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Effects of gamification and learning styles on English reading comprehension in gendered classrooms

Kevin Mario Laura-De La Cruz*, Johann Wilber Quispe Roque, Josue William Flores Valeriano, Luz Anabella Mendoza Del Valle, Miliam-Quispe Vargas, Enrique José Quispe Mello
Universidad Nacional Jorge Basadre Grohmann, Peru
*Corresponding Author: klaurac@unjbg.edu.pe

ABSTRACT

The study aims to determine the relationship among gamification, learning styles, and English reading comprehension within gender-differentiated educational settings, with the goal of understanding how these variables influence reading performance. A quantitative, non-experimental correlational design was applied. The sample consisted of 122 secondary students, equally divided by gender. Surveys and a written test were used to gather data related to the study variables, enabling objective statistical analysis of the relationships among them. The results show no statistically significant differences in English reading comprehension based on gender ($p > 0.05$). This suggests that gender does not significantly impact reading performance in this population. Instead, the findings suggest that factors such as gamification and learning styles may play a more influential role in improving reading regardless of gender. The study concludes that incorporating gamification strategies and adapting instruction to diverse learning styles can support motivation and comprehension when appropriately implemented. To achieve greater effectiveness, these strategies should be adjusted to the individual characteristics of learners in gender-differentiated contexts, contributing to more inclusive and efficient educational practices.

Keywords: education, gamification, gender, learning styles, motivation, reading comprehension

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INTRODUCTION

Over the last decade, education has become more student-centered, prompting teachers to adopt tools that increase student motivation. Gamification, as noted by Vaz de Carvalho and Coelho (2022), adapts game elements to non-game settings to enhance learning. This approach has led to game-based learning, its role in inspiring students to develop new learning environments and foster intrinsic motivation, ultimately leading to better learning outcomes. In English language learning, gamification is particularly relevant because it can transform reading activities into more interactive, goal-oriented, and motivating learning experiences. When implemented with clear pedagogical purposes, gamified activities may encourage students to participate more actively, persist in difficult tasks, and engage more meaningfully with reading materials.

Learning styles, as noted by Coffield et al. (2004), involve varying attitudes and skills shaped by individual comfort levels across different contexts. These styles represent a bifurcation of cognitive style, highlighting how students gather, analyze, and assimilate new information as well as the tendencies they have developed.

According to Guan et al. (2014), text comprehension is an intermediary in the relationships between morphological awareness, syntactic processing, and working memory in relation to

composition performance. Therefore, this study identifies text comprehension as a mediator in the predictive relationships between morphological awareness, syntactic processing, and working memory in relation to written composition performance in Chinese, highlighting its crucial role in the effective comprehension and production of written texts. In another aspect, they maintain that the process of language acquisition is based on the encoding and decoding of different types of written texts, which results in the learning of a wide range of vocabulary regarding different topics of interest.

Ho et al. (2023) assert that the Global Scale of English (GSE) provides detailed descriptors for evaluating reading comprehension, enabling precise tracking of student progress from beginner to advanced levels. Assessment tools like the WordSword Test and Cambridge English (CAE) exams align with the Common European Framework of Reference (CEFR) and, in some instances, the GSE to evaluate this skill internationally. Additionally, the GSE aids in global result comparisons and allows for the customization of materials and assessments to suit various educational contexts and student needs.

Vocabulary mastery, especially of high- and mid-frequency words, is crucial for reading comprehension for both native and ESL learners, according to Babayiğit, S., & Shapiro (2020). Grammatical knowledge and syntactic skills are also important for ESL learners. Furthermore, explicit teaching of reading strategies and the use of culturally inclusive materials enhance reading comprehension performance.

Several gamification systems neglect individual learning differences, diminishing motivation and effectiveness, particularly in online learning (Hassan et al., 2019). This lack of personalization may lead to unsatisfactory experiences and increased dropout rates. While gamification boosts motivation and participation, its effects on cognitive performance and user behavior can be inconsistent (Bai et al., 2020). Factors such as fictional narratives, social interaction, and the competition-collaboration balance affect outcomes, but consensus on their effectiveness is lacking. Moneva et al. (2020) suggests that a preference for auditory learning among students hampers reading comprehension, emphasizing the need for teachers to identify effective learning strategies, as self-motivation does not significantly dictate learning style choices.

Septia et al. (2022) report that secondary school students in Bangka struggle with reading comprehension, with specific challenges in identifying the main idea (53.67%), vocabulary (47.84%), and making inferences (45.34%). Contributing factors include low interest in reading, insufficient school resources, and an unfavorable home environment, based on a study involving 60 students.

In a systematic review, Vrcelj et al. (2023) found that gamification studies are less common in primary and secondary education compared to higher education, despite successful implementation of digital tools. In contrast, Inayati and Waloyo (2022) noted that the gamification platform Quizizz enhanced participation, interest, and self-discipline among Indonesian ninth graders, though academic outcomes varied. They suggest combining online games with cognitive strategies for improved educational results. Buzko et al. (2018) showed that integrating gamification and augmented reality in Physics and English classes heightened cognitive interest and practical knowledge application. Lastly, Arip and Hashim (2024) reviewed 28 studies on gamification in ESL/EFL, indicating its positive impacts on language learning, motivation, and engagement, while also addressing implementation challenges and the need for better curricular integration.

In developing countries like Indonesia and Colombia, limited access to technology and connectivity hampers the effective implementation of gamified platforms, creating inequality between urban and rural students (Septianto, 2025).

Hassan et al. (2019) contend that many gamified systems neglect diverse learning styles, potentially reducing motivation and effectiveness for certain students. Additionally, conventional gamification tends to offer standardized experiences, which may not be motivating for all, posing challenges for personalization.

Septianto (2025) notes that while competitive elements like rankings and time limits can boost speed and focus, they may compromise deep comprehension, as students tend to value speed over critical analysis.

Research indicates that gamification positively influences student motivation and performance in English language learning in Indonesian secondary schools. Ariati and Iswahyuni (2023) report favorable reactions from seventh-grade students, particularly those experienced with digital games. Similarly, Ridhon and Daulay (2023) note improvements in pronunciation among ninth-grade students using the ELSA Speak app. Collectively, these findings highlight the effectiveness of gamification in enhancing educational experiences.

In Peru, Acuña-Torres et al. (2024) highlight that many students, particularly in rural regions or from low-income backgrounds, encounter significant barriers to accessing technology and internet connectivity, which impedes their ability to utilize gamified tools and digital platforms that enhance reading comprehension. Martín et al. (2024) assert that gamified applications frequently use a generalized approach that overlooks diverse learning styles, such as visual, auditory, or kinesthetic, which may result in reduced student motivation and effectiveness in enhancing reading comprehension.

Gamification positively impacts student satisfaction, as demonstrated by Cornejo-Torres et al. (2023). Similarly, Erazo-Márquez and Argudo-Garzón (2023) also found that 69.2% of 209 secondary school students in Peru experienced heightened motivation through gamification, reflecting improvements in attention, relevance, confidence, and satisfaction. Their study suggests gamification is effective in promoting intrinsic motivation among B1 level secondary school students, providing valuable insights for teachers.

Vilca (2024) examined the correlation between learning styles and English language acquisition among 45 fifth-year secondary school students in Tacna. The study revealed that visual learning was the most common style (37.78%), followed by auditory (35.56%) and kinesthetic (26.67%), with an average English proficiency of 48.89%. A significant positive correlation ($p = 0.046$) was established, suggesting that learning style affects language performance. Yuxin (2023) emphasizes the need for more engaging and culturally rich English reading materials in secondary schools and recommends that teachers choose resources that align with students' levels and interests.

Gamification in education, when poorly organized and executed, can lead to student disinterest and reduced motivation. This strategy fails to accommodate individual learning styles, which limits meaningful learning experiences. Consequently, English language learning is adversely affected as it promotes monotonous teaching methods, restricting students' autonomy in their educational pursuits. However, Kapp (2012) argues that even though students have enough knowledge, this is not always reflected because they typically only repeat what they have learned, ignoring soft skills. Gamification, on the other hand, creates a change because it inspires students and encourages active engagement, which forces them to act in ways that reflect what they have learned. Stated differently, gamification enables the application of acquired material in various engaging games and activities. Students clearly favor four learning styles: self-sufficient, contextual, associative, and collaborative, according to Madhu and Bhattachryya's (2023) findings. These styles are linked to distinct characteristics and inclinations, including the requirement for a guiding framework, a preference for group work dynamics, autonomy in the learning process, and an affinity for previously familiar settings.

Indeed, the motivation generated by the gamification strategy may create an environment capable of reinforcing and generating new knowledge, as well as promoting cooperative and collaborative skills within their learning environment, because students feel sufficiently stimulated in the same way towards autonomous learning. A systematic review found that digital gamification positively influences the motivation and satisfaction of English language students in higher education, enhancing learning outcomes, although further rigorous research is necessary to confirm these benefits (La Cruz et al., 2023). Ryan and Deci (2000) state that effective gamification must fulfill three conditions: it should promote student autonomy, ensure equal opportunities, and provide a dynamic leaderboard for students to track their rankings, fostering intrinsic motivation to improve or maintain their positions.

Honey and Mumford (1986) investigate learning styles in academic settings, suggesting that expected learning outcomes are derived from students' experiences throughout their training. They introduce a framework categorizing learning styles into Active, Reflective, Theoretical, and Pragmatic, while building upon Kolb's theory. This perspective emphasizes the importance of empirical training, encouraging teachers to develop new strategies informed by these experiences. A nuanced classification of learning styles that includes visual, auditory, and kinesthetic types, with kinesthetic being the most intricate. This classification emphasizes the presence of multiple intelligences, indicating that learning styles extend beyond four categories to encompass various abilities, such as visual and auditory learning.

Within the learning of a new language, comprehension skills are vital for achieving meaningful learning, since knowledge reception is the first innate tool for language production and use. Therefore, any strategy or activity that fosters comprehension must be properly regulated (Krashen, 1985). For this reason, teachers cannot design or create activities that are difficult to understand or that are far removed from students' prior knowledge, as this would lead to complete misunderstanding and hinder their learning.

Consequently, the production of the learned language is also essential to the learning process. As Swain (2000) argues, language production allows both students and teachers to become aware of their communication weaknesses. Therefore, feedback and the development of new linguistic strategies will help encourage students to continue practicing. In simpler terms, the learner will be able to recognize where they are making mistakes; these may be grammatical errors, manners of courtesy, or the need to learn expressions that facilitate better interaction within a social circle.

Over the years, several studies have emerged related to gamification, a game-based strategy. It aims to motivate and enhance learning by creating a positive and competitive environment. It treats games as learning tools, encouraging students to engage actively in their education and facilitating knowledge acquisition through playful activities (Gómez, 2024). Furthermore, gamification has emerged as a crucial motivator for new generations, as noted by Gómez-Paladines and Ávila-Mediavilla (2021). This generation, raised with technology since childhood, possesses a broader perspective on new forms of entertainment. Consequently, pedagogy must adapt and leverage the opportunities presented by the digital world to foster independent learning among students. In another aspect, academic performance is closely linked to learning styles. Understanding students' learning styles allows teachers to adopt strategies that improve engagement and create a psychologically safe environment, where they can explore and deepen their skills and intelligence (García, 2018).

Another important point to mention is metacognition, which is fundamental to the development of critical thinking. The ability to self-reflect on one's learning style radically benefits the creation of new techniques or strategies that expedite and facilitate the acquisition of new knowledge. Furthermore, after this process, students will have time to critique what they are learning, laying the foundation for critical thinking (Barría-Jeréz, 2023). Consequently, having strong critical thinking skills will exponentially enhance learning, as students will be drawn into the field of research, contrasting information.

This article analyzes how the teacher-student relationship, from a relational theory perspective, influences motivation to learn foreign languages. Using qualitative data from eight adult learners, it shows that this relationship can affect motivation positively or negatively and that engagement and the relational matrix are key factors in learner emotions and motivation (Moskowitz et al., 2022). The article examines the role of prediction and prediction error in L2 language processing and acquisition, reviewing evidence on predictive mechanisms, priming, adaptation, and computational modeling. The authors conclude that, although prediction error can facilitate learning, its impact on L2 acquisition is complex and requires further research (Bovolenta & Marsden, 2021).

Gamification enhances vocabulary retention, listening comprehension, oral production, and student motivation in English language learning, but its effectiveness is hindered by issues in technological infrastructure and teacher training, necessitating a structured application with defined objectives. The study indicates that gamification positively influences motivation and

English language learning in secondary schools. However, while teachers utilize it, only a third of students acknowledge its benefits, highlighting implementation challenges. It suggests enhancing teacher training to maximize gamification's potential (Ñacato et al., 2024).

The article reviews various definitions of learning styles and their influence on foreign language acquisition, highlighting how visual, auditory, and tactile styles affect linguistic outcomes and academic performance, offering useful guidance for students and teachers (Chen, 2023). The study reveals that English teachers modify their practices for distance education by utilizing various platforms, materials, and assessments. However, challenges such as technical issues, excessive workloads, large class sizes, and low student motivation complicate this adaptation, making it more intricate than traditional face-to-face teaching (Maryono & Lengkanawati, 2022).

In recent years, there has been a growing emphasis on comprehension skills related to gathering and processing information from various texts. This shift has spurred research, and the development of new strategies aimed at enhancing these skills, particularly in countries like Colombia and Peru (Zapata et al., 2024). Strategic reading techniques, notably the CPQS strategy, enhance reading skills in English as a foreign language, emphasizing innovative methods like peer feedback and self-correction (Okasha, 2020). This research focuses on enhancing the quality of education for students from diverse social backgrounds, aligning with the Fourth Sustainable Development Goal: Quality Education. This goal aims to eradicate social inequalities, ensuring universal access to quality education that fosters digital and social skills, critical thinking, and lifelong meaningful knowledge.

For the same reason, this research highlights the significance of learning styles in language acquisition and their impact on teaching. As per Vygotsky (2009), peer interaction enhances knowledge exchange and improves the learning environment, thereby fostering cognitive practices and creating supportive learning contexts for students. Consequently, the overall objective of this research is to determine the relationship between gamification, learning styles, and English reading comprehension in gender-differentiated educational contexts. The specific objectives are to establish the relationship between the freedom to make mistakes, cooperation, feedback, and the active, reflective, theoretical, and pragmatic learning styles, and the level of English reading comprehension in gender-differentiated educational contexts.

METHOD

This study uses a quantitative research approach to objectively measure and analyze the relationships between gamification, learning styles, and English reading comprehension in educational settings differentiated by gender. According to Hernández-Sampieri and Mendoza (2018), this approach involves collecting data for hypothesis testing based on numerical measurements and statistical analyses to identify behavioral patterns and test theories.

This research focuses on understanding fundamental phenomena and constructing a theory to expand general knowledge. It employs questionnaires and written tests for data collection. The study aims to examine the relationship between the gamification, learning styles, and English reading comprehension.

This research is correlational, evaluating the association between multiple variables by measuring them to quantify their relationships and testing hypotheses based on the results. This research employs a non-experimental correlational design, which examines data collected simultaneously from various individuals. The aim is to describe a problem rather than to conduct an experiment.

Table 1. Gender

	Frequency	Percentage
Male Educational Institution	61	50.0%
Female Educational Institution	61	50.0%
Total	122	100.0%

The study focused on fifth-year students at two notable secondary education institutions in the Southern region of Peru, aligning with its objectives and geographical context (see Table 1). Using a stratified probabilistic sampling technique, a total sample of 122 students was obtained from a population of 178, comprising 61 male and 61 female students across both institutions. To determine the sample:

n: The sample size to be studied
N: Total (178 fifth-year students from both educational institutions)
Z: Confidence level (95% would be equal to 1.96)
E: The margin of error allowed (5% = 0.05)
P: Probability of occurrence (5% = 0.5)
Q: Probability of non-occurrence (5% = 0.5).

$$n = \frac{(178)(1.96)^2(0.5)(0.5)}{(0.05)^2(178-1) + (1.96)^2(0.5)(0.5)}$$
$$n = \frac{(178)(3.8416)(0.5)(0.5)}{(0.0025)(177) + (3.8416)(0.5)(0.5)}$$
$$n = 122$$

Techniques and instruments for data analysis for variable 01 (see Table 2): Gamification; Technique: Survey; Instrument: Questionnaire. For variable 02 (see Table 3): Learning Styles; Technique: Survey; Instrument: Questionnaire. For variable 03 (see Table 4): English Reading Comprehension; Technique: Exam; Instrument: Reading Cambridge Test A2 (Key for Schools).

Table 2. Gamification variable scales

Dimension	Items	Indicators
Freedom to make mistakes	12 items	From 1 to 12
Cooperation	12 items	From 13 to 24
Feedback	09 items	From 25 to 33

Table 3. Learning styles variable scales

Dimension	Items
Asset	20 items
Thoughtful	20 items
Theorist	20 items
Pragmatic	20 items

Table 4. Reading comprehension variable scale

CEFR level	Score	Degree
-	0 – 81	Below pre-A1
-	82 – 99	Pre-A1
A1	100 – 119	Level A1
A2	120 – 132	Grade C
A2	133 – 139	Grade B
B1	140 – 150	Grade A

To assess the reliability of the instruments for learning English, a specialized tool focused on gamification was created, yielding a reliability score of 0.933 and a content validity score of 0.955 based on Aiken's V coefficient validated by five experts. The Learning Styles Questionnaire (CHAEA) was employed for identifying learning styles, while the Cambridge B1 level international exam, known for its established reliability, was utilized to evaluate English reading comprehension.

FINDINGS AND DISCUSSION

This chapter details the results of the study, starting with descriptive analyses followed by inferential analyses to test research hypotheses. Statistical results are illustrated in tables and graphs, with interpretations and implications discussed in the research context.

Findings

Descriptive results

The section outlines an analysis of descriptive results related to sociodemographic data from the study. It details the sample characteristics based on gender and age, alongside levels in gamification, learning styles, and English reading comprehension, offering an overview of data behavior prior to inferential analyses (see Table 5).

Table 5. Gender

	Frequency	Percentage
Male	61	50.0%
Female	61	50.0%
Total	122	100.0%

The percentage distribution of student gender shows a balanced split of 50% male and 50% female in a total sample of 122 students. This gender balance enables comparisons in future analyses related to perception levels or attitudes by gender.

Table 6. Age

	Frequency	Percentage
15 years	2	1.6%
16 years	68	55.7%
17 years	52	42.6%
Total	122	100.0%

The majority of students are aged 16 (55.7%) and 17 (42.6%), with only 1.6% being 15 years old. This age distribution allows for generalizations about the 16- to 17-year-old demographic in relation to other study variables (See Table 6).

Table 7. Levels of freedom to make mistakes by gender

		Freedom to make mistakes		
		Low Level	Intermediate level	High Level
Gender	Male	55.3%	49.0%	45.7%
	Female	44.7%	51.0%	54.3%
Total		100.0%	100.0%	100.0%

The results indicate that among students (See Table 7), male students (55.3%) largely fall into the low level of "freedom to make mistakes" while female students are more represented in the medium (51.0%) and high levels (54.3%). This suggests that female students view gamification strategies more positively, perceiving a higher likelihood of making mistakes, in contrast to male students who show a lower predisposition to such perceptions in the learning process. Female students tend to engage more at medium and high levels in gamified learning environments, understanding that mistakes enhance their learning, while male students are more common at low levels, as they tend to avoid making mistakes.

Table 8. Levels of cooperation by gender

		Cooperation		
		Low Level	Intermediate level	High Level
Gender	Male	57.5%	50.0%	38.5%
	Female	42.5%	50.0%	61.5%
Total		100.0%	100.0%	100.0%

Cooperation levels by gender indicate that women exhibit a higher proportion of high-level cooperation (61.5%) compared to men (57.5%) (See Table 8). Gender influences collaboration, with women displaying a greater willingness to cooperate in the gamification process. The analysis indicates that women exhibit higher levels of cooperation compared to men, emphasizing the need to consider these behavioral differences in the development of educational strategies.

Table 9. Feedback levels by gender

		Feedback		
		Low Level	Intermediate level	High Level
Gender	Male	56.8%	53.1%	38.9%
	Female	43.2%	46.9%	61.1%
Total		100.0%	100.0%	100.0%

Women perceive feedback at a higher level (61.1%) than men (38.9%), with men predominantly at low or medium levels (See Table 9). The graph indicates a notable gender difference in feedback levels, with women exhibiting higher feedback levels compared to men, suggesting varying behaviors or perceptions regarding feedback in the study's context.

Table 10. Gamification levels by gender

		Gamification		
		Low Level	Intermediate level	High Level
Gender	Male	62.2%	49.0%	38.9%
	Female	37.8%	51.0%	61.1%
Total		100.0%	100.0%	100.0%

Women demonstrate a greater involvement and positive perception of gamification, often achieving higher levels compared to men, who generally fall into low or medium levels of engagement (See Table 10). Gender differences in gamification participation and perspective show that women exhibit significantly higher levels of engagement and maintain a positive attitude towards learning errors compared to men.

Table 11. Learning style levels by gender

		Learning Styles		
		Low Level	Intermediate level	High Level
Gender	Male	50.0%	48.9%	51.4%
	Female	50.0%	51.1%	48.6%
Total		100.0%	100.0%	100.0%

The study indicated no significant gender differences in learning styles, with both genders showing a consistent 50% across all levels, including the lowest accuracy level (See Table 11). This suggests that students are equally likely to develop similar learning styles. Both men and women can develop various learning styles, although men tend to dominate at high levels while women excel at medium levels.

Table 12. CEFR-L (Common European Framework of Reference for Languages) scoring levels by gender

		CEFR-L		
		Low Level	Intermediate level	High Level
Gender	Male	43.9%	45.7%	62.9%
	Female	56.1%	54.3%	37.1%
Total		100.0%	100.0%	100.0%

Male students exhibit higher levels of English reading comprehension compared to female students, who are more concentrated at the average level, indicating gender differences in reading performance within the analyzed sample (See Table 12). Male students outperform female students in reading comprehension at high CEFR levels, with 18.03% compared to 10.66% for females. Conversely, female students are more prevalent at medium and low levels, suggesting additional influencing factors in performance. The analysis presents a comparative visualization of CEFR-L score levels (See Table 13), highlighting the percentages of students across

performance categories and examining the correlation between gender and reading comprehension abilities at these varying levels.

Table 13. CEFR-L score levels by gender

		CEFR-L level			
		Below Pre-A1	Pre – A1	A1	A2
Gender	Male	25.00%	48.90%	50.00%	57.10%
	Female	75.00%	51.10%	50.00%	42.90%
Total		100.00%	100.00%	100.00%	100.00%

Inferential Results

This section outlines the results of the inferential analyses conducted to test the research hypotheses and assess the relationships between study variables. Various statistical tests were employed, suitable for the data type and adherence to normality assumptions, ensuring valid and reliable outcomes.

Normality Test

Table 14 presents the normality test results using the Kolmogorov-Smirnov index for key study variables: gamification, learning styles, and reading comprehension (CEFR). Out of 122 student participants, the gamification variable demonstrated a normal distribution (p-value = 0.200), while learning styles (p-value = 0.003) and CEFR (p-value = 0.000) did not indicating non-normal distribution for the majority of the variables. Consequently, non-parametric statistical tests are recommended for hypothesis testing to ensure valid inferential analyses.

Table 14. Kolmogorov-Smirnov normality test

	Kolmogorov-Smirnov[a]		
	Statistical	gl	Sig.
Gamification	0.069	122	0.200*
Learning Styles	0.104	122	0.003
CEFR-L	0.188	122	0.000

Note: *. This is a lower bound of the true significance

In this study, non-parametric tests were utilized due to the Kolmogorov-Smirnov test indicating a lack of normal distribution ($p < 0.05$). Spearman's rho correlation was applied to examine the relationship between gamification, learning styles, and English reading comprehension, while the Mann-Whitney U test was used to assess differences in reading comprehension levels by gender. These statistical methods facilitated accurate data interpretation within a correlational framework.

Hypothesis testing

The section compares research hypotheses on the significant relationships between gamification, learning styles, and English reading comprehension (CEFR), while also examining potential differences in reading comprehension based on student gender. Statistical tests were selected based on data distribution to maintain consistency with the study's objectives and methodology.

General hypothesis testing

There is a significant relationship between gamification and learning styles and reading comprehension in English in gender-differentiated educational contexts. In Table 15, the analysis revealed a moderate positive correlation (0.104) between gamification and learning styles, and a very weak correlation (0.019) with English reading comprehension. This suggests that while gamification relates to specific learning styles, its impact on reading comprehension is minimal. In contrast, learning styles have a significant positive correlation (0.837) with it, indicating a strong influence on comprehension performance. Thus, the primary relationship identified is between learning styles and comprehension, with gamification having a negligible effect on these variables.

Table 15. Correlation of gamification and learning styles with English Reading comprehension

			Gamification	Learning Styles	CEFR-L
Spearman's rho	Gamification	Correlation coefficient	1.000	0.104	-0.154
		Sig. (2-tailed)		0.253	0.091
		N	122	122	122
	Learning Styles	Correlation coefficient	0.104	1.000	-0.019
		Sig. (2-tailed)	0.253		0.837
		N	122	122	122
	CEFR-L	Correlation coefficient	-0.154	-0.019	1.000
		Sig. (2-tailed)	0.091	0.837	
		N	122	122	122

Specific hypothesis testing 1

There is a significant relationship between freedom to make mistakes and the level of reading comprehension in English in gender-differentiated educational contexts.

Table 16. Correlation of gamification and learning styles with English reading comprehension

			Freedom to make mistakes	CEFR-L
Spearman's rho	Freedom to make mistakes	Correlation coefficient	1.000	-0.131
		Sig. (2-tailed)		0.150
		N	122	122
	CEFR-L	Correlation coefficient	-0.131	1.000
		Sig. (2-tailed)	0.150	
		N	122	122

Table 16 indicates that the variables of freedom to make mistakes and CEFR level have very low, non-significant correlations with English Reading comprehension, both showing a coefficient of -0.131 and p = 0.150. These findings suggest that neither variable has a statistically significant relationship with it in the studied context.

Specific hypothesis 2

There is a significant relationship between cooperation and the level of reading comprehension in English in gender-differentiated educational contexts.

Table 17. Correlation of gamification and learning styles with English Reading comprehension

			Cooperation	CEFR-L
Spearman's rho	Cooperation	Correlation coefficient	1.000	-0.126
		Sig. (2-tailed)		0.167
		N	122	122
	CEFR-L	Correlation coefficient	-0.126	1.000
		Sig. (2-tailed)	0.167	
		N	122	122

Table 17 reveals a low and statistically insignificant correlation between gamification, cooperation as a learning style, and English Reading comprehension, with Pearson and Spearman's rho values of 0.126 and -0.126, respectively, both having p-values of 0.167. This

suggests that cooperation does not significantly affect English reading comprehension in the analyzed context.

Specific hypothesis 3

There is a significant relationship between feedback and the level of reading comprehension in English in gender-differentiated education contexts.

Table 18. Correlation of gamification and learning styles with English reading comprehension

			Feedback	CEFR-L
Spearman's rho	Feedback	Correlation coefficient	1.000	-.186*
		Sig. (2-tailed)		0.040
		N	122	122
	CEFR-L	Correlation coefficient	-.186*	1.000
		Sig. (2-tailed)	0.040	
		N	122	122

Table 18 reveals a weak and significantly negative relationship between perceived feedback and English reading comprehension, with a coefficient of -0.186 and a p-value of 0.040. A similar relationship exists between learning styles and gamification experience, also at -0.186 and p=0.040. These results indicate that while the associations are statistically significant, their influence on reading comprehension is moderate and inverse, suggesting a lack of strong impact in the studied context.

Specific hypothesis 4

There is a significant relationship between active learning style and the level of reading comprehension in English in gender-differentiated educational contexts (See Table 19).

Table 19. Correlation of gamification and learning styles with reading comprehension

			Asset	CEFR-L
Spearman's rho	Active	Correlation coefficient	1.000	0.044
		Sig. (2-tailed)		0.627
		N	122	122
	CEFR-L	Correlation coefficient	0.044	1.000
		Sig. (2-tailed)	0.627	
		N	122	122

The analysis indicates active learning style and gamification do not have significant impact on reading comprehension, which with Pearson's correlations showing r=0.044 (p=0.627) and r=0.04 (p=0.62) respectively. In contrast, there is a moderate correlation (ρ=0.62, p=0.007) between learning styles and reading comprehension, highlighting the influence of learning styles on reading performance, however gamification lacks a statistically proven effect.

Specific hypothesis 5

There is a significant relationship between reflective learning style and the level of reading comprehension in English in gender-differentiated educational contexts.

Table 20. Correlation of gamification and learning styles with English reading comprehension

			Thoughtful	CEFR-L
Spearman's rho	Reflective	Correlation coefficient	1.000	0.018
		Sig. (2-tailed)		0.848
		N	122	122
	CEFR-L	Correlation coefficient	0.018	1.000
		Sig. (2-tailed)	0.848	
		N	122	122

Table 20 displays the correlation between reflective learning style and reading comprehension (CEFR) is not significant because it has a coefficient of 0.018 and a p-value of 0.848. Additionally, the relationship between this learning style and CEFR level is also insignificant. In contrast, there is a significant moderate correlation (0.62, p = 0.007) between learning styles and reading comprehension, indicating learning styles affect reading comprehension performance, while gamification does not demonstrate a statistically relevant impact.

Specific hypothesis 6

There is a significant relationship between theoretical learning style and the level of reading comprehension in English in gender-differentiated educational contexts (See Table 21).

Table 21. Correlation of gamification and learning styles with English reading comprehension

			Theorist	CEFR-L
Spearman's rho	Theorist	Correlation coefficient	1.000	0.024
		Sig. (2-tailed)		0.796
		N	122	122
	CEFR-L	Correlation coefficient	0.024	1.000
		Sig. (2-tailed)	0.796	
		N	122	122

The study revealed a very low and statistically insignificant correlation (p=0.796) between theoretical learning style and reading comprehension level, indicating insufficient evidence to establish a relationship in this context.

Specific hypothesis 7

There is a significant relationship between pragmatic learning style and the level of reading comprehension in English in gender-differentiated educational contexts (See Table 22).

Table 22. Correlation of gamification and learning styles with English reading comprehension

			Pragmatic	CEFR-L
Spearman's rho	Pragmatic	Correlation coefficient	1.000	-0.031
		Sig. (2-tailed)		0.733
		N	122	122
	CEFR-L	Correlation coefficient	-0.031	1.000
		Sig. (2-tailed)	0.733	
		N	122	122

This analysis displays a Spearman correlation coefficient of -0.031 and a p-value of 0.733, indicating there is a significant relationship between pragmatic learning styles and reading comprehension. The findings suggest that pragmatic learning style does not influence comprehension levels in the studied context, showing hypotheses are negligible and statistically insignificant correlations.

Specific hypothesis 8

There are differences in English language reading comprehension in gender-differentiated educational contexts (Table 23).

Table 23. Correlation of gamification and learning styles with reading comprehension

	CEFR-L
Mann-Whitney U	1613.5
Wilcoxon W	3504.5
Z	-1.268
Continue like this. (bilateral)	0.205

Note: A Grouping variable: Gender

This paper analyzes English reading comprehension scores by gender using the Mann-Whitney U test, yielding a W value of 3504.5 and a Z value of -1.268, with a significance of 0.205. The findings reveal no statistically significant differences between male and female students at the 95% confidence level, suggesting that gender does not significantly impact it, which supports specific hypothesis 8 and previous comparisons.

Discussion

According to the data, implementing gamification and learning styles in English sessions does not significantly relate to reading ability, as assessed by CEFR levels. The study found a weak negative correlation between the feedback aspect of gamification and reading comprehension, while dimensions such as freedom to make mistakes and cooperation showed no significant relationships. Additionally, the learning styles, active, reflective, theoretical, and pragmatic, did not correlate significantly with reading comprehension. These findings suggest that gamified experiences and cognitive style preferences do not enhance reading performance. Furthermore, the analysis indicated that factors like vocabulary level and reading strategies are more influential than gender in determining reading ability.

These findings contrast with existing literature that regards gamification primarily as a motivational tool. Vaz de Carvalho and Coelho (2022) advocate for gamification in educational settings to enhance student motivation through game-like processes. Recent reviews identify commonly utilized game elements, such as points, badges, and rankings, as mechanisms to boost participation, linking them to a dichotomy between intrinsic and extrinsic motivation. Gamification's positive impact on academic motivation but warned that these benefits could wane over time due to novelty and extrinsic rewards. Notably, this study found no significant improvement in reading comprehension, indicating that heightened motivation does not necessarily lead to deeper learning when gamified elements focus solely on earning points or receiving immediate feedback.

The research by Tripathi and Kumar (2025) indicates that learning styles may correlate with performance in specific subjects, such as mathematics and listening comprehension in languages. However, average performance differences between styles are negligible. The study advocates for multimodal teaching to accommodate diverse learners, cautioning against relying exclusively on learning styles for educational guidance.

Studies indicate that reading ability is closely linked to lexical mastery and the ability to decode and process texts syntactically. Wagner and Meros (2010) argue that lack of word meaning recognition jeopardizes comprehension, which is affected by both direct and indirect vocabulary influences. Additionally, research in English language teaching suggests that extensive vocabulary knowledge is a strong predictor of reading comprehension, necessitating explicit instruction to enhance this skill. Consequently, gamified learning platforms focusing solely on speed or scores may fall short unless they include activities that foster vocabulary growth and reading practice.

Self-determination theory suggests that intrinsic motivation emerges from fulfilling the needs for autonomy, competence, and relatedness. Gamification can enhance these needs through clear objectives and feedback but may also lead to extrinsic motivation from rewards that are easily used up. In the study, a negative correlation was found between feedback perception and reading comprehension, indicating that learners may prioritize points over in-depth text processing. Furthermore, excessive competition and reward focus could diminish long-term intrinsic motivation, potentially hindering comprehension improvement.

Another theoretical point is related to personalization. Personalization in gamified environments is crucial for enhancing motivation and performance. A systematic review indicates that tailoring game components to learning styles, such as the Felder-Silverman model, can significantly boost course completion, academic achievements, and learner motivation. Specifically, gamification that addresses visual, verbal, active, reflective, sensing, or holistic styles can lead to higher engagement and improved learning outcomes. Conversely, generic gamification systems may reduce motivation and increase dropout rates, particularly in online

settings. The lack of personalization in the current study may account for the observed absence of a significant link between learning styles and reading comprehension.

Reading comprehension necessitates attention for making inferences, integrating concepts, and monitoring understanding. Adding game elements that require more attention, and competition may lead to cognitive overload, hindering text processing. Although gamification can boost motivation and engagement, it does not guarantee enhanced cognitive performance, particularly if game dynamics distract from thorough text analysis.

The research provides recommendations for English language teaching, emphasizing the importance of gamification to enhance motivation and student participation rather than for personal gain. It suggests that methodologies should prioritize vocabulary expansion, critical thinking development, and effective reading strategies for knowledge acquisition. Additionally, it advocates for teachers to serve as guides who integrate traditional and communicative approaches with sensory-engaging activities to support students' self-perception of their learning styles.

Personalizing gamified tools for students is essential, as it enhances their connection to the material and fosters healthy competition. Customized activities aligned with learning styles improve information retention and engagement. Providing options like group versus individual tasks and adjusting activity difficulty is vital. However, promoting competitiveness should be balanced with cooperation, encouraging collaborative problem-solving and soft skill development to maintain motivation and deepen understanding.

Finally, emphasis is placed on vocabulary and strategies that enhance reading comprehension before, during, and after reading. Wagner and Meros (2010) highlight that difficulties in comprehension often arise from unfamiliarity with new words, leading to frustration. Tasks should focus on analyzing and inferring meanings of unknown words, encouraging students to relate them to prior knowledge. Including a vocabulary list with definitions tailored to the student's level alongside each reading is recommended. Consistent practice, coupled with gamification, will improve the effectiveness of extensive reading as inferential practice.

The research presents several limitations affecting result interpretation. The correlational design restricts causal relationship determination between gamification and reading comprehension, indicating the need for experimental designs with control groups. The gender-balanced sample is confined to one educational context in Tacna, hindering generalization. Self-assessments of gamification parameters and learning styles may introduce perceptual biases. The short application period of gamified strategies limits the evaluation of long-term effects and differentiates between novelty and sustained motivation. Furthermore, key variables like vocabulary level, prior intrinsic motivation, and socio-familial context, which could have influenced results, were not monitored.

To further understand the link between gamification, learning styles, and reading comprehension, several lines of research are suggested:

Quasi-experimental designs that include control groups are needed to explore the causal effects of gamification on reading comprehension, particularly through longer-term interventions to assess whether initial motivation is sustained over time.

Exploring both basic and higher education within varied sociocultural contexts and expanding the sample size can enhance the generalization of results. Additionally, employing qualitative research is recommended to better understand gender-specific perceptions of gamification across different cultural backgrounds.

Digital tools that offer continuous feedback and digital narratives can enhance engagement through concise texts. Additionally, applications that allow students to share their views and experiences on assignments may provide valuable insights for future activities.

Future research should explore intervening variables like extrinsic stimuli, participation, and knowledge regulation to avoid saturation, focusing on the link between motivation and English language learning, particularly its influence on reading comprehension.

Integrating vocabulary instruction and reading strategies into gamified designs enhances comprehension and supports the connection between gamification and various language skills,

including writing, speaking, and listening. However, findings suggest that gamification and self-directed learning do not automatically lead to improved English reading comprehension. Their effectiveness hinges on motivation and intervention but must be coherently integrated into pedagogy to align with comprehension goals, accommodate individual differences, and aid vocabulary and reading strategy development for optimal results.

CONCLUSION

In this research, there is not a significant correlation that was found between gamification and reading comprehension, particularly with the "freedom to make mistakes" dimension. However, we can express gamification positively contributes to English reading comprehension, especially through feedback and cooperation dimension, which help to identify strengths and weaknesses and lead to significant improvement in the learning process.

There are significant relationships between learning styles and reading comprehension, indicating that awareness of cognitive styles enhances English language learning through several strategies and techniques. Moreover, a participatory, analytical, and practical approach markedly improves the comprehension of various text types.

Gender does not significantly influence reading comprehension or school performance. Instead, gamification and learning styles have a more substantial and equal effect on both males and females.

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