

RESEARCH ARTICLE**The Effect of AI-Based Grammar Tools on English Grammar Accuracy among Undergraduate Students: A Conceptual Review**

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Abstract:

English grammar accuracy is an essential component of effective academic and professional communication. Undergraduate students are expected to produce grammatically accurate sentences in assignments, examinations, presentations, project reports, and professional correspondence. However, many English as a Foreign Language (EFL) learners experience persistent grammatical difficulties due to limited exposure to English, differences between their first language and English, inadequate opportunities for individualized feedback, and difficulties in identifying and correcting errors independently. The development of Artificial Intelligence (AI)-based grammar tools has introduced new possibilities for supporting grammar learning through automated error detection, corrective feedback, explanations, rewriting suggestions, and personalized practice. This conceptual review examines the potential effect of AI-based grammar tools on English grammar accuracy among undergraduate students. It discusses the role of AI in identifying grammatical errors, providing immediate feedback, supporting self-correction, promoting learner autonomy, and facilitating individualized learning. The review also examines limitations, including inaccurate corrections, overreliance on automated suggestions, reduced grammatical awareness, contextual limitations, privacy concerns, and academic integrity issues. The paper argues that AI-based grammar tools can be effective when used as supplementary learning resources rather than substitutes for systematic grammar instruction. A human-AI collaborative approach, in which teachers provide pedagogical guidance and students critically evaluate AI-generated feedback, is recommended for sustainable grammar development. The review concludes that responsible integration of AI tools can support grammatical accuracy while simultaneously promoting independent learning and reflective language use among undergraduate students.

Keywords: Artificial Intelligence, grammar accuracy, AI grammar tools, EFL learners, undergraduate students, automated feedback, English language learning

1. Introduction

Grammar provides the structural foundation through which ideas are expressed accurately and meaningfully. For undergraduate students, grammatical accuracy is particularly important because academic and professional communication requires clarity, precision, and coherence. Students are expected to write essays, reports, assignments, emails, project documentation, and research papers using appropriate grammatical structures.

Despite several years of formal English education, many undergraduate EFL learners continue to experience grammatical problems. Common errors include incorrect verb forms, subject-verb agreement,

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article usage, prepositions, sentence structure, tense selection, pronoun reference, punctuation, and word order. Traditional grammar teaching commonly relies on classroom explanations, exercises, textbooks, worksheets, and teacher correction. Although these approaches remain important, teachers may find it difficult to provide immediate individualized feedback to every student.

The emergence of AI-based grammar tools has created new opportunities for addressing this problem. AI-powered writing and language-learning systems can identify grammatical errors, suggest corrections, explain potential problems, and allow students to revise their writing repeatedly.

2. AI-Based Grammar Tools

AI-based grammar tools use technologies such as Natural Language Processing, machine learning, and language models to analyse written language.

These tools can identify problems related to:

- verb tense;
- subject-verb agreement;
- articles;
- prepositions;
- sentence structure;
- pronoun use;
- word order;
- punctuation;
- spelling;
- sentence clarity.

Some advanced generative AI systems can also explain why a particular grammatical construction may be inappropriate and provide alternative versions. For undergraduate learners, this creates an opportunity to move beyond simple correction toward understanding grammatical patterns.

3. Immediate Corrective Feedback

One of the major advantages of AI-based grammar tools is immediate feedback.

In traditional classroom writing, students may submit an assignment and receive corrections after several days. By contrast, AI systems can identify potential errors during or immediately after writing.

For example, if a student writes:

“She go to college every day.”

An AI grammar tool may identify the subject-verb agreement problem and suggest:

“She goes to college every day.”

More advanced systems can explain that the third-person singular subject “she” requires the verb form “goes” in the simple present tense.

Immediate feedback can help students notice errors while the writing process is still active.

4. Promoting Self-Correction

Effective grammar learning requires learners to recognize and correct their own errors.

AI tools can encourage self-correction by highlighting problematic sentences without immediately providing the correct answer.

For example, a teacher can instruct students to:

1. write a paragraph independently:

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2. use an AI grammar tool to identify possible errors;
3. analyse each suggestion;
4. decide whether the correction is appropriate;
5. revise the paragraph.

This process can promote grammatical awareness and encourage students to become active participants in editing their own work.

5. Personalized Grammar Learning

Undergraduate students possess different levels of grammatical knowledge.

Some learners may struggle with basic tense formation, while others may require support with complex sentence structures and academic writing.

AI tools can provide individualized assistance based on learners' writing.

Repeated errors can reveal areas requiring additional practice. For example, if a student frequently misuses articles, the student can request additional exercises focusing on “a,” “an,” and “the.”

This personalization can make grammar learning more targeted and efficient.

6. Grammar Explanations and Examples

AI-based systems can provide explanations at different levels of complexity.

A learner may ask:

“Why is this sentence grammatically incorrect?”

The system can explain the relevant grammatical rule and provide examples.

Students can also request contrasting examples to understand differences between structures.

For instance, learners can compare:

- “I have lived here for five years.”
- “I lived there for five years.”

The AI can explain how the present perfect and simple past differ according to context.

Such explanations may strengthen learners' grammatical knowledge when they are critically evaluated.

7. Learner Autonomy

AI grammar tools can promote learner autonomy by allowing students to practise outside the classroom.

Students can independently:

- check assignments;
- identify recurring errors;
- request grammar explanations;
- generate practice questions;
- revise sentences;
- compare alternative constructions.

This can encourage students to take greater responsibility for their English development.

However, autonomy does not mean complete independence from teachers. Learners need guidance to distinguish between appropriate and inappropriate AI suggestions.

8. AI and Academic Writing

Grammar accuracy is especially important in academic writing.

AI tools can assist students in reviewing:

- essays;
- reports;

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- project documentation;
- research papers;
- presentations;
- formal emails.

They may help identify grammatical problems that affect clarity and readability.

However, students should not use AI simply to rewrite entire assignments. Excessive rewriting can hide their actual language ability and reduce opportunities for learning.

AI should primarily function as a feedback and revision resource.

9. Limitations and Risks

AI-based grammar tools have several limitations.

Inaccurate Corrections

AI systems may occasionally identify a grammatically acceptable sentence as incorrect or fail to recognize a contextual problem.

Loss of Learner Responsibility

Students may accept corrections without understanding the underlying grammatical rule.

Overdependence

Continuous use of automated correction may prevent students from developing independent editing skills.

Contextual Limitations

Grammar is closely connected with meaning, register, discourse, and communicative purpose. Automated systems may not always understand these factors accurately.

Academic Integrity

Students may use AI to rewrite entire assignments rather than improve their own grammar knowledge.

Privacy

Uploading student writing to external AI platforms may create data-protection concerns.

These issues demonstrate the need for responsible use.

10. Role of Teachers

Teachers continue to play a central role in AI-supported grammar learning.

Teachers can:

- identify appropriate grammar objectives;
- explain grammatical concepts;
- evaluate AI suggestions;
- design corrective activities;
- monitor student progress;
- provide contextual feedback;
- assess independent grammar performance.

A useful classroom model is:

Student writing → AI feedback → Student analysis → Teacher guidance → Independent revision

This approach combines technological efficiency with human pedagogical expertise.

11. Pedagogical Implications

AI-based grammar tools can transform grammar instruction from correction-oriented learning into a more interactive revision process.

Teachers can use AI to create individualized exercises based on common student errors. Students can also

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maintain error logs documenting their recurring grammatical problems.

For example:

Error Type	Student Error	Correct Form
Tense	He go yesterday	He went yesterday
Agreement	She have a book	She has a book
Article	I bought new phone	I bought a new phone
Preposition	Interested on music	Interested in music

Such activities can help students recognize patterns rather than simply correcting individual sentences.

12. Future Research

Future empirical studies should examine the actual effectiveness of AI grammar tools through controlled or longitudinal research.

Researchers can investigate:

- grammatical accuracy;
- error reduction;
- writing quality;
- learner confidence;
- grammar awareness;
- learner autonomy;
- revision behaviour.

Comparative research can examine traditional teacher feedback, AI feedback, and combined teacher-AI feedback.

Research should also investigate whether improvements achieved through AI-assisted revision transfer to independent writing tasks where AI assistance is unavailable.

13. Conclusion

AI-based grammar tools offer significant opportunities for improving English grammar accuracy among undergraduate students. Their ability to detect errors, provide immediate feedback, explain grammatical problems, generate exercises, and support repeated revision can complement traditional grammar instruction.

The greatest educational value of these tools lies not simply in correcting errors but in encouraging students to understand why errors occur and how they can avoid similar mistakes in future writing.

Nevertheless, AI-generated feedback is not always accurate and should not be accepted without critical evaluation. Excessive dependence on automated correction may also limit the development of independent grammatical awareness.

A human-AI collaborative approach is therefore recommended. Teachers should establish learning objectives, explain grammatical concepts, evaluate AI suggestions, and monitor learner progress, while AI tools can provide immediate and individualized practice.

When integrated responsibly, AI-based grammar technologies can support undergraduate learners in

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developing greater grammatical accuracy, editing ability, confidence, and autonomy. The future of AI-supported grammar education should therefore focus not on replacing teachers but on combining AI's capacity for immediate personalized feedback with the teacher's expertise in language, context, pedagogy, and human communication.

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