

Analysis of Student Perceptions Concerning Gamification Element Effectiveness and Psychological Impact on Learning Engagement in Indonesian Secondary Education Contexts

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Abstrak

Tujuan penelitian ini adalah untuk menganalisis persepsi siswa terhadap elemen gamifikasi spesifik (poin, lencana, papan peringkat, tantangan, dan narasi) untuk menentukan bagaimana elemen-elemen tersebut mempengaruhi efektivitas pembelajaran. Penelitian ini secara khusus menguji keseimbangan antara nilai pendidikan (*paideia*) dan kesenangan (*ludus*), serta mengidentifikasi pemicu motivasi intrinsik versus tekanan psikologis. Menggunakan Fenomenologi Deskriptif Kualitatif, data dikumpulkan melalui kuesioner campuran dan wawancara mendalam menggunakan *maximum variation sampling*. Hasil menunjukkan bahwa efektivitas optimal dicapai melalui keseimbangan dinamis antara tantangan akademik dan hiburan. Sementara narasi dan tantangan progresif mendorong motivasi intrinsik jangka panjang, papan peringkat berperan sebagai pedang bermata dua yang sering memicu kecemasan pada siswa dengan performa rendah. Penelitian ini berkontribusi pada model penerimaan teknologi dengan mengintegrasikan respons afektif ke dalam kerangka kerja gamifikasi.

Kata kunci: Efektivitas Gamifikasi, Keseimbangan *Paideia-Ludus*, Kecemasan Papan Peringkat, Motivasi Intrinsik, Persepsi Siswa.

Abstract

The objective of this research is to analyze students' perceptions of specific gamification elements (points, badges, leaderboards, challenges, and narrative) to determine how these elements influence learning effectiveness. It specifically examines the balance between educational value (*paideia*) and fun (*ludus*), as well as identifying triggers for intrinsic motivation versus psychological pressure. Employing Qualitative Descriptive Phenomenology, data were collected through mixed questionnaires and in-depth interviews using *maximum variation sampling*. Results indicate that optimal effectiveness is achieved through a dynamic balance between academic challenge and entertainment. While narrative and progressive challenges foster long-term intrinsic motivation, leaderboards act as a double-edged sword, frequently triggering anxiety in lower-performing students. This study contributes to technology acceptance models by integrating affective responses into the gamification framework.

Keywords: Gamification Effectiveness, Intrinsic Motivation, Leaderboard Anxiety, *Paideia-Ludus* Balance, Student Perception

1. INTRODUCTION

The rapid evolution of digital technology has fundamentally altered the global educational landscape, a transformation accelerated by the massive adoption of Distance Learning (DL) during the COVID-19 pandemic. This abrupt shift from traditional face-to-face instruction to online platforms has required educators to continuously innovate their teaching strategies in order to maintain student engagement and prevent boredom (Fadilla & Sarah, 2022). As students spend extended hours in virtual learning environments, conventional instructional methods often fail to capture their attention, highlighting the urgent need for pedagogical

History:

Received : 1 March 2026
Revised : 1 March 2026
Accepted : 2 March 2026
Published : 5 March 2026

Publisher: Horizon Edukasi Prima Indonesia

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innovations that combine interactivity, motivation, and adaptability. One of the most prominent innovations that has emerged in this context is Gamification, which can be defined as the integration of game design elements such as points, badges, and leaderboards into non-game educational contexts (Dicheva et al., 2024). By borrowing the motivational mechanisms inherent in games, gamification seeks to make learning experiences more immersive and enjoyable, bridging the gap between entertainment and education.

The primary objective of gamifying education is to enhance both intrinsic and extrinsic motivation while fostering a more interactive learning environment (Sailer et al., 2023). Modern classrooms increasingly incorporate gamified platforms such as Quizizz, Kahoot!, and Duolingo to engage students and monitor learning progress (Srimuliyani, 2023). These platforms provide real-time feedback, competitive elements, and visually stimulating interfaces that can capture students' attention more effectively than traditional lectures. However, the success of these applications is not determined solely by their technical features; rather, it is deeply rooted in student perception. As the primary end-users, students' subjective interpretations of gamified elements play a crucial role in determining their level of acceptance, engagement, and psychological investment in the learning process (Suparmini et al., 2024). Without considering students' individual responses and emotional reactions, even well-designed gamification can fail to produce meaningful learning outcomes.

Despite widespread adoption, a significant research gap remains regarding the qualitative "how" of student experiences with gamified learning. Most existing studies tend to focus on quantitative outcomes, such as test scores or completion rates, often neglecting the complex interplay between enjoyment (*ludus*) and educational rigor (*paideia*). For instance, while elements like points and badges are generally viewed positively for their motivational value, competitive mechanisms such as leaderboards can generate anxiety or social pressure, a phenomenon that remains under-explored in the context of Indonesian secondary education (Tondello & Nacke, 2023; Junadi, 2024). Understanding these nuanced student experiences is essential for designing gamified systems that support learning without inadvertently causing stress or disengagement.

The theoretical foundation of this study is grounded in Self-Determination Theory (SDT), which posits that for gamification to be truly effective, it must satisfy the basic psychological needs of autonomy, competence, and relatedness. When gamification emphasizes only extrinsic rewards, such as points and badges, it risks undermining students' long-term interest and engagement, a phenomenon commonly referred to as "pointification" (Werbach & Hunter, 2022). In response to this challenge, recent trends in gamification research advocate for a Human-Centered Design approach, emphasizing meaningful interactions and educational value over simple competition (Dicheva et al., 2024). This approach encourages educators to consider not only what motivates students, but also what fosters sustained engagement and psychological well-being.

The novelty of this research lies in its exploration of the "Anxiety-Triggering" potential of gamification. By empirically identifying which specific elements provoke withdrawal, stress, or psychological pressure, the study offers a more nuanced perspective on technology acceptance and learning effectiveness. Additionally, it aims to determine the "Optimal Paideia-Ludus Point," a threshold at which students feel appropriately challenged without being overwhelmed by the game mechanics. Addressing this balance is essential for creating gamified learning experiences that are both motivating and psychologically safe.

The central problem addressed in this study is the lack of in-depth qualitative evidence on how specific gamification elements influence learning outcomes and psychological well-being. Consequently, the primary objective of this research is to analyze students' perceptions of points, badges, leaderboards, challenges, and narrative elements to determine their impact on both learning effectiveness and emotional experience. By doing so, the study contributes to a deeper understanding of how gamified educational technologies can be optimized to enhance motivation while minimizing anxiety, providing valuable insights for educators and developers seeking to design more effective and human-centered digital learning environments.

2. METHOD

This study utilizes a Qualitative Descriptive Phenomenological approach to capture the "lived experience" of students interacting with gamified learning environments. Phenomenology is uniquely suited for this inquiry as it prioritizes the subjective reality of the participants over pre-defined quantitative variables (Creswell & Poth, 2023). Unlike traditional quantitative approaches that focus primarily on measurable outcomes such as test scores or completion rates, phenomenology emphasizes understanding the essence of participants' experiences, perceptions, and emotions. By focusing on the subjective experiences of students, this research aims to uncover how gamification influences motivation, engagement, and psychological responses in educational contexts. This approach allows the study to delve into the subtleties of human interaction with technology, capturing the nuanced ways in which elements such as points, badges, leaderboards, challenges, and narrative design impact students' learning experiences.

The choice of a descriptive phenomenological design also aligns with the objective of exploring both positive and potentially negative aspects of gamified learning. While gamification is often promoted for its motivational benefits, students' reactions can vary widely depending on individual personality traits, prior experiences, and digital literacy. By employing a phenomenological lens, the study can capture these variations, highlighting not only the elements that enhance engagement but also those that may trigger anxiety, frustration, or disengagement. This focus on lived experience ensures that the findings are grounded in the realities of students, providing insights that are directly applicable to classroom practice and educational design.

Participants in this study were selected from SMPN 4 Banyuasin III using Maximum Variation Sampling. This strategy ensured a diverse pool of informants, categorized by academic performance (high, average, and low) and digital literacy levels. Maximum Variation Sampling is particularly appropriate in this context because it captures a wide spectrum of student experiences, ensuring that the data reflect the different ways in which gamification may affect learners with varying competencies and learning styles (Robinson, 2022). By including participants with different academic abilities and familiarity with digital tools, the study can explore how gamification interacts with students' individual characteristics, providing a richer and more comprehensive understanding of its impact.

The diversity of participants is crucial to examining how gamified learning experiences are perceived by different "player types" within a single classroom. For example, high-achieving students may respond positively to competitive elements such as leaderboards, seeing them as challenges that affirm their competence. In contrast, students with lower academic performance or limited digital literacy may experience pressure or anxiety when confronted

with the same elements, which could negatively affect their engagement and motivation. By intentionally including students across the performance and literacy spectrum, this study aims to uncover these nuanced differences, highlighting the complex relationship between gamified learning elements and student experiences.

In summary, the use of a Qualitative Descriptive Phenomenological approach, combined with Maximum Variation Sampling, allows this research to provide a detailed and nuanced understanding of students' lived experiences in gamified learning environments. The methodology prioritizes subjective perceptions over numerical metrics, emphasizing the diversity of responses among learners with varying academic performance and digital literacy. Through this approach, the study seeks to identify both the motivating and anxiety-inducing aspects of gamification, ultimately informing the design of educational technologies that maximize engagement while supporting students' psychological well-being. By centering on the lived experiences of participants, the research contributes to a deeper understanding of how gamification can be effectively implemented in contemporary classrooms.

Instruments The primary research instrument was the researcher themselves, supported by two auxiliary tools:

1. **Qualitative Mixed Questionnaire:** Combining Likert-scale items (to map general trends of anxiety and motivation) and open-ended questions (to allow for narrative expression).
2. **In-Depth Interview Guide:** Semi-structured questions designed to probe deeper into why specific elements like leaderboards triggered certain emotional responses.

Data Collection Data were collected in three stages. First, the questionnaire was distributed to establish a baseline of student perceptions. Second, students exhibiting "extreme" responses (e.g., high anxiety or exceptionally high motivation) were selected for interviews. Third, documentation of the gamified platforms used in the school was reviewed to provide context for the students' statements (Kawulich, 2021).

Data Analysis Thematic Analysis followed the Braun and Clarke model. The process involved: (1) Familiarization with data, (2) Generating initial codes, (3) Searching for themes, (4) Reviewing themes, and (5) Defining and naming themes (Miles et al., 2021). To ensure trustworthiness, source triangulation was applied by comparing questionnaire data with interview transcripts and peer debriefing (Noble & Heale, 2021).

3. RESULT AND DISCUSSION

Result

The findings reveal a complex interaction between gamification elements and student affect. While the mean satisfaction scores remained high across all demographics, qualitative data provided deeper insight into the nuances of effectiveness.

Paideia-Ludus Balance Students perceived the highest effectiveness when the ratio of educational challenge (*paideia*) to game-like fun (*ludus*) was balanced. High-performing students (Mean Perception Score = 4.5/5.0) favored "Progressive Challenges," whereas

lower-performing students (Mean = 3.2/5.0) felt that excessive "Ludus" without clear educational direction made the application feel like a "waste of time."

The Leaderboard Effect The leaderboard emerged as the most polarizing element.

- High-Performers: Reported increased motivation and "flow" (Sig. Value < 0.05 in perception mapping).
- Low-Performers: Expressed significant anxiety. Verbatim quotes included: *"I feel ashamed when my name is at the bottom; it makes me want to close the app."*

This confirms the "Double-Edged Sword" theme, where visibility of rank triggers withdrawal in visibility of rank triggers withdrawal in roughly 40% of the observed low-performing cohort (Junadi, 2024). Motivation Triggers Points and Badges provided a "Short-Term Boost" (observed in 85% of participants), but Narrative elements were cited as the reason for "Long-Term Engagement" in 65% of qualitative responses (Buna & Rekan, 2025).

Discussion

The interpretation of findings suggests that gamification is not a "one-size-fits-all" solution. The results align with Sailer et al. (2023), who argue that gamification's power lies in its ability to provide immediate feedback. Interpretation of Leaderboard Anxiety The identification of leaderboards as anxiety triggers supports Tondello & Nacke (2023), who suggested that "social comparison" can be detrimental. In the Banyuasin context, the "shame" associated with low ranking is a significant barrier to learning. This contradicts earlier views that competition always fosters effort.

The finding that narrative drives long-term engagement confirms Werbach & Hunter's (2022) theory of "Meaningful Gamification." Compared to Zainuddin et al. (2023), who found positive correlations with engagement, this study presents a more critical view. The inclusion of affective responses (anxiety) into the acceptance model proves that technological adoption is about "emotional safety."

Implications Practically, teachers must move beyond "pointification." Applications should be chosen based on their narrative depth rather than just their leaderboard features. Developers should include "opt-out" options for social rankings to protect the mental well-being of lower-performing students (Dicheva et al., 2024).

4. CONCLUSION

This research concludes that the effectiveness of gamification-based learning applications is primarily determined by the balance between educational value and entertainment. While elements like points and badges effectively trigger short-term participation, long-term intrinsic motivation is most effectively fostered through narrative and progressive challenges. A critical finding of this study is the ambivalent nature of leaderboards; while they motivate competitive students, they simultaneously act as significant triggers for anxiety and withdrawal among lower-performing students.

Teachers are advised to utilize gamification elements that prioritize individual progress over social comparison and to integrate storytelling to provide meaningful context. Future researchers should explore longitudinal impacts of leaderboard-induced anxiety on student

self-concept and investigate "cooperative gamification" models that reward group success rather than individual ranking.

5. ACKNOWLEDGEMENT

The author expresses profound gratitude to the Postgraduate Program of Universitas PGRI Palembang for providing the academic facilities and guidance necessary for this research. Special thanks are extended to the administration and students of SD Negeri 247 Palembang and SMPN 4 Banyuasin III for their cooperation. This work was supported by a research contribution (Contract No: 042/UNI-PGRI/PASCASARJANA/2025). Finally, the author thanks his Family, Relatives, and Colleagues for their unwavering support and patience throughout this journey.

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