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Research Article:

# ChatGPT in Higher Education Grammar Instruction: A Kolb's Experiential Learning Perspective

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## ABSTRACT

The role of technology in classrooms today, especially in English language acquisition, has become fundamental. This research examined students' perceptions of ChatGPT as a grammar pedagogy tool in the context of an English for Academic Purposes (EAP) course. In addition, the research analysed how ChatGPT affected learner independence and motivation, accounting for key issues such as potential dependence on the tool and the reliability of its results. Using a mixed-methods research approach, the authors gathered data through a questionnaire, focus group interviews, students' learning reflections, and an assessment of user prompt-text interactions. The results of the study suggested that, for the most part, students perceived ChatGPT as an effective resource for grammar learning and as a peer providing conversational-like engagement. However, the study has recognised the issues that still need to be solved in the context of AI-assisted language learning. This study found that AI tools like ChatGPT need to be purposefully designed and harnessed to support and strengthen learner independence and broaden their grasp of grammar.

**Keywords:** Online EFL teaching, COVID-19, digital technology and applications, social networking sites, TPACK

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## INTRODUCTION

The technology has been applied to the education field (Pratama & Chandra, 2024; Chan, 2023; Lee et al., 2023; Peters et al., 2023; Trust et al., 2023; McLeod & Richardson, 2023). In English lessons, it is used to teach some skills, such as grammar, powered by AI tools like ChatGPT and Grammarly (Mekheimer, 2025). Moreover, it became famous and widely used because AI-powered tools provide direct, interactive feedback to address students' needs (Liu et al., 2024). AI can provide quick, corrective feedback, helping autonomous learners learn with the personalised feedback they want.

There is a clear shift from the traditional feedback to real-time response feedback (Kohnke et al., 2023; Luo & Zou, 2025). Additionally, the use of technology may provide opportunities to collaborate on various software applications, which makes learners more engaged in language learning (Lee et al., 2023). Although it has many benefits, it is necessary to evaluate and investigate the drawbacks in the learning, processing, and internalisation of language competency, especially in grammar, in this term. ChatGPT appears to be implemented in English for academic purposes as well. Thus, it has found a flexible use in teaching grammar skills.

The popularity stems from its support for error detection, offering rule-based explanations that are far more elaborate, thereby driving a better understanding (Dai et al., 2023; Kohnke, 2024; Rudolph et al., 2023). ChatGPT provides extensive assistance, including engaging, personalised interaction, context-related illustrations, and metalinguistic explanations, which are then reported to aid learners in developing a better understanding of grammar compared to traditional grammar tools that deliver inadequate corrections (Watson & Romic, 2024; Liu et al., 2025).

Shaikh et al. (2023) point out that implementing ChatGPT in English learning provides learners with more opportunities to experience interactive grammatical corrections, instant and tailored writing feedback, and engaging simulated-scenario practices with AI-powered bots. Werdiningsih et al. (2024) further note that AI is a helpful tool for broadening learners' language competence, as it can adapt to users' needs in real time and emulate authentic exchanges. The contributions of ChatGPT to learners' language comprehension, covering grammatical accuracy, vocabulary development, and syntactic recognition, have been reported in several previous studies (Ali et al., 2023; Kohnke et al., 2023; Jmaiel et al., 2025). It aims to provide a helpful, neutral, and receptive learning environment that benefits the learners to experiment with language openly and receive personalised feedback instantly. Due to its advantages and flexibility, ChatGPT is a promising tool beyond the language-learning domain. Moreover, it has demonstrated its effectiveness in improving students' comprehension across numerous settings, including marketing (Iranmanesh et al., 2025), business (Pratama & Chandra, 2024), science (Adesso, 2023), and creative writing (Niloy et al., 2024). In addition, it has a particular feature that produces illustrative examples, analogies, and hypothetical scenarios. ChatGPT not only sustains student engagement but also cultivates higher-order thinking skills by fostering critical reflection and cognitive elaboration (van den Berg & du Plessis, 2023).

The potential benefits of technology in language learning, such as tools like ChatGPT, also come with new teaching and ethical considerations. One challenge of language teaching instruction is the debatable opinion about the effectiveness of explicit teaching, the direct telling of grammatical rules, compared to implicit teaching, where learners study grammar through meaningful language exposure (Thornbury, 1999; Nassaji & Fotos, 2011).

Given the paucity of research on ChatGPT in the grammar domain, this study explored learners' experiences using ChatGPT for grammar learning within an EAP context. It is vital to understand how learners interact with AI-generated content to assess its effectiveness as a learning tool, identify potential drawbacks, and examine its benefits in helping learners develop grammar competence, foster autonomy, and deepen their motivation to learn English grammar. To efficiently integrate AI into classroom practice, Kostka and Toncelli (2023) suggest that it requires a harmonious combination of human engagement, constructive feedback, and a deliberate educational framework. Hence, based on the objective of this study, there are two research questions formulated as the base of this study:

1. How do learners utilise ChatGPT for learning English grammar?
2. What are the benefits and obstacles in utilising ChatGPT to learn English grammar that learners encounter?

The results of this study are likely to provide more information on the effectiveness, ethical grounding, and learner-focused integration of AI tools in the domain of grammar at the tertiary level.

**Kolb Learning Theory Framework**

This study adopts Kolb's Experiential Learning Theory as the primary framework to examine how learners engage with ChatGPT in grammar learning. Kolb (1984) stated that knowledge is formed through the interaction between theory and experience. Similarly, Dunlap et al. (2016) emphasised that learning is a process of creating knowledge through the transformation of experience. This process requires active student involvement, in contrast to passive, instructor-centred learning approaches (Clark et al., 2010). Therefore, Kolb's Experiential Learning Cycle (ELC) serves as a relevant conceptual foundation for understanding active and reflective learning processes.

Kolb (1984) proposed that learning occurs through four interconnected stages: Concrete Experience (CE), Reflective Observation (RO), Abstract Conceptualisation (AC), and Active Experimentation (AE). CE refers to students' involvement in new experiences or in the reinterpretation of existing ones. Furthermore, RO encourages students to reflect on these experiences and identify gaps between understanding and reality. The next stage, AC, involves the formation of new concepts or understandings from reflection. Finally, in

the AE stage, students apply these concepts in new situations. These four stages form a continuous cycle in which each supports the others and contributes to meaningful learning.

Within this theoretical framework, ChatGPT is positioned as a mediating tool that facilitates each stage of Kolb's learning cycle. In the CE stage, students can interact with ChatGPT to receive direct feedback on their grammar usage. This feedback then drives the RO process, where students identify errors and evaluate their understanding. Next, through AC, students develop a deeper understanding of grammatical rules and structures by drawing on the provided explanations. This process continues in the AE stage, where students apply this understanding in various tasks with the support of ChatGPT.

The integration of ChatGPT across each stage of the ELC enables continuous feedback and more reflective learning. However, ChatGPT also has limitations, particularly in the accuracy and depth of its explanations, so the instructor's role in guiding and validating the learning process remains necessary. Nonetheless, this integration offers the potential to create a more interactive and student-centred learning environment.

Therefore, this study uses Kolb's (1984) ELC as the primary framework for understanding the learning process, with ChatGPT as a mediating tool supporting each stage of learning. This integration is expected to facilitate an active, reflective, and sustainable learning process, ultimately contributing to the improvement of students' grammatical competence.

**ChatGPT in English Learning**

ChatGPT provides spontaneous feedback; meanwhile, some researchers have said that its use depends on users' digital literacy skills, especially at the tertiary level (Pratama & Chandra, 2024; Luo & Zou, 2025). Some debatable issues arose regarding how people use AI, including ethical issues in the academic context that lead to plagiarism and students' dependence on AI (Susnjak & McIntosh, 2024). In addition, the negative impacts of technology use, such as digital dependency on self-regulation and peer relationships (McNaughton et al., 2023), have also been highlighted in recent discussions. These newly identified concerns highlight the changing need to balance traditional grammar-teaching techniques with the adoption of AI-based teaching tools, as their use encourages learner autonomy and development.

Although the research about the use of ChatGPT in education is growing (Dwivedi et al., 2023; Kasneci et al., 2023), the use of ChatGPT in the teaching of English for Academic Purposes (EAP) in grammar remains insufficiently explored, particularly in relation to how learners experience grammar learning processes across different stages of experiential learning. Previous studies have explored how ChatGPT is used for writing enhancement, feedback generation, or academic integrity issues (Cotton et al., 2023; Jeon et al., 2023), whereas little attention has been paid to how learners use it for specific linguistic components such as grammar. Some research examining learners' direct experiences with ChatGPT in language-learning contexts remains limited (Dwivedi et al., 2023; Gao et al., 2024; Pratama & Chandra, 2024; Lo et al., 2024). Despite its increasing integration into

academic writing and classroom practices, there are some drawbacks as well as the benefits. Further research on this issue is crucial to examine ChatGPT's pedagogical impacts and ensure that its application fosters meaningful learning rather than diminishing learners' critical thinking.

Recent studies on AI-assisted language learning suggest that generative AI tools such as ChatGPT have changed the nature of language learning from passive reception to interactive engagement. Unlike traditional grammar instruction, which emphasises rule-based and linear approaches (Thornbury, 1999; Nassaji & Fotos, 2011), AI creates a more interactive environment through immediate and adaptive feedback (Kasneci et al., 2023; Kohnke, 2024), allowing learners to experiment with language and refine their understanding. However, most studies focus on writing and academic integrity (Niloy et al., 2024; Susnjak, 2022), with limited attention to grammar learning. In this regard, Kolb's Experiential Learning Theory offers a useful analytical lens, as its stages align with how learners interact with ChatGPT, supporting a more process-oriented view of learning. Nevertheless, empirical research on how learners progress through these stages remains limited; therefore, this study offers a theoretically grounded analysis to better understand and optimise ChatGPT-assisted grammar learning in EAP contexts.

## METHODOLOGY

### Population, Sampling Techniques, and Samples

This study's population was one university in Indonesia. The researchers teach in higher education, specifically on a private campus where all first-semester students learn EAP. Due to the large population, the researchers used purposive sampling (Sugiyono, 2019), in which the selected students had used ChatGPT in their learning by creating a course. We searched the university's EAP instructor database and asked who had taught a class using ChatGPT. The writers compiled a list of classes. The participants were aged 18–25 and were familiar with technology-enhanced language-learning activities because the lecturer had used AI to support their English grammar learning. To get the participants for the interview, the researchers selected them based on these criteria:

1. Their willingness to voluntarily participate after filling out the questionnaire.
2. The proof of being an active user of ChatGPT or other AI tools about grammar skills.
3. The representation of various learning usages of AI for relevant experience using AI that is processed from the result of the questionnaire.

After meeting the selected participants, the researchers sent individual students a request for ethical consideration to participate in the research. 128 students agreed to participate and were provided a Google Form link to complete the questionnaire; they could withdraw

at any time. They were homogeneous, with similar educational backgrounds in their first semester in various majors at one university. The researchers ensured that this was in line with ethical considerations. We also asked if they agreed to be contacted as interview sources at a later date. Of 128 participants, 30 students agreed to be interviewed, either online or offline. Initially, the researchers attempted face-to-face interviews, but, due to time constraints, they ultimately decided to split the interviews into a hybrid format comprising both online and semi-structured offline sessions. They agreed to participate and share their opinions on AI-assisted grammar learning.

**Research Instruments**

Two research instruments were used in this study:

1. Likert scale – Questionnaire (quantitative data).
2. Semi-structured interview (qualitative data).

**Questionnaire**

The researchers developed a questionnaire based on Kolb's Experiential Learning Theory (1984). It was selected to explore students' perspectives and experiences when they use ChatGPT to study grammar in an EAP class. The questionnaire's goal is to understand how students interact with ChatGPT and how it supports their grammar learning through Kolb's (1984) ELC. The instrument consists of 20 items (4 dimensions), which are constructed to represent the four aspects in Kolb's Learning Theory, including CE, RO, AC, and AE, and Active Experimentation (Annamalai & Bervell, 2025). Since the questionnaire employed a five-point Likert scale, it ranged from 1 (strongly disagree) to 5 (strongly agree). Moreover, it is used to assess their agreement with statements about their learning to use ChatGPT in their grammar skills. The researchers used a Likert scale to collect quantitative data on their perceptions and to identify the pattern for each dimension, thereby determining the dominant learning style.

Prior to data collection, the questionnaire items were reviewed by two English lecturers to ensure the instrument's quality, readability, and relevance. One expert specialised in Applied Linguistics, while the other had expertise in Technology in Education. After reviewing, the evaluation focused on the clarity of the questionnaire items, the appropriateness of the language used, and the alignment between the items and the research objectives. Thus, the experts confirmed that the questionnaire had represented the constructs under investigation. Based on their feedback, minor revisions were made to improve the clarity and wording of several items, ensuring the questions were easily understood by participants. The statement is that each item should be in an "I statement" to enhance clarity for the participants' target.

Table 1 shows the construct of students' experience in learning with ChatGPT that is structured into four dimensions adapted from Kolb's (1984) experiential learning cycle, encompassing 20 items that reflect different stages of students' grammar learning.

**Table 1.** The item construct "Students' Experience in Learning with ChatGPT"

| Dimension (Kolb) | Learning stage description | Item code | Source |
|---|---|---|---|
| Concrete Experience (CE) | Students gain direct learning experience through interaction with ChatGPT while practicing English grammar | 1, 2, 3, 4, 5 | Kolb (1984) |
| Reflective Observation (RO) | Students reflect on their grammar learning process and evaluate the responses provided by ChatGPT | 6, 7, 8, 9, 10 | Kolb (1984) |
| Abstract Conceptualisation (AC) | Students develop understanding of grammar concepts based on explanations generated by ChatGPT | 11, 12, 13, 14, 15 | Kolb (1984) |
| Active Experimentation (AE) | Students apply grammar knowledge by testing new prompts or practicing grammar structures by ChatGPT | 16, 17, 18, 19, 20 | Kolb (1984) |

To examine the questionnaire's internal consistency, a reliability analysis was conducted using Cronbach's alpha in the Statistical Package for the Social Sciences (SPSS). This analysis was performed to ensure that the items within each dimension consistently measured the same construct. The reliability test provided evidence that the questionnaire items were sufficiently consistent and appropriate for measuring students' learning experiences when using ChatGPT for grammar learning. Based on the results, all dimensions had values greater than 0.70, indicating reliable items. Here is the detailed result of each dimension in Table 2.

**Table 2.** The result of Cronbach's alpha in the reliability test

| Dimension | Items | Cronbach's alpha | Interpretation |
|---|---|---|---|
| Concrete Experience | X1–X5 | 0.81 | Reliable |
| Reflective Observation | X6–X10 | 0.78 | Reliable |
| Abstract Conceptualisation | X11–X15 | 0.75 | Reliable |
| Active Experimentation | X16–X20 | 0.80 | Reliable |

At the core of this research lies the exploration of students' learning experiences when using ChatGPT to learn English grammar. Guided by Kolb's Experiential Learning Theory, the study examines how students engage with ChatGPT across the stages of experiential learning: CE, RO, AC, and AE. By examining these dimensions, it seeks to understand how students' interactions with AI-assisted tools support students' grammar learning processes and shape their learning strategies. Furthermore, the findings are expected to provide insights into how emerging AI technologies, such as ChatGPT, can shape students' learning experiences and enhance more effective grammar instruction in higher education.

## Semi-structured Interview

Semi-structured interviews were conducted with 30 participants, both online and offline, depending on the participants' availability and preferences. Online interviews were conducted via Zoom Cloud Meetings, while offline sessions were held at mutually agreed locations. Previous studies have indicated that semi-structured interviews enable flexible yet in-depth data collection, allowing researchers to explore participants' perspectives while maintaining alignment with research objectives (Braun & Clarke, 2021; Kallio et al., 2016).

Prior to the data collection, all participants were informed about the purpose of the study, the procedures involved, and their rights to voluntary participation, with assurances of anonymity and confidentiality. Informed consent was obtained before the interviews began, including permission to record the sessions for research purposes, in line with ethical considerations in qualitative research (Tracy, 2019). All identifiable information was removed during transcription to protect participants' privacy and enhance the credibility and trustworthiness of the findings (Nowell et al., 2017). Participants were also informed that they could withdraw from the study at any time without consequences and that they were not obligated to answer any questions they found uncomfortable.

To foster a comfortable and open environment, the researcher initiated brief rapport-building conversations prior to the interviews, which has been shown to reduce participant anxiety and encourage more authentic responses (Braun & Clarke, 2021). The interviews were guided by a set of questionnaire results aligned with the research objectives, particularly focusing on how students use ChatGPT to learn English grammar and the challenges and benefits they experience. However, additional probing and follow-up questions were used to gain deeper insights, clarify responses, and elicit examples from participants' experiences, a key characteristic of semi-structured interviews (Kallio et al., 2016). Each interview was audio-recorded and transcribed verbatim, resulting in a comprehensive dataset for analysis. The data were then analysed using thematic analysis to identify recurring patterns and themes related to students' learning practices and experiences (Braun & Clarke, 2021).

## Data Analysis

### *Quantitative data analysis*

For the quantitative data, descriptive statistics were employed to analyse the questionnaire responses, including frequencies, percentages, mean scores, and standard deviations. The mean scores were used to indicate the central tendencies of students' learning experiences with ChatGPT for English grammar, particularly along Kolb's experiential learning dimensions: CCE, RO, AC, and AE. Frequencies and percentages provided insights into the distribution patterns of responses, illustrating how often specific learning behaviours and experiences occurred among participants. These statistical measures enabled the researcher to present the data clearly and meaningfully, highlighting overall trends in how students engage with ChatGPT across the experiential learning cycle.

***Qualitative data analysis***

Qualitative data were collected through semi-structured interviews, which were audio-recorded and transcribed verbatim to ensure accuracy and completeness. The data were then analysed using thematic analysis, which allows for the identification and interpretation of patterns within qualitative data (Braun & Clarke, 2021). The analysis began with data familiarisation, followed by the generation of initial codes relevant to the research questions.

The coding process was guided by Kolb's experiential learning framework, in which the transcribed data were categorised into four main dimensions: CE, RO, AC, and AE. This approach enabled the researcher to systematically map students' experiences and understand how they interact with ChatGPT in learning English grammar across different stages of the learning cycle. The themes were then reviewed and refined to ensure internal coherence and alignment with the research objectives.

The qualitative findings complemented and provided deeper explanations of the quantitative results, offering richer insights into students' learning processes and the benefits and challenges they encountered when using ChatGPT.

Table 3 illustrates the sample schema used to code, categorise, and organise interview data according to the identified themes. The table presents selected excerpts from participants' responses alongside corresponding analytical notes and thematic classifications.

**Table 3.** Sample schema to code, arrange, and organise data (Interview) according to the themes.

| No. | Example excerpts | Analyses (note/comment) | Themes |
|---|---|---|---|
| 1 | INT5: "When I use ChatGPT, I usually ask it to check my sentences and correct my grammar mistakes. Sometimes I also ask for examples to understand better" | Self-learning behaviour: The student actively uses ChatGPT to check their grammar and request examples. It means there is a direct engagement with the tool as a learning resource. (CE – Concrete Experience) | Using ChatGPT for Grammar Practice (RQ1) |
| 2 | INT12: "After getting the answer from ChatGPT, I usually read it again and compare it with my understanding. Sometimes I feel the explanation is too complicated." | Reflective learning: The student evaluates and reflects on the responses provided by ChatGPT but experiences difficulty in understanding complex explanations (RO). | Reflection and Challenges in Understanding (RQ2) |

*(Continued on next page)*

**Table 3.** *(Continued)*

| No. | Example excerpts | Analyses (note/comment) | Themes |
|---|---|---|---|
| 3 | INT18: "ChatGPT helps me understand grammar rules more clearly because it gives explanations and examples. I feel like I can learn faster." | Perceived benefit: The student perceives ChatGPT as helpful in conceptualising grammar rules through explanations and examples (AC). | Perceived Benefits of ChatGPT (RQ2) |
| 4 | INT15: "After learning from ChatGPT, I try to use the grammar in my writing assignments or daily conversations." | Application of knowledge: The student applies learned grammar in real contexts, indicating active experimentation (AE). | Applying Grammar in Practice (RQ1) |
| 5 | INT30: "Sometimes I don't trust ChatGPT because I think the answer might be wrong, so I check it again on Google or ask my lecturer." | Challenge and critical evaluation: The student shows doubt toward ChatGPT's accuracy and seeks validation from other sources (RO). | Trust and Reliability Issues (RQ2) |

Notes: RO = reflective observation, AC = abstract conceptualisation, AE = active experimentation

## RESULTS

Table 4 shows that all aspects of Kolb's Learning Cycle have comparatively high mean scores (on the learning questionnaire, above 4.00 out of 5.00). This finding implies that when students utilised ChatGPT, they mostly experienced all four stages of Kolb's learning cycle. Furthermore, the order of average priority was led by CE (4.41). The second and the third were AE (4.36) and RO (4.30), respectively. The AC was in the last order with a score of 4.19. Although some aspects have higher scores than others, it can be inferred that they result from Kolb's learning cycle.

**Table 4.** The result of the learning cycle questionnaire

| Aspect | Mean | SD |
|---|---|---|
| Concrete Experience (CE) | 4.41 | 0.654 |
| Reflective Observation (RO) | 4.30 | 0.610 |
| Abstract Conceptualisation (AC) | 4.19 | 0.604 |
| Active Experimental (AE) | 4.36 | 0.579 |

### Student Engagement with ChatGPT for English Grammar Learning

Based on the analysis of questionnaire results, despite varying focus on the four stages of Kolb's ELC, it is beneficial for students to use ChatGPT to learn English grammar.

***Concrete Experience (CE): Interaction-driven learning as the entry point***

Concrete Experience (CE) recorded the highest mean score (M = 4.41; SD = 0.654), indicating that students predominantly engage with ChatGPT through direct interaction. However, beyond reflecting high usage, this finding reveals a shift in the entry point of learning, where students initiate learning through immediate action rather than prior instruction or observation. The prominence of CE suggests that ChatGPT functions as an on-demand learning environment, allowing students to engage in spontaneous inquiry whenever they encounter difficulties. This immediacy transforms grammar learning into a situated, need-based activity rather than a structured or sequential process.

This pattern is evident in students' responses:

> I usually ask ChatGPT to check my sentences and correct them. (INT5)

> When I don't understand grammar, I directly ask ChatGPT.(INT8)

These excerpts indicate that students rely on ChatGPT as a first-response mechanism, positioning it as an alternative to traditional resources such as textbooks or lecturers. Learning, therefore, begins with real-time problem-solving, which strengthens experiential engagement. From an experiential learning perspective, this aligns with Kolb's notion that learning starts from concrete experience. However, in this context, the experience is not naturally occurring but digitally mediated, shaped by AI's affordances. The instant feedback and conversational interface encourage repeated cycles of input and correction, reinforcing trial-and-error learning behaviour.

Nevertheless, this immediacy also introduces a critical shift in learner behaviour. Instead of struggling with uncertainty or attempting self-correction, students tend to outsource the initial cognitive effort to ChatGPT. As one participant explained:

> I prefer to ask ChatGPT first because it is faster than thinking by myself. (INT11)

This suggests that while CE is highly activated, it may reduce opportunities for productive struggle, which is often essential for deeper learning.

***Active Experimentation (AE): Expanding learning through application and validation***

Active Experimentation (AE) also demonstrated a high mean score (M = 4.36; SD = 0.579), indicating that students actively apply the knowledge gained from ChatGPT. However, this stage goes beyond simple application; it reveals how students use ChatGPT as a space for testing, validating, and refining their language.

Unlike traditional classroom settings, where experimentation is often limited by time and feedback constraints, ChatGPT enables continuous, low-risk experimentation. Students

can repeatedly test their understanding without fear of judgement, which encourages active engagement.

This is reflected in the interview data:

> After learning from ChatGPT, I try to use it in my writing.(INT15)

> I make my own sentences and ask ChatGPT if they are correct.(INT8)

These responses show that students move beyond passive reception and actively apply knowledge, a critical component of experiential learning.

However, a deeper analysis reveals that this experimentation is often feedback-dependent rather than self-regulated. Students tend to validate their output through ChatGPT rather than independently evaluate its correctness. For instance:

> I always check with ChatGPT to make sure my sentence is correct. (INT3)

This suggests that experimentation is closely tied to external validation, where ChatGPT acts as an authority that confirms correctness. While this supports accuracy, it may limit the development of internal evaluation mechanisms, such as grammatical intuition or self-editing skills. Furthermore, the ease of experimentation may lead to surface-level iteration, where students focus on producing correct sentences rather than understanding underlying grammatical systems. This reinforces the earlier finding that AC is less dominant. From a pedagogical perspective, this indicates that ChatGPT is highly effective at promoting active language use but requires structured guidance to ensure experimentation leads to meaningful learning rather than repetitive correction cycles.

***Reflective Observation (RO): Reflection as a supporting process***

Reflective Observation (M = 4.30; SD = 0.610) also shows a high level of engagement, although it remains secondary to action-oriented stages. The questionnaire results suggest that students engage in reflection, but this process is often linked to verifying correctness rather than critically analysing their learning.

Interview data further support this finding. For instance, one student noted:

> I compare my sentence with ChatGPT's correction to see what is wrong. (INT3)

Another participant added:

> After I get the answer, I read it again to understand why it is correct. (INT9)

These responses indicate that reflection occurs mainly as a follow-up activity after interaction, rather than as a deep analytical process. Students tend to focus on identifying

errors and confirming correct answers instead of exploring alternative explanations or questioning the output.

However, some students demonstrated a more critical approach by questioning the reliability of ChatGPT:

> Sometimes I'm not sure if the answer is correct, so I check it again from other sources.(INT7)

This suggests that reflective observation can also involve evaluation and scepticism, which are important for developing critical thinking skills in AI-supported learning environments.

***Abstract Conceptualisation (AC): Limited conceptual engagement***

Although students reported a relatively high level of engagement in Abstract Conceptualisation (M = 4.19; SD = 0.604), this aspect recorded the lowest mean among the four stages of Kolb's learning cycle (Table 1). This suggests that while students benefit from ChatGPT in understanding grammar, their engagement in deeper conceptual processing is comparatively less dominant. The findings indicate that students tend to rely on ChatGPT for ready-made explanations rather than constructing their own conceptual understanding. This pattern is evident in the interview data, where several participants expressed their dependence on ChatGPT's explanations:

> I usually ask ChatGPT to explain the grammar, and I just follow the explanation. (INT6)

Similarly, another student stated:

> ChatGPT already gives the answer and explanation, so I don't really think deeply about the rule. (INT10)

These responses suggest that students engage with grammar concepts at a surface level, focusing more on the output than on the underlying principles. This may explain why AC is lower compared to CE and AE, as students are less likely to independently construct grammatical rules.

Furthermore, some students reported difficulties in understanding the explanations provided by ChatGPT, particularly when the explanations were too complex:

> Sometimes the explanation is too complicated, so I just look at the example instead. (INT12)

This indicates that the quality and complexity of AI-generated explanations may influence students' ability to engage in abstract thinking. As a result, students may shift their focus from conceptual understanding to practical usage, reinforcing the dominance of CE and

Active Experimentation. From a pedagogical perspective, this finding implies that while ChatGPT is effective in facilitating immediate understanding, it does not automatically promote deep conceptual learning. Therefore, additional instructional support is needed to guide students in transforming experience into conceptual knowledge.

**Benefits in Using ChatGPT for Grammar Learning**

The benefits and challenges of using ChatGPT for English grammar learning can be interpreted through students' engagement across Kolb's ELC, while being further elaborated through thematic patterns emerging from the qualitative data. This integrated analysis highlights how ChatGPT amplifies certain stages of learning while simultaneously constraining others.

***Concrete Experience (CE): Interactive and task-based engagement***

The findings indicate that ChatGPT significantly enhances students' CE through its interactive and task-oriented nature. Students actively engage with the tool by asking questions, generating examples, and completing grammar-related tasks in a dynamic manner. This reflects a form of technology-mediated experiential learning in which experience is constructed through interaction with AI.

One participant explained, "We usually start by asking ChatGPT questions from the exercises, then it gives answers and explanations with examples" (INT3). This suggests that learners are not merely exposed to input but are actively constructing their learning experience through continuous interaction.

This interactive engagement also increases motivation and participation, as students perceive the learning process as more immediate and responsive. However, it also indicates that experience is increasingly shaped by AI-generated input rather than authentic communicative contexts.

***Active Experimentation (AE): Iterative practice and immediate feedback***

The high engagement in AE reflects students' strong tendency to apply grammatical knowledge through repeated practice. ChatGPT enables learners to test their understanding, receive instant feedback, and revise their responses, thereby creating a continuous feedback loop that supports skill development.

As one participant noted, "After I learn a rule, I try to make my own sentences and ask ChatGPT to check them" (INT11). This demonstrates that learners are actively experimenting with language and refining their output in response to feedback.

This process aligns with experiential learning principles, as students move from passive to active learning. The immediacy of feedback further reinforces learning by allowing

students to identify and correct errors in real time. As another participant stated, "It helps me correct my mistakes quickly and try again" (INT8).

***Reflective Observation (RO): Error awareness and self-monitoring***

The relatively high score in RO indicates that students engage in evaluative processes, particularly in comparing their responses with AI-generated corrections. This stage is characterised by the development of error awareness and self-monitoring strategies, which are essential for language learning.

For instance, one participant shared, "I write my sentence and then compare it with ChatGPT's correction to see what I did wrong" (INT7). This behaviour demonstrates that learners are not entirely passive but are actively reflecting on their performance.

Such practices foster learner autonomy, as students take greater responsibility for monitoring and improving their own learning. However, the depth of reflection varies, as some students rely more on surface-level comparisons than on deeper analysis of grammatical rules.

***Abstract Conceptualisation (AC): Flexible but limited concept formation***

Although ChatGPT provides opportunities for conceptual understanding, engagement in AC appears comparatively less dominant. The thematic findings suggest that while students benefit from flexible and personalised explanations, they do not always internalise underlying grammatical concepts. One participant noted, "ChatGPT can explain grammar in different ways, so it's easier to understand" (INT21), indicating the potential for supporting conceptual learning. However, this support is often externally driven rather than internally constructed. This suggests that while ChatGPT facilitates access to conceptual knowledge, it does not necessarily ensure that learners actively formulate or generalise grammatical rules on their own.

**Challenges in Using ChatGPT for Grammar Learning**

***Abstract Conceptualisation (AC): Superficial understanding and reduced cognitive effort***

The comparatively lower engagement in AC highlights a key challenge in AI-supported learning. Students tend to prioritise obtaining correct answers over understanding underlying rules, leading to surface-level learning. As one participant admitted, "I just follow the correction, but sometimes I don't really understand why it is wrong" (INT5). This indicates a reduced level of cognitive engagement, where learners rely on AI output rather than constructing their own understanding. This tendency disrupts the integrative nature of Kolb's learning cycle, weakening the transition from experience to conceptual understanding.

***Reflective Observation (RO): Limited depth of reflection***

Although students engage in reflection, the depth of this process is often limited. The reliance on automatic feedback reduces the need for critical analysis, potentially weakening reflective practices. For example, one participant stated, "I usually just check and accept the answer without thinking too much" (INT14). This suggests that reflection may become procedural rather than analytical, limiting the development of deeper linguistic awareness.

***Concrete Experience (CE): AI-mediated rather than authentic experience***

While ChatGPT enhances engagement, it also shifts the nature of experience from authentic communication to AI-mediated interaction. Students primarily interact with the system rather than with real communicative contexts, which may limit exposure to natural language use. This shift raises concerns about the ecological validity of the learning experience, as language learning becomes more tool-dependent.

***Active Experimentation (AE): Over-reliance on automated feedback***

The strong engagement in Active Experimentation is accompanied by a tendency toward over-reliance on AI feedback. Students frequently depend on ChatGPT to validate their responses, which may reduce independent problem-solving skills.

As one participant explained, "I always check with ChatGPT first before I feel confident" (INT9). This suggests that experimentation is often guided externally rather than driven by internal judgement.

***System-Level Challenges: Inconsistency and lack of human mediation***

Beyond the learning stages, several challenges emerge from the nature of AI itself. One key issue is inconsistent responses, which may lead to confusion. As noted by a participant, "Sometimes the explanation is different when I ask again" (INT18). Additionally, the lack of human interaction limits opportunities to negotiate meaning and clarify context. One participant highlighted this by stating, "With a teacher, I can ask more questions and get a clearer explanation" (INT6). These limitations indicate that, while ChatGPT is a powerful supplementary tool, it cannot fully replace human instruction.

## DISCUSSION

The research followed Kolb's ELC framework; this study examined the integration of ChatGPT into English grammar instruction. This study aimed to analyse usage patterns and identify the benefits and limitations of using ChatGPT for grammar learning among tertiary students. The data further showed that students engaged with ChatGPT to learn English grammar across all four cycles of Experiential Learning: CE, AE, RO, and AC.

This study also revealed that CE and AE gained the highest scores. This result indicates that ChatGPT is beneficial for students as an interactive medium to practice their language input, as a continual feedback provider, and as a reinforcement of functional grammar provider instead of as a sole information resource.

ChatGPT was primarily used for direct grammar manipulation tasks, as shown by the highest engagement level in the CE stage. Also, students generally submitted linguistic inputs, demanded error analysis, and weighed AI-generated explication. Such an engagement pattern aligns with experiential learning theory, which emphasises knowledge acquisition through active involvement. Kohnke (2024) and Liu et al. (2025) also reported similar results, in which ChatGPT assists students with contextual and interactive grammar exercises. Its ability to provide immediate, objective feedback in a neutral environment is likely to play a significant role in increasing students' interest and confidence in practicing grammatical structures.

The high AE score further suggests a shift in input reception from passive to active. Students applied the grammar feedback they received from ChatGPT in a new sentence construction and actively sought evaluations of their revised outputs. This finding is similar to that of Shaikh et al. (2023), suggesting that a procedural learning process occurred, as evidenced by iterative hypothesis testing and structural variation, associated with emerging competence and strengthened autonomy.

There are several benefits to learning grammar with ChatGPT. Based on the high utility scores for CE and AE, ChatGPT shows potential to enhance learners' experience and self-regulated learning. In addition, it aligns with the research by Ali et al. (2023) and Kohnke et al. (2023). The research has shown that ChatGPT offers significant advantages for promoting learner autonomy, as it provides direct feedback and interaction. The accessible, multimodal feedback from AI can accommodate various learning styles and preferences (van de Berg & du Plessis, 2023) and empower personalised grammar-learning experiences for students.

Some limitations are found, although there are several important benefits from its use, including lower AC cycle engagement. It suggests a discrepancy in students' ability to achieve deeper comprehension. Moreover, this claim is supported by prior studies by Cotton et al. (2023) and Jeon et al. (2023), which indicate a general drawback of AI learning environments. Research by Susnjak and McIntosh (2024) found that reliance on AI-generated corrections diminishes students' ability to analyse rules or consult additional resources independently. Its insensitive context feedback and the absence of dialogic human interaction also limit syntactic clarity and grammatical accuracy. These limitations highlight the need for pedagogical supervision and human mediation to foster adequate comprehension and reduce reliance on AI tools.

The essential contribution of this research lies in its integration of ChatGPT within a deliberate experiential learning framework, offering an example in exploring AI-mediated grammar instruction at higher education settings. Despite the growing study of AI tools in language education, few studies have examined the alignment of student engagement with established pedagogical models (Sun & Deng, 2025; Salinas-Navarro et al., 2024; Annamalai & Bervell, 2025). This study provides a systematic insight into ChatGPT as a catalyst for experiential learning instead of merely as an information source through mapping students' interaction with ChatGPT throughout Kolb's four stages: Concrete Experience, Reflective Observation, Abstract Conceptualisation, and Active Experimentation.

This study also limits its focus to grammar instruction, a language subskill often disregarded in broader discussions of AI-assisted learning. Adopting a mixed-methods approach, this study examines the cognitive and reflective dimensions, as well as the behavioural patterns, of learning grammar through ChatGPT, thereby addressing a noteworthy gap in the prevailing literature on AI and language pedagogy.

This study provides pedagogical implications by emphasising both the benefits and limitations of ChatGPT-assisted grammar instruction. It underscores the importance of teacher mediation and instructional design in fostering deep, AC and RO. These discoveries illuminate the effective incorporation of AI tools within a structured educational framework, encouraging balanced, theory-grounded approaches to designing learning instruction. To boost the pedagogical value of ChatGPT, the instructional framework should deliberately engage all four cycles of Kolb's experiential learning framework, starting with direct grammar interaction (CE), followed by application in writing exercises (AE), continued by guided reflection and feedback analysis (RO), and ending with formulating a rule concept (AC). Scaffolding techniques should encourage students to justify their grammatical choices and compare alternative structures, rather than simply requesting corrections. Kostka and Toncelli (2023) underscore that meaningful AI integration involves alignment with established instructional principles and interactive pedagogical elements that support critical engagement.

Based on this study's findings, it can be concluded that ChatGPT is a viable tool for facilitating experiential grammar learning within Kolb's learning framework. Its significant strength lies in promoting practical engagement and experimentation, while its drawback, in facilitating abstract reasoning and reflective analysis, underscores the necessity of measured instructional intervention. As a result, these results emphasise the significance of structured, learner-centred instructional models that incorporate AI tools, including ChatGPT. Deliberate pedagogical design is essential to ensure ethical, effective, and conceptually grounded grammar instruction in a tertiary context.

Theoretically, this study extends Kolb's Experiential Learning Theory in the context of AI-supported learning. While Kolb conceptualises learning as a balanced cycle of experience, reflection, conceptualisation, and experimentation, this study's findings demonstrate that integrating ChatGPT reshapes this cycle into a more action-oriented process. Specifically, students tend to prioritise CCE and AE. While engaging less in AC.

This imbalance suggests that ChatGPT functions as an external cognitive support, enabling learners to access ready-made explanations and immediate feedback, thereby reducing the need for deep conceptual processing. As a result, the transition from experience to conceptual understanding is not automatically achieved, challenging the assumption of a naturally occurring learning cycle.

This study contributes pedagogically by proposing a set of data-driven guidelines for integrating ChatGPT into experiential learning. The findings indicate that while students actively engage in CEe and AE, they tend to under develop AC. Therefore, educators are encouraged to design structured AI-mediated tasks that not only promote interaction and application but also explicitly facilitate reflection and conceptual understanding. These guidelines highlight the need to move beyond unstructured AI use toward intentional instructional design that aligns with the stages of experiential learning.

## CONCLUSION

This research explored the application of ChatGPT to English grammar learning in higher education through an analysis of the Kolb Experiential Learning Cycle. As a result, it showed that students were more active in the CE and AE stages when using ChatGPT as a tool for learning grammar. Thus, it implied that the use of AI supports students in becoming more independent and active. Other findings indicated moderate engagement in the RO stage, suggesting that the use of artificial intelligence can contribute to raising metalinguistic awareness. However, there was low engagement in the AC stage, which raised concerns about a limitation. This means the tool is not capable of fostering a deeper understanding of grammatical theory without educators' pedagogical intervention. To sum up, these findings confirm that AI-based tools like ChatGPT can provide a better learning experience, but this depends heavily on how carefully instructional design is implemented in the learning process. Future researchers are recommended to examine the influence of giving more varied teacher support related to the quality of student participation in every step in Kolb's learning theory, so that it can be more comprehensive.

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## CONFLICT OF INTEREST STATEMENT

The authors report there are no competing interests to declare.

## DATA AVAILABILITY STATEMENT

The data that support the findings of this study are not publicly available due to ethical restrictions and participant confidentiality.

## ETHICS STATEMENT

This study was conducted with permission from the Institute for Research and Community Service (LPPM) of Universitas Pignatelli Triputra (UPITRA). Informed consent was obtained from all participants prior to data collection. Participation was voluntary, and participants' confidentiality and anonymity were ensured. The authors declare that they have no conflict of interest.

## AUTHORS' CONTRIBUTIONS

Sangaji Yudhi Pratama: Conceptualisation, literature review, writing – original draft preparation.

Lutvy Arsanti: Data collection, formal analysis, writing – review and editing.

## STATEMENT OF ARTIFICIAL INTELLIGENCE (AI) USE

AI tools (ChatGPT, OpenAI) were used during the writing process to generate outlines, summarise relevant literature, and provide language support. The authors critically reviewed, validated, and revised all AI-generated text to ensure accuracy and academic integrity.

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