

Utilizing ChatGPT as a Pedagogical Tool to Enhance English as a Foreign Language Learners' Basic English Grammar Competence: A Case Study at an Islamic Boarding School

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Abstract

Mastery of English sentence structure is fundamental yet challenging for EFL learners, forming the basis for effective communication and academic success. In Indonesian Islamic boarding schools, students juggling intensive religious studies and academics often have limited targeted grammar practice, intensifying difficulties with sentence construction. Although ChatGPT shows promise as a pedagogical tool in EFL contexts, prior research has largely examined university students or prolonged interventions, leaving a gap regarding its impact in short-term, intensive programs for senior high school students in boarding school settings. This study assessed ChatGPT's effectiveness in improving EFL learners' sentence structure competence. Adopting a one-group pretest-posttest design, 14 tenth-grade male students at an Islamic boarding school in Bogor, Indonesia completed a two-week intervention of daily 60-minute ChatGPT-assisted sessions on simple present tense sentence construction, incorporating guided practice and immediate feedback. Sentence structure competence was evaluated using a 15-item multiple-choice grammar test developed by the researcher, administered before and after the intervention. Results indicated statistically significant gains, with mean scores rising from 68.43 (SD = 25.922) on the pretest to 90.43 (SD = 6.418) on the posttest (mean difference = 22; $t(13) = 3.297$, $p = .006$). The Shapiro-Wilk test confirmed normality, and the large effect size underscored substantial practical significance. These findings demonstrate that even brief, intensive ChatGPT interventions can substantially enhance EFL learners' sentence structure competence. ChatGPT proves a practical, time-efficient, and engaging tool for grammar instruction in Indonesian boarding school contexts. EFL teachers are advised to incorporate structured ChatGPT activities into daily lessons to promote individualized learning and lessen teacher workload. Limitations and avenues for future research are discussed.

Keywords: boarding school; ChatGPT; English grammar; pedagogical tool; sentence structure

INTRODUCTION

In today's interconnected world, mastery of English grammar, especially sentence structure, remains one of the most essential yet persistently challenging skills for English as a Foreign Language (EFL) learners. Sentence structure serves as the foundation for clear communication, logical idea development, and academic achievement. Without a solid command of how to construct grammatically accurate and coherent sentences, learners often struggle to express complex thoughts effectively (Shaikh et al., 2023; Teng, 2024). In the Indonesian context, where

English is taught as a foreign language, many senior high school students continue to face difficulties in organizing ideas into well-formed sentences despite years of classroom instruction. This challenge becomes even more pronounced in Islamic boarding schools such as conducted at an Islamic boarding school in Bogor, Indonesia, where students must balance intensive religious studies with academic demands, often resulting in limited time for targeted language practice (Mali, 2025; Werdiningsih et al., 2024).

The present study was conducted at an Islamic boarding school in Bogor because this educational setting represents a unique context for English language learning in Indonesia. In addition to following the national senior high school curriculum, students participate in intensive religious education and structured dormitory activities, resulting in limited opportunities for focused English grammar practice. The school was also selected because the researcher serves as an English teacher at the institution and has extensive knowledge of its curriculum, learning system, students' English proficiency, and daily instructional practices. This familiarity enabled the researcher to identify persistent difficulties in students' sentence structure competence through continuous classroom observations and to design an intervention that was appropriate for the school's instructional context. Furthermore, the researcher's established role within the school facilitated the implementation of the intervention while ensuring that the learning activities reflected authentic classroom practices. These characteristics make the school an appropriate setting for examining the effectiveness of ChatGPT as a pedagogical tool for supporting grammar learning in an Islamic boarding school environment.

The emergence of generative artificial intelligence has opened new possibilities for addressing these long-standing challenges in language education. Among the various AI tools currently available, ChatGPT has rapidly gained attention as a promising pedagogical instrument. Researchers have increasingly turned their attention to its potential to provide immediate, personalized, and interactive support for grammar learning. For instance, Kucuk (2024) conducted an experimental study at Tishk International University and found that integrating ChatGPT into grammar lessons led to significant improvement in students' grammatical accuracy compared to traditional teacher-centered instruction. Similarly, Al-Obaydi et al. (2025) explored ChatGPT's role in developing core language skills among EFL college students and reported that the tool offered valuable scaffolding for sentence construction when used as both a guide and an exercise partner.

Previous studies have consistently highlighted the benefits of ChatGPT across various EFL contexts. Shaikh et al. (2023) assessed the usability of ChatGPT for formal English language learning and concluded that students rated the tool highly for tasks involving sentence building, grammar, and vocabulary development. In a different setting, Song and Song (2023) examined the impact of ChatGPT on EFL students' academic writing skills and motivation, revealing notable gains in sentence organization and overall coherence after AI-assisted instruction. Systematic reviews further strengthen these findings. Alsaedi (2024) synthesized 15 empirical studies and emphasized that ChatGPT not only enhances writing efficiency and structural accuracy but also reduces teachers' workload in providing feedback. Teng (2024) reviewed 20 key articles and recommended ChatGPT as a supportive tool for EFL writing instruction, provided it is used thoughtfully alongside human guidance. Deep et al. (2025) focused on higher education contexts and reported improvements in grammar proficiency and sentence-level fluency when ChatGPT was employed as a learning companion.

Additional empirical evidence comes from diverse cultural and educational backgrounds. Abduljawad (2024) investigated ChatGPT's impact on ESL writing in Saudi Arabian higher education and documented positive effects on sentence construction and overall text quality. Yuan and Dao (2026) examined tertiary learners' engagement with ChatGPT-assisted writing and noted

increased confidence in producing structured sentences. Alghasab (2025) introduced a training course called “ChatGPT Essentials” and found that structured pedagogical guidance helped EFL students develop better grammar skills and critical evaluation abilities. Xiao and Zhi (2023) conducted an exploratory study with Chinese EFL learners and discovered that students viewed ChatGPT as a helpful learning partner capable of offering real-time suggestions on sentence structure. Lu and Zeng (2025) further showed that ChatGPT-generated model texts significantly improved EFL students’ sentence quality when used as feedback tools. Complementary findings were reported by Jmaiel et al. (2025), who highlighted gender and major differences in how students benefited from ChatGPT in ESP writing, and by Du and Alm (2024), who applied self-determination theory to understand learners’ motivation when using the tool.

In the Indonesian context, Werdiningsih et al. (2024) revealed how master’s students strategically employed ChatGPT to refine sentence structure and enhance overall writing quality. Mali (2025) conducted a systematic review of ChatGPT use in EFL/ESL writing classrooms and identified both bright and dark sides of the technology, underscoring the need for ethical and pedagogical guidelines. Srithep (2025) discussed the pedagogical merits and potential concerns of integrating ChatGPT in EFL writing instruction, while Aljadei et al. (2025) positioned ChatGPT as an effective digital assistant for developing structural and idiomatic competence. Gai (2024) also summarized positive effects of ChatGPT on vocabulary learning, writing ability, and student motivation.

Despite the growing body of encouraging evidence, a noticeable gap remains in the literature. Most existing studies have focused on university-level learners or relatively long intervention periods (Du & Alm, 2024; Klimova et al., 2024). Very few investigations have specifically examined the impact of ChatGPT on sentence structure competence among senior high school students in Indonesian boarding school settings. Moreover, short-term interventions using a one-group pretest-posttest design have rarely been explored, particularly in contexts where students must navigate both religious and academic demands (Alsaedi, 2024; Mali, 2025). This leaves an important question unanswered regarding the practicality and effectiveness of ChatGPT in time-constrained, real-world secondary education environments in Indonesia.

To address this gap, the present study investigated the effectiveness of ChatGPT as a pedagogical tool in enhancing EFL learners’ sentence structure competence through a case study conducted at an Islamic boarding school in Bogor, Indonesia. The school was intentionally selected because it provides a distinctive educational environment in which students balance intensive religious education with the national curriculum, leaving limited time for individualized English grammar practice.

In addition, the researcher's experience as an English teacher at the school provided in-depth contextual understanding of the students’ learning needs and instructional environment, allowing the intervention to be designed and implemented in a manner that aligned with the school's existing teaching practices. The study involved 14 tenth-grade EFL learners who participated in a two-week intervention consisting of daily one-hour sessions. Specifically, this study aimed to measure the improvement in sentence structure competence before and after the ChatGPT-assisted intervention using pre-test and post-test scores. The study sought to answer the following research question: Does the utilization of ChatGPT as a pedagogical tool enhance EFL learners’ sentence structure competence following a two-week intervention at an Islamic boarding school in Bogor, Indonesia?

METHOD

Research design

This study employed a one-group pretest-posttest design. This pre-experimental quantitative design was selected to determine the effectiveness of ChatGPT as a pedagogical tool in enhancing EFL learners' sentence structure competence. The goal of this design was to examine whether there was a significant change in the participants' sentence structure scores by comparing their performance before and after the two-week intervention. A pretest was administered at the beginning of the program to measure students' initial sentence structure competence. After the two-week intervention, a posttest using the same instrument was conducted to measure any improvement. Ethical and practical concerns in a real-world boarding school classroom, such as the limited number of students and the difficulty of forming a control group, led to the selection of this design. Therefore, the study focused on within-group comparison to evaluate the impact of the ChatGPT-assisted intervention.

The relatively small number of participants reflects the characteristics of classroom-based educational research conducted in a natural school setting. Since the intervention was implemented during regular classroom instruction, the study involved only the students who were officially enrolled in the target class. Therefore, the findings should be interpreted as evidence of the effectiveness of the intervention within this specific instructional context rather than as results intended for broad statistical generalization.

Participants

The participants consisted of 14 male tenth-grade students (Class 10/1) at an Islamic boarding school in Bogor, Indonesia. The students were between 15 and 17 years of age and were learning English as a Foreign Language (EFL). Total sampling was employed because all students enrolled in the class participated in the study. The school had only one tenth-grade class that met the inclusion criteria for the intervention, making it impossible to recruit a larger sample within the same instructional setting. Consequently, the study involved the entire accessible population rather than a selected subset of students. This approach is considered appropriate for classroom-based pre-experimental research, where the objective is to evaluate the effectiveness of an instructional intervention in an authentic educational context rather than to produce statistically representative findings. Anonymity was maintained by assigning identification codes (ID-01 to ID-14) to all participants, and all students completed the intervention without any dropouts.

Table 1. Demographic summary of participants

Category	Sub-Category	Frequency (n)	Percentage (%)
Sex	Male	14	100
Age	15-16 years old	9	64.3
	17 years old	5	35.7

Instruments

The primary instrument was a grammar test consisting of 15 multiple-choice questions developed by the researcher. The test was specifically designed to measure students' sentence structure competence, with emphasis on the simple present tense. It assessed students' ability to identify correct sentence structures, apply subject-verb agreement, and construct grammatically accurate sentences. Each correct answer was scored 6.67 points, resulting in a total possible score of 100. The same test was used as both the pretest and posttest to ensure consistency in measuring improvement.

Procedures

The study was conducted at an Islamic boarding school in Bogor, Indonesia over a two-week period, with one 60-minute session held daily. The procedure consisted of three main stages. First, before the intervention began, all participants completed the 15-item grammar pretest to measure their initial sentence structure competence. Second, during the two-week intervention, students engaged in ChatGPT-assisted learning activities. Each session started with a brief reading of simple present tense material, followed by guided practice in constructing sentences. Students then used ChatGPT to check and correct their own sentences. The following prompts were provided to guide them during the sessions: “I am writing sentences in simple present tense. Please check my sentence for grammar and sentence structure mistakes and give me the corrected version with an explanation;”; “Help me practice simple present tense sentence structure. Give me 5 topics and guide me to create correct sentences using subject-verb agreement”; and “Explain why this sentence is incorrect and show me how to fix the structure: Students were encouraged to interact actively with ChatGPT, revise their sentences based on the feedback received, and discuss any difficulties with the teacher when necessary. Finally, at the end of the two-week intervention, participants completed the same 15-item grammar test as a posttest to measure improvement in their sentence structure competence.

Data analysis

To evaluate the effectiveness of the intervention, the data were analyzed by comparing the total sentence structure scores from the pretest and posttest. Descriptive statistics, including means and standard deviations, were computed to summarize the scores (Pallant, 2020). The Shapiro-Wilk test was used to check whether the difference scores were normally distributed before inferential analysis. A paired-samples t-test was conducted using SPSS. The effect size was calculated to determine the statistical and practical significance of the change from the baseline to the target score. An alpha level of 0.05 was set for all statistical tests.

RESULT AND DISCUSSION

Result

The present study examined the effectiveness of utilizing ChatGPT as a pedagogical tool to enhance EFL learners’ basic English grammar competence, with a specific focus on sentence structure. Over the two-week intervention period, 14 tenth-grade students at an Islamic boarding school in Bogor participated in daily ChatGPT-assisted learning activities. To evaluate the impact of the intervention, students completed the same 15-item grammar test before and after the treatment. The assessment was designed to measure three key components of sentence structure competence: (1) subject–verb agreement, (2) the use of verbal and nominal sentence patterns in the simple present tense, and (3) the construction of grammatically correct affirmative, negative, and interrogative sentences. Using the same instrument for both the pretest and posttest ensured that any differences in performance reflected students’ learning progress rather than variations in test difficulty. The results are presented through descriptive statistics, graphical visualizations, and inferential analysis to provide a comprehensive understanding of students’ grammatical development following the ChatGPT-assisted intervention.

The pretest evaluated students’ initial understanding of sentence structure by assessing their ability to apply subject–verb agreement, distinguish between verbal and nominal sentence patterns, and construct affirmative, negative, and interrogative sentences in the simple present tense. These grammar components represent the fundamental competencies expected from tenth-grade EFL learners and therefore served as the basis for evaluating students’ grammatical proficiency before the intervention.

As presented in Appendix A, the grammar test consisted of 15 multiple-choice items distributed across four grammar components: subject–verb agreement, verbal sentence patterns, nominal sentence patterns, and negative/interrogative sentence construction. Seven items focused on subject–verb agreement and verbal sentence construction because these are the most fundamental competencies required for tenth-grade EFL learners. The remaining items assessed students’ ability to construct nominal sentences using the verb *to be* and correctly form negative and interrogative sentences. This distribution ensured that the instrument comprehensively measured students’ sentence structure competence rather than only one aspect of grammar.

Before the implementation of the ChatGPT-assisted intervention, the participants’ sentence structure competence was assessed using a 15-item multiple-choice grammar pretest. As shown in Table 2, the pretest results revealed considerable variation in the students’ initial performance. The mean score for the 14 tenth-grade EFL learners was 68.43, with a standard deviation of 25.922. The lowest score recorded was 13, while the highest reached 100. These findings indicate that, although some students already demonstrated a relatively good command of sentence structure, the majority still faced notable difficulties in constructing grammatically accurate sentences, particularly in the simple present tense. This wide range of scores reflects the typical challenges encountered by EFL learners in Indonesian boarding schools, where students often have limited opportunities for intensive and individualized grammar practice.

Table 2. Statistics of pretest scores

N	Minimum	Maximum	Mean	Std.Deviation
14	13	100	68.43	25.922

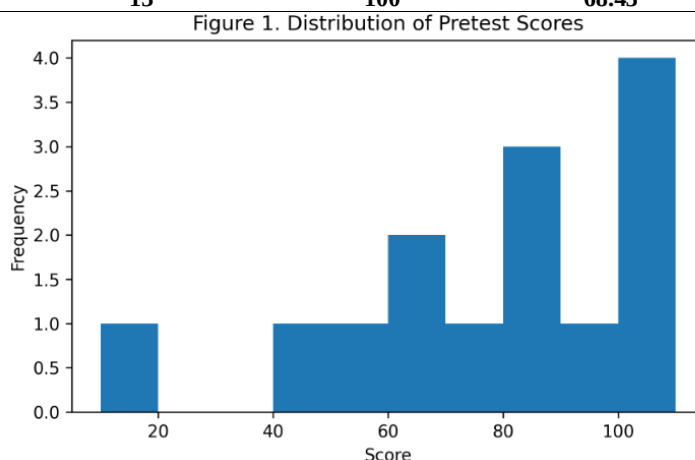


Figure 1 illustrates the distribution of students’ pretest scores prior to the ChatGPT-assisted intervention. The histogram shows considerable variation in students’ initial sentence structure competence, with scores spread across a wide range. This finding indicates that participants entered the study with diverse levels of grammatical proficiency, highlighting the need for individualized instructional support.

A more detailed analysis of students’ responses revealed that the greatest difficulties occurred in items related to subject–verb agreement and the formation of negative and interrogative sentences. Many students incorrectly selected verb forms for third-person singular subjects and confused the use of the auxiliary verbs *do* and *does*. In contrast, students showed relatively better performance on nominal sentence items involving the verb *to be*. These findings indicate that participants possessed basic grammatical knowledge but had difficulty applying grammar rules consistently in different sentence structures.

The two-week intervention was designed to explore the potential of ChatGPT as a pedagogical tool. Each day, students participated in a 60-minute session that combined brief exposure to simple present tense materials with active sentence construction practice. They were guided to write sentences and then use ChatGPT to obtain immediate feedback and corrections. This process allowed students to revise their work iteratively, fostering greater awareness of grammatical accuracy and sentence coherence. The consistent daily interaction with ChatGPT created a supportive and interactive learning environment that differed markedly from traditional teacher-centered grammar instruction.

Following the two-week ChatGPT-assisted intervention, the participants' sentence structure competence was measured again using the same 15-item grammar test as a posttest. As presented in Table 3, the results showed a substantial improvement in the students' performance. The mean posttest score increased to 90.43 (SD = 6.418), with scores ranging from a minimum of 79 to a maximum of 100. Compared to the pretest mean score of 68.43, the participants achieved an average improvement of 22 points after utilizing ChatGPT as a pedagogical tool. This marked increase indicates that the daily one-hour sessions, which combined guided sentence construction practice with immediate feedback from ChatGPT, were effective in enhancing the EFL learners' basic English grammar competence, particularly in sentence structure.

Table 3. Statistics of posttest scores

N	Minimum	Maximum	Mean	Std.Deviation
14	79	100	90.43	6.413

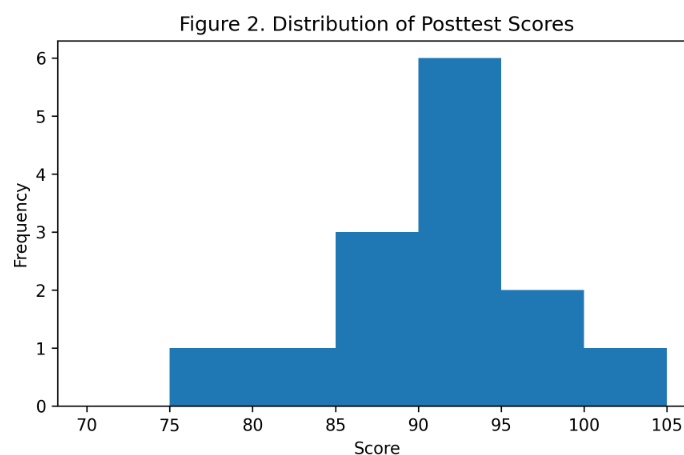


Figure 2 presents the distribution of posttest scores after the two-week intervention. Compared with the pretest, the distribution became more concentrated toward higher scores, indicating not only an improvement in overall achievement but also greater consistency in students' sentence structure competence following the ChatGPT-assisted learning activities.

Analysis of the posttest responses showed improvement across all grammar components measured in the instrument. Students demonstrated greater accuracy in applying subject-verb agreement, selecting the correct auxiliary verbs for negative and interrogative sentences, and constructing both verbal and nominal sentence patterns in the simple present tense. Compared with the pretest, grammatical errors occurred less frequently, suggesting that the immediate feedback provided by ChatGPT helped students internalize grammar rules through repeated practice.

To ensure that the data met the assumption of normality prior to conducting inferential statistics, the Shapiro-Wilk test was performed on both pretest and posttest scores. The results indicated that the pretest scores were normally distributed (Statistic = .918, df = 14, p = .207). Similarly, the posttest scores also followed a normal distribution (Statistic = .930, df = 14, p = .303). These findings confirmed that the data satisfied the normality assumption, allowing the use of parametric tests for further analysis.

A paired-samples t-test was conducted to determine whether the improvement in sentence structure scores after the intervention was statistically significant. The results are presented in Table 4. The analysis was performed using IBM SPSS Statistics. Prior to conducting the test, the normality assumption for the difference scores was confirmed through the Shapiro-Wilk test.

Table 4. Results of paired samples t-test

Comparison	Mean Diff.	SD	t	df	P
Pre - Post					.006

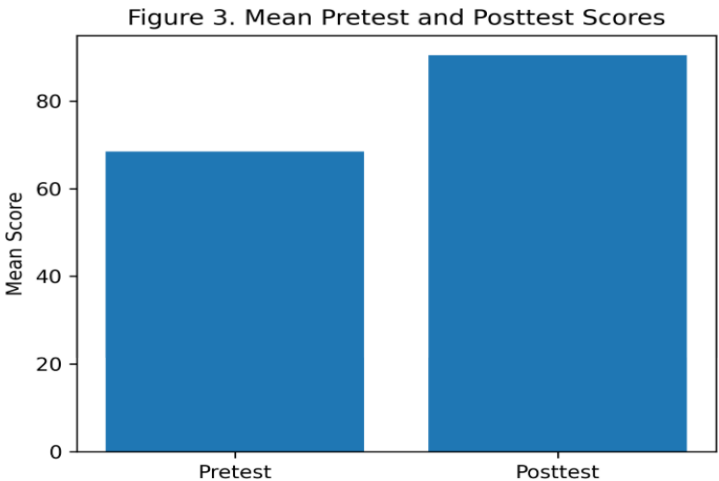


Figure 3 visually summarizes the improvement in students' sentence structure competence. The mean score increased from 68.43 in the pretest to 90.43 in the posttest, representing an average gain of 22 points after the ChatGPT-assisted intervention. The graphical comparison supports the statistical findings obtained from the paired-samples t-test.

The paired-samples t-test revealed a statistically significant improvement in students' sentence structure competence after the intervention, $t(13) = 3.297$, $p = .006$. The mean difference between posttest and pretest scores was 22.00 points (SD = 24.965). This result indicates that the utilization of ChatGPT as a pedagogical tool produced a meaningful positive effect on EFL learners' basic English grammar competence. The p-value of .006 (less than the alpha level of .05) confirms that the observed improvement is unlikely to have occurred by chance. Furthermore, the effect size (Cohen's $d = -0.881$) suggests a large practical significance of the intervention.

The statistical improvement was also reflected in students' mastery of the grammar content assessed in the test. The increase in scores was accompanied by better performance in applying subject-verb agreement, distinguishing between verbal and nominal sentence structures, and producing grammatically correct affirmative, negative, and interrogative sentences. Therefore, the improvement observed in this study represents not only higher test scores but also meaningful development in students' understanding of English sentence structure.

Discussion

Several factors appear to have contributed to this positive outcome. The improvement observed in this study was not limited to the increase in overall test scores but also reflected better mastery of the grammatical components assessed in the instrument. Students demonstrated greater consistency in applying subject–verb agreement and showed improved accuracy in constructing affirmative, negative, and interrogative sentence patterns in the simple present tense. These findings suggest that ChatGPT supported conceptual understanding of English sentence structure by providing immediate corrective feedback and opportunities for repeated practice, rather than merely improving students' test performance.

The most prominent was the personalized learning experience provided by ChatGPT. Unlike traditional classroom instruction, the tool offered immediate, individualized feedback on every sentence the students produced, allowing them to identify and correct errors in real time. This instant response mechanism helped students become more aware of their own grammatical mistakes and encouraged them to experiment with different sentence structures without fear of embarrassment. As a result, the students became more courageous in trying new sentence patterns, which is often one of the biggest barriers in grammar learning. The interactive nature of ChatGPT transformed grammar practice from a passive activity into an engaging, low-anxiety process.

These findings align well with previous research. Kucuk (2024) similarly reported significant gains in grammatical accuracy when ChatGPT was integrated into grammar lessons. Shaikh et al. (2023) and Al-Obaydi et al. (2025) also highlighted that students perceived ChatGPT as a supportive learning partner that increased their confidence and willingness to produce language. The large effect size observed in the current study further supports Teng (2024) and Alsaedi (2024), who concluded that ChatGPT can accelerate grammar development when used consistently as a pedagogical tool.

From a practical perspective, the results suggest that ChatGPT is easy to adopt in Indonesian boarding school settings. Teachers can integrate the tool into daily lessons without requiring sophisticated technology or major changes to the curriculum. Moreover, the intervention proved to be time-efficient for teachers, as ChatGPT handled much of the repetitive feedback work, allowing educators to focus more on higher-order guidance and individual student support. This is particularly valuable in boarding school environments where teachers often manage multiple responsibilities alongside academic instruction.

Despite these promising results, the study has several limitations. First, the intervention period was relatively short. Second, the focus was limited to sentence structure within the simple present tense. Third, the sample consisted of only 14 students from a single tenth-grade class at one Islamic boarding school. Although the study involved the entire accessible population through total sampling, the relatively small sample size limits the generalizability of the findings to other educational settings. Therefore, future studies should involve multiple schools and larger participant groups to further validate the effectiveness of ChatGPT in diverse EFL learning contexts.

Future research should address these limitations by employing a larger and more diverse sample, extending the intervention period, and including a control group for stronger causal evidence. Researchers could also investigate the effectiveness of ChatGPT on other grammar elements and explore its long-term impact on students' overall writing skills. Furthermore, future studies should examine students' and teachers' perceptions toward the use of ChatGPT in grammar instruction to provide deeper insights into its acceptability and motivational effects in Indonesian Islamic boarding school contexts.

In conclusion, this study contributes empirical evidence that ChatGPT can serve as an effective and practical pedagogical tool for improving sentence structure competence among EFL learners in Indonesian boarding schools. The findings offer valuable insights for teachers and curriculum developers seeking innovative ways to support grammar learning in technology-rich yet resource-constrained educational environments. Therefore, EFL teachers and school administrators are strongly encouraged to integrate structured ChatGPT-assisted activities into daily grammar lessons to enhance student engagement, promote individualized learning, and alleviate teachers' workload in similar boarding school contexts.

CONCLUSION

This study has demonstrated that ChatGPT can serve as an effective pedagogical tool for enhancing EFL learners' sentence structure competence in a remarkably short period of time. The significant improvement in students' scores from a pretest mean of 68.43 to a posttest mean of 90.43 ($p = .006$) after only two weeks of daily intervention confirms that ChatGPT is not only practical but also highly beneficial for grammar instruction in the EFL context. The findings contribute meaningfully to the growing body of knowledge on the use of artificial intelligence in Indonesian boarding schools, where students must balance religious studies with academic demands. In such an environment, ChatGPT has proven to be a valuable supplementary tool that supports individualized learning without requiring extensive additional resources. From a practical standpoint, the tool substantially reduces teachers' workload by providing immediate and consistent feedback while also being easily integrated into daily classroom routines. These benefits are especially relevant for boarding school teachers who often face time constraints and heavy teaching loads. In light of these findings, it is strongly recommended that EFL teachers and school administrators begin integrating ChatGPT into the daily curriculum through structured activities, thereby creating more engaging and effective grammar lessons while fostering greater learner autonomy and confidence. Overall, this study supports the promising role of ChatGPT as a pedagogical innovation in Indonesian EFL education and encourages wider adoption of AI-assisted learning tools in similar boarding school contexts.

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