



Translating Gamification from Digital Technology to Analog Systems in Design Education

Alvanov Zpalanzani Mansoor¹, Gabrielle Ivy Luna Putri¹

¹Institut Teknologi Bandung, Indonesia

✉ 27125048@mahasiswa.itb.ac.id*

Article Information:

Received May 20, 2026

Revised June 25, 2026

Accepted July 28, 2026

Keywords: *Gamification translation, digital-to-analog system, design criticism learning, higher education, design-based research*

Abstract

This study examines the translation of gamification principles from digital technology into analog systems within higher education, focusing on a design criticism class. Using a qualitative Design-Based Research approach, the study followed stages of analysis, design, implementation, and evaluation. Data were collected through literature review, documentation of design artifacts, questionnaires administered to 75 students, and semi-structured interviews with 10 purposively selected participants. Thematic analysis combined with descriptive statistics revealed that analog gamification enhances motivation, participation, collaboration, and enjoyment in classroom learning. However, the findings also highlight ambivalent effects, including risks of social pressure, verbal participation bias, and distraction when mechanics lack inclusivity and transparency. The study concludes that gamification effectiveness depends not only on game mechanics but also on system design quality, instructor facilitation, and the learning environment. The implications recommend developing inclusive, adaptive, and academically substantive analog gamification models to strengthen engagement and achievement in design education.

INTRODUCTION

Higher education demands increasingly complex levels of cognitive engagement, critical reflection, and active student participation. However, in practice, students often face various challenges, such as high cognitive load, low participation in class discussions, and difficulty in developing sustained critical reflection (Halabieh et al., 2022). This situation is further exacerbated by rising academic stress and learning burnout, which reflect a decline in student engagement across cognitive, affective, motivational, and behavioral dimensions (Olson et al., 2025; Qin et al., 2025).

At the same time, advances in digital technology have also brought about significant changes in students' attention patterns and learning habits. Digital media is often used as a coping strategy to avoid academic stress and difficulties, one example being video game play (Finkielstein, 2020). Students are able to invest a great deal of time, focus, and persistence when playing video games, yet

How to cite:

Mansoor, A. Z., Putri, G. I. L. (2026). Translating Gamification from Digital Technology to Analog Systems in Design Education. *International Journal of Multidisciplinary of Higher Education (IJMURHICA)*, 9(3), 889-902.

E-ISSN:

2622-741x

Published by:

Islamic Studies and Development Center Universitas Negeri Padang

demonstrate a stark contrast in engagement within the context of formal learning (Gómez-Gonzalvo et al., 2020; Kuş, 2025). This phenomenon raises critical questions regarding the factors that make digital games so appealing to students, as well as the extent to which these characteristics can be translated into a learning context to enhance engagement and motivation in higher education.

One approach that has emerged in response to the challenge of translating game characteristics into pedagogical practice is gamification. Gamification is defined as the strategic application of game principles, mechanisms, and elements to non-game contexts to enhance user engagement, motivation, and goal achievement (Christopoulos & Mystakidis, 2023). In the context of higher education, various studies indicate that gamification can boost intrinsic motivation, emotional engagement, active participation, resilience in the face of challenges, and students' positive perceptions of the learning process (Zeybek & Saygi, 2024). Furthermore, gamification contributes to a more meaningful and enjoyable learning experience while supporting the development of knowledge, skills, and social competencies that lead to improved academic performance among students (Campillo-Ferrer et al., 2020; Huseinović, 2023).

The effectiveness of gamification in learning depends heavily on the accuracy with which game principles are translated into pedagogical design. These principles include clarity of learning progress, controlled competition management, balanced difficulty levels, the provision of reflective pauses, and the use of narrative to foster students' emotional engagement (Li et al., 2023). These principles are realized through mutually integrated gamification elements, including mechanics, dynamics, aesthetics, narrative, and technology (Zeybek & Saygi, 2024). Mechanisms serve as functional components such as points, levels, badges, and challenges that influence learning motivation, while dynamics govern patterns of learning interaction through a sequence of activities like tasks, feedback, reflection, and discussion that bridge learning objectives with the gaming experience (Laine & Lindberg, 2020). Aesthetics, narrative, and technology complement this process by creating affective experiences, situational contexts, and implementation mediums that enable gamification to occur effectively and meaningfully in learning (Christopoulos & Mystakidis, 2023).

Although gamification has been widely practiced, most research and implementations of gamification in education still focus on digital-based systems (Fernandez-Rio et al., 2020). However, this digital approach has limitations, including dependence on technology, potential screen fatigue, limited access, and a reduction in face-to-face interaction and tangible learning experiences (Lester et al., 2023; Silvia et al., 2025). Furthermore, research on analog-based gamification remains relatively limited. Analog gamification refers to the application of game principles and mechanics through physical media, game rules, direct interaction, and spatial experiences without reliance on digital systems. A number of early studies indicate that analog game systems can generate comparable levels of engagement, collaboration, and reflection; in certain contexts, they are even more effective than digital systems because they reinforce students' physical presence and social interactions (Atherton & Cross, 2021; Qiao et al., 2023).

Based on this research gap, this study offers a novel approach by focusing on the translation of gamification from digital to analog systems using a Design-Based Research approach applied to a Design Critique class as a case study. This context was chosen because Design Critique learning requires not

only an understanding of visual concepts but also the ability to articulate arguments, conduct evaluations, and engage in constructive dialogue, making it relevant for examining students' perceptions and the impact of gamification implementation. This research aims to strengthen the theoretical framework of cross-medium gamification (digital–analog), enrich the application of Design-Based Research in design education, and provide practical contributions to the development of student-centered learning strategies aligned with the post-digital context.

METHODS

This study employs a qualitative method using a Design-Based Research (DBR) approach combined with case studies. The Design-Based Research (DBR) approach was chosen because it aligns with the discipline of design, which emphasizes an iterative process between the design, implementation, analysis, and evaluation of design solutions within an authentic educational context (Cela-Ranilla et al., 2025; Easterday et al., 2018; Tinoca et al., 2022). The case study was used to narrow and deepen the analysis within a single real-world context: the implementation of an analog gamification system in the Design Critique course for the Visual Communication Design undergraduate program at the Ganesha Campus of the Bandung Institute of Technology. This class was selected as a case study due to its learning characteristics, which emphasize critical reflection, open discussion, and direct interaction among students, making it relevant for examining the translation of gamification from a digital system to an analog system (Greenhalgh, 2025). The research subjects consisted of 88 active students aged 20–22 years who were selected using purposive sampling, with the criteria that they had participated in the entire gamification implementation process in the course and provided information consistent with the facts observed in the field (Engkizar et al., 2025, 2026; Sugiyono & Sudaryono, 2021).

The research was conducted in four main stages: analysis, design, implementation, and evaluation (Kasheem et al., 2025; Kim et al., 2018; Masoud & Almajri, 2025; Putri et al., 2025). Data sources included a literature review, documentation of the gamification process and design artifacts, evaluative questionnaires, and semi-structured interviews to explore students' perceptions and subjective experiences. Data collection was conducted during the implementation process and after the implementation stage was completed to ensure that the data reflected the actual learning conditions experienced. Qualitative data were analyzed using thematic analysis through the process of identifying key words/phrases, coding, identifying and reviewing themes, sequencing main themes, and interpreting meanings (Engkizar et al., 2024; Kushnir, 2025), while descriptive quantitative data from closed-ended questionnaires were analyzed using simple statistics in the form of percentages to support the qualitative findings. The validity of the research findings was established through data triangulation across various data sources, as well as through participant confirmation with the students (Creswell & Poth, 2018).

RESULT AND DISCUSSION

Analysis

In the analysis phase, the study focused on mapping the learning context, instructional objectives, and dynamics of the design critique course as the basis for designing a gamification system. The design critique course is a 2-credit elective offered in-person over 14 sessions, each lasting 2 hours per week. Instruction is delivered through a combination of lectures, collaborative

discussions, and team-based projects, with the option of blended sessions on specific topics as needed for learning. Pedagogically, this course is designed to develop students' critical and analytical thinking skills in formulating contextual and data-driven critiques of visual communication design works and phenomena. The course material covers an introduction to design criticism, design phenomena and contexts, primary data collection through observation and interviews, secondary data research through literature and credible sources, citation ethics, and basic academic writing. Students are also introduced to visual rhetoric analysis to examine visual messages, a data-based critical framework using the Feldman Model (Feldman, 1992), dissemination of critical findings through report writing, and visualization of findings in the form of scientific posters or interactive presentations. Although the learning structure has been designed to support the development of critical competencies, initial observations indicate that the design criticism learning process is not always equally accessible to all students. Discussion and critique activities are often dominated by certain students, while others tend to be passive or inconsistent in their classroom participation. This situation highlights the need for learning strategies that can facilitate more equitable participation, foster a sense of safety in expressing opinions, and help students understand the flow and stages of design critique in a more structured manner.

Designing

Building upon the findings of the analysis phase, this study developed a learning intervention in the form of an analog gamification system integrated with the learning objectives and intended outcomes of the Design Criticism course. The design process focused on constructing narrative elements, mechanics, dynamics, aesthetics, and structured learning activities aligned with the targeted competencies of critical, reflective, and participatory thinking. The gamification system, titled Grind & Glory, positions students as active agents in a progressive learning journey toward mastery in design criticism. The narrative framework draws upon the hero's journey and skill-based progression commonly found in action role-playing games, where learning is conceptualized as a transformative process from initial exploration to more advanced levels of competence (Kosmas et al., 2023). This narrative approach was intentionally designed to enhance engagement, imbue classroom activities with meaning, and frame learning as a progressive and reflective process of self-development.

To support the analog implementation, a learning progress card was designed as the primary artifact documenting each student's academic journey. The card consists of four main components: a main menu page, player profile, point inventory, and badge inventory. The main menu functions as a narrative entry point that establishes the gamified learning atmosphere, while the player profile contains the student's identity and visual representation, fostering a sense of ownership over the learning process. The point inventory quantitatively reflects levels of participation, and the badge inventory serves as a symbolic marker of specific achievements related to participation, competence, and academic milestones.

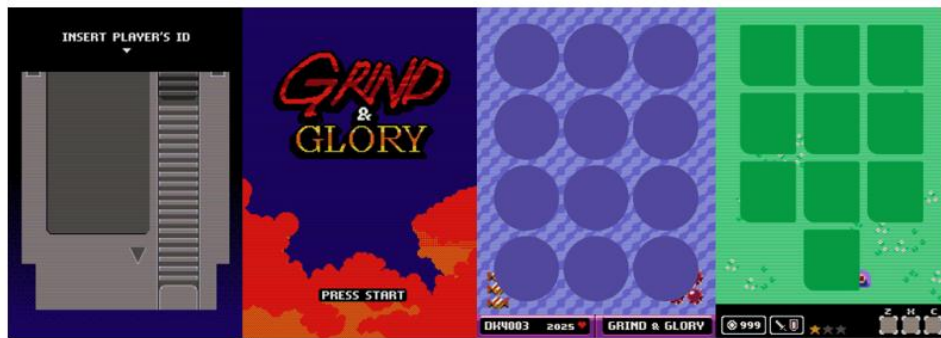


Fig 1. Gamified Learning Progress Card Interface

Within the player profile component, students were given the freedom to design their own avatars as representations of themselves. In gamification contexts, avatars function not only as expressions of identity and creativity but also as tools for strengthening emotional attachment to the learning experience. This customization element was designed to enhance students' sense of control, confidence, and engagement in classroom activities. The badge system was developed as a form of recognition for specific achievements attained through completing missions or fulfilling particular conditions during the course. Visually, the badges were inspired by game cartridges, resembling familiar game covers to create a sense of cultural proximity for students. A layer of visual humor was incorporated to foster approachability, increase appeal, and cultivate a more fluid and less rigid classroom atmosphere. Ten badges were designed to reflect diverse dimensions of learning, ranging from active participation and academic initiative to discipline and critical reflection. Some badges were appreciative in nature, while others functioned as reflective-corrective prompts intended to encourage students' awareness of less optimal learning behaviors. Importantly, the criteria for obtaining badges were not fully disclosed at the beginning of the course, thereby encouraging exploration, initiative, and strategic thinking as students navigated the gamified system.



Fig 2. Points and Badges in the Grind & Glory Gamification System

In addition to badges, a points system is used as a motivational reinforcement mechanism that reflects the intensity and consistency of student participation. Points are earned through various learning activities and accumulated across three tiers (gold, silver, and bronze) based on participation achievements, such as asking questions, responding, giving presentations, and

attending out-of-class tutoring sessions. Points are cumulative and converted as part of the learning assessment, thus functioning not only as a game element but also as an evaluative instrument integrated into the academic system. To reinforce recognition of achievements and highlight mastery, certificates of recognition are also designed both for students with specific achievements and for all participants as a form of appreciation for successfully completing the entire gamified learning process.

Implementation

The implementation phase involves applying the gamification system design developed during the design phase to a real-world learning context. The implementation took place in the Design Critique course over the course of one semester, from August 2025 to December 2025. The gamification system was introduced during the second class session via a presentation explaining the narrative, game mechanics, and applicable participation rules. In this initial phase, students were also asked to fill out their player profile pages and design avatars as an introductory mission, while also printing out learning progress cards that they were required to bring to every session as a form of commitment to participating in the gamification system. Core elements of gamification, such as game mechanics (e.g., challenges, progress, and feedback), role-playing narratives, and reward systems, were integrated into classroom activities such as critical discussions, project presentations, and individual reflections.



Fig 3. Student Profile and Avatar Page

During the implementation process, the instructor served as both a facilitator and an observer, with the support of teaching assistants acting as additional observers to ensure the objectivity of documentation and the consistent application of gamification mechanisms. The instructor and teaching assistants actively monitored the learning process, provided contextual feedback, and ensured that the point and badge systems were implemented as designed. Student participation takes various forms, such as asking questions, offering critical feedback, engaging in peer discussions, attending tutoring sessions, delivering presentations, and expressing confusion or reflections on the design critique process. Each form of active participation is awarded points, which are publicly announced by the instructor and manually recorded by teaching assistants as part of the student engagement monitoring system.



Fig 4. Student Points, Badges, and Certificate Page

As a conclusion and the culmination of the gamification implementation, an awards ceremony was held at the end of the semester as a form of reflection and appreciation for the entire learning process. The event began with a retrospective look at the learning journey over the course of the semester, followed by the announcement of students' badge achievements and point levels. Badges and points were awarded in the form of physical stickers that could be affixed to learning progress cards, as well as certificates of recognition for students who achieved specific milestones. This award ceremony also served as a macro-level leaderboard representing students' overall performance, allowing them to reflect on their learning achievements in a comparative and reflective manner relative to their peers. At the end of the event, students are asked to fill out an evaluation form and participate in in-depth interviews to provide feedback on the gamification-based learning implementation, which is subsequently used as material for evaluation and improvement in the next learning period.

Evaluation

Based on questionnaire data from 75 respondents (out of a total of 88 students) and in-depth interviews with 10 students, the thematic analysis identified four main themes of evaluation, namely: i) gamification as a driver of student motivation and engagement; ii) the social dynamics between collaboration and competition; iii) the limitations of gamification regarding cognitive challenges and potential distractions; and iv) the synergy between gamification systems and the role of instructors in creating a more enjoyable and meaningful learning experience.

The first finding indicates that gamification significantly contributes to increased student motivation and participation. Sixty percent of students reported feeling more motivated, while 70% showed an increased desire to actively participate in class. The most prominent forms of participation included collaboration or teamwork (61.3%), asking questions (60%), and group discussions (49.3%). This increase was driven by the presence of symbolic rewards, such as physical stickers, as well as a sense of achievement and appreciation for academic engagement, which were perceived as refreshing and motivating. These findings align with [Xiao & Hew, \(2024\)](#), who assert that tangible rewards can enhance intrinsic motivation, behavioral and cognitive engagement, and learning performance, particularly in the context of challenging tasks.

In addition to rewards, the point system is considered effective in creating a more interactive classroom atmosphere while fostering constructive competition. The point system serves as instant feedback that validates students' competencies, thereby helping to balance the demands of complex design critique analysis with recognition of continuous learning progress ([Koppitsch & Meyer, 2022](#)). Incentives in the form of converting points into academic grades further strengthen the motivation to excel, reinforced by students' tendency to collect points and achieve specific targets within the game system ([Giráldez et](#)

al., 2022).

The aspect of autonomy emerged as a key driver of students' motivation and enthusiasm for learning, particularly through the freedom to choose design critique topics. This finding aligns with self-determination theory's autonomy dimension, which states that alignment between learning choices and personal interests enhances intrinsic motivation (Kirsch & Spreckelsen, 2023). Student statements such as "discussing phenomena that my group and I chose and enjoy" and "topics that can be as free as possible" indicate the development of a sense of psychological ownership over the learning process. Within the gamification framework, this autonomy is reinforced through mission and challenge mechanisms that allow students to independently determine their learning exploration paths. When students have control over what they learn, gamification is perceived as a facilitator rather than an external control, as reflected in students' statements that this class format makes them "more enthusiastic" because they can integrate personal interests into assignments. The synergy between autonomy and the reward system encourages students to go beyond the minimum standards for fulfilling academic tasks (Li et al., 2024). This theme was expressed by several informants namely informants 43, 45, 57, and 70 as shown in the following interview excerpts.

The presence of rewards provides a refreshing impression and serves as a form of appreciation for the work accomplished during the semester (informant 43); The point system makes students more active and enlivens the classroom atmosphere, so the learning process does not proceed in a one-way manner but allows for discussions and even debates (informant 45); What I like most is the game mechanism and point system that make the class more lively and less monotonous. I feel more motivated to participate actively because of challenges that seem light yet still encourage enthusiasm. The class also feels more interactive and not merely one-directional (informant 57); Yes, because of the point system in the form of cute stickers and challenges every time students ask questions or provide responses, which further motivates active involvement in the learning process (informant 70)

The second theme indicates that gamification creates a dynamic social tension between collaboration and competition within the classroom. The data show that 56% of students reported an increase in collaboration and the intensity of discussions, while the remaining 44% felt that the game mechanics had no significant impact or actually created social tension. These findings confirm that gamification is a double-edged sword: on one hand, it can strengthen a sense of community and collective focus through healthy competition (Zeng et al., 2024), but on the other hand, it can trigger social comparison due to the visibility of individual achievements through point systems and leaderboards (Kirsch & Spreckelsen, 2023). This situation is reflected in the students' statements, in which they admitted to "wanting to beat their friends" and described the classroom atmosphere as "somewhat tense and competitive."

Further analysis revealed that social pressure was primarily experienced by students with low self-confidence and introverted tendencies, who hesitated to express their opinions for fear of making mistakes in public. One crucial finding is the perception that extroverted students dominate in point-scoring, as reflected in the statements "it's a shame that introverts have to compete with extroverts who keep answering" and "actually, introverted students want to answer, but they're outpaced by the extroverts." This finding indicates the presence of structural bias in gamification designs that overemphasize spontaneous verbal activity. In line with the findings of Toda et al., (2018), such mechanisms have the potential to shift the focus of learning from the quality of understanding toward point-scoring alone, and fail to adequately accommodate

reflective learning styles. Students' suggestions regarding the implementation of a turn-taking system or the provision of special participation spaces for more passive students underscore the urgency of designing gamification that is more inclusive, adaptive, and fair in accommodating diverse learning styles. The theme of the dynamic tension between collaboration and competition created by gamification is illustrated through the following interview excerpt.

Table 1. Interview Excerpts Comparing Positive and Negative Impacts

Positive Impact	Negative Impact
<i>Many peers became more active, which triggered the desire to participate actively as well</i>	<i>Introverted students often struggle to compete with extroverted peers who frequently answer. It would be better if the system were rotated; only if a student truly refuses should it be redirected to another</i>
<i>Strongly enjoy discussion activities with peers, lecturers, and teaching assistants because they feel like forums that open up broader insights</i>	<i>The point system sometimes encourages students to ask questions without fully understanding the content of their inquiry</i>
<i>With the presence of game-based mechanisms, the class becomes highly active and generates a sense of fear of missing out (FOMO), as seeing peers' enthusiasm motivates participation in asking and answering</i>	<i>The class occasionally feels less comfortable due to peer pressure within the environment</i>
<i>The topics presented by peers during discussions and presentations are very engaging, making the classroom atmosphere more lively</i>	<i>Participation still depends on students' courage. In the future, the game mechanism could be designed to better encourage passive students to take part actively</i>

The third theme highlights the limitations of gamification regarding cognitive challenges and potential distractions in learning. Although gamification mechanisms are relatively easy to understand, students' cognitive load is influenced by external factors, such as afternoon class schedules following design studio sessions or classes held after lunch, which trigger fatigue and drowsiness. Additionally, infrastructure limitations, such as cramped classroom capacity and technical glitches with projectors, further hinder an immersive gamification experience. These findings reinforce the literature asserting that the physical environment is an integral part of game-based learning systems and inseparable from the game mechanics themselves (Sambo et al., 2025).

Students' critical evaluations also highlighted the issue of grade transparency as a crucial factor in maintaining motivation. Students expressed the need for "grades to be made public, say once a month" or "grades to be updated as the course progresses so that people are more motivated." The lack of regular progress monitoring has the potential to trigger a drop in motivation mid-semester (the stall effect) (Toda et al., 2018). Grade transparency not only serves as a motivator but also as a form of accountability for students' learning efforts. The use of physical media, such as Grind & Glory sheets that are stamped immediately when students participate, is proposed as a solution to provide immediate, tactile, and transparent reinforcement of learning, without having to wait until the end of the semester. This theme was expressed by several informants, namely informants 31, 42, 59, and 61, as shown in the following interview excerpts.

There needs to be increased awareness regarding the continuity of the game system, as students sometimes forget about the gamification and only recall it during awarding activities

(informant 31); Perhaps from the beginning of the course, stickers could be distributed directly, so that students who see their peers receiving stickers become more motivated (informant 42); In my opinion, the point mechanism could be made more transparent and consistent, for example through more regular point updates so participants can monitor their progress more clearly. In addition, the variety of challenges could be increased to avoid repetitiveness (informant 59); Rewards should be given immediately after students ask questions or provide responses (informant 61)

The fourth theme indicates that learning satisfaction and enjoyment are shaped not only by gamification but also by its synergy with the instructor's role. Evaluation results show that the design critique class experience was rated as enjoyable to very enjoyable by all students (65.3% enjoyable; 34.7% very enjoyable), with a flow of activities that was easy to follow and comfortable to participate in. Gamification mechanisms such as points, badges, and leaderboards were also rated as exciting and distinct from other classes by 72 students, consistent with findings that gamification elements often trigger positive emotions by providing a sense of achievement and joy (Borrás-Gené et al., 2019). However, the data also confirms that the instructor remains the primary determinant of the quality of the learning experience. Gamification was rated as very helpful by 28% of students and somewhat helpful by 57.3%, while enthusiasm for learning was more closely associated with lecturers and teaching assistants who were communicative, warm, and appreciative of student participation. These findings indicate that gamification serves as an accelerator of engagement, not the primary driver of learning. Game mechanics are only effective when supported by the active role of educators in creating a safe space for dialogue, a strong learning narrative, and clear and meaningful gamification guidelines (Mansoor, 2017; Romli et al., 2025; Safitri & Fanreza, 2026). This theme was expressed by several informants, namely informants 28, 41, 45, and 74, as shown in the following interview excerpts.

Lecturers and teaching assistants are friendly and approachable, creating a learning atmosphere that feels familiar and supportive (informant 28); The way the lecturer delivers the material is not boring (informant 41); The lecturer explains the material very clearly and is open to students' opinions and questions. Teaching assistants are also supportive and guide students effectively and clearly (informant 45); The material is delivered using language that is easy to understand, and the lecturer provides appreciation for students' questions and responses (informant 74)

CONCLUSION

This study demonstrates that the application of gamification translating digital elements into analog systems is effective in enhancing students' motivation, engagement, and enjoyment of learning, particularly when combined with instructors who are communicative, appreciative, and reflective. Gamification acts as an engagement accelerator capable of balancing the cognitive demands of complex design criticism with a more enjoyable learning experience. However, the findings also highlight the ambivalent nature of gamification: on one hand, it fosters collaboration and healthy competition, but on the other hand, it has the potential to create social pressure, bias toward verbal participation, and cognitive distraction if its mechanical design is not inclusive, transparent, and aligned with learning objectives. Based on these findings, recommendations for future gamification translation development include: i) differentiating gamification mechanics to be more inclusive through point categories based on non-verbal cognitive contributions, such as written critiques, in-depth visual analysis, and asynchronous reflection; ii) the implementation of a transparent and integrated

point-tracking system that is updated regularly, for example after each class session; iii) refining award criteria to better reflect substantive academic achievements and encourage deep learning; and iv) auditing and improving the learning environment as a prerequisite for the successful implementation of gamification. With this approach, gamification functions not only as a strategy to boost motivation but also as a fair, reflective, and sustainable learning system.

REFERENCES

- Atherton, G., & Cross, L. (2021). The Use of Analog and Digital Games for Autism Interventions. *Frontiers in Psychology*, 12, 669734. <https://doi.org/10.3389/fpsyg.2021.669734>
- Borrás-Gené, O., Martínez-Núñez, M., & Martín-Fernández, L. (2019). Enhancing fun through gamification to improve engagement in MOOC. *Informatics*, 6(3), 28. <https://doi.org/10.3390/informatics6030028>
- Campillo-Ferrer, J. M., Miralles-Martínez, P., & Sánchez-Ibáñez, R. (2020). Gamification in higher education: Impact on student motivation and the acquisition of social and civic key competencies. *Sustainability (Switzerland)*, 12(12), 4822. <https://doi.org/10.3390/SU12124822>
- Cela-Ranilla, J., Esteve-Mon, F. M., & Sánchez-Caballé, A. (2025). Design-based research in higher education: A systematic literature review between 2019 and 2023. *Australasian Journal of Educational Technology*, 41(4), 67–83. <https://doi.org/10.14742/ajet.10380>
- Christopoulos, A., & Mystakidis, S. (2023). Gamification in Education. *Encyclopedia*, 3(4), 1223–1243. <https://doi.org/10.3390/encyclopedia3040089>
- Creswell, J. W., & Poth, C. N. (2018). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (4th ed.). Sage Publications.
- Easterday, M. W., Rees Lewis, D. G., & Gerber, E. M. (2018). The logic of design research. *Learning: Research and Practice*, 4(2), 131–160. <https://doi.org/10.1080/23735082.2017.1286367>
- Engkizar, E., Jaafar, A., Alias, M., Guspita, B., & Albizar, R. (2025). Utilisation of Artificial Intelligence in Qur'anic Learning: Innovation or Threat? *Journal of Quranic Teaching and Learning*, 1(2), 1–17. <https://joqer.intischolar.id/index.php/joqer/index>
- Engkizar, E., Jaafar, A., Hamzah, M. I., Syafril, S., Febriani, A., Oktavia, G., & Satrial, A. (2026). Quran Teachers' Skills as Pedagogical Foundations: Conceptual and Practical Insights into Nine Competencies. *Muaddib: Journal of Islamic Teaching and Learning*, 2(1), 22–38. <https://muaddib.intischolar.id/index.php/muaddib/article/view/31>
- Engkizar, E., Jaafar, A., Sarianto, D., Ayad, N., Rahman, A., Febriani, A., Oktavia, G., Puspita, R., & Rahman, I. (2024). Analysis of Quran Education Problems in Majority Muslim Countries. *International Journal of Islamic Studies Higher Education*, 3(1), 65–80. <https://doi.org/10.24036/insight.v3i1.209>
- Feldman, E. B. (1992). *@Varieties of visual experience Edmund Burke Feldman* (4th ed.). H.N. Abrams.
- Fernandez-Rio, J., de las Heras, E., González, T., Trillo, V., & Palomares, J. (2020). Gamification and physical education. Viability and preliminary views from students and teachers. *Physical Education and Sport Pedagogy*, 25(5), 509–524. <https://doi.org/10.1080/17408989.2020.1743253>
- Finkielsztein, M. (2020). Class-related academic boredom among university students: a qualitative research on boredom coping strategies. *Journal of*

- Further and Higher Education*, 44(8), 1098–1113.
<https://doi.org/10.1080/0309877X.2019.1658729>
- Giráldez, V. A., Sanmiguel-Rodríguez, A., Álvarez, O. R., & Navarro-Patón, R. (2022). Can Gamification Influence the Academic Performance of Students? *Sustainability (Switzerland)*, 14(9), 5115.
<https://doi.org/10.3390/su14095115>
- Gómez-Gonzalvo, F., Devís-Devís, J., & Molina-Alventosa, P. (2020). Video game usage time in adolescents' academic performance. *Comunicar*, 28(65), 89–99. <https://doi.org/10.3916/C65-2020-08>
- Greenhalgh, T. (2025). Case studies: a guide for researchers, educators, and implementers. *BMJ Medicine*, 4(1), 1623.
<https://doi.org/10.1136/bmjmed-2025-001623>
- Halabieh, H., Hawkins, S., Bernstein, A. E., Lewkowict, S., Unaldi Kamel, B., Fleming, L., & Levitin, D. (2022). The Future of Higher Education: Identifying Current Educational Problems and Proposed Solutions. *Education Sciences*, 12(12), 888.
<https://doi.org/10.3390/educsci12120888>
- Huseinović, L. (2023). The Effects of Gamification On Student Motivation And Achievement In Learning English As A Foreign Language In Higher Education. *MAP Education and Humanities*, 4(1), 10–36.
<https://doi.org/10.53880/2744-2373.2023.4.10>
- Kasheem, M., Yahya, N., Shalghoum, N., Masuwd, M., Alriteemi, A., Abdullah, M., Alsaeh, F., & Alrumayh, S. (2025). Artificial Intelligence in Academic Research: Adoption, Opportunities, and Barriers among Faculty in Libya Higher Education. *Multidisciplinary Journal of Thought and Research*, 1(3), 109–127.
<https://mujoter.intischolar.id/index.php/mujoter>
- Kim, S., Song, K., Lockee, B., & Burton, J. (2018). What is Gamification in Learning and Education? In S. Kim, K. Song, B. Lockee, & J. Burton (Eds.), *Gamification in Learning and Education* (pp. 25–38). Springer International Publishing. https://doi.org/10.1007/978-3-319-47283-6_4
- Kirsch, J., & Spreckelsen, C. (2023). Caution with competitive gamification in medical education: unexpected results of a randomised cross-over study. *BMC Medical Education*, 23(1), 259. <https://doi.org/10.1186/s12909-023-04258-5>
- Koppitsch, S. E., & Meyer, J. (2022). Do Points Matter? the Effects of Gamification Activities With and Without Points on Student Learning and Engagement. *Marketing Education Review*, 32(1), 45–53.
<https://doi.org/10.1080/10528008.2021.1887745>
- Kosmas, C., Ioannis, A., & George, F. (2023). Storytelling Archetypes In Gamification. In *AIP Conference Proceedings* (Vol. 2909, Issue 1). <https://doi.org/10.1063/5.0183272>
- Kuş, M. (2025). A meta-analysis of the impact of technology related factors on students' academic performance. *Frontiers in Psychology*, 16, 1524645.
<https://doi.org/10.3389/fpsyg.2025.1524645>
- Kushnir, I. (2025). Thematic analysis in the area of education: a practical guide. *Cogent Education*, 12(1), 2471645.
<https://doi.org/10.1080/2331186X.2025.2471645>
- Laine, T. H., & Lindberg, R. S. N. (2020). Designing Engaging Games for Education: A Systematic Literature Review on Game Motivators and Design Principles. *IEEE Transactions on Learning Technologies*, 13(4), 804–821. <https://doi.org/10.1109/TLT.2020.3018503>

- Lester, D., Skulmoski, G. J., Fisher, D. P., Mehrotra, V., Lim, I., Lang, A., & Keogh, J. W. L. (2023). Drivers and barriers to the utilisation of gamification and game-based learning in universities: A systematic review of educators' perspectives. *British Journal of Educational Technology*, 54(6), 1748–1770. <https://doi.org/10.1111/bjet.13311>
- Li, L., Hew, K. F., & Du, J. (2024). Gamification enhances student intrinsic motivation, perceptions of autonomy and relatedness, but minimal impact on competency: a meta-analysis and systematic review. *Educational Technology Research and Development*, 72(2), 765–796. <https://doi.org/10.1007/s11423-023-10337-7>
- Li, M., Ma, S., & Shi, Y. (2023). Examining the effectiveness of gamification as a tool promoting teaching and learning in educational settings: a meta-analysis. *Frontiers in Psychology*, 14, 1253549. <https://doi.org/10.3389/fpsyg.2023.1253549>
- Mansoor, A. Z. (2017). *Gamification Experiment in Introduction to ICT Development Course Through Art and Design* (Issue 2)). https://doi.org/10.20668/adada.21.2_89
- Masoud, M., & Almajri, S. (2025). The use of artificial intelligence-based translation tools for language department students. *Journal of Arabic Literature, Teaching and Learning*, 1(3), 76–92. <https://jaliter.intischolar.id/index.php/jaliter>
- Olson, N., Oberhoffer-Fritz, R., Reiner, B., & Schulz, T. (2025). Stress, student burnout and study engagement – a cross-sectional comparison of university students of different academic subjects. *BMC Psychology*, 13(1), 293. <https://doi.org/10.1186/s40359-025-02602-6>
- Putri, N., Noprianti, A., & Oktavia, G. (2025). The Qur'an as a Source of Solutions for the Global Moral Crisis. *Journal of Quranic Teaching and Learning*, 1(2), 90–105. <https://joqer.intischolar.id/index.php/joqer>
- Qiao, S., Yeung, S. S. sze, Zainuddin, Z., Ng, D. T. K., & Chu, S. K. W. (2023). Examining the effects of mixed and non-digital gamification on students' learning performance, cognitive engagement and course satisfaction. *British Journal of Educational Technology*, 54(1), 394–413. <https://doi.org/10.1111/bjet.13249>
- Qin, Z., Yang, G., Lin, Z., Ning, Y., Chen, X., Zhang, H., & Un In Wong, C. (2025). The impact of academic burnout on academic achievement: a moderated chain mediation effect from the Stimulus-Organism-Response perspective. *Frontiers in Psychology*, 16, 1559330. <https://doi.org/10.3389/fpsyg.2025.1559330>
- Romli, A. S., Luayyin, R. H., & Billah, A. (2025). *The Role of Lecturers in Building Student Resilience* (Vol. 8, Issue 3, pp. 403–414). <https://doi.org/10.24036/ijmurhica.v8i3.274>
- Safitri, D., & Fanreza, R. (2026). Impact of Teacher Professionalism in Educational Technology on Student Learning Engagement. *International Journal of Multidisciplinary Research of Higher Education (IJMURHICA)*, 9(2), 207–218.
- Sambo, K. U., Shishah, W., & Isiaku, L. (2025). Barriers to gamification adoption in education: A systematic review of cultural, technological, and institutional challenges in developing countries. *Information Development*, 02666669251331268. <https://doi.org/10.1177/02666669251331268>
- Silvia, C., Kopczynski, K., & Alexander, A. (2025). Navigating Digital Fatigue in Educational Environments. *Creative Education*, 16(11), 1883–1896. <https://doi.org/10.4236/ce.2025.161115>

- Sugiyono, & Sudaryono, A. (2021). Metode Penelitian Pendidikan BT - Metode Penelitian Pendidikan. In *Penelitian Kuantitatif, Penelitian* Alfabeta. <https://doi.org/10.1234/metodepenelitian.2021>
- Tinoca, L., Piedade, J., Santos, S., Pedro, A., & Gomes, S. (2022). Design-Based Research in the Educational Field: A Systematic Literature Review. *Education Sciences*, 12(6), 410. <https://doi.org/10.3390/educsci12060410>
- Toda, A. M., Valle, P. H. D., & Isotani, S. (2018). The dark side of gamification: An overview of negative effects of gamification in education. In A. I. Cristea, I. I. Bittencourt, & F. Lima (Eds.), *Communications in Computer and Information Science* (Vol. 832, pp. 143–156). Springer International Publishing. https://doi.org/10.1007/978-3-319-97934-2_9
- Xiao, Y., & Hew, K. F. T. (2024). Intangible rewards versus tangible rewards in gamified online learning: Which promotes student intrinsic motivation, behavioural engagement, cognitive engagement and learning performance? *British Journal of Educational Technology*, 55(1), 297–317. <https://doi.org/10.1111/bjet.13361>
- Zeng, J., Sun, D., Looi, C. K., & Fan, A. C. W. (2024). Exploring the impact of gamification on students' academic performance: A comprehensive meta-analysis of studies from the year 2008 to 2023. *British Journal of Educational Technology*, 55(6), 2478–2502. <https://doi.org/10.1111/bjet.13471>
- Zeybek, N., & Saygi, E. (2024). Gamification in Education: Why, Where, When, and How?—A Systematic Review. *Games and Culture*, 19(2), 237–264. <https://doi.org/10.1177/15554120231158625>

Copyright holder:

© Mansoor, A. Z., Putri, G. I. L. (2026)

First publication right:

International Journal of Multidisciplinary of Higher Education (IJMURHICA)

This article is licensed under:

CC-BY-SA