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Students' Use of Metacognitive Strategies in a Gamified English Language Classroom

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ABSTRACT

In the context of English as a Foreign Language (EFL) learning, metacognitive strategies play a vital role in fostering learner autonomy and improving learning outcomes. This study aimed to explore students' use of metacognitive strategies in a gamified EFL learning environment. A quantitative descriptive design was employed, involving 32 university-level EFL students who participated in a gamified vocabulary and grammar learning program. Data were collected through a Likert-scale questionnaire adapted from the Metacognitive Awareness Inventory and analyzed using descriptive statistics. The findings revealed that students demonstrated a moderately high use of metacognitive strategies, with a mean score of 3.87 (on a 5-point scale). Among the strategy components, planning and goal setting received the highest average (M = 4.10), followed by monitoring (M = 3.85) and evaluating (M = 3.67). These results indicate that gamified learning environments may support the development of

learners' metacognitive awareness, particularly in planning and organizing their learning processes. The study contributes to EFL pedagogy by providing preliminary evidence that integrating game-based elements in instruction can enhance students' engagement with metacognitive strategies, potentially leading to more autonomous and effective learning experiences.

Keywords: English as a Foreign Language (EFL), Gamified English Language, Metacognitive Strategies,

Introduction

In recent years, the integration of game elements into language learning environments—commonly referred to as *gamification*—has gained considerable attention for its potential to enhance student engagement, motivation, and learning outcomes (Lestari et al., 2024). In the English as a Foreign Language (EFL) context, where students often face challenges related to motivation, anxiety, and retention of vocabulary and grammar, gamified learning offers an alternative approach that makes the learning process more interactive and learner-centered (Barca & Tripaldi, 2024). While much research has emphasized the motivational and affective dimensions of gamification, fewer studies have focused on how it supports the development of learners' self-regulated learning skills particularly their metacognitive strategy use.

Metacognitive strategies refer to learners' ability to plan, monitor, and evaluate their learning processes (Huang, 2023; Yabukoshi, 2020). These strategies are essential for promoting learner autonomy, helping students take responsibility for their own learning, and adapting their approaches based on task demands and outcomes (Dewi & Wilany, 2023). In EFL classrooms, students who actively apply metacognitive strategies are more likely to become independent learners who can transfer their skills across different language tasks and contexts (Jin et al., 2023). The growing emphasis on autonomy in language learning underscores the importance of understanding how learners engage in metacognitive processes during classroom activities including those delivered through gamified platforms.

Gamified learning environments typically include features such as points, badges, leaderboards, progress tracking, immediate feedback, and goal-setting mechanisms (Oliveira et al., 2022). These elements can potentially stimulate the use of metacognitive strategies by making learning progress more visible and encouraging reflection and self-monitoring (Bhuana, 2023). For example, leaderboard rankings may prompt students to plan and monitor their participation more actively, while achievement badges can reinforce self-evaluation and goal-setting. As such, gamification may not only increase motivation but also create opportunities for learners to engage in deeper, more self-regulated forms of learning (Alotaibi, 2024).

Despite the increasing popularity of gamification in language education, empirical evidence on its impact on metacognitive strategy use particularly from the learners'

perspective remains limited. Most existing studies tend to focus on academic performance, affective outcomes, or behavioral engagement, rather than exploring how students manage their own learning cognitively and metacognitively in gamified settings. Moreover, in EFL contexts where traditional instruction is still dominant, there is a pressing need to understand how innovations like gamification align with or support metacognitive development, especially among learners who may not be accustomed to taking an active role in their learning (Alrashedi et al., 2024; Alsadoon et al., 2022).

The present study aims to address this gap by exploring how EFL students use metacognitive strategies while participating in gamified language learning activities. Unlike experimental studies that measure the effectiveness of interventions, this research adopts a descriptive approach to capture students' perceptions and reported use of metacognitive strategies during gamified instruction. Focusing on planning, monitoring, and evaluating—the three core components of metacognitive awareness—this study investigates the extent to which learners engage in these strategies and which aspects are most prominent.

This research is particularly relevant for EFL educators and instructional designers who seek to implement gamified approaches in ways that not only boost engagement but also foster critical learning strategies. By understanding how students use metacognitive strategies in gamified learning contexts, educators can make more informed decisions about designing tasks, providing feedback, and scaffolding learner autonomy.

Thus, the objective of this study is to examine the use of metacognitive strategies by EFL students engaged in gamified learning activities, using a Likert-scale questionnaire as the primary data collection tool. The analysis is limited to descriptive statistics, offering an overview of students' metacognitive behavior without attempting to establish causal relationships. The findings are expected to contribute to the growing body of research on gamification in language education by highlighting its role in supporting students' self-regulated learning processes.

Methods

This study employed a quantitative descriptive research design to investigate the use of metacognitive strategies among EFL students engaged in gamified language learning. The purpose of this design was not to test hypotheses or establish causal relationships, but rather to provide a general overview of students' reported use of metacognitive strategies within a gamified instructional context. The study focused on three key aspects of metacognition: planning, monitoring, and evaluating.

The participants consisted of 32 undergraduate students enrolled in an English course at a university in Indonesia. These students were selected using convenience sampling, as they were part of a class where gamified learning activities were regularly implemented (Creswell, 2012). Gamified instruction during the course included the use of online

- platforms such as Kahoot!, Quizizz, and Wordwall, as well as classroom-based point systems, badges, and leaderboards to reinforce participation and task completion. All participants had prior exposure to these tools and were familiar with gamified classroom dynamics.

Data were collected using a structured Likert-scale questionnaire adapted from the Metacognitive Awareness Inventory (Robillos & Bustos, 2022). The questionnaire consisted of 20 items, covering three main dimensions of metacognitive strategies: planning (6 items), monitoring (7 items), and evaluating (7 items). Each item was rated on a 5-point scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The instrument was reviewed by two experts in language education to ensure content validity and was pilot tested for clarity and reliability prior to full distribution. The internal consistency of the instrument, as measured by Cronbach's alpha, was found to be 0.87, indicating high reliability.

The questionnaire was distributed online through Google Forms and completed anonymously to ensure honest responses. Data collection took place over one week following a series of gamified instructional sessions. Students were informed of the voluntary nature of the study and gave their consent before participating. Ethical clearance was granted by the university's research ethics committee.

The collected data were analyzed using descriptive statistics in SPSS 23. For each metacognitive component (planning, monitoring, evaluating), the mean, standard deviation, minimum, and maximum scores were calculated. These statistics were used to interpret the general level of students' metacognitive strategy use. No inferential statistical analysis was conducted, in line with the descriptive nature of the research.

Results

This study aimed to explore the use of metacognitive strategies—specifically planning, monitoring, and evaluating—among students engaged in gamified EFL learning. The data were collected through a Likert-scale questionnaire and analyzed using descriptive statistics, including mean scores, standard deviations, and score ranges for each component of metacognitive strategy use. The result is shown in table 1.

Table 1. Descriptive Statistics of Metacognitive Strategy Use (N = 32)

Component	Mean	Std. Deviation	Minimum	Maximum
Planning	4.12	0.43	3.00	5.00
Monitoring	3.88	0.51	2.50	5.00
Evaluating	3.67	0.56	2.00	5.00

The descriptive statistics revealed that students reported a moderately high use of metacognitive strategies overall. The planning component had the highest mean score at

- 4.12 (SD = 0.43), indicating that most students actively prepared, set goals, and organized their learning before engaging with gamified tasks. The monitoring component followed with a mean of 3.88 (SD = 0.51), suggesting that students were regularly checking their understanding and tracking their progress during the activities. The evaluating component scored slightly lower, with a mean of 3.67 (SD = 0.56), which implies that students engaged in post-task reflection and assessment of their performance, though to a slightly lesser extent than the other two components.

The overall mean score across all metacognitive items was 3.89 (SD = 0.48), which falls within the upper-mid range of the 5-point scale, demonstrating a general tendency among learners to use metacognitive strategies during gamified English learning experiences. The score ranges for each component showed that the minimum and maximum responses spanned the full scale (from 2 to 5), indicating some variation in individual students' levels of strategy use.

These results suggest that gamified learning environments provide conditions that support the use of metacognitive strategies, particularly in helping students prepare for learning (planning) and remain aware of their understanding during tasks (monitoring). However, the relatively lower score in evaluating indicates a potential area for instructional improvement, such as integrating more explicit reflection prompts or post-activity feedback.

Discussion

The findings of this study indicate that EFL students engaged in gamified learning activities reported a moderately high use of metacognitive strategies, particularly in the areas of planning and monitoring. The highest mean score was found in the planning component, suggesting that students were proactive in setting goals, organizing materials, and preparing for tasks when participating in gamified activities. This aligns with previous research that highlights the potential of gamification to enhance learners' readiness, attention, and involvement by creating interactive and motivating learning environments (Alotaibi, 2024; Barca & Tripaldi, 2024; Lestari et al., 2024). The competitive, goal-driven nature of gamified environments may naturally foster planning behaviors, as students anticipate tasks and track progress toward rewards or achievements (Alrashedi et al., 2024).

Monitoring was also reported at a relatively high level, indicating that students were aware of their understanding and performance during the activities. This may be attributed to the real-time feedback, timers, and progress tracking commonly embedded in gamified tools such as *Kahoot!* and *Quizizz*, which allow learners to instantly recognize mistakes and adjust their strategies accordingly (Bhuana, 2023; Alsadoon et al., 2022). Such features promote ongoing self-assessment and cognitive control, which are key to effective self-regulated learning (Jin et al., 2023; Oliveira et al., 2022).

- In contrast, the evaluating component had the lowest mean score, though it still fell within a moderately high range. This suggests that while students are actively involved in planning and monitoring, fewer of them engage in systematic reflection after completing tasks. This result is consistent with prior studies indicating that post-task evaluation is often underdeveloped in language learners, especially when learning is fast-paced or heavily focused on immediate outcomes (Robillos & Bustos, 2022; Yabukoshi, 2020). The quick feedback loops of gamified learning may unintentionally de-emphasize reflection, leading students to focus on performance rather than deeper evaluation of strategies or outcomes.

The overall findings reinforce the potential of gamified EFL instruction to support the development of metacognitive awareness. Gamification appears to not only increase engagement but also create opportunities for learners to become more aware of how they learn, particularly through planning and monitoring processes (Alsadoon et al., 2022; Dewi & Wilany, 2023). However, the lower use of evaluating strategies highlights the need for teachers to provide more explicit scaffolding that encourages reflective thinking, such as post-task discussions, self-assessment checklists, or metacognitive prompts (Huang, 2023; Jin et al., 2023).

These findings offer important pedagogical implications. First, they emphasize the value of gamified learning not merely as an engagement tool, but as a means to foster strategic learning behaviors that can lead to greater learner autonomy and long-term language success (Alrashedi et al., 2024; Robillos & Bustos, 2022). Second, they suggest that while gamification naturally supports some aspects of metacognitive development—such as planning and monitoring—it may fall short in encouraging deeper evaluation without deliberate instructional intervention. EFL educators are therefore encouraged to integrate structured reflection activities alongside gamified learning to promote more balanced metacognitive growth across all strategy domains (Alotaibi, 2024; Oliveira et al., 2022).

Overall, this study contributes to a growing body of literature advocating for the thoughtful integration of metacognitive instruction in technology-enhanced and gamified learning environments. By focusing on descriptive data, it offers a baseline understanding of how students engage with metacognitive strategies in EFL classrooms and highlights areas for further pedagogical refinement and research.

Conclusion

This study explored the use of metacognitive strategies—planning, monitoring, and evaluating—among EFL students participating in gamified language learning activities. The descriptive findings revealed that students reported a moderately high level of metacognitive engagement, with planning emerging as the most frequently used strategy, followed by monitoring and evaluating. These results suggest that gamified environments can support the development of students' metacognitive awareness, particularly in terms

of goal setting and ongoing self-monitoring during learning tasks. However, the relatively lower use of evaluating strategies highlights the need for more intentional instructional design to foster post-task reflection. The study contributes to the growing understanding of how gamification in language education not only enhances engagement but also promotes strategic learning behaviors. As an exploratory, small-scale study, it offers practical insights for EFL educators aiming to integrate metacognitive support into gamified instruction, and it lays the groundwork for future research involving larger samples, longitudinal designs, or mixed-method approaches to deepen our understanding of metacognition in technology-enhanced learning contexts.

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