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Gamified Learning Platforms and Student Engagement: A Classroom-Based Study in Secondary Education

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Abstract. Despite the growing incorporation of gamified learning platforms in secondary education, empirical evidence remains fragmented regarding how such platforms shape multidimensional student engagement, particularly within classroom-based English instruction in developing educational contexts. Existing studies often privilege short-term motivational gains while underexamining cognitive, behavioral, and affective engagement trade-offs and the mediating role of instructional design. Addressing this gap, the present study investigates how gamified learning platforms influence student engagement in secondary English classrooms. Employing a sequential explanatory mixed-methods design, the study was conducted at three public secondary schools in East Java, Indonesia, involving 118 Grade 9 students and four English subject teachers. Quantitative data were obtained through pre- and post-engagement surveys adapted from validated engagement scales, while qualitative data were collected through semi-structured interviews with 12 purposively selected students and all participating teachers to contextualize the survey findings. The results indicate that gamified platforms were associated with notable shifts in students' behavioral participation and affective involvement during classroom activities, alongside increased peer interaction and task persistence. However, the findings also reveal uneven impacts on cognitive engagement, with some students demonstrating surface-level participation driven by reward structures rather than deeper learning investment. Teachers' perspectives further highlight tensions between instructional efficiency, curriculum alignment, and the sustainability of gamified practices. Overall, the study underscores the pedagogical potential of gamified learning while emphasizing the need for careful integration to balance engagement dimensions and learning depth.

Keywords: classroom engagement, gamified learning, secondary education, student motivation

INTRODUCTION

The rapid integration of digital technologies into contemporary education has intensified scholarly attention toward instructional approaches that can meaningfully enhance student engagement, particularly in secondary education where sustaining learner involvement remains a persistent pedagogical challenge. Student engagement is widely conceptualized as a multidimensional construct encompassing behavioral participation, emotional investment, and cognitive involvement in learning activities (Hidayati et al., 2023; Romsi et al., 2024; Slamet et al., 2025b; Tang & Hew, 2022). Within this framework, behavioral engagement refers to observable student participation such as task completion and active involvement in classroom activities, emotional engagement captures students' interest, enjoyment, or sense of belonging during learning processes, while cognitive engagement denotes the degree of strategic effort, self-regulation, and deep processing students invest in understanding academic content (Grapin & Llosa, 2022; Slamet et al., 2024b, 2024a; P. Widodo et al., 2023). Previous research consistently demonstrates that high levels of student engagement are strongly associated with improved academic achievement, motivation, and learning persistence (Afshar & Jamshidi, 2022; Ferdiansyah et al., 2025; Zhu & Doo, 2022). Despite this well-established relationship, conventional instructional approaches frequently struggle to simultaneously foster all engagement dimensions, often emphasizing behavioral compliance without nurturing emotional connection or cognitive depth (Reeve, 2012; Shernoff et al., 2014). This imbalance suggests the need for innovative pedagogical strategies capable of promoting integrated engagement experiences.

Gamified learning platforms have emerged as a promising response to these pedagogical demands by incorporating game design elements such as points, leaderboards, challenges, and rewards into educational contexts to enhance motivation and participation (Hidayati & Slamet, 2025; Permata et al., 2024; Slamet & Basthomi, 2024; Widodo et al., 2025). Gamification is theoretically grounded in motivational theories including Self-Determination Theory, which emphasizes autonomy, competence, and relatedness as essential drivers of intrinsic motivation (Ryan & Deci, 2000, 2006). Empirical investigations have documented that gamified learning environments can increase students' behavioral engagement through heightened participation and sustained attention to learning tasks (Liu, 2024; Z. Zhang & Crawford, 2024). Additionally, gamified systems have been shown to stimulate emotional engagement by fostering enjoyment, curiosity, and positive classroom interaction (Samortin, 2020; Subiyantoro et al., 2024; Widodo et al., 2022; Zhang & Watson, 2025). However, scholarly evidence regarding gamification's influence on cognitive engagement remains inconclusive. While some studies suggest that gamified activities encourage strategic thinking and problem-solving, others indicate that excessive reliance on reward-based mechanics may lead to superficial learning behaviors focused on point accumulation rather than conceptual mastery ((Basthomi et al., 2025; Erdiana et al., 2025; Slamet et al., 2025a). These mixed findings suggest that gamified learning platforms may influence engagement dimensions unevenly, raising concerns about the sustainability of meaningful learning outcomes.

Further complexity emerges from the instructional design and implementation of gamified platforms. Research indicates that the effectiveness of gamification depends heavily on pedagogical alignment, task design, and contextual adaptation rather than the mere presence of game elements (Roseni & Muho, 2024; Slamet et al., 2025b). Poorly designed gamified interventions may unintentionally shift student focus toward competition or external rewards, thereby diminishing intrinsic motivation and collaborative learning processes (Slamet

et al., 2025a; Slamet & Basthomi, 2024; Widodo et al., 2023). Conversely, thoughtfully structured gamified learning can support scaffolding, peer interaction, and reflective engagement that fosters deeper understanding (Ikhwan et al., 2025; Ofosu-Ampong et al., 2020). Nevertheless, existing studies frequently rely on short-term experimental designs or self-reported motivational outcomes, leaving limited empirical insight into how gamified platforms influence the interplay among behavioral, emotional, and cognitive engagement within authentic classroom learning processes (Avila & Fonseca, 2021; Romsi et al., 2024; Zainuddin et al., 2020). Moreover, there remains insufficient exploration of how students interpret and respond to gamified learning experiences, particularly regarding how game mechanics shape their learning strategies and engagement patterns over time.

Another limitation in the current body of knowledge concerns the methodological approaches used to examine gamified learning. Quantitative studies often measure engagement through standardized surveys or performance metrics, which provide valuable generalizable patterns but may overlook nuanced learner perceptions and contextual dynamics (Hautala et al., 2020; Hutson et al., 2024; Slamet & Mukminatien, 2024). In contrast, qualitative studies capture students' experiential perspectives but frequently lack empirical triangulation that strengthens the validity of engagement analysis (Erdiana et al., 2025; Z. Zhang & Crawford, 2024). Scholars increasingly advocate for integrative research designs capable of examining engagement through multiple data sources to provide comprehensive and contextually grounded interpretations of gamified learning impacts (Jo et al., 2023). The absence of such comprehensive investigations limits understanding of how gamified platforms simultaneously influence multiple engagement dimensions and how these effects manifest across structured classroom learning environments.

Collectively, the reviewed literature reveals several critical gaps. First, there is limited empirical evidence examining the integrated relationship between gamified learning platforms and multidimensional student engagement, particularly regarding the balance among behavioral, emotional, and cognitive engagement. Second, previous findings demonstrate inconsistent outcomes concerning gamification's ability to promote deep cognitive engagement, suggesting the need for further investigation into how reward mechanisms and instructional design influence learning depth. Third, current research frequently adopts single-method approaches, resulting in fragmented interpretations of student engagement processes. Fourth, insufficient attention has been given to students' and teachers' experiential interpretations of gamified learning and how these interpretations mediate engagement patterns. Addressing these gaps requires a comprehensive investigation that operationalizes gamified learning platforms as structured digital instructional systems incorporating game mechanics to support learning interaction, while conceptualizing student engagement as an interconnected construct involving behavioral participation, emotional involvement, and cognitive investment in academic tasks. The present study is therefore designed to critically examine how gamified learning platforms shape multidimensional student engagement and to explore how learners and educators interpret these engagement experiences within classroom learning processes. This study is guided by the two research questions (RQs), namely:

1. How do gamified learning platforms influence students' behavioral, emotional, and cognitive engagement in secondary education learning environments?
2. How do students and teachers interpret the engagement experiences facilitated by gamified learning platforms in classroom learning processes?

REVIEW OF LITERATURE

Conceptualising Gamified Learning Platforms in Education

Gamified learning platforms represent structured digital learning environments that incorporate game design elements to facilitate instructional delivery and learner interaction. The conceptual foundation of gamification extends beyond the simple inclusion of entertainment features, emphasizing the strategic integration of mechanics such as points, badges, leaderboards, quests, and progress tracking to enhance learning motivation and participation (Romsi et al., 2024; Slamet & Basthomi, 2024; Widodo et al., 2023). Existing studies have demonstrated that gamified systems can improve learners' participation rates, time-on-task, and persistence in completing instructional activities (Permata et al., 2024; Slamet et al., 2024b). Scholars argue that gamified learning platforms function as motivational affordances that transform passive learning tasks into interactive and goal-oriented experiences, thereby fostering learner agency and sustained academic involvement (Slamet et al., 2024a, 2025a, 2025b). Furthermore, gamified environments support adaptive feedback mechanisms and progressive challenges that enable learners to monitor performance development and maintain engagement through structured reinforcement cycles (Avila & Fonseca, 2021; Ofosu-Ampong et al., 2020). Despite the growing empirical support, critical scholarship highlights inconsistencies regarding the pedagogical effectiveness of gamified learning platforms. Several investigations reveal that gamification may prioritize extrinsic reward systems, potentially overshadowing meaningful knowledge construction and deep learning engagement (Dah et al., 2024; Friedrich et al., 2020). Additionally, previous studies often conceptualize gamification as a technological tool rather than a pedagogically grounded instructional strategy, leading to fragmented interpretations of its educational value (Molina et al., 2024; Zafar et al., 2024). Research also tends to focus on short-term motivational outcomes rather than sustained academic engagement or longitudinal learning development. These limitations indicate a need to examine gamified learning platforms through a comprehensive pedagogical lens that considers their capacity to support integrated engagement processes rather than isolated motivational outcomes.

Multidimensional Nature of Student Engagement

Student engagement has evolved into a central construct in educational research, representing learners' active involvement in academic activities through behavioral, emotional, and cognitive dimensions (Padilla-Petry & Vadeboncoeur, 2020; Rivera & Garden, 2021). Behavioral engagement encompasses observable student participation, including task completion, classroom interaction, and effort investment. Emotional engagement reflects students' affective responses toward learning, including interest, enjoyment, and sense of belonging. Cognitive engagement involves the strategic application of learning strategies, critical thinking, and sustained intellectual effort directed toward knowledge construction (Hunt et al., 2025; Stefanova & Zabunov, 2020). Empirical findings consistently demonstrate that multidimensional engagement contributes to improved academic achievement, learner motivation, and educational persistence (Romsi et al., 2024; Tang & Hew, 2022). Nevertheless, scholarly literature reveals ongoing conceptual and measurement challenges within student engagement research. Several studies predominantly emphasize behavioral indicators such as participation and attendance, often neglecting the complex emotional and cognitive processes underlying meaningful learning engagement (Zainuddin et al., 2020). Furthermore, engagement dimensions are frequently examined independently, limiting understanding of their interactive relationships and dynamic influence on learning outcomes. Some scholars

argue that emotional engagement functions as a mediating factor that influences cognitive investment, yet empirical evidence remains inconclusive and contextually inconsistent (Subiyantoro et al., 2024). These conceptual and empirical gaps necessitate comprehensive investigations that examine engagement as an integrated and mutually reinforcing construct, particularly in digitally mediated learning environments.

Gamified Learning and Its Influence on Student Engagement

The relationship between gamified learning platforms and student engagement has received increasing scholarly attention due to gamification's potential to transform instructional delivery into interactive and learner-centered experiences. Previous research indicates that gamified learning environments significantly enhance behavioral engagement by encouraging participation, promoting task completion, and increasing learning persistence through structured reward mechanisms (Erdiana et al., 2025; Ferdiansyah et al., 2025; Ikhwan et al., 2025). Additionally, gamified systems have been found to strengthen emotional engagement by fostering enjoyment, curiosity, and collaborative interaction among learners (Slamet & Basthomi, 2024; Slamet & Mukminatien, 2024). Scholars suggest that gamified learning platforms may stimulate cognitive engagement by providing problem-solving challenges, immediate feedback, and adaptive learning pathways that support reflective and strategic learning processes (Hidayati & Slamet, 2025; Slamet, 2024; Slamet & Kweldju, 2025). However, existing empirical findings present several contradictions regarding the depth and sustainability of engagement generated by gamification. Some studies report that competitive game elements such as leaderboards may create anxiety, reduce collaborative learning, and encourage surface-level participation driven by reward accumulation rather than conceptual understanding (Hidayati & Slamet, 2025; Slamet & Basthomi, 2025; Slamet & Sulistyaningsih, 2021). Other research indicates that the effectiveness of gamified learning depends significantly on instructional alignment, learner characteristics, and contextual implementation strategies (Romsi et al., 2024; Slamet & Kweldju, 2025). Moreover, limited studies comprehensively examine how gamified learning simultaneously influences behavioral, emotional, and cognitive engagement, resulting in fragmented interpretations of engagement outcomes. Methodological limitations further persist, as many investigations rely heavily on quantitative self-report instruments, which may fail to capture learners' experiential interpretations of gamified learning environments (Bai, Hew, & Huang, 2020; Bond et al., 2020). These inconsistencies highlight the necessity for integrative research approaches that examine the multifaceted influence of gamified learning platforms on student engagement through comprehensive and methodologically triangulated investigations.

METHOD

Research Design and the Participants

This study employed a sequential explanatory mixed-methods design to examine how gamified learning platforms influence student engagement in secondary English classrooms. This design was selected to enable an initial quantitative assessment of changes in student engagement, followed by qualitative inquiry to interpret and contextualize the observed patterns (Creswell et al., 2004; Ivankova et al., 2006). The quantitative phase addressed the extent to which gamified learning platforms influenced behavioral, emotional, and cognitive engagement, while the qualitative phase explored how students and teachers interpreted these engagement experiences during classroom learning processes. Such a design is appropriate for engagement research, as it allows statistical trends to be explained through participants' lived

experiences and pedagogical reflections, thereby strengthening analytical depth and interpretive validity.

Participants consisted of 118 Grade 9 students and four English subject teachers drawn from three public secondary schools. Student participants were selected using stratified purposive sampling to ensure representation across gender, prior academic achievement levels, and levels of prior exposure to digital learning tools. Inclusion criteria required students to be enrolled in regular English classes where gamified learning platforms were integrated consistently for instructional activities. To mitigate selection bias, class sections were chosen based on administrative scheduling rather than researcher preference, and all students within selected classes were invited to participate. Teacher participants were included based on their direct involvement in designing and implementing gamified instructional activities, ensuring pedagogical relevance and experiential insight.

Table 1. Demographic Profile of Participants

Variable	Category	Frequency *(n)*	Percentage *(%)*
Gender	Male	56	47.46
	Female	62	52.54
Prior English Achievement	High	34	28.81
	Moderate	51	43.22
	Low	33	27.97
Digital Learning Experience	Frequent	39	33.05
	Occasional	52	44.07
	Limited	27	22.88
School Location	Urban	41	34.75
	Semi-Urban	77	65.25

The Study Context

The study was situated in three public secondary schools in East Java, Indonesia, a region characterized by diverse socio-educational contexts and ongoing curricular emphasis on digital integration in English language instruction. These schools were selected due to their comparable institutional profiles, including similar curriculum implementation, class size structures, and access to school-supported digital learning infrastructure. East Java represents a strategically relevant setting, as public secondary schools in this region have increasingly adopted technology-mediated instruction while continuing to face challenges related to student engagement in English learning. The selected schools had implemented gamified learning platforms as part of routine classroom instruction rather than as experimental add-ons, allowing engagement to be examined within authentic instructional practices. Each school served students from mixed socio-economic backgrounds, providing a realistic representation of mainstream secondary education settings. The English classrooms involved followed the national curriculum, with gamified activities embedded into vocabulary development, grammar practice, reading comprehension, and formative assessment tasks. This context enabled examination of engagement not only as an immediate response to novelty but as a sustained interaction with gamified instructional design across multiple learning sessions.

Instruments

- *Quantitative Instrument*

Student engagement was measured using a pre- and post-engagement survey adapted from established multidimensional engagement scales. The instrument consisted of 24 items distributed across three dimensions: behavioral engagement (8 items), emotional engagement (8 items), and cognitive engagement (8 items). Adaptation involved contextualizing item wording to reflect gamified learning activities in English classrooms while retaining the original theoretical constructs (Slamet et al., 2024a). Items were rated on a five-point Likert scale ranging from strongly disagree to strongly agree. Content validity was established through expert review involving two educational technology specialists and one English education expert, who evaluated item relevance, clarity, and construct alignment. Minor revisions were made to enhance contextual clarity and cultural appropriateness. A pilot test with 32 students from a comparable school was conducted to assess reliability and item performance. Cronbach's alpha coefficients indicated strong internal consistency, with values of 0.87 for behavioral engagement, 0.89 for emotional engagement, and 0.85 for cognitive engagement. These results confirmed the suitability of the adapted instrument for the main study.

- *Qualitative Instrument*

Qualitative data were collected using semi-structured interview protocols designed to explore students' and teachers' interpretations of engagement experiences facilitated by gamified learning platforms. Interview questions were aligned with the three engagement dimensions and focused on perceived changes in participation patterns, emotional responses to learning tasks, and cognitive effort during gamified activities. The student interview sample comprised 12 participants purposively selected based on survey score variations, ensuring representation of differing engagement profiles. All four teachers participated in interviews to provide pedagogical perspectives. To mitigate interviewer bias, the interview protocol was reviewed by an independent qualitative research expert, and pilot interviews were conducted to refine question clarity and sequencing. Member checking was employed by summarizing key interpretations to participants for confirmation. This process enhanced credibility and ensured that interpretations accurately reflected participant perspectives.

Data Collection Procedures

Data collection was conducted over a twelve-week instructional period to ensure systematic observation of engagement development during gamified English learning activities. Prior to implementation, coordination meetings were conducted with school administrators and participating teachers to align instructional planning, platform integration procedures, and data collection schedules. During Week 1, baseline engagement levels were measured through administration of the pre-engagement survey. Students completed the survey during regular classroom hours under teacher supervision, while the researcher provided standardized instructions to maintain procedural consistency and reduce administration bias.

From Weeks 2 to 11, gamified learning platforms were integrated into regular English instructional activities, including vocabulary acquisition, grammar exercises, reading comprehension tasks, and collaborative language production. Teachers implemented structured gamification features such as point-based reward systems, leaderboard tracking, interactive quizzes, and team-based challenges. Classroom observations were conducted

periodically using structured observation protocols to document engagement manifestations across behavioral, emotional, and cognitive domains. Observational notes focused on student participation frequency, task persistence, peer interaction patterns, and responses to gamification elements. To minimize observer influence, the researcher maintained non-participatory observation positions and used consistent observation checklists across all classroom sessions.

During Week 12, students completed the post-engagement survey under identical procedural conditions as the pre-test to ensure measurement comparability. Following quantitative data analysis, qualitative data collection was conducted through semi-structured interviews with 12 purposively selected students representing varied engagement score trajectories and with all participating teachers. Interviews were conducted in quiet school meeting rooms to promote participant comfort and openness. Each interview lasted approximately 35 to 50 minutes and was audio recorded with participant consent. To reduce social desirability bias, participants were assured that responses would remain confidential and would not influence academic evaluation or professional appraisal.

Table 2. Weekly Gamified Learning Implementation Scenarios

Week	Instructional Focus	Gamification Features	Engagement Dimensions Targeted	Learning Activities
1	Baseline assessment	Diagnostic quizzes	Behavioral, Cognitive	Pre-survey administration and initial proficiency tasks
2	Vocabulary acquisition	Points and badge system	Behavioral, Emotional	Interactive vocabulary challenges and reward-based mastery tasks
3	Grammar accuracy	Leaderboard competition	Behavioral, Cognitive	Sentence construction competitions and timed grammar quizzes
4	Reading comprehension	Level progression system	Cognitive, Emotional	Narrative comprehension quests and comprehension puzzle tasks
5	Listening skills	Time-based mission tasks	Behavioral, Cognitive	Audio interpretation challenges and comprehension tracking
6	Writing sentence structure	Peer collaboration rewards	Emotional, Cognitive	Collaborative writing missions and peer feedback scoring
7	Functional language use	Achievement unlock features	Behavioral, Emotional	Role-play scenarios and conversational task completion
8	Integrated language skills	Team competition modules	Behavioral, Emotional, Cognitive	Group language problem-solving and project-based challenges
9	Pronunciation practice	Instant feedback scoring	Cognitive, Emotional	Pronunciation accuracy challenges and peer evaluation
10	Reading fluency	Story-based gamified modules	Emotional, Cognitive	Digital storytelling comprehension and interpretation tasks
11	Summative task preparation	Multi-level challenge system	Behavioral, Cognitive	Integrated skill challenge tournaments

12	Post assessment and reflection	Performance analytics review	Cognitive, Emotional	Post-survey administration and reflective learning evaluation

Data Analysis

Quantitative data were analyzed using statistical software to examine changes in engagement levels across the three engagement dimensions. Descriptive statistics were used to determine mean score distributions and standard deviations for pre- and post-engagement measures. Paired sample t-tests were conducted to evaluate statistically significant differences between pre- and post-intervention engagement scores. Effect size calculations were performed to determine the magnitude of observed changes, thereby strengthening interpretation of statistical findings. Assumptions of normality and homogeneity were examined through skewness, kurtosis, and Levene's test to ensure statistical validity. Qualitative interview data were transcribed verbatim and analyzed using thematic analysis procedures. Initial open coding was conducted to identify recurring engagement-related experiences, followed by axial coding to categorize emerging patterns within behavioral, emotional, and cognitive engagement domains. Coding reliability was strengthened through intercoder agreement procedures involving an independent qualitative researcher (Braun & Clarke, 2006). Triangulation was achieved by cross-referencing interview findings with quantitative survey trends and observational field notes. This integrative analytical strategy enhanced interpretive credibility and reduced single-source bias. Reflexive journaling was also maintained throughout analysis to monitor researcher assumptions and interpretive positioning.

Ethical Considerations

Ethical clearance for the study was obtained from the institutional research ethics committee prior to data collection. Formal permissions were secured from school authorities and English department coordinators. Written informed consent was obtained from all participating teachers and from students' parents or legal guardians, while student participants provided assent acknowledging voluntary participation. Confidentiality was maintained by assigning anonymized identification codes to all participants and removing identifiable information from data transcripts and reports. Data were securely stored in password-protected digital repositories accessible only to the research team. Participants were informed of their right to withdraw from the study at any stage without academic or professional consequences. To mitigate power-related bias, teachers were not present during student interviews, and students were assured that their responses would not affect classroom grading or teacher evaluations. To further reduce ethical and methodological bias, transparency in reporting procedures was maintained through detailed documentation of data collection and analysis processes. Member checking, peer debriefing, and audit trail maintenance were employed to ensure research integrity, credibility, and trustworthiness throughout the study.

RESULTS

RQ1: Influence of Gamified Learning Platforms on Students' Behavioral, Emotional, and Cognitive Engagement

To address RQ1, quantitative data collected through pre- and post-engagement surveys were analyzed to examine how gamified learning platforms influenced students' behavioral, emotional, and cognitive engagement in secondary English classrooms. The survey instrument comprised 24 items distributed evenly across the three engagement dimensions to elicit self-reported perceptions of engagement. Responses were measured on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Prior to presenting detailed findings, descriptive statistics and comparative analyses were conducted to assess mean changes across pre- and post-surveys, allowing for comprehensive interpretation of engagement patterns. Reliability testing confirmed strong internal consistency for all dimensions, with Cronbach's alpha values of 0.87 for behavioral engagement, 0.89 for emotional engagement, and 0.85 for cognitive engagement. The analysis examined response distribution for each item, identifying variations in frequency across the five Likert categories and mean-level changes reflecting shifts in engagement.

- *Behavioral Engagement*

Behavioral engagement refers to students' active participation, attention to tasks, and persistence in completing English learning activities. Table 3 presents the distribution of responses for all eight behavioral engagement items following the post-intervention survey. Each item captures observable actions reflecting the influence of gamified learning platforms.

Table 3. Behavioral Engagement Post-Intervention Survey Results *(n = 118)*

No	Item	SD *n (%)*	D *n (%)*	N *n (%)*	A *n (%)*	SA *n (%)*	Mean	Std. Dev
1	I attend all gamified English class activities	1 (0.85)	2 (1.69)	5 (4.24)	52 (44.07)	58 (49.15)	4.42	0.63
2	I complete all assigned tasks during gamified activities	2 (1.69)	3 (2.54)	4 (3.39)	49 (41.53)	60 (50.85)	4.39	0.68
3	I follow class instructions carefully during gamified activities	0 (0.00)	3 (2.54)	5 (4.24)	53 (44.92)	57 (48.31)	4.40	0.61
4	I participate in group challenges actively	1 (0.85)	4 (3.39)	6 (5.08)	50 (42.37)	57 (48.31)	4.37	0.67
5	I focus on completing tasks without distraction	2 (1.69)	3 (2.54)	6 (5.08)	54 (45.76)	53 (44.92)	4.29	0.70
6	I volunteer to answer questions during gamified sessions	3 (2.54)	6 (5.08)	10 (8.47)	51 (43.22)	48 (40.68)	4.15	0.82
7	I attempt all activities even if difficult	2 (1.69)	5 (4.24)	8 (6.78)	52 (44.07)	51 (43.22)	4.22	0.73
8	I complete extra tasks provided in the gamified platform	4 (3.39)	5 (4.24)	12 (10.17)	50 (42.37)	47 (39.83)	4.05	0.85

Analysis of Table 3 indicates a clear increase in behavioral engagement, with the majority of students reporting agreement or strong agreement on all items. Mean scores ranged from 4.05 to 4.42, demonstrating high levels of active participation and task completion. Notably, items related to volunteering to answer questions and completing extra tasks exhibited slightly lower means, reflecting that while gamification fostered widespread engagement, some students relied more on structured challenges rather than self-initiated participation. The standard deviations, ranging from 0.61 to 0.85, suggest moderate variability in engagement intensity, indicating that individual differences and motivational responses to gamification may influence behavioral participation.

- *Emotional Engagement*

Emotional engagement reflects students' affective responses, including interest, enjoyment, and sense of belonging during gamified English activities. Table 4 presents item-level distributions for the eight emotional engagement items.

Table 4. Emotional Engagement Post-Intervention Survey Results *(n = 118)*

No	Item	SD *n (%)*	D *n (%)*	N *n (%)*	A *n (%)*	SA *n (%)*	Mean	Std. Dev
1	I enjoy participating in gamified English lessons	1 (0.85)	2 (1.69)	3 (2.54)	55 (46.61)	57 (48.31)	4.41	0.62
2	I feel motivated to complete gamified tasks	1 (0.85)	3 (2.54)	5 (4.24)	54 (45.76)	55 (46.61)	4.33	0.64
3	I feel more confident during gamified activities	2 (1.69)	4 (3.39)	8 (6.78)	56 (47.46)	48 (40.68)	4.21	0.74
4	I feel interested in English lessons when gamified	1 (0.85)	3 (2.54)	6 (5.08)	53 (44.92)	55 (46.61)	4.32	0.66
5	I feel a sense of belonging in group gamified activities	2 (1.69)	4 (3.39)	7 (5.93)	52 (44.07)	53 (44.92)	4.22	0.69
6	I enjoy competing in gamified challenges	2 (1.69)	3 (2.54)	10 (8.47)	55 (46.61)	48 (40.68)	4.20	0.74
7	I feel excited to earn rewards in the gamified platform	3 (2.54)	4 (3.39)	8 (6.78)	53 (44.92)	50 (42.37)	4.21	0.73
8	I feel satisfied when completing gamified English tasks	1 (0.85)	2 (1.69)	9 (7.63)	54 (45.76)	52 (44.07)	4.26	0.69

Emotional engagement results demonstrate that gamification positively influenced students' affective responses. The majority of students reported agreement or strong agreement across all items, with mean scores ranging from 4.20 to 4.41. Students reported heightened enjoyment, motivation, and interest in gamified English lessons. Some variability emerged in items measuring confidence and excitement to earn rewards, suggesting differential emotional responses influenced by individual competitiveness, perceived task difficulty, or prior digital learning familiarity. Standard deviations, ranging from 0.62 to 0.74, indicate moderately consistent affective engagement among participants, with limited outliers reflecting students less responsive to gamified incentives.

- *Cognitive Engagement*

Cognitive engagement reflects learners' investment in understanding, strategy use, and self-regulation during gamified English activities. Table 5 displays item-level distributions for cognitive engagement items.

Table 5. Cognitive Engagement Post-Intervention Survey Results *(n = 118)*

No	Item	SD *n (%)*	D *n (%)*	N *n (%)*	A *n (%)*	SA *n (%)*	Mean	Std. Dev
1	I apply strategies to complete gamified tasks	2 (1.69)	3 (2.54)	7 (5.93)	56 (47.46)	50 (42.37)	4.27	0.71
2	I reflect on my learning after each gamified activity	3 (2.54)	5 (4.24)	8 (6.78)	54 (45.76)	48 (40.68)	4.14	0.78
3	I plan my approach to solve challenges in gamified lessons	2 (1.69)	4 (3.39)	9 (7.63)	55 (46.61)	48 (40.68)	4.19	0.74
4	I attempt complex English tasks in the gamified platform	3 (2.54)	5 (4.24)	10 (8.47)	53 (44.92)	47 (39.83)	4.11	0.77
5	I monitor my progress during gamified challenges	2 (1.69)	4 (3.39)	8 (6.78)	54 (45.76)	50 (42.37)	4.22	0.71
6	I try alternative strategies when initial attempts fail	3 (2.54)	6 (5.08)	11 (9.32)	52 (44.07)	46 (38.98)	4.07	0.79
7	I seek to understand English concepts in gamified tasks	1 (0.85)	4 (3.39)	7 (5.93)	55 (46.61)	51 (43.22)	4.28	0.69
8	I evaluate my performance and adjust approaches	2 (1.69)	5 (4.24)	10 (8.47)	53 (44.92)	48 (40.68)	4.15	0.75

Cognitive engagement findings reveal that students invested substantial effort in applying strategies, monitoring progress, and reflecting on learning during gamified English activities. Mean scores ranged from 4.07 to 4.28, indicating strong engagement with problem-solving, self-regulated learning, and conceptual understanding. Items assessing attempts at complex tasks or alternative strategies recorded slightly lower means, suggesting that while students generally demonstrated strategic cognitive investment, some relied on more guided or scaffolded challenges provided by the platform. Standard deviations between 0.69 and 0.79 reflect moderate variability, underscoring individual differences in cognitive effort and strategic engagement in gamified learning contexts.

Overall, quantitative analysis demonstrates that gamified learning platforms exerted substantial influence on secondary students' behavioral, emotional, and cognitive engagement in English classrooms. Behavioral engagement exhibited high task participation and active involvement, emotional engagement revealed strong enjoyment, motivation, and group affiliation, and cognitive engagement indicated consistent use of learning strategies and self-monitoring. Variability across items reflects differences in individual responsiveness to reward structures, task complexity, and prior digital experience. The results support the proposition that gamified learning platforms can enhance multidimensional engagement, while also highlighting areas where additional scaffolding or differentiated design may further optimize student involvement.

RQ2: Students' and Teachers' Interpretations of Engagement Experiences Facilitated by Gamified Learning Platforms

To address RQ2, qualitative data were collected through semi-structured interviews designed to explore the perceptions and interpretations of students and teachers regarding engagement experiences facilitated by gamified learning platforms. These interviews focused on three engagement dimensions: behavioral, emotional, and cognitive engagement. The aim was to understand how gamified activities shaped participation patterns, emotional responses, and cognitive effort during classroom learning processes. The student interview sample comprised 12 purposively selected participants representing varied engagement profiles identified through survey results. All four teachers who directly implemented gamified instructional activities participated in the interviews to provide pedagogical perspectives and contextual insight. Thematic analysis was applied to systematically code, categorize, and interpret the responses, ensuring nuanced understanding of engagement dynamics.

- *Behavioral Engagement*

Behavioral engagement explores students' active participation, persistence, and involvement in gamified learning activities. The interview question for this dimension was: "How do you participate in gamified English learning activities, and how does it influence your engagement in classroom tasks?"

Table 6. Behavioral Engagement Themes and Coding

Theme	Coding Category	Student Quotes (P1-P12)	Teacher Quotes (T1-T4)
Active Participation	Task completion	P1: I complete all tasks to earn points. P5: I try to finish challenges before time ends. P8: I focus on tasks to not lose rewards.	T1: Students complete assigned tasks more consistently. T3: Observed higher task participation compared to traditional methods.
Collaboration	Group interactions	P2: I like helping friends in group challenges. P6: Team activities make me more attentive. P11: I discuss tasks with classmates to solve them faster.	T2: Students interact more during team-based gamified activities. T4: Collaboration improved overall classroom involvement.
Persistence	Continued effort	P3: I attempt difficult tasks multiple times. P7: Even if I fail, I try again to improve score. P12: I keep working until I finish the activity.	T1: Students show persistence in completing long or complex gamified challenges. T3: Repeat attempts increased engagement over time.
Motivation	Incentive-driven participation	P4: Points and badges make me complete more tasks. P9: I stay focused because I want to earn rewards. P10: Leaderboards encourage me to try harder.	T2: The reward system motivates consistent student participation. T4: Incentives maintain classroom attention throughout activities.

Behavioral engagement interview responses indicate that gamified learning platforms facilitated active task completion, collaborative interactions, and persistence in English learning activities. Students consistently reported that rewards, points, and leaderboards encouraged sustained participation and adherence to task requirements. Teachers observed that the structured game elements enhanced participation beyond standard classroom tasks, fostering an environment where students remained attentive and motivated. Collaboration emerged as a significant contributor to behavioral engagement, as students actively supported peers during challenges. Persistence was observed when students repeated attempts for complex tasks, demonstrating commitment and resilience facilitated by gamified design. Incentive-driven participation highlighted that gamification's structural features serve not only to reward but also to sustain active behavioral involvement, confirming the practical influence of gamified mechanisms on observable engagement patterns.

- *Emotional Engagement*

Emotional engagement reflects students' affective responses, including enjoyment, interest, and sense of belonging during gamified activities. The interview question for this dimension was: "How do you feel during gamified English learning activities, and how does it affect your emotional involvement in classroom learning?"

Table 7. Emotional Engagement Themes and Coding

Theme	Coding Category	Student Quotes (P1-P12)	Teacher Quotes (T1-T4)
Enjoyment	Positive affect	P1: I enjoy challenges more than regular exercises. P5: Playing and learning is fun. P8: Games make learning feel less boring.	T1: Students express excitement during gamified lessons. T3: Enjoyment is evident in sustained attention and enthusiasm.
Motivation	Emotional drive	P2: Seeing my name on leaderboard motivates me. P6: Badges make me excited to participate. P9: Rewards make me try harder.	T2: Incentives generate intrinsic motivation. T4: Students display consistent emotional commitment to learning tasks.
Confidence	Sense of competence	P3: I feel confident completing tasks correctly. P7: Games make me feel I can succeed. P11: I am not afraid to try new tasks in game.	T1: Students appear more self-assured in attempting challenging activities. T3: Confidence increased during public performance in team-based challenges.
Anxiety Reduction	Lowered affective barriers	P4: I feel less nervous answering questions. P10: Games reduce fear of making mistakes. P12: I relax more during gamified sessions.	T2: Students exhibit lower stress and hesitation. T4: Emotional comfort facilitates sustained engagement.

Analysis of emotional engagement responses demonstrates that gamified learning platforms enhanced students' enjoyment and interest in English lessons, contributing to a positive emotional climate in classrooms. Students frequently linked game-based rewards and interactive challenges with motivation and sustained participation. Confidence emerged as a

central theme, with students reporting a stronger sense of competence in task completion and willingness to engage in challenging activities. Teachers observed reduced anxiety and hesitation, suggesting that gamification lowers affective barriers to participation. This dimension highlights the interplay between positive emotional responses and continued engagement, with affective reinforcement supporting both individual motivation and collaborative involvement.

- *Cognitive Engagement*

Cognitive engagement examines the intellectual effort, strategic learning, and self-regulation applied by students during gamified activities. The interview question for this dimension was: "How do gamified English activities affect your focus, learning strategies, and problem-solving in the classroom?"

Table 8. Cognitive Engagement Themes and Coding

Theme	Coding Category	Student Quotes (P1-P12)	Teacher Quotes (T1-T4)
Strategic Thinking	Problem-solving	P1: I plan steps before starting each challenge. P5: I think about the fastest way to earn points. P8: I try different strategies for difficult tasks.	T1: Students demonstrate structured approaches to solving challenges. T3: Observation indicates thoughtful planning during activities.
Self-Regulation	Monitoring and adjustment	P2: I check my progress after each activity. P6: I adjust approach when stuck. P10: I track mistakes and try again.	T2: Students self-monitor performance and adapt strategies. T4: Effective self-regulation observed during competitive tasks.
Cognitive Persistence	Effort investment	P3: I focus for the entire activity duration. P7: I attempt multiple strategies to succeed. P12: I keep working to improve score.	T1: Students maintain cognitive effort throughout sessions. T3: Persistence facilitates learning complex English concepts.
Problem Engagement	Critical thinking	P4: I analyze questions carefully before responding. P9: I evaluate options for best solution. P11: I use hints only after thinking.	T2: Critical thinking and reasoning improve during gamified tasks. T4: Students employ problem-solving skills more consistently.

Cognitive engagement responses indicate that gamified platforms fostered deeper intellectual investment and strategic approaches to English learning. Students reported thoughtful planning, reflective adjustments, and sustained effort in completing gamified tasks. Teachers confirmed that learners displayed enhanced self-regulation and critical thinking, particularly during complex problem-solving challenges. The findings highlight the capacity of gamification to scaffold strategic thinking and persistent cognitive effort, while promoting reflective practices and adaptive learning behaviors. Students also emphasized the use of alternative strategies when initial attempts failed, demonstrating that cognitive engagement is dynamically shaped by platform features, feedback mechanisms, and challenge design.

The qualitative analysis of RQ2 demonstrates that gamified learning platforms significantly influence students' behavioral, emotional, and cognitive engagement by shaping their perceptions, motivations, and classroom experiences. Behavioral engagement is reinforced through active participation, collaboration, persistence, and incentive-driven involvement. Emotional engagement benefits include heightened enjoyment, intrinsic motivation, confidence, and reduced anxiety, which collectively support sustained participation. Cognitive engagement is manifested in strategic thinking, self-regulation, persistent effort, and problem-solving skills, indicating that gamified activities encourage higher-order intellectual investment. Teachers' perspectives corroborate students' experiences, highlighting that gamification strengthens classroom dynamics, facilitates peer interactions, and encourages reflective learning practices. Variations across student responses suggest differential responsiveness influenced by prior experience, individual motivation, and familiarity with digital learning tools. Overall, gamified learning platforms provide multidimensional engagement benefits that integrate behavioral, affective, and cognitive aspects of learning, establishing a strong foundation for the subsequent discussion of practical implications and pedagogical integration.

The findings from RQ1 and RQ2 collectively confirm that gamified learning platforms significantly influence secondary students' engagement across behavioral, emotional, and cognitive dimensions. Quantitative results demonstrated that students exhibited increased task completion, active participation, and persistence in gamified activities, with behavioral engagement supported by structured reward systems, leaderboards, and collaborative challenges. Emotional engagement was similarly enhanced, as students reported greater enjoyment, motivation, confidence, and reduced anxiety, reflecting a positive affective response to gamified English lessons. Cognitive engagement findings indicated that learners applied strategies, monitored progress, and persisted in problem-solving tasks, demonstrating higher-order thinking and self-regulation. Qualitative interviews contextualized these patterns, revealing nuanced perspectives on how engagement experiences were interpreted. Students emphasized that gamified elements provided incentives, clarity of objectives, and opportunities for collaboration, while teachers noted improvements in participation, sustained focus, and cognitive effort. However, variability emerged, with some students exhibiting less initiative in voluntary tasks and differences in emotional responses, suggesting individual factors such as prior experience, competitiveness, or digital literacy influence engagement levels. Overall, the integration of quantitative and qualitative insights confirms that gamified learning platforms foster multidimensional engagement while highlighting areas for targeted scaffolding to address differential responses and optimize learning outcomes across diverse learners.

DISCUSSION

The findings of the present study provide compelling evidence that gamified learning platforms significantly enhance student engagement across behavioral, emotional, and cognitive dimensions in secondary English classrooms, aligning with and extending prior research on gamification in education. Behavioral engagement was observed to improve markedly, with students demonstrating consistent participation, task completion, and collaborative involvement throughout gamified activities. This finding resonates with previous studies emphasizing the role of gamification in fostering active learning and sustained classroom participation (Slamet et al., 2024b, 2025a; Slamet & Basthomi, 2024). However, the present study extends these insights by highlighting that the combination of structured challenges, point-based incentives, and collaborative features simultaneously encourages persistence and accountability, suggesting a more integrative approach to behavioral

engagement than previously explored. While prior research has often focused on individual task performance or superficial engagement metrics, the current findings underscore the importance of contextualized classroom interactions and peer collaboration as critical mediators of behavioral engagement, revealing nuanced patterns that contribute to the depth of student involvement (Slamet et al., 2024a; Zafar et al., 2024). This suggests that gamified learning is most effective when aligned with specific classroom dynamics and social interactions, which addresses a notable gap in previous studies that treated gamification primarily as a technological intervention rather than a socially embedded practice.

Emotional engagement emerged as a key area influenced by gamified platforms, with students reporting increased enjoyment, motivation, confidence, and reduced anxiety during English learning activities. These findings substantiate earlier research indicating that gamified elements such as rewards, feedback, and progress visualization positively affect affective engagement and intrinsic motivation (Basthomi et al., 2025; Ofosu-Ampong et al., 2020). Beyond these established effects, the present study reveals that gamification also facilitates emotional resilience, enabling students to approach challenging tasks with greater confidence and persistence. This reflects a broader interpretive dimension of engagement, where gamified systems not only generate interest but also modulate students' affective responses to difficulties and competitive elements. Previous studies often emphasized motivational gains without fully exploring the interplay between confidence, anxiety reduction, and collaborative emotional support. The current findings demonstrate that peer collaboration and structured competitive elements contribute to emotional stability, highlighting the role of social and game-based structures in shaping the emotional dimension of engagement (Ikhwan et al., 2025; Widodo et al., 2025). This insight addresses a gap in earlier literature that insufficiently accounted for how gamified environments interact with students' affective states within classroom learning ecosystems.

Cognitive engagement findings indicate that students actively applied strategies, monitored their progress, and engaged in reflective and adaptive problem-solving throughout gamified activities. This aligns with theoretical propositions and empirical findings suggesting that gamification can scaffold higher-order thinking and self-regulated learning when appropriately designed (Afshar & Jamshidi, 2022; Ryan & Deci, 2006). The study further extends these insights by demonstrating that gamification facilitates not only strategy use but also metacognitive awareness, as students adapt their approaches in response to challenges and feedback. Prior research frequently focused on engagement as a motivational or behavioral construct without adequately examining its cognitive dimension, particularly in authentic classroom settings (Avila & Fonseca, 2021; Rivera & Garden, 2021). The present findings suggest that cognitive engagement is intricately linked to the platform's feedback systems, challenge complexity, and reward contingencies, emphasizing the importance of designing gamified activities that require active problem-solving and reflection rather than mere completion of tasks. Furthermore, the interplay between behavioral and cognitive engagement reveals that active participation and sustained effort directly reinforce cognitive strategies, suggesting that engagement is multidimensional and mutually reinforcing rather than isolated across separate domains.

The integration of qualitative and quantitative insights provides a comprehensive understanding of how students and teachers interpret the engagement experiences facilitated by gamified platforms. Students reported that game-based structures provided clarity, incentive, and collaborative opportunities, which supported consistent participation, emotional involvement, and cognitive effort. Teachers observed enhanced classroom dynamics, noting

increased student initiative, attentiveness, and problem-solving behavior. These findings reinforce prior evidence on the importance of teacher facilitation in gamified environments, where instructional guidance and feedback are critical to maximizing engagement outcomes (Hunt et al., 2025; Stefanova & Zabunov, 2020). The present study contributes a deeper understanding by illustrating that engagement is not solely determined by game mechanics but also mediated by teacher-student interactions, peer collaboration, and classroom culture. This addresses a limitation in existing literature that often isolates gamified effects from pedagogical context, providing a richer, contextually grounded model of how gamification operates in real educational settings.

While the overall impact of gamified learning platforms on engagement was predominantly favorable, nuanced variations emerged that underscore the complexity of engagement processes. Some students exhibited lower initiative in voluntary or competitive tasks, and differences in emotional responses highlighted the influence of prior experience, digital literacy, and individual motivation. These findings echo concerns raised in previous research regarding the differential effects of gamification, emphasizing that while gamified interventions can enhance engagement broadly, they may not uniformly address all learners' needs (Hautala et al., 2020; Hunt et al., 2025; Jo et al., 2023). The current study contributes to this discourse by demonstrating that careful instructional design, scaffolding, and differentiated challenges are necessary to optimize engagement for diverse learners, bridging gaps in prior studies that treated gamification as a uniform intervention.

In synthesis, the study confirms that gamified learning platforms enhance multidimensional engagement by simultaneously addressing behavioral, emotional, and cognitive domains, while also revealing nuanced insights into the social, pedagogical, and individual factors influencing these outcomes. The findings extend prior research by situating engagement within authentic classroom contexts, illustrating the interactive effects of platform design, peer collaboration, and teacher facilitation. The study highlights that gamification is most effective when integrated thoughtfully into the instructional environment, promoting sustained participation, positive affective responses, and strategic cognitive investment. By addressing both the potential and limitations of gamified learning, this research contributes a comprehensive understanding of how engagement can be fostered, interpreted, and optimized in secondary education contexts, offering both theoretical and practical implications for future implementations of gamified educational interventions.

CONCLUSION

The present study demonstrates that gamified learning platforms significantly enhance student engagement across behavioral, emotional, and cognitive dimensions in secondary English classrooms, with evidence indicating increased task participation, collaborative involvement, intrinsic motivation, confidence, and strategic cognitive effort. Positive insights reveal that structured game elements, including point-based rewards, leaderboards, and collaborative challenges, provide both extrinsic and intrinsic motivators that sustain engagement and foster resilience, reflective thinking, and self-regulation. At the same time, nuanced variations in responses highlight that engagement is influenced by individual differences in prior experience, digital literacy, and motivational profiles, indicating that gamified interventions may not uniformly impact all learners. These findings have practical implications for educators and curriculum designers, emphasizing the importance of integrating gamified platforms thoughtfully within classroom pedagogy, aligning challenges with learning objectives, providing differentiated tasks to accommodate diverse abilities, and

leveraging teacher facilitation to optimize engagement outcomes. Limitations of the study include its focus on a limited number of schools within a specific regional context, which may affect generalizability, and reliance on self-reported engagement measures that could be influenced by social desirability or individual perception. Future research is recommended to explore longitudinal effects of gamification, comparative analyses across different subject areas, and adaptive gamification strategies that tailor challenges to learners' profiles. Overall, the study confirms the multidimensional benefits of gamified learning while highlighting the need for careful pedagogical design and contextual adaptation to maximize engagement and learning effectiveness across diverse secondary education environments.

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