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The effects of gamification on improving contextual competence of digital slang among generation Z

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Abstract

This study investigates the impact of gamification on improving the contextual competence of digital slang among Generation Z learners. Using a quasi-experimental, pretest-posttest control group design, 112 undergraduate students participated in a 10-week intervention. The experimental group utilized a gamified platform featuring progression indicators and immediate feedback, while the control group followed traditional instruction. Findings reveal that the gamified approach significantly enhanced students' ability to use digital slang accurately within socio-pragmatic contexts ($p < .001$). The results also indicate that gamification fostered higher intrinsic motivation and sustained engagement throughout the intervention. This research contributes to applied linguistics by providing an empirical framework for integrating game mechanics into socio-pragmatic instruction, offering practical implications for educators designing modern, digital-native language environments.

1. Introduction

The rapid proliferation of digital communication platforms in the post-pandemic era has fundamentally altered the landscape of social interaction, particularly for Generation Z. As these digital natives increasingly rely on mediated discourse for education, social connection, and identity construction, their linguistic habits have evolved to prioritize speed, emotional expression, and in-group belonging (Siagian & Yuliana, 2024). Central to this evolution is the emergence of digital slang, which serves not merely as a lexicon of brevity but as a sophisticated socio-pragmatic tool for negotiating power, intimacy, and cultural identity (Phi et al., 2025). As digital communication becomes the primary arena for modern discourse, understanding the nuances of how this slang functions across varied social contexts is no longer an optional academic pursuit but a necessity for effective cross-cultural communication (Iqbal et al., 2026; Miri, 2025).

Despite the ubiquitous use of digital slang among Generation Z, a significant disconnect persists between vocabulary knowledge and pragmatic performance. While learners may be familiar with the literal meanings of slang terms, they frequently encounter pragmatic failure, the inability to use these terms appropriately within specific social or digital contexts (Rehman et al., 2025). This limitation often stems from a lack of exposure to the subtle socio-pragmatic elements, such as politeness norms, paralinguistics, and the socio-cultural rules governing informal discourse

(Gündüz, 2021). Furthermore, research suggests that traditional pedagogical approaches often fail to account for the dynamic, co-constructed nature of digital meaning, leaving students ill-equipped to interpret the affective and ideological intentions behind the slang they encounter online (Hamoudi, 2021; Iqbal et al., 2026).

This study seeks to bridge the gap between classroom instruction and the complex reality of digital discourse by examining the efficacy of gamification as a pedagogical intervention. Specifically, the research aims to quantify the impact of gamified learning environments on the contextual competence of Gen Z learners regarding digital slang. By integrating game-design elements such as progression indicators, feedback loops, and interactive challenges, this study aims to foster a learning environment that promotes intrinsic motivation and sustainable language practices (Luu et al., 2025a; Luu et al., 2025b). The ultimate goal is to provide a systematic basis for educators to design instruction that improves students' ability to navigate the socio-pragmatic demands of 21st-century digital communication. To achieve these objectives, this study addresses the following research questions:

RQ1: Is there a statistically significant difference in the ability to accurately use digital slang in varied social contexts between learners exposed to gamified instruction and those receiving traditional instruction?

RQ2: How does the integration of gamification influence the progression of students' contextual understanding of digital slang from the pre-intervention to the post-intervention stage?

RQ3: To what extent does gamification-based learning sustain students' engagement and motivation in mastering the socio-pragmatic nuances of digital language?

2. Methodology

2.1. Research design

This study employs a quasi-experimental, pretest-posttest control group design to evaluate the impact of gamification on the contextual competence of Gen Z learners regarding digital slang. This design is particularly suitable for educational settings where randomization of individual students may be impractical, allowing the researcher to compare the progress of an experimental group against a control group under controlled variables (Creswell & Creswell, 2018). By administering a pretest before the intervention and a posttest afterward, the design enables the calculation of gain scores, which isolate the effect of the gamified instruction from initial differences in student proficiency (Campbell & Stanley, 2015). This structure aligns with previous empirical studies in computer-assisted language learning that require a rigorous baseline comparison to validate the efficacy of gamified interventions (Dehganzadeh & Dehganzadeh, 2020; Shen et al., 2024).

2.2. Participants

The study involves a sample of 112 undergraduate students recruited from a university in Indonesia, selected through purposive sampling to ensure participants were within the Gen Z generational cohort (born between 1996 and 2010). Inclusion criteria required participants to have active social media usage (daily) and a minimum B1 level of English proficiency to ensure comprehension of the test materials. The participants were assigned into two groups: the experimental group (n=56) and the control group (n=56). The demographic profile of the participants is detailed in Table 3.1 below.

Table 1.

Demographic characteristics of participants

Demographic Variable	Category	Experimental Group (n=56)	Control Group (n=56)	Total (N=112)
Gender	Male	22	24	46
	Female	34	32	66
Age	18-20	30	28	58
	21-23	26	28	54
English Proficiency	B1	25	27	52
	B2	31	29	60
Social Media Usage	High (≥ 4 hours/day)	40	38	78
	Moderate (< 4 hours/day)	16	18	34

2.3. Instruments

The measurement of contextual competence is conducted through a validated pretest and posttest consisting of thirty digital slang items embedded within thirty authentic social media scenarios (e.g., WhatsApp threads, TikTok comment sections). Participants are required to select the most socio-pragmatically appropriate slang term to complete the interaction, with scores ranging from 0 to 30. The experimental group utilizes a custom-designed gamified platform that incorporates progression indicators (experience points), immediate corrective feedback loops, and competitive leaderboards to stimulate intrinsic motivation (Luu et al., 2025a). In contrast, the control group undergoes the same curriculum using a traditional approach, involving teacher-led explanations of slang definitions, paper-based reading materials, and standard gap-fill exercises without the use of interactive game mechanics. Lesson plans for both groups are synchronized in terms of target vocabulary content and instructional time to ensure the experimental effect is attributed solely to the gamified nature of the intervention.

2.4. Data collection procedure

The data collection process follows a longitudinal structure spanning three months, from May 2025 to September 2025. During the first week of September 2025, both groups completed the pretest to establish a performance baseline. Following this, the intervention phase commenced and lasted for ten weeks. During this period, the experimental group engaged with the gamified platform during supplemental practice sessions, while the control group participated in traditional classroom workshops. Researchers monitored participation rates and engagement through the platform's analytical dashboard for the experimental group and attendance logs for the control group. Finally, in the third week of November 2025, both groups completed the posttest under the same environmental conditions as the pretest to ensure data consistency and validity.

2.5. Data analysis

Data analysis is performed using IBM SPSS Statistics. Descriptive statistics, including mean scores and standard deviations, are used to summarize the performance of both groups at both testing intervals. To address the research questions regarding the effectiveness of the intervention, an Independent Samples T-test is conducted to compare posttest scores. Given that minor differences in baseline proficiency may exist, an Analysis of Covariance (ANCOVA) is utilized to control for pretest scores, effectively adjusting the posttest means to account for initial

variations in student ability (Field, 2018). This methodological rigor ensures that any observed improvement in contextual competence can be confidently attributed to the gamified instructional approach rather than pre-existing differences between the cohorts.

3. Findings

3.1. Comparative analysis of posttest performance

The analysis of post-intervention data indicates a marked disparity between the two pedagogical groups. As shown in Table 4.1, the experimental group achieved a significantly higher mean score ($M = 24.82, SD = 2.15$) compared to the control group ($M = 19.45, SD = 2.87$). An independent samples t-test confirmed that this difference is statistically significant ($t(110) = 11.24, p < .001$), suggesting that the integration of gamified mechanics provides a distinct advantage in mastering the socio-pragmatic nuances of digital slang.

Table 2.

Independent Samples T-Test for Posttest Scores

Group	N	Mean	SD	t-value	df	Sig. (2-tailed)
Experimental	56	24.82	2.15	11.24	110	.000
Control	56	19.45	2.87			

3.2. Progression of contextual understanding (RQ2)

To evaluate the progression from pre-intervention to post-intervention, an ANCOVA was performed, using pretest scores as a covariate to ensure the rigor of the comparison. As illustrated in Table 4.2, the experimental group demonstrated a substantial gain in contextual competence, with an adjusted mean of 24.78. The analysis confirms that the gamified intervention was a significant predictor of posttest performance ($F(1,109) = 84.12, p < .001$), effectively demonstrating that gamification accelerates the internalization of contextual rules compared to traditional instruction.

Table 3.

ANCOVA Results for Posttest Scores (Covariate: Pretest)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Pretest	125.45	1	125.45	32.12	.000
Group	328.67	1	328.67	84.12	.000
Error	425.68	109	3.91		

Sustained engagement and motivation (RQ3)

Engagement data collected over the 10-week period reveals a notable trend in sustained motivation. Table 4.3 displays the mean engagement scores calculated from platform analytics and self-reported motivation surveys. The experimental group maintained high motivation levels throughout the intervention, whereas the control group experienced a decline after the initial weeks. This sustained engagement suggests that the continuous feedback and progression indicators inherent in the gamified environment effectively nurtured intrinsic motivation as defined by Self-Determination Theory.

Table 4.3.

Mean Engagement and Motivation Scores (Weeks 1-10)

Timeframe	Experimental Group (M)	Control Group (M)
Week 2	4.62	4.21
Week 6	4.58	3.55

Week 10	4.45	3.12

4. Discussion

The empirical findings of this study reinforce the growing consensus that gamification, when theory-driven, serves as a transformative pedagogical tool for socio-pragmatic development. The significant improvement in the experimental group's contextual accuracy suggests that gamification bridges the critical gap between passive vocabulary acquisition and active pragmatic performance. By situating digital slang within interactive, feedback-rich environments, the intervention allowed learners to experience and rectify pragmatic failures in a low-stakes setting, echoing the pedagogical benefits of mobile-assisted learning highlighted by Ishaq et al. (2021). Furthermore, the sustained engagement observed in this study validates the theoretical mechanisms proposed by Luu et al. (2025b) and Shen et al. (2024), demonstrating that game elements like progression indicators and immediate feedback loops satisfy the fundamental psychological needs of competence and relatedness.

This study further supports the perspective that digital slang functions as a complex socio-pragmatic strategy, a tool for power negotiation and emotional attunement rather than a static list of terms (Phi et al., 2025; Miri, 2025). As Iqbal et al. (2026) observed, meaning in digital discourse is co-constructed; therefore, teaching strategies must mirror this fluidity. The failure of the control group to maintain long-term engagement suggests that traditional, didactic methods are increasingly inadequate for the digital-native demographic of Generation Z, who expect dynamic, responsive communication environments (Rahman et al., 2024; Siagian & Yuliana, 2024). Consequently, educators are encouraged to transition from purely transmission-based models to gamified learning frameworks that provide constant, actionable feedback, which has been shown to be essential in preventing the socio-pragmatic misunderstandings documented by Rehman et al. (2025) and Gündüz (2021).

Ultimately, this research implies that integrating gamification is not merely about increasing fun, but about fostering a sustainable, culturally responsive learning environment that aligns with the specific affective and cognitive needs of modern learners. Educators who adopt these theory-driven gamified models can better assist students in navigating the socio-pragmatic nuances of 21st-century discourse, ensuring they possess the communicative resilience required for the post-pandemic digital economy (Adzmi et al., 2024; Flores, 2015; Roseni & Muho, 2024). Future pedagogy must therefore prioritize the synergy between technological integration and socio-pragmatic competence to prepare learners for the complex social realities of mediated communication (Dehganzadeh & Dehganzadeh, 2020; Hamoudi, 2021).

5. Conclusion

This study demonstrates that gamification significantly enhances Gen Z students' contextual competence in using digital slang by fostering intrinsic motivation and iterative pragmatic practice. Despite these positive outcomes, the research is limited by its moderate sample size and the specific cultural focus on a single university setting, which restricts the generalizability of the findings to broader demographics. Future studies should aim for larger, multi-national longitudinal designs to explore how varied cultural backgrounds influence the efficacy of different game elements. Additionally, researchers are encouraged to investigate the long-term retention of socio-pragmatic skills beyond the classroom, ensuring that gamified interventions continue to support learners as they adapt to the rapidly shifting landscape of the digital economy.

Declarations

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Author contributions

Arjuno Dwivatra: Conceptualization, methodology, gamified platform design, data collection, and formal analysis.

Laksmana Vryntano: Writing-original draft, visualization, software integration, project administration, and supervision of the final manuscript. Both authors have read and agreed to the published version of the manuscript.

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Conflicts of interest

The authors declare no conflicts of interest. The authors have no financial, personal, or professional affiliations that could be perceived as having influenced the results or interpretation of this research.

Ethics statement

The research protocol was reviewed by the institutional ethics committee of Universitas Negeri Malang, which granted an exemption/waiver from formal ethics approval. This determination was based on the study's design as a low-risk educational intervention that posed no physical or psychological harm to participants. All procedures were conducted in accordance with the ethical principles for educational research. Participation was voluntary, and all collected data were anonymized to ensure the confidentiality and privacy of the respondents throughout the study.

AI-assisted technology declaration

The authors declare that they utilized AI-assisted technologies (specifically, ChatGPT, Gemini and Quillbot) during the preparation of this work to enhance readability, refine language, and structure the manuscript in accordance with academic standards. Following the use of these tools, the authors reviewed, edited, and took full responsibility for the final content of the article.

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