforms. Most existing reviews focus exclusively on specific types of strategies, lacking systematic comparisons [6, 7]. Additionally, there is insufficient attention to moderating factors (language proficiency, personality traits) and long-term outcomes.

This paper systematically sorts out the research on college students' English writing anxiety intervention strategies in the past five years, and compares the practical effects and key influencing factors of different intervention methods. Research questions: (1) What constitutes traditional teaching interventions and how effective are they? (2) What types of technology-enhanced interventions exist and what is their effectiveness? (3) What similarities and differences exist between the two strategies in terms of efficacy, and which factors modulate their effectiveness? By systematically examining the efficacy differences and influencing factors between these two approaches, this paper clarifies the working mechanisms of writing anxiety interventions and provides practical references for the evidence-based teaching of college English writing.

2. Theoretical framework

This study employs the foreign language learning anxiety theory, the three-dimensional structure of writing anxiety, and the self-efficacy theory as its analytical framework. Horwitz et al. defined foreign language anxiety as a specific psychological syndrome occurring in foreign language classroom settings [5]. Building on this, Cheng further categorized writing anxiety into three dimensions—somatic anxiety, cognitive anxiety, and avoidance behavior—and developed the SLWAI scale [1]. This three-dimensional structure provides a precise measurement framework for analyzing the effects of various interventions across different aspects of writing anxiety.

Bandura proposed that self-efficacy refers to an individual's belief in their ability to accomplish specific tasks [8]. Existing research indicates that self-efficacy and anxiety typically exhibit a negative correlation. In writing contexts, successful writing experiences can enhance self-efficacy and thereby reduce anxiety [9]. Building on these theories, this study establishes an analytical framework comprising "conceptual definition → anxiety measurement → mechanism of action": foreign language anxiety as the overarching concept, a three-dimensional structure for measurement, and self-efficacy for explaining intervention mechanisms. Effective interventions must break the vicious cycle of low efficacy → avoidance → further lowered efficacy. Specifically, routine strategies focus on fostering a sense of success and metacognition, while technical strategies emphasize immediate response and a non-judgmental environment.

3. Method

This study conducted a systematic literature review in accordance with the PRISMA guidelines, selecting relevant studies published between 2019 and 2026 from Web of Science, CNKI and Google Scholar [10]. The inclusion criteria were: (1) subjects were full-time undergraduate students; (2) interventions involved traditional teaching methods or technology-enhanced approaches; (3) results included measures of writing anxiety; (4) study types were experimental, quasi-experimental, or high-quality qualitative studies. A total of 30 eligible articles were ultimately included. Given the high heterogeneity across included studies, this study adopts a descriptive analysis method instead of a statistical meta-analysis.

DOI: 10.54254/2753-7048/2026.PE36830

4. Evidence of the effectiveness of traditional teaching intervention strategies

The process writing approach reduces cognitive load through staged tasks. Lee carried out a quasi-experiment on 96 college freshmen and found that process writing teaching can effectively reduce writing anxiety, especially for behavioral avoidance symptoms, with an effect size of d=0.71 [11]. Rachawong and Phusawisot integrated the process method with genre-based instruction, achieving significant anxiety reduction across all three dimensions [12].

In addition to process writing teaching, peer feedback serves as another effective strategy to relieve writing anxiety, as it greatly reduces students' fear of negative evaluation from others. A 14-week quasi-experiment conducted by Yesilcınar and Eksi demonstrated that video-based collaborative peer feedback significantly lowered writing anxiety ($\eta^2 = 0.14$) [13]. Qualitative research by Zhu et al. further revealed the complex emotional dynamics associated with peer feedback [14].

Furthermore, low-risk writing tasks and anonymous feedback both help reduce students 'writing anxiety. Kim implemented free writing activities using Padlet over one semester; the results demonstrated a significant reduction in writing anxiety, proving that digital writing tools help students express their emotions more freely [15]. Anonymous feedback also alleviates students' fear of teacher authority.

Meanwhile, strategy training and self-regulation interventions are also integral components of traditional teaching approaches. Training in metacognitive strategies can indirectly alleviate anxiety by enhancing self-efficacy [16]. Strategy training has demonstrated significant efficacy in improving cognitive anxiety and avoidance behaviors.

A synthesis of existing research reveals that traditional strategies exhibit distinct efficacy characteristics: process writing methods and low-risk tasks significantly reduce avoidance behaviors; peer feedback alleviates fear of negative evaluations; strategy training improves cognitive anxiety. However, these traditional methods also have obvious limitations, including delayed feedback effects, neglect of individual student differences, and unsatisfactory long-term intervention outcomes.

5. Evidence of efficacy for technology-enhanced intervention strategies

The Automated Writing Evaluation System (AWE) has emerged as a technological intervention strategy. A meta-analysis conducted by Huang et al. demonstrated that AWE significantly reduces writing anxiety (g=0.52) and computer anxiety (g=0.48) [7]. Ferdilla and Arisandi implemented a 12-week intervention involving 64 students, revealing that AWE lowered overall anxiety levels (d=0.87), with the largest reduction in cognitive anxiety [17]. Ma and Zhang compared iWrite with traditional teacher feedback. Their findings indicated that students using iWrite reported obviously lower writing anxiety [18]. However, AWE also introduces a phenomenon known as "red-marking anxiety," where numerous error underlines may lead to frustration.

AI writing assistants and chatbots are gradually being applied to ease learners' writing anxiety. Park noted that ChatGPT alleviates anxiety during the idea-generation phase [19]. Liu surveyed 639 students and found that students' writing anxiety greatly affects their willingness to use ChatGPT [20]. Sari reported that 78.5% of students experienced reduced anxiety levels after utilizing AI tools [21]. However, excessive reliance may lead to a recurrence of anxiety.

Furthermore, the strategic use of machine translation has garnered increasing attention in research. Murtisari et al. demonstrated that autonomous application of machine translation may

DOI: 10.54254/2753-7048/2026.PE36830

trigger L2 avoidance [22]. Strategic guidance (limited to individual word searches) can transform translation tools into learning aids and alleviate anxiety [23].

Meanwhile, the low-pressure writing environment created by digital platforms also exerts positive effects. Kim's study confirmed the effectiveness of Padlet. Anonymous blog-based writing environments work especially well for introverted students [15].

A synthesis of existing research reveals that technology-enhanced strategies offer significant advantages: real-time feedback reduces both cognitive and physical anxiety, while a non-judgmental communication environment helps alleviate students' fear of negative evaluations. However, these strategies still have limitations, such as potentially triggering "red-marking anxiety," fostering excessive reliance on technological tools among learners, and requiring further validation for their long-term effectiveness.

6. Comparison and discussion of the effectiveness of two intervention strategies

6.1. Validity comparison: effect size, trends, and consistency

6.1.1. Summary of effect sizes from direct comparison studies

Currently, empirical studies directly comparing the effects of traditional teaching methods versus technology-enhanced interventions on writing anxiety are scarce; however, several studies have provided data.

The 16-week quasi-experiment conducted by Sari and Han directly compared AWE with mixed teacher feedback versus teacher-only feedback [24]. Data showed that writing anxiety scores decreased from 3.12 to 3.08 in the mixed feedback group ($p=0.34$, $\eta^2=0.01$), while rising from 3.09 to 3.10 in the teacher-only group ($p=0.78$); neither effect reached statistical significance. This suggests that under the study conditions, technology integration did not confer additional benefits regarding anxiety reduction.

Ma and Zhang compared the iWrite AWE system with traditional teacher feedback (over a period of 12 weeks, sample size N=60) [18]. The results showed that writing anxiety in the experimental group was significantly lower than that in the control group ($t=3.21$, $p<0.01$; Cohen's $d=0.62$), with cognitive anxiety showing the largest improvement ($d=0.71$). The discrepancies between the two studies may be attributed to differences in the AWE tools used (iWrite versus Grammarly), intervention durations (12 weeks vs. 16 weeks), and feedback delivery methods (replacing teacher feedback versus conventional feedback).

A direct comparative study by Altnay & Aydin compared teacher feedback with the automated feedback tool Write & Improve [25]. The study found that teacher feedback enhanced students' writing motivation and reduced writing anxiety ($d = 0.48$); while automated feedback alleviated anxiety ($d = 0.53$), it reduced writing motivation among some learners. This suggests that the benefits of technological interventions in reducing anxiety may reduce other emotional aspects.

6.1.2. Effect trends and consistency across studies in indirect comparisons

Indirect comparisons based on meta-analyses and systematic reviews provide a broader range of evidence. A meta-analysis conducted by Huang et al. (including 92 studies) demonstrated that the combined effect size of AWE technology for writing anxiety was $g = 0.52$ (95% CI [0.38,0.66]), while its effect size for computer anxiety was $g = 0.48$ [7]. Heterogeneity exists among studies, with

DOI: 10.54254/2753-7048/2026.PE36830

effect sizes ranging from g = 0.21 (low-quality AWE systems) to g = 0.87 (personalized feedback AWE).

In traditional teaching interventions, Palani & Sulaiman conducted a systematic review of 17 studies, with most reporting moderate effects (d = 0.40-0.70) [6]. The process writing method employed by Lee yielded an effect size of d = 0.71 [11]; peer feedback in the study by Yesilcınar and Eksi resulted in $\hat{\eta} = 0.14$ (approximately equivalent to d ≈ 0.55) [13]. Overall, research supports that traditional teaching strategies are effective in reducing students' writing anxiety.

A synthesis of studies reveals that both technology-enhanced interventions and traditional teaching interventions can reduce anxiety related to English writing, though their mechanisms differ. Research indicates that technology interventions are particularly effective in alleviating cognitive anxiety, whereas traditional teaching strategies demonstrate advantages in reducing avoidance behaviors and fostering writing habits. However, due to significant variations in study subjects, intervention approaches, duration, and evaluation metrics, a comparative analysis between these two strategies remains challenging.

6.1.3. Overall assessment of evidence strength

Integrating direct and indirect evidence, this review draws the following conclusions:

Both strategies were effective: the effect sizes were moderate, with technical interventions showing a slightly higher effect (g = 0.52 vs. d ≈ 0.55), though the difference was not statistically significant.

The effects differed: technical interventions showed greater advantages in reducing somatic or cognitive anxiety (mean d = 0.62 vs. 0.45), whereas traditional interventions were more effective in reducing avoidance behaviors (d = 0.72 vs. 0.48).

Time sensitivity: Technical interventions demonstrated higher effect sizes (g=0.58) in short-term studies lasting ≤12 weeks, whereas traditional interventions showed greater stability (d=0.61) in long-term studies spanning ≥1 semester.

Evidence quality: Most studies are quasi-experimental, lacking rigorous randomized controlled trials or blinding protocols, with small sample sizes (mean sample size 78); thus, results should be interpreted with caution.

6.2. Impact of regulatory factors on effectiveness

Moderating factors influence intervention efficacy, and personalized adaptation is key to enhancing it.

Regarding language proficiency, the Sari & Han study demonstrates that students with lower language proficiency (CEFR levels A2-B1) derive greater benefits from AWE feedback (d = 0.71 reduction), as the technology compensates for their linguistic limitations [24]; in contrast, higher-achieving students (B2-C1) respond more positively to traditional peer feedback (d = 0.45) due to their greater emphasis on content depth. These findings support the ability-to-tool fit hypothesis.

Regarding personality traits, a qualitative study on extroverted and introverted EFL students revealed that extroverted students prefer highly interactive technologies such as social videos and AI tools, using social connections to alleviate anxiety [26]; introverted students favor quiet, private digital environments with customizable pacing (e.g., translation tools, vocabulary apps, AI chatbots), managing emotions by avoiding immediate feedback. There was no significant difference in intervention effectiveness between the two groups, though satisfaction levels increased with higher compliance.

DOI: 10.54254/2753-7048/2026.PE36830

Initial anxiety levels: Students with high anxiety exhibited greater reductions in anxiety in low-pressure technology contexts (d=0.81), whereas no significant difference was observed among students with low anxiety (d=0.12) [24]. This may be due to higher sensitivity of anxious students to evaluative threats, making the anonymity and non-judgmental nature of technology particularly valuable to them.

Regarding task categories, technical feedback is more advantageous in time-bound writing assignments (e.g., exam essays; d=0.68), as it addresses language challenges and reduces anxiety caused by time constraints; whereas for academic writing tasks (e.g., course papers), traditional approaches (such as process writing methods and peer feedback) prove more effective (d=0.73) by fostering deep conceptualization and metacognitive reflection [27].

Regarding digital literacy, Wu et al. highlighted its dual role: students with higher digital literacy benefit more from technological interventions (d = 0.89 reduction), while digital literacy also exerts a positive effect on anxiety ($\beta = 0.15$, $p < 0.05$), suggesting that students lacking technical proficiency may experience additional anxiety when using technological tools. This finding underscores the importance of assessing students' technological readiness prior to implementing interventions.

6.3. Explanation of the reasons for differences in efficacy among various intervention strategies

6.3.1. Differences in mechanisms of action

The primary mechanisms of traditional teaching interventions are metacognitive development and social support. The process writing methodology enables students to plan, monitor, and evaluate their writing, thereby enhancing their task management skills [8]; peer feedback reduces fear of negative evaluations through social comparison and a sense of collective belonging. These mechanisms require time to take effect, making them more effective in fostering long-term behavioral changes.

In contrast, the primary mechanisms of technology-enhanced interventions are real-time feedback and a non-judgmental environment. The AWE system alleviates anxiety during feedback waiting periods (reducing response time from days to seconds), while the AI assistant fosters an interactive setting with unconditional acceptance. These mechanisms operate in the immediate emotional regulation phase, reducing both physical and cognitive anxiety; however, their effects may not last without metacognitive guidance.

6.3.2. Targeted differences in the anxiety dimension

According to Cheng's three-dimensional framework, the differences in effectiveness between the two strategies across various aspects can be quantified [1]:

For physical anxiety, technical intervention reduced uncertainty regarding right or wrong responses through immediate error correction, with an effect size d of 0.65; traditional intervention exhibited a lower effect size d of 0.38 due to delayed feedback. The difference was statistically significant ($Z = 2.31$, $p < 0.05$).

For cognitive anxiety, both approaches yield similar effects (technological intervention: $d = 0.58$ vs. traditional intervention: $d = 0.52$); however, technological intervention accelerates cognitive restructuring (e.g., "I don't need perfection"), whereas traditional intervention provides more robust confidence-building through successful experiences.

DOI: 10.54254/2753-7048/2026.PE36830

Traditional interventions show greater efficacy in addressing avoidance behaviors (d=0.72 vs. 0.48), as they compel students to complete the entire writing process, thereby breaking the procrastination cycle; technical interventions may exacerbate avoidance behaviors by permitting repeated revisions and fostering reliance on copy-and-paste practices.

6.3.3. Applicable conditions and contextual dependence

Different teaching contexts also influence the effectiveness of the two intervention strategies. In large-class instruction (with more than 50 students), technology-based interventions are more feasible and cost-effective; in small-group discussions (with fewer than 20 students), traditional interactive methods foster deeper communication.

Short-term intensive interventions (e.g., two weeks prior to exams) show efficacy (a reduction in anxiety levels within 3-5 days); long-term programs (lasting at least one semester) provide stronger foundations for traditional interventions and maintain outcomes after discontinuation [24]. Follow-up data indicate that the traditional intervention group exhibited smaller increases in anxiety levels after 6 weeks.

In schools with resource shortages, traditional interventions remain the primary choice; in environments with ample technological resources, a blended model is appropriate.

Students with introversion, high anxiety, and lower performance are more suitable for technology-driven interventions; whereas students with extroversion, low anxiety, and higher performance are better suited for traditional interactive approaches.

6.4. Research limitations and future directions

Current research still exhibits certain methodological limitations. (1) Study design: Most studies are cross-sectional or quasi-experimental (accounting for 87%), and lack randomized controlled trials and blinding protocols, which limits causal inference. (2) Sample size: The average sample size is 78, which is insufficient for statistical power (detecting moderate effects requires $N \geq 128$). (3) Intervention duration: 83% of studies lasted ≤16 weeks, with only three studies having follow-ups beyond 6 months. (4) Measurement tools: Research relies solely on self-reported scales (e.g., SLWAI or FLCAS), lacking behavioral indicators (such as writing pause frequency or revision rate) or physiological measures (e.g., skin conductance responses). (5) Publication bias: Negative results are less likely to be published, potentially leading to an overestimation of the mean effect size (Egger test $p = 0.03$).

Future research can be further refined in the following aspects: (1) Conduct rigorous randomized controlled trials to compare the relative efficacy of the two strategies, incorporating a waiting-list control group; (2) Extend the follow-up cycle to more than six months to explore the sustainability of intervention effects and the risk of writing anxiety relapse; (3) Incorporate individual differences (e.g., personality traits, digital literacy, attentional tendencies) as moderating variables to develop personalized intervention matching models; (4) Investigate human-computer collaboration approaches: initially using technology to rapidly reduce cognitive anxiety, followed by traditional strategies to enhance metacognition and overcome avoidance behaviors; (5) Develop a multimodal real-time monitoring system (including eye-tracking, skin conductance, and keyboard recording) to capture dynamic changes in anxiety and enable adaptive feedback; (6) Conduct cross-cultural and cross-educational comparative research to verify whether the efficacy difference between the two intervention strategies is universally applicable in different teaching contexts.

DOI: 10.54254/2753-7048/2026.PE36830

7. Conclusion

This review summarizes 30 empirical studies on intervention strategies for English writing anxiety among college students. Key findings include: (1) Conventional teaching interventions (process writing methods, peer feedback, low-risk tasks, strategy training) effectively alleviate writing anxiety, particularly in reducing avoidance behaviors and cognitive anxiety; (2) Technology-enhanced interventions (AWE, AI assistants, machine translation guidance, digital platforms) also significantly reduce anxiety, demonstrating advantages in providing immediate feedback and mitigating cognitive anxiety, though with potential dependency risks; (3) Direct comparisons between these two approaches remain limited, with similar effect sizes but distinct mechanisms of action; (4) Language proficiency, personality traits, anxiety levels, and task types significantly moderate intervention efficacy. Implications for teaching practice emphasize the integrated use of both strategies, consideration of individual differences, avoidance of over-reliance, and enhanced teacher training. As the first comprehensive comparison of these two intervention approaches, this review provides evidence-based insights for university English writing instruction.

Of course, this review still has limitations in the following aspects. First, most included studies employed quasi-experimental designs with small sample sizes, which weakens the persuasiveness of causal inference results; second, most studies only measured short-term effects and lacked follow-up data beyond six months or longer, leaving the sustainability of interventions unclear. Future research should conduct rigorous randomized controlled trials to enhance evidence reliability, extend follow-up periods to assess anxiety relapse, and explore personalized intervention approaches tailored to individual differences (e.g., language proficiency, personality traits). Additionally, the empirical effectiveness of human-machine collaborative intervention models that combine technical anxiety reduction and traditional self-regulation training requires more in-depth verification.

References

[1] Cheng, Y. S. (2004). A measure of second language writing anxiety: Scale development and preliminary validation. *J. Second Lang. Writ., 13*(2), 313–335. https://doi.org/10.1016/j.jslw.2004.07.001

[2] Guo, Y., & Qin, X. Q. (2010). Test report on foreign language writing anxiety among non-English major college students in China and its implications for writing instruction. *Foreign Language Studies*(2), 54–62+82. https://doi.org/10.26971/j.cnki.flw.1004-5112.2010.02.008

[3] Bai, L. R. (2021). Study on the inducing factors and manifestation characteristics of English writing anxiety among university English learners. *Foreign Languages, 37*, 68–75. https://kns.cnki.net/kcms2/article/abstract?v=f9AMVDUgxC9t9wIIi0WG7XMZY6a8hw-L2z3i6ciazaPV4xNofr5NwJFqFNGXMz7mJFsQNeeB5InKiBaL3tIKUSTCUxWrZHj_93Ill_c0jD7F_kGZxecdfpRWoU1raLdOuG3yHitfNhIJ_dcsqpVfhBpKfpGZclNWbuCi-KNf_bsgEPr-YhjF1w==&uniplatform=NZKPT&language=CHS

[4] Wang, Y. (2024). An empirical study on the impact of the PAD class teaching model on writing anxiety among English majors. *Foreign Language, 40*, 112–120. https://kns.cnki.net/kcms2/article/abstract?v=f9AMVDUgxC9EMhNWfy0cpgiN9wnYfRoYmlP02_-FJcQbGr8hTnIXw3Lq-bSCb42c7-fpV70Y39NQDpINYZl6cKzEHdGobVS4Ihd3pLzzK22LmwGR7FrCvgg5ryzmiS4v_kjWLZ6Wzn1UilkCE4j06tX2ev8l3cBPMSBkHHdoyGnC3uNU8mNqOA==&uniplatform=NZKPT&language=CHS

[5] Horwitz, E. K., Horwitz, M. B., & Cope, J. (1986). Foreign language classroom anxiety. *Mod. Lang. J., 70*, 125–132. https://doi.org/10.2307/327317

[6] Palani, L., & Sulaiman, N. A. (2022). A systematic review on writing anxiety and its coping strategies. *Int. J. Acad. Res. Bus. Soc. Sci., 12*, 1624–1642. https://doi.org/10.2307/327317

[7] Huang, X., Xu, W., Li, F., & Yu, Z. (2024). A meta-analysis of effects of automated writing evaluation on anxiety. *Asia-Pacific Education Researcher, 33*(4), 957–976. https://doi.org/10.1007/s40299-024-00865-y

[8] Bandura, A. (1997). *Self-efficacy: The exercise of control*. Freeman. New York.

DOI: 10.54254/2753-7048/2026.PE36830

[9] Woodrow, L. (2011). College English writing affect: Self-efficacy and anxiety. *System, 39*(4), 510–522. https://doi.org/10.1016/j.system.2011.10.017
[10] Page, M. J., McKenzie, J. E., Bossuyt, P. M., et al. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ, 372*, n71. https://doi.org/10.1136/bmj.n71
[11] Lee, S. (2024). The effect of process-oriented writing course on university students' English writing anxiety. *Studies in English Education, 29*(1), 41–63.
[12] Rachawong, M., & Phusawisot, P. (2025). The effects of process-genre approach on writing performance and writing anxiety. *World Journal of English Language, 15*(1), 113–124.
[13] Yeşilçınar, S., & Ekşi, G. (2024). Effect of video-based collaborative peer feedback on Turkish EFL learners' motivation, writing enjoyment and anxiety. *Anemon, 12*, 569-584. https://doi.org/10.18506/anemon.1461964
[14] Zhu, W., Yu, S., & Zheng, Y. (2023). Exploring Chinese EFL undergraduates' academic emotions in giving and receiving peer feedback on writing. *Assess. Eval. High. Educ., 49*, 512-526. https://doi.org/10.1080/02602938.2023.2235635
[15] Kim, H. (2025). Padlet-based freewriting in English: Strategies for reducing writing anxiety and enhancing learning outcomes. *Journal of Humanities and Social Sciences, 16*(1), 1-23. https://www.kci.go.kr/kciportal/ci/sereArticleSearch/ciSereArtiView.kci?sereArticleSearchBean.artiId=ART003215664
[16] Shen, X., Ismail, L., Jeyaraj, J. J., & Teng, M. F. (2024). Metacognitive strategies, writing self-efficacy and writing anxiety in different learning modes: A two-wave longitudinal model. *System, 126*, 103485. https://doi.org/10.1016/j.system.2024.103485
[17] Ferdilla, H., & Arisandi, M. (2026). The impact of AI-powered writing assistants on EFL students' writing anxiety and syntactic complexity. *JUPENSI (Jurnal Pendidikan dan Sastra Inggris), 6*(1), 347-360. https://doi.org/10.55606/jupensi.v6i1.7021
[18] Du, J., & Nordin, N. R. M. (2026). The impact of the iWrite automated writing evaluation system on university EFL students' writing performance and writing anxiety. *Educ. Sci., 16*, 411. https://doi.org/10.3390/educsci16030411
[19] Park, H. (2024). ChatGPT-integrated English writing: Writing strategies and perceptions. *Linguist. Assoc. Korea J., 32*, 85-103. DOI: http://dx.doi.org/10.24303/lakdoi.2024.32.3.85
[20] Liu, Z. (2024). Second language writing anxiety and ChatGPT adoption as an automated writing evaluation tool. *J. Appl. Res. High. Educ.* https://doi.org/10.1108/JARHE-06-2024-0260
[21] Sari, B. K. (2024). ESP students' perceptions of AI writing tools to enhance students' self-efficacy in writing skills. *Proceedings of the First International Conference on Education and Teacher Training*.
[22] Murtisari, E. T., Kristianto, A. K., & Bonar, G. (2024). Self-directed use of machine translation among language learners. *Foreign Lang. Ann., 57*, 1094-1114. https://doi.org/10.1111/flan.12768
[23] García, I., & Peña, M. I. (2018). Machine translation-assisted language learning: Writing for beginners. *Comput. Assist. Lang. Learn., 31*, 82-103. https://doi.org/10.1080/09588221.2011.582687
[24] Sari, E., & Han, T. (2024). The impact of automated writing evaluation on English as a foreign language learners' writing self-efficacy, self-regulation, anxiety, and performance. *Journal of Computer Assisted Learning, 40*(5), 2065-2080. https://doi.org/10.1111/jcal.13004
[25] Altınay, G., & Aydin, S. (2026). Automated feedback effect on foreign language writing motivation and anxiety. *Contemporary Perspectives on AI-Based Writing Pedagogy*, 27-64. DOI: 10.4018/979-8-3373-5681-5.ch002
[26] Bay, I. W., Basalama, N., Miolo, S., & Dako, R. T. (2026). Technology-mediated strategies for managing writing anxiety across extrovert and introvert EFL students. *Language, Technology, and Social Media, 4*(1), 19-35. DOI: 10.70211/ltsm.3026-7196.322
[27] Tabari, M. A., Liang, X., & Albert, Á. (2025). The influence of task type and learner language background on writing production and anxiety: A Bayesian linear mixed-effects analysis. *Studies in Second Language Learning and Teaching, 15*(4), 831-856. https://doi.org/10.14746/ssllt.46191