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AI-ASSISTED FEEDBACK AS A TOOL FOR IMPROVING STUDENTS' WRITING ACCURACY

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Abstract: Artificial intelligence (AI)-assisted feedback has become an increasingly important component of technology-enhanced writing instruction. AI-based writing tools can identify grammatical, lexical, spelling, punctuation and stylistic problems and provide learners with immediate feedback during the writing and revision processes. This thesis examines the potential of AI-assisted feedback for improving students' writing accuracy on the basis of existing empirical and meta-analytic research. Previous research on written corrective feedback demonstrates that feedback can contribute to improvements in second-language writing accuracy, although its effectiveness depends on learner proficiency, feedback type, writing task and the way learners process corrections [1], [2]. Research on automated written corrective feedback similarly indicates positive effects, while also identifying risks such as overcorrection, inaccurate error identification and cognitive overload [3]. Recent studies involving generative AI tools such as ChatGPT demonstrate that AI can provide formative feedback efficiently, although human feedback remains stronger in several dimensions of feedback quality [4], [5]. Consequently, AI-assisted feedback should be viewed not as a complete replacement for teachers but as a complementary instrument supporting noticing, revision, self-regulation and language accuracy.

Keywords: artificial intelligence, AI-assisted feedback, writing accuracy, automated written corrective feedback, EFL, ESL, ChatGPT, academic writing.

Introduction

Writing accuracy is a fundamental component of successful academic and second-language writing. It includes the appropriate use of grammar, vocabulary, spelling, punctuation and syntactic structures. For learners of English as a foreign or second language, developing accuracy requires repeated writing, opportunities for revision and meaningful feedback.

Written corrective feedback has been extensively investigated in second-language writing research. A meta-analysis of 21 primary studies found that written corrective feedback can improve grammatical accuracy in L2 writing, although its effectiveness is influenced by variables such as learner proficiency, educational context and genre [1].

The development of automated writing evaluation and generative AI has introduced new possibilities for providing feedback. Unlike traditional teacher feedback, AI-based systems can provide immediate responses and allow students to revise their texts repeatedly. Research on automated feedback has reported generally positive effects on writing performance. A three-level meta-analysis of automated feedback research reported a medium overall effect of **g = 0.55**, although substantial heterogeneity was found among studies [6].

The emergence of generative AI tools such as ChatGPT has further expanded the possibilities of AI-assisted writing feedback. These systems can identify linguistic problems, explain potential corrections and provide suggestions for revision. However, empirical research also shows that AI-generated feedback is not consistently equivalent to expert human feedback. Therefore, the

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educational value of AI-assisted feedback depends largely on how it is integrated into the learning process.

Methodology

This thesis is based on a review and synthesis of peer-reviewed research concerning written corrective feedback, automated writing evaluation, AI-generated feedback and second-language writing accuracy. The reviewed literature includes empirical studies, systematic reviews and meta-analyses published in established academic journals.

Particular attention was given to studies investigating automated written corrective feedback and generative AI feedback. The analysis focused on four major dimensions: grammatical accuracy, lexical accuracy, revision behaviour and the quality and reliability of AI-generated feedback.

No original experimental data were collected for this thesis. Accordingly, all quantitative findings presented below are derived from previously published research and are not presented as original experimental results.

Results

Existing research provides evidence that feedback can positively influence students' writing accuracy. Kang and Han's meta-analysis of 21 primary studies concluded that written corrective feedback contributes to improved grammatical accuracy in second-language writing, although its effectiveness is affected by contextual and learner-related variables [1].

Research specifically examining automated feedback has produced comparable findings. Barrot investigated automated written corrective feedback through Grammarly and reported its potential to improve college students' overall writing accuracy. The study associated these effects with increased noticing, metalinguistic explanations and self-directed learning. At the same time, the research identified problems including overcorrection, cognitive overload and limited explanations for some corrections [3].

Ranalli's investigation of automated written corrective feedback also emphasized that students may not always be able to use automated feedback effectively. Differences in the amount and usefulness of information provided for different error types and the possibility of incorrect error identification represent important limitations of automated systems [7].

A broader meta-analysis of automated feedback found a medium overall effect on students' writing performance (**g = 0.55**), while substantial heterogeneity between studies indicated that automated feedback cannot be considered a uniform instructional intervention [6].

More recent evidence concerning generative AI is also significant. Mahapatra's mixed-methods intervention study investigated ChatGPT as a formative feedback tool for undergraduate ESL students' writing development [5]. Escalante, Pack and Barrett similarly examined AI-generated feedback and students' responses to it, highlighting the growing educational potential of generative AI while emphasizing the importance of responsible implementation [4].

Research comparing AI-generated and human feedback provides an important qualification. A 2024 study comparing 200 pieces of human-generated feedback with 200 pieces of ChatGPT-generated feedback found that human feedback was superior in four of five evaluated dimensions, although differences in overall feedback quality were relatively modest and AI demonstrated potential as a time-efficient feedback instrument [8].

Analysis and Discussion

The reviewed evidence indicates that AI-assisted feedback can contribute to writing accuracy primarily by increasing the frequency and immediacy of feedback. Traditional teacher feedback is constrained by teachers' time and workload, particularly in classes with large numbers of students. AI systems can provide feedback immediately and repeatedly, allowing learners to identify and revise errors during the writing process.

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One important mechanism is **noticing**. When an AI system identifies an error and provides an explanation or alternative formulation, learners receive an opportunity to compare their original production with a proposed correction. Such comparison can promote awareness of grammatical and lexical problems. Barrot's research specifically identified noticing and metalinguistic explanation as possible mechanisms underlying the positive effects of automated corrective feedback [3].

Another important advantage is **revision support**. AI feedback can make revision an iterative process rather than a single stage occurring after teacher assessment. Students can submit revised versions and request additional explanations. Research on written corrective feedback more generally demonstrates that how learners process feedback is important. A study involving 44 learners found that both individual and collaborative processing of teacher feedback improved overall accuracy, while collaborative processing resulted in fewer verb and word-choice errors and more successful revisions [9].

Nevertheless, AI-assisted feedback has significant limitations. AI systems can produce incorrect corrections or explanations. Automated systems may also identify acceptable language as erroneous or fail to recognize context-dependent problems. Ranalli emphasized the need to anticipate inaccuracies in automated error identification [7].

Generative AI introduces an additional issue: the quality and consistency of feedback can vary depending on the prompt and the text. Comparative research has shown that ChatGPT feedback may differ from teacher feedback in accuracy, prioritization and clarity [8]. Research comparing teacher and GPT-assisted corrective feedback likewise found that teacher feedback commonly combines direct correction and indirect feedback, whereas GPT-assisted feedback often uses metalinguistic explanations and reformulation; the researchers also identified variation and redundancy in AI feedback [10].

Recent 2026 research provides further evidence that AI-assisted corrective feedback can improve accuracy but should not automatically replace teachers. Hartshorn and Pack studied 41 intermediate-high ESL learners in a 15-week program and found that both teacher-based and AI-based dynamic written corrective feedback groups improved in writing accuracy. However, the teacher-feedback group outperformed the AI group in fluency and functional adequacy, while no significant differences were found for syntactic complexity [11].

Therefore, the most appropriate pedagogical model is a **human-AI collaborative approach**. AI can handle frequent, immediate and lower-level corrective feedback, while teachers can evaluate context, communicative purpose, argumentation, organization and the appropriateness of suggested revisions. Students should also be trained to critically evaluate AI suggestions rather than accept every correction automatically.

Conclusion

AI-assisted feedback represents a promising instrument for improving students' writing accuracy. Existing empirical evidence demonstrates that automated corrective feedback can support grammatical and surface-level accuracy, encourage noticing and facilitate revision. Meta-analytic research has reported positive overall effects of automated feedback, although considerable variation exists across studies and educational contexts.

The evidence also demonstrates that AI feedback has limitations. Incorrect error identification, overcorrection, insufficient explanations and inconsistency can reduce its pedagogical value. Recent research comparing AI and teacher feedback indicates that AI should not be regarded as a universal substitute for human teachers.

Consequently, AI-assisted feedback is most effective when integrated into a structured writing process involving drafting, AI-supported feedback, critical evaluation, revision and teacher guidance. Such an approach can combine the speed and accessibility of artificial intelligence with the

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contextual and pedagogical expertise of teachers. Future educational practice should therefore focus not simply on increasing students' use of AI but on developing their ability to **critically interpret, verify and apply AI-generated feedback**.

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