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AI in Gamifying English Language Teaching to College Students

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Abstract

This thesis explores the effect of using Artificial Intelligence (AI) in gamifying English Language Teaching (ELT) by evaluating the advantages and disadvantages from the perspective of college students. A mixed methods approach was utilized, and a quasi-experimental design was applied where ChatGPT is used to make a gamified lesson for 47 preparatory year students at King Abdulaziz University in Jeddah, Saudi Arabia. A questionnaire of 20 items that depends on the flow theory was distributed to the 47 students, and semi-structured interviews were conducted with five students. The results revealed that gamified AI lessons can have a positive effect on college students' participation and learning abilities, with advantages like enhancing motivation and enjoyment, activating cognitive abilities, improving classroom dynamics, and elevating the overall experience. On the other hand, some concerns were raised regarding AI's capability of providing human-like interactions with students. For example, it was felt that students experienced a "feeling of a lack of control." The thesis recommends conducting long-term studies, involving students from different age groups and contexts, exploring teachers' perspectives, and comparing traditional ELT methods with gamified AI lessons to cover a wide range of outcomes and contribute effectively to the topic.

Keywords: Artificial intelligence, gamification, English language teaching, flow theory, motivation, University/College students

1. Introduction

One of the recent is the implementation of Artificial Intelligence (AI), which is considered a prominent trend in recent years. Edmett et al. (2024, p. 16) stated in their report that there are more studies conducted on AI in the field of ELT now than five years ago since there are more AI tools available in the public domain. Alongside the rise of AI, the use of games in ELT has also gained popularity in recent years. Moreover, several famous AI tools like ChatGPT or Gemini could be used to achieve the best experience in applying gamified AI lessons if they are carefully utilized and supervised (Trust et al., 2023).

1.1. Background and Context of ELT in Saudi Arabia

Teaching English in the Kingdom of Saudi Arabia (KSA) has a long history of developments and support from the government. For a long time, there had been a college of education in many universities, which prepared and trained students to become English as a Foreign Language (EFL) teachers and work in public schools. Currently, the Saudi Vision 2030 has an important role in enhancing the education system through innovation and integration of technology, and ELT has to keep up with these developments. Al-Wossabi (2024) lists in his paper a number of traits that Saudi college students have, like their diverse backgrounds and levels. Someof them are from rural regions while others are from urban ones, where the latter have more access to different resources. In addition, a lot of classes in higher education are quite large, with some of them exceeding thirty students, which might hinder the communication aspect of the language. However, in this study, the classes that took the gamified AI lesson were around fifteen students, which is acceptable in standard EFL classrooms (Mortali, 2023). As for gamification in KSA, Jarrah et al. (2024) state that the use of gamification is aligned with the Vision 2030 in terms of promoting and evolving the learning experience to create a knowledge-based civilization, which could be achieved by implementing game elements like competition, rewards, and storytelling to increase students' motivation and engagement in acquiring new knowledge.

1.2. Statement of the Problem

Despite the growing interest in both AI and gamification individually within ELT, there is still limited empirical research on how these two elements function together in real classroom settings (Zolfaghari et al., 2025). Moreover, teachers and researchers in Saudi Arabia lack clear evidence on whether combining AI-driven tools with gamified activities enhances or obstructs the learning experience. Accordingly, many studies suggest that there is a need for further investigation on how far gamified AI lessons can affect students' motivation and engagement (Mohamed et al., 2024; Ravichandran et al., 2024; Dahri et al., 2025).

1.3. Purpose of the Study

The aim is to examine the effect of gamifying English language teaching for college students using AI, specifically ChatGPT, by exploring the advantages and disadvantages to fill the gap in the literature.

1.4. Significance of the Study

The study contributes to the trending topic of gamifying ELT using AI by providing a solid idea about the impact of applying gamified AI lessons in Saudi college classrooms. Furthermore, the findings of this study might inform teachers, supervisors, researchers, or any interested parties about what to expect and anticipate from using AI to gamify ELT in terms of students' engagement and motivation.

1.5. Research Questions

RQ1: What are the advantages of gamifying English language teaching using AI?

RQ2: What are the disadvantages of gamifying English language teaching using AI?

2. Literature Review

2.1. Theoretical Framework

Mihaly Csikszentmihalyi founded the flow theory in 1975, which is defined as the mental state where participants are fully invested and comfortable in doing certain activities without the pressure of time and space. Moreover, Csikszentmihalyi (1990) provides eight components or traits of enjoyment during flow experience: Balance between challenge and skill, immediate feedback, clear goals and rewards, merging action and awareness, losing sense of time and space, experiencing intrinsic rewards, and finally, feeling a sense of control over the task, environment, or one's own action. These components are heavily related to games or fun activities in general, which include merging AI with gamification.

2.2. AI in ELT

Artificial intelligence is the data and algorithms that are built to imitate human intelligence like visual perception, language interactions, problem-solving, decision-making, and creativity (Edmett et al., 2024; Quiroz-Vázquez & Goodwin, 2024; Oxford University Press, 2023). Influenced by this definition, many AI tools were developed; some of these tools are ChatGPT, Gemini, Replika, FLOW speak, Babble, Duolingo, Grammarly, and Criterion (Boeru, 2024; Kristiwan et al., 2024). Accordingly, all of these tools could be examples of the main technologies or domains of AI, which are the following: Machine learning, natural language processing (NLP), computer vision, speech recognition, and robotics (Mukhamediev et al., 2022).

2.2.1. Use of AI in ELT

It is important to note that most of these methods need the teacher as a moderator and a supervisor to ensure the AI programs' performance is sufficient. It works by sending prompts, which are inputs, in the form of either typical language or structured text. These prompts are , sent to an AI model to guide its output or behavior (Kim et al., 2025). For example, in many AI Chatbots and tools are used to improve fluency and increase engagement in reading. Notably, a tool named Microsoft Reading Coach, which is an AI-powered platform specializes in improving students' reading skills by authorizing them to read some texts, and then provide some instructions that improve reading fluency. Daweli and Mahyoub (2024) explored the

use of Microsoft Reading Coach, where the students had a positive reaction towards the platform and recognized some improvements in their reading abilities. Sumanding et al. (2024) conclude in their study, that AI tools like Duolingo will indeed motivate both teachers and their students to teach and learn vocabulary with enthusiasm and interest. Likewise, , ChatGPT is widely used as a writing coach and instructor, where teachers have their students write their work into the writing box and then ask for corrections and advice to improve their writing. This technique had a positive effect on students since they have immediate feedback that they can work on spontaneously (Han et al., 2023; Han et al., 2024). In addition, Grammarly is also widely used as an editor. As Amina (2024) asserted in her paper, Grammarly is very helpful in improving and motivating students to adapt academic writing skills by granting immediate feedback, reducing errors, and enhancing the quality of writing. In speaking, ELSA Speak, which is an AI-driven application that provides features like speech recognition, pronunciation, and an intonation checker, is a very reliable tool for improving speaking skills. As Karim et al. (2023) concluded in their study, ELSA Speak is very useful and motivating in enhancing students' pronunciation, intonation, and speaking ability since the app uses automatic correction during the process of speech recognition. One example is the Google text-to-speech application, which is an AI-driven tool that transforms written manuscripts to spoken utterances. This tool has a positive impact on students' listening skills. Xiao (2025) states in her paper that the implementation of AI has decreased the anxiety and demotivating atmosphere during the listening activities.

2.3. Gamification in English Language Teaching

In 2002, Nick Pelling, a game designer, created the term "gamification," but the term did not gain traction and usability until the mid-2010s (Christians, 2018). As for the definition, many scholars agreed on the definition that gamification is the utilization of game elements in a non-game context to ensure and develop participants' motivation, learning, productivity, and engagement. Some of these elements are challenges, competitions, achievement, leaderboards, points, scores, goals, progression, teams, rewards, and feedback (Hamari et al., 2014; Landers, 2014; Sailer et al., 2017). In addition, gamification is of two types, as presented by Kapp (2013); one is structural gamification, which is the utilization of game elements in the learning process without changing the original learning content. The other is Content Gamification which iInvolves changing the learning content itself so it resembles a game narrative or scenario. This includes embedding stories, characters, challenges, and playful contexts directly into the subject matter to make learning more engaging.

2.3.1. Use of Gamification in ELT

In reading, gamification is implemented in various ways as Abusa'aleek and Baniabdelrahman (2020) examine the effect of implementing gamification in reading comprehension by allowing every student to participate in activities and answer questions independently with game elements like points, leaderboards, and rewards, which had a positive effect on developing students' reading comprehension and was more effective than conventional ways. Another utilization of gamified ways in developing reading skills is the use of Kahoot, an online game platform to create quizzes and educational games, that allows the teacher to make competitive

or collaborative quizzes and share them with their students to compete without creating an account (Korkmaz & Oz, 2021). In writing, gamification elements include competitions, challenges, prizes, quizzes, and interactive feedback. , as Ahmed (2021) and Saiyed and Mevada (2024) examined in their papers the effect of utilizing varied gamification elements in writing lessons. Both papers compared the effect on two groups: an experimental group that experienced gamification and a control group that underwent the conventional ways of teaching writing. In speaking, one way is using an application or a program as a speaking partner with some gamification elements like challenges, achievements, rewards, and feedback. Farhan (2019) examines in his paper the effect of using the application Plotagon in a gamified way, which is an application that allows the speaker to create his or her scenario. The results were collected after the teacher awarded the students, which had a positive effect with enhancements in students' excitement, interest, and motivation. In addition, another way to utilize gamification is the use of competitions to bring out the best in the students. Aal-Asheakh and Saud (2024) analyze the effect of gamification in their study by applying elements like competition and rewards, where the results prove that gamification is a powerful tool that fosters interaction and engagement with excitement and motivation.

In listening, elements such as challenges, quizzes, points, levels, and progression bars could be implemented to make listening tasks and exercises more interactive and enjoyable. As Bularafa et al. (2024) examine in their study, the implementation of these game elements results in a significantly positive impact on developing critical listening skills by allowing learners to evaluate, analyze, and react to audio tracks, which also improves comprehension and retention of information. Additionally, elements like competitions, badges, leaderboards, and awards could also be used to improve the environment of listening lessons.

3. Methodology

3.1. Design

The mixed method was used to fulfill the thesis's purpose, which is exploring the advantages and disadvantages of gamifying English language teaching using Artificial intelligence, specifically ChatGPT. A quasi-experimental approach was selected to ensure rapid and expounded quantitative and qualitative results.

3.2. Participants

The study was conducted at King Abdulaziz University (KAU) in Jeddah, Saudi Arabia. 47 preparatory year students from three classes were chosen to participate in the gamified lesson prepared by ChatGPT. The participants were male from the scientific track (ELIS 120, which qualifies for level A2). The students' ages were between 18 and 22 as shown in Figure 1.

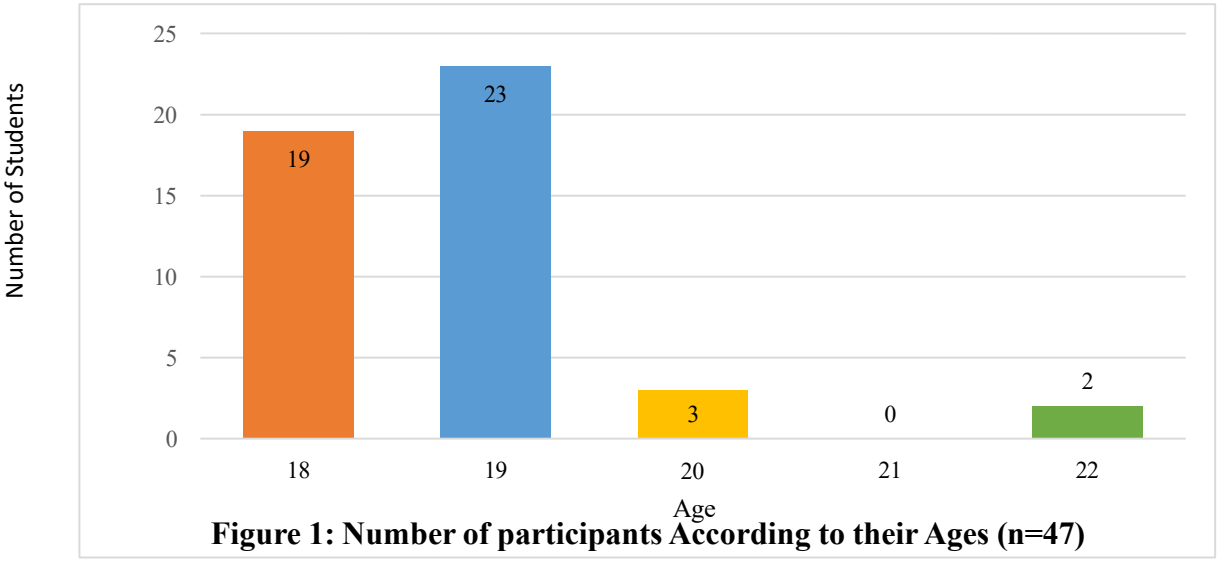

Figure 1: Number of participants According to their Ages (n=47)

3.3. Procedure

Using the text-based chat feature, ChatGPT was asked to construct a competitive game by sending the following prompt:

> *Hi, I am an English as a second language teacher, and I am in my classroom with my students. I want to do a game-based lesson based on their skills (level 2). I divided them into four teams; I want you to ask questions for each team. I will write their answers to you, and you count their points and give me a score at the end. I want it to be around 25 minutes of competition.*

Furthermore, some additional prompts were sent, like: "Make the questions harder, focus on grammar and vocabulary, focus on unlock 2, and include partial credits." These gamified AI lessons had game elements like competition, teams, points, progression, and instant feedback.

3.4. Instruments

To collect data, two instruments were utilized: a questionnaire and a semi- structured interview. The questionnaire was designed to assess students' engagement, motivation, and perceptions of the gamified AI lesson. The questionnaire items were adapted from Gaggioli et al. (2024), which align with the Flow Theory and were modified to meet the thesis requirement. The questionnaire included multiple 5-point Likert-scale items (e.g., 1=strongly disagree, 5=strongly agree) grouped under four categories: Emotional engagement, behavioral engagement, cognitive engagement, and agentic engagement. In addition, five students were selected for follow-up interviews to gain deeper insights into their experiences. Semi-structured interviews were structured to enable flexibility and adaptability while ensuring association with the study's theoretical framework and research questions (Ruslin et al., 2022). The Interviews were made in the students' mother tongue (Arabic) to ensure efficiency, accuracy, and clarity

in students' responses, which were privately transcribed, translated into English, and thematically analyzed.

3.5. Data Analysis

Quantitative data from the questionnaire were analyzed using JASP statistical software. Descriptive statistics, exploratory factor analysis, correlation matrix, and a reliability test (Cronbach's alpha) were employed to examine tendencies and patterns in the collected data. Qualitative data from the interviews were analyzed using thematic analysis to identify major and minor themes related to the flow theory and research questions. Excel was solely used to construct graphs of students' age and previous experience.

3.6. Reliability and Validity

To ensure validity, the questionnaire items and interview questions were reviewed and approved by the Research Unit at the English Language Institute at KAU. Reliability was verified using Cronbach's alpha, where the internal consistency value exceeded the acceptable value of 0.70, as displayed in Table 3.1 (George & Mallery, 2016, p. 240). Data triangulation of the interviews and the questionnaire are also discussed for enhanced credibility of the results.

Table 3.1: Questionnaire Reliability Results

Cronbach's Alpha	Number of Items
0.898	20

4. Results

4.1. Quantitative

There are 25 questions divided into five categories as the following: general questions, emotional engagement, behavioral engagement, cognitive engagement, and argentic engagement. Accordingly, the two sub-sections are named: the general questions and student engagement.

4.1.1. General Questions

This first category contains five general questions; the first two are about the age and level of the students, which was introduced in the methodology. The other three questions are about students' previous experience, and their answers were as follows:

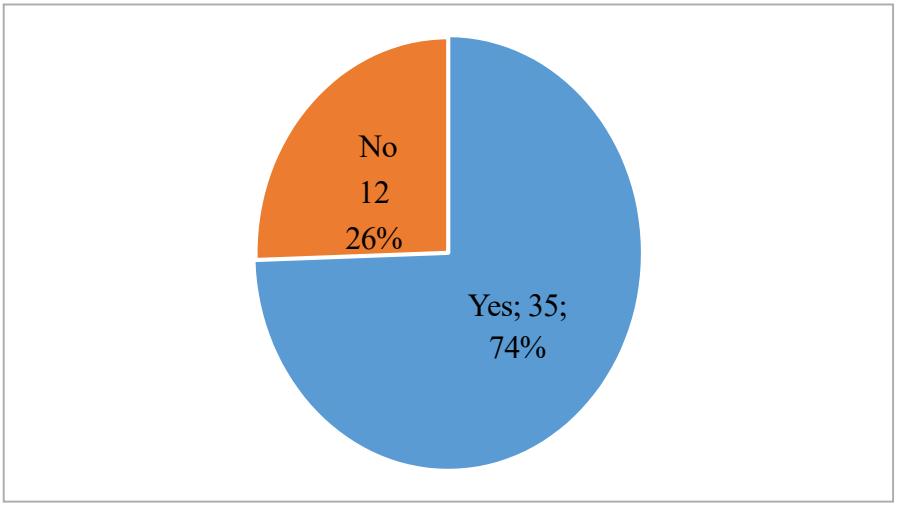

Figure 4.1: General Question 1: Have you ever been taught in a gamified style before? (n=47)

As Figure 4.1 shows, of the 47 students, only 35 of them experienced gamified or game-based lessons. The other considered this to be the first time. This considered a realistic percentage (74%) since gamification in the education system is still growing, and teachers are increasingly acknowledging it as a strategy and a methodology, especially in the Middle East, with 73% of teachers are applying gamification (Bhatia et al., 2023).

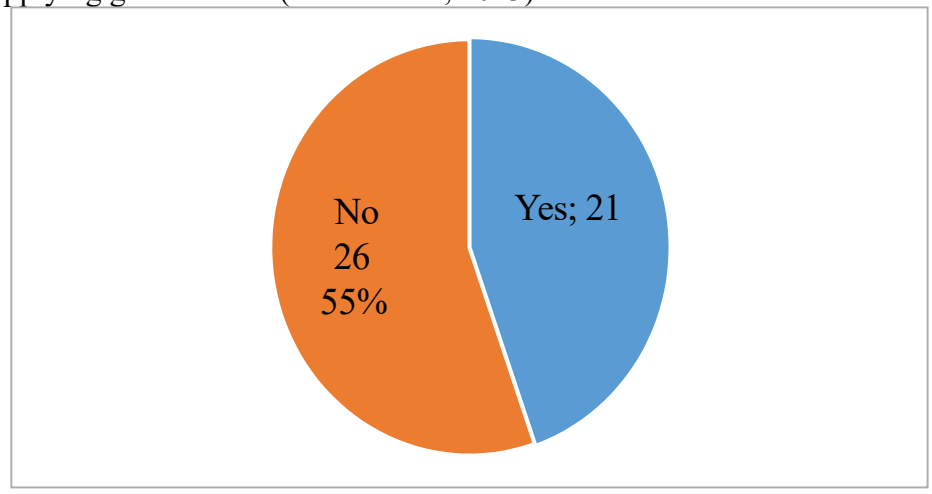

Figure 4.2: General Question 2: Have you ever been taught by using AI before? (n=47)

As Figure 4.2 displays, slightly more than half of the students (55%) did not get exposed to AI in the classroom, which is a reasonable percentage. AI is a new trend that is on the verge of expanding and increasing in terms of accessibility and utilization. As Edmett et al. (2024, p. 31) state in their book, after surveying 1348 teachers about the use of AI in English language teaching, one of the surveys concludes that 53% of the teachers use AI to help their students practice English, which is very close to the percentage in Figure 4.2.

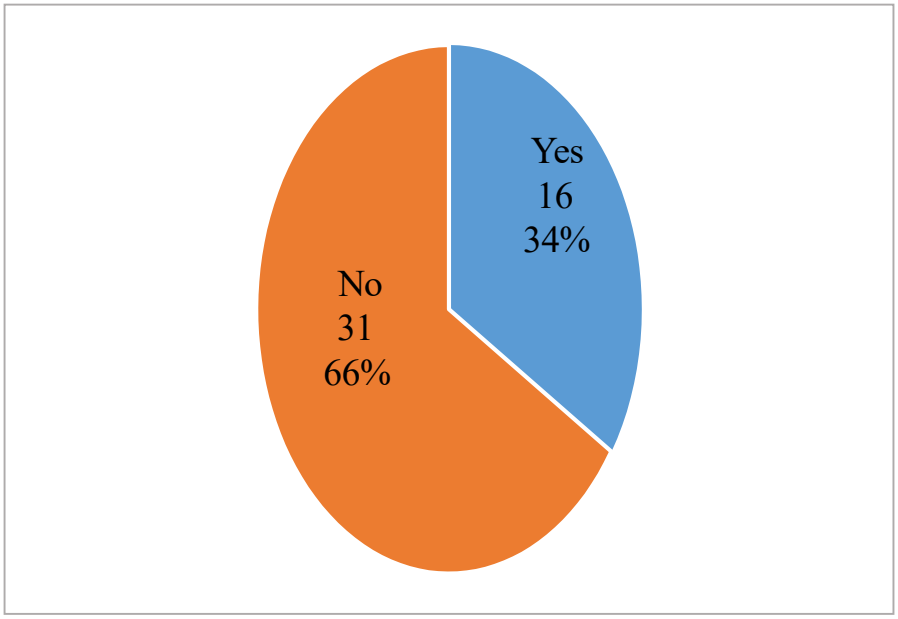

Figure 4.3: General Question 3: Have you ever been taught in a gamified style and AI together? (n=47)

As Figure 4.3 on the previous page reveals, only 16 students have experienced the mix of AI and gamification. This number is actually higher than expected since this mix is not common as it was discussed in the literature review. With this figure, it is the end of the general questions.

4.1.2. Student Engagement

The tables highlight the questionnaire's data. First Table 4.1, which is a descriptive statistics that includes 20 items or statements that are divided into four categories: emotional engagement, behavioral engagement, cognitive engagement, and argentic engagement. Next, Table 4.2 will compare the four categories in a Spearman's correlation matrix. Then, Table 4.3 and Table 4.4 will introduce loading factors and characteristics of the revealed factors. Finally, Table 4.5 will reveal the spearman's correlation matrix of the revealed factors. It is essential to mention that spearman's rho was chosen in the correlation matrixes because it is suitable for ordinal data like the Likert scale (Pallant, 2020).

Table 4.1: Descriptive statistics: Students' Engagement During the Gamified AI Lesson

Engagement Type	Item	Min	Max	Mean (M)	SD
Emotional engagement	1. When I was part of the gamified AI lesson, I felt interested.	3	5	4.638	0.6052
	2. When I answered the questions in the gamified AI lesson, I felt curious about the correct answers.	2	5	4.723	0.6151
	3. I thought this lesson was fun because of the gamified questions.	4	5	4.766	0.4280
	4. I enjoyed this lesson thanks to the gamified style.	3	5	4.638	0.6052
	5. I enjoyed learning new things in this lesson.	1	5	4.404	0.9245
Behavioral engagement	6. I listened carfully during the feedback sessions.	3	5	4.511	0.6552
	7. I paid attention to questions, comments, and feedback from other students.	3	5	4.723	0.4979
	8. I worked hard to answer the questions during the gamified AI lesson.	3	5	4.660	0.5999
	9. I was able to collaborate with my teammates during discussion and feedback sessions.	3	5	4.596	0.6481
	10. I tried to be active in participating during the gamified AI lesson.	3	5	4.617	0.6445
	11. I was able to recognize my team's progress during the gamified AI lesson.	3	5	4.787	0.5080
	12. The competition was friendly between	2	5	4.617	0.7087

	the teams.				
Cognitive engagement	13. I am able to remember the knowledge gained through the gamified AI lesson.	3	5	4.511	0.6552
	14. This lesson helped me improve my critical thinking skills through answering and participating with my team.	3	5	4.319	0.7549
	15. The group work during the gamified AI lesson was useful to solve problems related to the performance of the team.	2	5	4.574	0.7730
Agentic engagement	16. I participated to actively involve the other members and make the work of the team more lively.	2	5	4.617	0.6774
	17. I reported to my colleagues and/or teacher what I liked and disliked about the gamified AI lesson.	1	5	3.468	1.2997
	18. I have proposed suggestions to my team on how to make our group's work better.	1	5	3.787	1.1967
	19. During the lesson, I expressed my preferences and opinions.	1	5	3.532	1.2485
	20. I let my team and/or teacher know what I was interested in.	1	5	3.702	1.1405

In Table 4.1, the overall results indicate high levels of engagement across all categories, particularly in emotional, behavioral, and cognitive categories.

Emotional engagement received some of the highest mean scores, especially for the item “I thought this lesson was fun because of the gamified questions” (M = 4.766, SD = 0.4280), which suggests that the gamified AI lesson had a strong positive impact on students' interest and enjoyment.

In addition, behavioral engagement was also notably high, with mean scores above

4.5 for several items, such as “I was able to collaborate with my teammates during discussion and feedback sessions” (M = 4.596, SD = 0.6481) and “I worked hard to answer the questions during the gamified AI lesson” (M = 4.660, SD = 0.5999).

Furthermore, cognitive engagement was reflected by strong agreement with items related to team progress, such as "I was able to recognize my team's progress during the gamified AI lesson" (M = 4.787, SD = 0.5080). This suggests that the gamified AI lesson contributed to cognitive and environmental awareness.

In contrast, agentic engagement showed relatively lower mean scores, with "I reported to my colleagues and/or teacher what I liked and disliked about the gamified AI lesson" having the lowest mean (M = 3.468, SD = 1.2997). This indicates that while the students were highly engaged emotionally, cognitively, and behaviorally, they were somewhat less active in expressing their opinions about the gamified AI lesson. This , might be related to students having less sense of control over the environment, as the flow theory suggests.

Finally, the standard deviations show reasonably low inconsistency in responses for most items, which indicates a strong agreement among students, especially in items related to emotional and cognitive engagement.

Table 4.2

Spearman's Correlations Matrix					
Variable		Emotional engagement	Behavioral Engagement	Cognitive engagement	**Agentic engagement**
Emotional engagement	Spearman's rho	—			
	p-value	—			
Behavioral engagement	Spearman's rho	0.580	—		
	p-value	< .001	—		
Cognitive engagement	Spearman's rho	0.650	0.655	—	
	p-value	< .001	< .001	—	
Agentic engagement	Spearman's rho	0.358	0.349	0.571	—
	p-value	**0.014**	**0.016**	**< .001**	—

Table 4.2 shows Spearman's correlation coefficients (ρ) between the four types of engagement measured in the study: emotional, behavioral, cognitive, and agentic engagement. The results reveal strong positive correlations between most engagement types (Gravetter & Wallnau, 2014). Emotional engagement was significantly correlated with behavioral engagement (ρ = 0.580, p < .001), cognitive engagement (ρ = 0.650, p <

.001), and agentic engagement (ρ = 0.358, p = .014). Similarly, behavioral engagement was strongly associated with cognitive engagement (ρ = 0.655, p < .001) and moderately associated with Agentic Engagement (ρ = 0.349, p = .016). Additionally, a strong correlation was also found between cognitive engagement and agentic Engagement (ρ = 0.571, p < .001). These results indicate that higher emotional and behavioral involvement in the gamified AI lesson is likely to correspond with deeper cognitive processing and greater agentic participation. Finally, all correlations are statistically significant since all the p-values are less than 0.05 (Pallant, 2020).

Moreover, Bartlett's Test of Sphericity was conducted to determine whether the questionnaire's data was suitable for making a factor analysis or not. The test produced a statistically significant result, $\chi^2(190) = 628.335$, $p < .001$, which means that the correlation matrix was significantly different from an identity matrix. This confirms that the items were appropriately correlated and have a strong relationship among them, which justifies the use of EFA (Watkins, 2018).

In addition, a Promax (oblique) rotation was used in the factor loadings since it is suitable for correlated items, which usually happens in items that are related to motivation and engagement (Wiggins et al., 2017). Table 4.3 (EFA) will be on the next page and Table 4.4 (factors' characteristics) will be on the page after it. Finally, a correlation matrix of these factors will be presented in Table 4.5.

Table 4.3: Exploratory Factor Analysis: Factor Loadings of the Questionnaire Items

Item	F1	F2	F3	F4	F5	Uniq.
When I was part of the gamified AI lesson, I felt interested.	0.972					0.004
I am able to remember the knowledge gained through the gamified AI lesson.	0.788					0.337
I enjoyed learning new things in this lesson.	0.703					0.488
During the lesson, I expressed my preferences and opinions.		0.948				0.179
I reported to my colleagues and/or teacher what I liked and disliked about the gamified AI lesson.		0.846				0.349
I have proposed suggestions to my team on how to make our group's work better.		0.774				0.409

I let my team and/or teacher know what I was interested in.		0.494				0.540
I thought this lesson was fun because of the gamified questions.			0.782			0.355
I paid attention to questions, comments, and feedback from other students.			0.748			0.565
I listened carefully during the feedback sessions.			0.609			0.309
I enjoyed this lesson thanks to the gamified style.			0.533			0.342
I worked hard to answer the questions during the gamified AI lesson.			0.466			0.481
The competition was friendly between the teams.				0.831		0.336
I was able to recognize my team's progress during the gamified AI lesson.				0.750		0.342
When I answered the questions in the gamified AI lesson, I felt curious about the correct answers.				0.554		0.464
I was able to collaborate with my teammates during discussion and feedback sessions.					1.011	0.159
The group work during the gamified AI lesson was useful to solve problems related to the performance of the team.					0.875	0.172
This lesson helped me improve my critical thinking skills through answering and participating with my team.					0.558	0.371

Table 4.3 presents the factor loadings of the questionnaire items, which reveals hidden categories that emerged and were found to be related to certain items. Additionally, Items with loadings above 0.40 and Uniq. (Uniqueness) around 0.50 or less were considered significant

contributors to their corresponding factors (Hair et al., 2019, p. 175). That being said, five distinct factors emerged, which were named based on the shared content of items with the highest loadings.

Factor 1 (Cognitive Attention) included items such as “When I was part of the gamified AI lesson, I felt interested” (0.972), “I am able to remember the knowledge gained through the gamified AI lesson” (0.788), and “I enjoyed learning new things in this lesson” (0.703), All of them indicate strong engagement and mental focus during the lesson.

Factor 2 (Classroom Interactions) was characterized by items like “During the lesson, I expressed my preferences and opinions” (0.948), “I reported to my colleagues and/or teacher what I liked and disliked about the gamified AI lesson” (0.846), “I have proposed suggestions to my team on how to make our group's work better” (0.774), which reflect active communication and interaction.

Factor 3 (Personal Motivation) acquired motivational responses such as "I thought this lesson was fun because of the gamified questions" (0.782), “I paid attention to questions, comments, and feedback from other students” (0.748), and “I listened carefully during the feedback sessions.” (0.609), these responses reflect intrinsic and extrinsic motivation.

Factor 4 (Learning Experience Evaluation) included items like “The competition was friendly between the teams” (0.831), “I was able to recognize my team's progress” (0.750), and “When I answered the questions in the gamified AI lesson, I felt curious about the correct answers” (0.554), which relate to students' evaluation of their learning outcomes.

Finally, Factor 5 (Group Collaboration) comprised collaborative behaviors, including “I was able to collaborate with my teammates during discussion and feedback sessions” (1.011), “The group work during the gamified AI lesson was useful to solve problems related to the performance of the team” (0.875), and “This lesson helped me improve my critical thinking skills through answering and participating with my team” (0.558).

Table 4.4: Characteristics of the Revealed Factors

Factors’ Characteristics							
	Unrotated solution				Rotated solution		
Factor	Eig.	SS Loadings	Prop. Var.	Cum.	SS Loadings	Prop. Var.	Cum.
F1	7.907	7.568	0.378	0.378	3.173	0.159	0.159
F2	2.375	2.034	0.102	0.480	2.562	0.128	0.287
F3	1.645	1.384	0.069	0.549	2.430	0.121	0.408
F4	1.501	1.098	0.055	0.604	2.362	0.118	0.526
F5	1.039	0.701	0.035	0.639	2.258	0.113	0.639

Note. F1 = Cognitive Attention, F2 = Classroom Interactions, F3 = Personal Motivation, F4 = Learning Experience Evaluation, F5 = Group Collaboration.

As shown in Table 4.4, the factor characteristics table provides information about the strength and importance of each extracted factor. The analysis revealed the five factors with Eig. (Eigenvalues) greater than 1, which is aligned with the criterion (Kaiser, 1960). In the unrotated solution, Factor 1 had the highest eigenvalue of 7.907, which means it explained 37.8% of the total variance. Factor 2 had an eigenvalue of 2.375 and explained 10.2%, Factor 3 had an eigenvalue of 1.645 and explained (6.9%), Factor 4 had an eigenvalue of 1.501 and explained (5.5%), and Factor 5 had an eigenvalue of 1.039 and explained (3.5%). In total, the five factors explained 63.9% of the total variance in the unrotated solution.

After Promax rotation, the variance was spread more evenly across the factors. Factor 1 (Cognitive Attention) explained 15.9%, Factor 2 (Classroom Interactions) explained 12.8%, Factor 3 (Personal Motivation) explained 12.1%, Factor 4 (Learning Experience Evaluation) explained 11.8%, and Factor 5 (Group Collaboration) explained 11.3%. The total explained variance remained 63.9% in the rotated solution, which is considered acceptable in social science research (Hair et al., 2019, p. 142). This proves that the five factors captured a large amount of the variation in students' responses and helped explain different aspects of their experience during the gamified AI lesson. To understand these factors even more, Table 4.5 on the next page will present a correlation matrix, which gives a clear understanding of the relationships between one factor and another.

Table 4.5: Correlation Matrix of the Revealed Factors.

Spearman's Correlations Matrix						
Variable		F1	F2	F3	F4	F5
F1	Spearman's rho	—				
	p-value	—				
F2	Spearman's rho	0.416	—			
	p-value	0.004	—			
F3	Spearman's rho	0.440	0.329	—		
	p-value	0.002	0.024	—		
F3	Spearman's rho	0.496	0.214	0.713	—	
	p-value	< .001	0.148	< .001	—	
F4	Spearman's rho	0.725	0.449	0.502	0.516	—
	p-value	< .001	0.002	< .001	< .001	—

Note. F1 = Cognitive Attention, F2 = Classroom Interactions, F3 = Personal Motivation, F4 = Learning Experience Evaluation, F5 = Group Collaboration.

Table 4.5 shows several statistically significant positive correlations among the five factors, with a few values being closer to +1, which indicates strong relationships (Gravetter & Wallnau,

2014). The strongest correlation was found between F1 (Cognitive Attention) and F5 (Group Collaboration) (ρ = 0.725, p < .001), which suggests that students who reported higher levels of focus and interest during the lesson were also more likely to engage effectively in team collaboration. Similarly, F3 (Personal Motivation) and F4 (Learning Experience Evaluation) had a strong correlation (ρ = 0.713, p < .001), which indicates that students who experienced high levels of motivation tended to evaluate their own learning outcomes. Coming back to Group Collaboration, it had a reasonable and significant correlation with Learning Experience Evaluation (ρ = 0.516, p

< .001), which reflects the connection between teamwork and learning benefits. Additionally, Group Collaboration was also related to Personal Motivation (ρ = 0.502, p

< .001) and F2 (Classroom Interactions) (ρ = 0.449, p = .002), which shows that students who collaborated more were also more motivated and communicative.

Moreover, a moderate to strong correlation was detected between Cognitive Attention and Learning Experience Evaluation (ρ = 0.496, p < .001), which indicates that students who were cognitively engaged also tended to evaluate their learning outcomes more positively. Furthermore, Cognitive Attention showed moderate correlations with Personal Motivation (ρ = 0.440, p = .002) and Classroom Interactions (ρ = 0.416, p =

.004), which reinforces the idea that intellectual focus during the gamified AI lesson is supported by both motivation and collaboration.

4.2. Qualitative

The interview consisted of 13 items (see Appendix A), which go through the whole range of the experience and encourage the interviewees to express their thoughts and opinions, voluntarily. Students' responses were thematically coded, analyzed, and categorized. Five sub-sections for each major theme will be presented, where each sub-section will analyze the sub-themes by providing the relevant quotes. The major themes (n=5) will work as an umbrella for the sub-themes (n=13), which typically emerged from the students' answers to the interview questions. Table 4.6 below reveals the major themes, sub-themes, total number of quotes supporting each major theme, and total number of students for each major theme.

Table 4.6: Description of the Five Major Themes

Major Theme	Sub-theme	Total of Quotes	Total of Students
Affective Experience and Motivation	Enjoyment and Interest	11	5
	Increased Motivation to Participate		
	Reduced Stress and Anxiety		
Cognitive Benefits and	Vocabulary and Grammar Retention		

Learning Outcomes	Knowledge and Skills Gained	7	4
	General Experience Effectiveness		
Social and Collaborative Interaction	Peer Collaboration and Discussion	6	4
	Group Dynamics and Communication		
Perception of AI Integration	ChatGPT's Organizational Performance	7	5
	Accuracy and Curriculum Application		
	Limitations of AI in Teaching		
Future Perspectives and Recommendations	Preferred Level of AI Use in Future Classes	4	4
	Suggestions for Improvement or Balance		

4.2.1. Affective Experience and Motivation

Regarding enjoyment and interest, all of the five students agreed on the positive emotional impact of the gamified AI lesson. As Student 1 stated, “I enjoyed it based on interaction and participation and the way questions were presented.” Student 2 noted, “There were group activities and competition…that made it fun.” Additionally, Student 3 said, “It was more enjoyable than a regular class… the lesson had a plot and a concept.” Student 4 remarked, “The way the questions were presented was fun and not stressful.” Finally, Student 5 mentioned, “It was a good experience, not difficult, and I liked it even though the group wasn’t very active.”

4.2.2. Cognitive Benefits and Learning Outcomes

With regard to vocabulary and grammar retention, Student 2 noted, “This style helps you remember grammar and vocabulary better.” Likewise, Student 3 said, “Using AI to revise grammar or vocabulary made me remember it more.” Finally, Student 4 reflected, “This style helped me recall vocabulary and grammar…this question system made it more comfortable to remember.” Therefore, this sub-theme proved to be considered as an advantage. As for the knowledge and skills gained, Student 1 expressed, “I gained motivation and got used to competition…useful for future learning.” In addition, Student 3 stated, “I gained more confidence when I see my teammates trust me to answer the questions; it was refreshing.” As a result, this sub-theme is also categorized as an advantage.

4.2.3. Social and Collaborative Interaction

About peer collaboration and discussion, Student 2 said, "We discussed as a group and worked to win together." Moreover, Student 4 commented, "We talked and agreed on answers…very collaborative." On the other hand, two students expressed their concerns about the teamwork. As Student 1 asserted, "There was some cooperation, but not with most teammates."

4.2.4. Perception of AI Integration

As for ChatGPT's organizational performance, Student 2 stated, "It was very organized and managed the competition smoothly." In addition, Student 3 reported, "It managed the scores and turns correctly…no problems." On the other hand, Student 5 said, "Some questions were unclear and confusing…it needs review." In view of that, this conflict will be discussed extensively.

4.2.5. Future Perspectives and Recommendations

Concerning the preferred level of AI use in future classes, Student 1 stated, "Maybe three out of ten lessons should be AI-based." Moreover, Student 2 asserted, "It's fun and helpful; I'd like it to be used more often…with the traditional methods, of course." In addition, Student 4 stated, "A mix is better…some traditional, some gamified with AI."

5. Discussion

Regarding the exploratory factor analysis, it proved its reliability and validity in the table of factors characteristics. The underlying and hidden five categories (factors), which are cognitive attention, classroom interactions, personal motivation, learning experience evaluation, and group collaboration, added a significant beneficial layer to the depth of the questionnaire's items, where most of them scored high loadings under each factor to prove a strong connection to the original four categories. Baydas and Cicek (2019) extracted six factors in their study, which proved to be a valid and reliable measurement in affecting the process of a gamification setting. Lastly, the quantitative results proved their stronghold and effectiveness in achieving this thesis' goals and answering the research questions. In the end, the qualitative findings proved that the gamified AI lesson has its advantages and disadvantages. Accordingly, the next two sections will give an answer to the first and second research questions depending on what was found in the results and supported by the existing literature and comparable studies.

5.1. Data Triangulation

Moreover, the technique used to make a data triangulation in this research is by analyzing the results and identifying relationships between the qualitative and quantitative data to relate them to the advantages and disadvantages. This was used, to prove that the quantitative and qualitative findings complement each other (Bans-Akutey & Tiimub, 2021). Therefore, Table 5.1 below will present what was related.

Table 5.1: Triangulation of the Quantitative and Qualitative Data

Advantages & Disadvantages		Quantitative Evidence	Qualitative Evidence
Advantages	Enhancing Motivation and Enjoyment	High mean scores in enjoyment-related items, e.g., (M = 4.766, SD = 0.4280). Factor 3 (Personal Motivation) has high loadings (0.831, 0.750).	11 positive quotes under "Affective Experience and Motivation." Students mentioned increased interest and enjoyment.
	Activating Cognitive Abilities	High mean scores in cognitive engagement, e.g., (M = 4.511, SD = 0.6552). Factor 1 (Cognitive Attention) has strong loadings (0.972, 0.788).	7 quotes under "Cognitive Benefits…" Students reported better vocabulary/grammar retention and critical thinking.
	Improving Classroom Dynamics	High mean scores in participation items, e.g., (M = 4.617, SD = 0.6445). Factor 5 (Group Collaboration) has high loadings (1.011, 0.875).	Multiple students reported good group synergy and teamwork. 4 out of 5 praised collaboration.
	Elevating the Overall Experience	High score on an experience evaluation item (M = 4.787, SD = 0.5080); Factor 4 (Learning Experience Evaluation) has high loadings (0.831, 0.750).	Students praised ChatGPT for smooth competition management and alignment with textbook content.
Disadvantage	Not Feeling a Sense of Control	Low means in agentic engagement items (M = 3.468, SD = 1.2997); (M = 3.532, SD = 1.2485).	A student reported that AI cannot manage and interact like real teachers.

As Table 5.1 shows, the identified advantages and disadvantages were supported across both data sources. For example, the advantage 'Enhancing Motivation and Enjoyment' emerged strongly in the qualitative evidence, with 11 positive student quotes, and was confirmed quantitatively with high mean scores and strong factor loadings related to personal motivation. Similarly, high mean scores and loadings under the cognitive factor with students' reflections on memory and learning skills improvement supported the second advantage (Activating Cognitive Abilities). On the other hand, the disadvantage identified of students "Not Feeling a Sense of Control" was also validated: low mean scores in agentic engagement items aligned with student criticisms regarding AI's inability to personalize or adapt like human teachers.

6. Conclusion

6.1. Pedagogical Implications

Using AI to gamify lessons proved to significantly boost motivation, enjoyment, participation, collaboration, and cognitive abilities which supports the effectiveness of combining gamification and AI. Teachers can adopt AI tools like ChatGPT to design and organize a gamified lesson that has elements like competition, points, progression, and instant feedback without extensive technical training since the AI tool facilitates everything. However, teachers must remain actively involved as moderators, where it is important to ensure a human element that attends to students' emotional and cultural needs, which is something current AI tools lack.

6.2. Recommendations for Future Research

Even though this study made solid contributions to the topic, a few recommendations are introduced to make sure that future examinations of gamifying ELT using AI would have a wide range of results from different perspectives. For that reason, future studies should involve more students from different educational levels and cultural contexts to generalize the results more widely. Moreover, conducting longer-term research would reveal whether the benefits of gamified AI lessons evolve or fade away over time, particularly with repeated application. Additionally, researchers could apply pre and post-tests to compare traditional and gamified AI lessons to evaluate learning outcomes more thoroughly. In addition, conducting the study from the teachers' perspective would deepen the understanding of the utilization process and might introduce new benefits and limitations. Finally, more research is needed on how the use of different AI models would affect question accuracy, student engagement, and learning flow.

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