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Feedback Clarity and Pedagogical Value of AI-Assisted Grammar Instruction Tools

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وضوح التغذية الراجعة والقيمة التربوية لأدوات تعليم القواعد اللغوية المدعومة بالذكاء الاصطناعي

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الملخص

تستكشف هذه الدراسة القيمة التربوية لأدوات التعليم المدعومة بالذكاء الاصطناعي في تعليم القواعد. تبحث الدراسة في وضوح التغذية الراجعة المقدمة من هذه الأدوات وتحقق في التحديات التي تواجه استخدامها في التعليم اللغوي. تركز الدراسة على تجارب معلمي اللغة الإنجليزية كلغة أجنبية وتفحص كيفية تأثير أدوات الذكاء الاصطناعي على نتائج تعلم القواعد. استخدمت الدراسة المنهج الكمي، حيث تم جمع البيانات من ٥٠ معلمًا من خلال استبيان مغلق يقيس وضوح التغذية الراجعة والقيمة التربوية والتحديات المتعلقة بأدوات القواعد المدعومة بالذكاء الاصطناعي. تؤكد النتائج على التأثير الإيجابي للأدوات المدعومة بالذكاء الاصطناعي في تدريس القواعد، وخاصة في تقديم التغذية الراجعة الفورية والفردية التي يمكن أن تساهم في عملية التعلم. ومع ذلك، هناك بعض الصعوبات التي قد تعيق استخدام هذه الأدوات مثل الحاجة إلى مزيد من الوضوح في الشرح ومواءمتها بشكل أكبر مع أهداف التدريس، وتخلص الدراسة إلى أنه مع الاستخدام الصحيح ودعم المعلمين، يمكن للذكاء الاصطناعي أن يسهم بشكل كبير في تدريس القواعد، مما يعزز تجربة التعلم.

الكلمات المفتاحية: ذكاء، اصطناعي، تغذية، راجعة، تدريس، قواعد لغة، إنجليزية، أثر، تربية.

Abstract

This research explores the pedagogical value of AI-assisted grammar instruction tools, It looks into the clarity of feedback provided by these tools and investigates the challenges faced in their utility into language education. The study focuses on the experiences of English EFL teachers and examines how AI tools impact grammar learning outcomes, The research used a quantitative approach, collecting data from 50 instructors through a close-ended questionnaire that measures the feedback clarity, pedagogical value, and challenges related with AI grammar tools. The results emphasize the positive effect of AI-assisted tools on grammar teaching, precisely in

providing real-time, individualized feedback that can contribute to the learning process. However, there are some difficulties that can hinder the use of these tools such as the need for more clarity in explaining and more alignment with the teaching goals. This study concludes that with the right utility and teacher support, AI can greatly contribute to grammar instruction, enhancing the learning experience.

Key words: Intelligence, Artificial Intelligence, Feedback, Teaching, Grammar, English, Impact, Education.

1.1 Introduction

The utilization of AI tools in language education has revolutionized grammar instruction by providing personalized and efficient learning experience, including natural language processing and machine learning, providing real-time feedback and tailoring content to individualized needs, enhancing the learning process (Kuznietsova & Kulakova, 2024). This study uses a unidimensional questionnaire to examine the clarity and pedagogical value of AI-assisted grammar tools and discusses the challenges faced by teachers in integrating these tools. 50 foreign English language instructors participated in the questionnaire to explore the study aims.

1.2 Aims of the Study

This study aims to:

1- Assessing the effectiveness of AI in providing clear feedback.
2- Identifying the pedagogical implications and value of using AI-assisted tools.
3- Exploring the challenges of AI-assisted tools in grammar instruction.

1.3 Literature Review

AI in language learning and teaching concerns the application of the state-of-the-art technology, such as natural language processing, machine learning and intelligent tutoring systems, toward the enhancement and personalization of language learning and teaching (chen et al.,2020a; Dai & Ke, 2022).

Language learning is a great example where AI can help people learn faster due to the ability to mimic real human conversations as well as scaffold individualized practice. Godwin-jones (2018) elaborates that AI tools make use of speech recognition, chatbots, and adaptive algorithms to promote learner autonomy and motivation. AI application also support self-regulated learning through assessing the performance of the learners, diagnosing the errors by the learner, and providing personalized paths of the learning (Memarian & Doleck, 2024). Furthermore, AI-facilitated conversational agents can create a virtual safe space for learners to sign in and practice speaking and listening (chen et al.,2020a; Dai & Ke,2022). Between them, they offer many different perspectives on the potential AI revolution in language learning.

In a recent study, Kucuk (2024) demonstrated that a large extent artificial intelligence (AI) plays an essential role on grammar learning in language preparatory school. In this quasi-experimental research, students of experimental

group learned grammar by AI-based tools and instructional chatbots, and conventional methods instructed students of control group. The results indicate there was 27.25% significantly different and performance gain between two groups over the 10 weeks in terms of a significant difference between AI-assisted group and traditional learning supported group at grammar. The results indicate that AI applications have the potential to improve language training by offering immediate personalized feedback, entertaining practice tasks, and they will benefit students' academic improvement in grammar education.

Beyond language teaching, the implications of AI in education include reinventing traditional pedagogy to make it more personalized, efficient and accessible. For example, AI can be leveraged to enable personalized learning environments, with content and pace tailored to the unique demands of each student's learning (Holmes et al., 2019), as well as catering to a variety of learning styles and abilities. This personalization has a positive impact in terms of student participation, motivation, and learning. furthermore, AI systems might help in the administration of administrative work (e.g., grading, attendance, recording) so that teachers are free to focus on the quality of the teaching and the direct interaction with students (Luckin et al., 2016)

The real-time feedback by AI is immensely important to efficient learning, enabling the learners to correct mistakes and cement the learning process as they proceed (Heffernan & Heffernan, 2014). Crucially, AI grows access to education by encouraging both remote and life-long learning, as it transcends geographic and temporal restrictions (Williamson, 2019). Accordingly, AI is being more and more acknowledged as an indispensable means to promoting inclusive, effective as well as quality education across the globe.

The use of AI tools in grammar classes has a variety of potential implications for teaching and classroom dynamics (Bensalem et al.,2024). AI-based grammatical checkers provide instant feedback commensurate with each student, liberating teachers from verifying routine errors, thus being able to spend more time on higher-order language skills and communicative competence. This instantaneous reporting feedback allows formative uses of assessment: teachers can quickly see where students are succeeding, where errors are being made, and how to adjust instruction. In addition, AI instruments enable individualized instruction by automatically adjusting tasks according to individual learner capabilities in ways that can enhance inclusivity in the classroom (Ifenthaler et al., 2024).

AI tools can assist educators by automating time-intensive tasks, such as grading and error identification, thereby allowing more time for interactive learning and personalized instruction tailored to individual students' needs. However, it remains essential for teachers to actively engage in providing context for AI-generated feedback, ensuring ethical deployment, and addressing challenges such as algorithmic

bias and data privacy (Bensalem, Harizi, & Boujlida, 2024; Park, 2020; Ifenthaler et al., 2024). With careful and thoughtful implementation, AI tools have the potential to enhance grammar instruction while allowing educators to retain control over the pedagogical process and the degree of learner autonomy.

Intelligent computer systems have played an increasingly important role in formative assessment in the context of language learning classrooms. These systems regularly collect learner data such as grammar accuracy, error types, use of the system and convert it into actionable analytics to help educators understand both individual and group progress (Ifenthaler et al., 2024; Holmes et al., 2019). This evidence-based method provides teachers with the opportunity to track students' progress in grammar as it occurs, to become aware of ongoing challenges in grammatical knowledge and to teach strategically towards them (Bennett, 2011; Black & Wiliam, 2009).

As Black and Wiliam (2009) stressed, feedback that is both timely and informative is essential to formative assessment and learning. AI tools facilitate feedback at scale by providing accurate, continuous assessment that is infeasible through manual practices alone. In addition, they promote evidence-based teaching and, thus, promote more effective and adaptive grammar instruction within an English as a foreign language (EFL) context (Shute, 2008).

Thus AI-powered tools relieve teachers of repetitive manual tasks—for example identifying and correcting errors and giving feedback—and this is a particular benefit in grammar teaching, where error correction tends to be monotonous (Luckin et al., 2016; Holmes et al., 2019). Such relief enables teachers to focus more on higher-order pedagogical duties such as creating communicative and contextually rich grammar tasks, scaffolding of complex language ideas, and individualized learner support (Roll & Wylie, 2016). Luckin et al. (2016) add that AI is not substituting, but augmenting teaching, and redefining roles of educators. Yet robotics and AI offer much more than simply the promise of automation of tasks such as data collection and automated feedback provision; they also reconfigure the pedagogical calculus through the entanglement of algorithms and human judgment.

This hybridization allows teachers to focus on creative, interpersonal, and strategic teaching aspects that AI cannot emulate. However, Williamson (2019) cautions that the fallout creates new challenges for educators in the form of on-going data generation, algorithmic scrutiny and intensification of the duty to account, thus transforming the teacher as a functionary into a mediator between data-driven technologies and learners inside of intricate socio-technical configurations.

1.4 Methodology

The study instrument was designed to capture the experiences of the study population in order to explore the pedagogical value and challenges of using AI in English grammar instruction. The study population included all the EFL university teachers in Iraq who teach grammar and are involved in integrating new technological trends that can be used to enhance grammar instruction. The researcher utilized a qualitative and descriptive approach to examine the study aims and find out how the study variables relate to each other. Every step in the methodology was done with the consultations and instructions of a statistical expert and was approved by him.

Data was collected through a closed-ended questionnaire with a 4-point Likert scale (always, sometimes, rarely, never). The absence of a neutral midpoint in the 4-point scale compelled respondents to make absolute choices, and this could minimize system error like response set bias. Notably, the amount of scale points had little impact on criterion-related validity, in that the 4-point scale was a valid measure in the specific empirical context and study objectives, particularly when forced-choice neutral-free format was methodologically desirable (Chang, 1994).

To collect the data for the quantitative research design, a survey was allocated to the study sample which was chosen based on the quota sampling approach, this type of sampling according to (Iliyasu et al.,2021) is common non-probability approach that depends on the questionnaire's construction instead of the population size, it reflects the survey in the population. The sample chosen for the study includes 50 EFL college instructors in Iraq.

The researcher ensured that the items aligned with the constructs being measured, making sure that the domains and items measured the theoretical content that they must measure following the principles of (Cohen & Swerdlik, 2018). After finishing the questionnaire, it was presented to group of jury members who were experts in the field of English teaching methods to evaluate the scientific representation and the linguistic phrasing of the items, the adjustments were made based on their remarks making sure that the face and content validity have been achieved (Lynn, 1986).

The researcher used a unidimensional questionnaire that measured the pedagogical value and feedback clarity of integrating AI in grammar instruction. The questionnaire included 10 items as demonstrated below.

Table "1": the questionnaire used in the study

No.	Item	Always	Sometimes	Rarely	Never
1	Feedback and corrections provided by AI grammar tools are clear and easy to understand.	☐	☐	☐	☐
2	AI grammar tools align with my teaching goals and pedagogical strategies.	☐	☐	☐	☐
3	AI feedback is valuable in helping students improve their grammar skills.	☐	☐	☐	☐
4	I need to intervene to clarify or modify AI-generated feedback for students.	☐	☐	☐	☐
5	AI grammar tools help students develop an understanding of grammar rules rather than just providing corrections.	☐	☐	☐	☐
6	AI grammar tools provide explanations alongside corrections to support learning.	☐	☐	☐	☐
7	AI feedback encourages students to reflect on and revise their writing.	☐	☐	☐	☐
8	AI-generated corrections sometimes lack context, making them confusing for students.	☐	☐	☐	☐
9	AI grammar tools provide examples to illustrate grammar rules effectively.	☐	☐	☐	☐
10	AI grammar tools support differentiated instruction for students at various skill levels.	☐	☐	☐	☐

Due to the teachers' lack of cooperation with the paper form of questionnaires, the teacher's questionnaire was distributed both manually and online through a form designed in Google Form. Overall, 50 teachers from 11 different universities in Iraq participated in filling the questionnaire. The teachers asked the researcher questions concerning several topics.

The reliability of the questionnaire and the response time allotted to each teacher were computed by the researcher. One goal of the pilot project was to determine how long it would take the teachers to finish the questionnaire. Additionally, to guarantee that teachers were given clear instructions on the questionnaire. The Statistical range for time spent filling the questionnaire by the participants in the study was determined 15–20 minutes. After that, the questionnaire was prepared for use in the second pilot research.

Pilot Study II was executed to assess the reliability and validity of the research instrument and to collect preliminary data to guide the main study design. The study had 50 individuals, classified into higher and lower groups according to their overall scores, to investigate response disparities and evaluate item discrimination.

Given the limited sample size and the ordinal characteristics of the data, nonparametric statistical techniques were utilized. The item responses of the two independent groups were compared using the Mann-Whitney U test between the two independent groups to reveal the discrimination power of each item. This method

enables rigorous analysis in the context of small sample sizes and non-normal data distributions (Mann & Whitney, 1947; Nachar, 2008) and supports the instrument and the research procedures (Kazdin, 2003)

The reliability of the questionnaire was confirmed by various methods. Face validity was established through expert analysis: a group of ten experts considered the items for their clarity and their relevance without any disagreements regarding their content. Content validity of the questionnaire was fully ensured in the processes of expert review and professional judgements so as to guarantee it was measuring the integration of AI in the language classroom the broadest range. The one-dimensional questionnaire measures educators' perceptions about feedback through clarity of instructions and pedagogy with the use of AI-assisted grammar instruction; this corresponds to the underpinning theories of the study. Construct validity was tested using item discrimination analysis, revealing that the items effectively distinguish between the teachers' experiences and perception of AI grammar tool. Furthermore, inter-item correlations supported the unidimensionality of the scale.

1.5 Findings and Discussion of the Study

The Mann-Whitney U test revealed significant differences between the upper and lower groups' perceptions of AI grammar tool feedback clarity and pedagogical value across nine of ten items, with item 8 excluded due to non-significance. The upper group consistently rated AI feedback higher, with median scores between 2.00 and 2.50, while the lower group had median scores of 1.00 for most items. The significant z-value (above 2.95) indicated strong differences, with the upper group viewing AI feedback as more comprehensible and pedagogically useful. The results highlighted the need for tailored support and clearer explanations to improve AI feedback's educational value. Further qualitative research was needed to understand the factors behind these perceptions and optimize AI feedback systems for diverse user needs.

Table "2" the results of the Mann-Whitney test

Number of Item	Mann-Whitney	Z	median	
			Upper Group	Lower Group
1	12.000	4.426	2.00	1.00
2	2.500	4.690	3.00	1.00
3	5.500	4.688	2.00	1.00
4	17.000	4.062	2.00	1.00
5	38.000	2.954	2.00	1.00
6	16.000	4.046	2.00	1.00
7	12.000	4.226	2.00	1.00
8	86.000	0.583	2.00	2.00
9	18.000	4.055	2.00	1.00
10	10.500	4.274	2.50	1.00

few difficulties within the utilization of AI in the educational process were revealed. Including item (1) AI tools should present **simpler language and step-by-**

step explanations for grammar corrections. Integrating **natural language processing (NLP)** models created to identify errors more comprehensively which can develop the quality of feedback (Zunaidah et al., 2023).

Teachers could also take an important role in **explaining AI-generated feedback** by leading students through corrections, promoting **teacher-student interaction** to enhance their understanding. Feedback shouldn't be a process that happens one time however a continuous interaction. AI tools can let learners ask questions or request explanations and give many examples for each correction (Aluthmana, 2024).

To address the difficulties of AI grammar tools' feedback clarity and pedagogical value (item 2 and 3), AI developers must focus on developing feedback clarity by using simpler language, step-by-step clarifications, and interactive qualities which let learners ask questions or request further clarification (Zunaidah et al., 2023).

Moreover, AI tools should be customizable to align with teachers' particular educational techniques and teaching aims, allowing them to adjust lettings in accordance to their curriculum and the needs of the learners (Albeihi & Rice, 2025).

Personalized learning must be a key feature as well, where AI feedback was specified to each learner's development, supporting self-regulated learning and making sure that corrections are meaningful and contextually relevant (Bender et al., 2021). Training teachers to use these tools effectively and to mediate AI feedback in a way that develops student learning will further enhance the pedagogical value of AI tools in the classroom, fostering both comprehension and skill development in grammar (Wu & Annamalai, 2025).

1.6 Conclusion

This research underscores the transformative potential of AI-assisted grammar instruction tools in enhancing the pedagogical process within English as a Foreign Language (EFL) classrooms. The findings reveal that these tools provide immediate, individualized feedback, facilitating the development of students' grammar skills and fostering learner autonomy. Despite these advantages, the study identifies key challenges, including the need for greater clarity in feedback, improved alignment with pedagogical goals, and the contextualization of AI-generated corrections. These challenges highlight the critical role of teachers in mediating AI feedback to ensure its educational value and efficacy.

The results suggest that while AI tools can significantly contribute to grammar instruction, their full potential is realized only when integrated with teacher support. Educators must actively guide students through AI-generated feedback, facilitating deeper understanding and reflection. Moreover, the study emphasizes the importance of tailoring AI tools to fit specific teaching methodologies and learner needs, thereby ensuring their relevance and effectiveness in diverse educational contexts. In light of these findings, the research advocates for further development of AI technologies and

comprehensive teacher training to optimize the impact of AI in grammar education, ultimately enhancing the overall learning experience.

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