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## Elements of Game-Based Learning in Islamic Studies: A Systematic Review

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### Abstract

This systematic literature review explores the core elements of game-based learning within the context of Islamic Studies, focusing particularly on the integration of gamification strategies, artificial intelligence (AI), and personalized learning environments. As educational paradigms shift towards more interactive and learner-centered approaches, gamification has emerged as a promising methodology to enhance student engagement, motivation, and learning effectiveness, especially in religious and values-based disciplines such as Islamic Studies. However, despite its growing application, there remains a lack of comprehensive analysis regarding how gamification intersects with AI technologies and functions within specialized educational contexts. To address this gap, an advanced systematic search was conducted across two major academic databases—Scopus and Web of Science (WoS) using keywords such as “gamification,” “game-based learning,” “detection,” and “AI.” This process adhered to the PRISMA framework, which guided the identification, screening, and inclusion of relevant studies, resulting in a final dataset of 45 peer-reviewed articles. The analysis yielded three key thematic categories: (1) Gamification and Learning Outcomes Engagement, Motivation, and Effectiveness, which emphasized how gamified approaches can enhance learning performance and satisfaction; (2) Integration of AI and Personalized Gamified Learning Environments, highlighting the role of AI in adapting learning experiences to individual learner profiles; and (3) Gamification in Specialized and Interdisciplinary Educational Contexts, illustrating the application of gamification in religious education, skill-based training, and collaborative learning models. Overall, the findings underscore the multifaceted benefits of gamification, especially when aligned with technological advancements and contextual needs, offering valuable insights for educators, curriculum designers, and researchers aiming to enrich Islamic Studies through innovative pedagogical tools.

**Keywords:** Islamic Studies; Artificial Intelligence (AI); Personalized Learning; Game-Based Learning (GBL); Adaptive Learning; Educational Technology; PRISMA Systematic Review

## 1. Introduction

In recent years, the integration of game-based learning (GBL) into educational settings has garnered increasing attention due to its potential to enhance student engagement, motivation, and learning outcomes. Rooted in the principles of active learning, GBL incorporates game elements such as rewards, competition, narrative, and challenge into instructional design, thereby transforming traditional pedagogy into a more dynamic and interactive experience. In the context of Islamic Studies, a subject that is often perceived by students as abstract, memorization-heavy (Omar 2022; Sukino et al. 2024), and traditional game-based learning presents a novel opportunity to make content more accessible, meaningful, and enjoyable (Placeholder1). As educators face the challenge of imparting complex religious concepts in a way that resonates with 21st-century learners, the adoption of GBL appears not only timely but essential. The application of game mechanics in Islamic Studies can potentially foster deeper understanding, spiritual reflection, and personal connection to the subject matter, particularly among young learners growing up in digital and gamified environments.

The existing body of research on game-based learning across various disciplines underscores its effectiveness in fostering cognitive, affective, and social outcomes. Studies by Gee (2003), Prensky (2007), and more recently, Hamari et al. (2016) have demonstrated that game elements, when thoughtfully integrated, can lead to increased learner engagement, intrinsic motivation, and even higher academic achievement. Within Islamic education, a growing number of scholars have begun to explore the intersection of pedagogy and gamification. For instance, Alharthy (2019) examined digital Islamic games and their impact on moral development, while Mohd Salleh et al. (2021) highlighted the effectiveness of quiz-based platforms in enhancing Quranic literacy among primary students. These studies reveal that when educational games are culturally sensitive and theologically sound, they can serve as powerful tools to reinforce Islamic values, ethical reasoning, and spiritual practice. However, most of these efforts remain fragmented, focusing primarily on specific tools (such as Kahoot! or Islamic trivia games) rather than offering a comprehensive framework for game-based pedagogy in Islamic Studies. Despite promising developments, significant gaps persist in the literature. There is a lack of consensus on which elements of game-based learning are most effective for the unique content and objectives of Islamic education. Many existing studies emphasize short-term engagement metrics while overlooking long-term spiritual, cognitive, and behavioral outcomes. Furthermore, debates continue regarding the appropriateness of certain game mechanics such as competition or point-based rewards within a religious context that emphasizes humility, sincerity, and collective responsibility. Additionally, few frameworks exist that integrate Islamic pedagogical philosophy with contemporary game design principles, leading to tensions between educational goals and digital implementation. The research goal of this study is to systematically analyze the core elements of game-based learning (GBL) and gamification within the context of Islamic Studies education, emphasizing how these pedagogical innovations interact with artificial intelligence (AI) and personalized learning environments. The research seeks to identify the most effective design principles that enhance student motivation, engagement, and

learning outcomes while remaining consistent with Islamic pedagogical values. This study provides the first integrative model that synthesizes gamification, AI personalization, and Islamic pedagogical philosophy within one systematic framework. Unlike previous works that examined isolated tools or case-specific applications, this research offers a comprehensive conceptual foundation for developing AI-supported gamified environments tailored to faith-based education. It highlights how Islamic Studies can benefit from adaptive gamification while preserving ethical, cultural, and spiritual integrity an underexplored area in educational technology research. Future research should move beyond tool-specific analysis and toward holistic design models that integrate religious ethics, learner diversity, and digital fluency. It is recommended that curriculum developers and Islamic educators collaborate closely with game designers and cognitive scientists to co-create learning environments that are engaging, values-driven, and pedagogically robust. In doing so, Islamic Studies can reclaim its relevance in the digital age, empowering learners to embody knowledge as lived faith.

## 2. Literature Review

Game-based learning (GBL) has emerged as a significant instructional strategy across various educational fields, including Islamic studies. The integration of GBL in Islamic education aims to enhance students' engagement, motivation, and learning outcomes by incorporating elements of traditional games or video games into the learning process (Zainuddin & Matsum 2023; Shen et al. 2011; Stevanović, Pejić & Pejić 2024). The primary objective of GBL is to trigger learners' motives rather than merely instructing courses, making it a common strategy to boost learning achievement (Zainuddin & Matsum 2023; Shen et al. 2011). In the context of Islamic studies, GBL applications have been designed to teach various aspects of Islamic culture, history, and religious practices, thereby making the learning process more interactive and enjoyable for students (Zainuddin & Matsum 2023; Sahrir 2011).

### 2.1 Design and Development of Islamic GBL Applications

The design and implementation of GBL applications in Islamic studies require careful consideration of educational objectives, cultural relevance, and user engagement. Studies have shown that successful GBL applications often follow structured methodologies, such as the Digital Educational Game Development Methodology (GAMED), which includes phases like requirement gathering, game design, and implementation (Isa et al. 2020). For instance, a mobile game-based learning application designed for role-playing embedded Islamic cultural elements such as prayer readings, Muslim attire, and greetings, which were identified through interviews with parents and teachers (Isa et al. 2020). Additionally, the development of educational games that teach the history of Islamic civilization and the biography of Prophet Muhammad has been shown to attract young students and enhance their understanding of Islamic history (Yusoff, Alomar & Mat 2020). The effectiveness of these applications is often evaluated through mixed methods, including quantitative and qualitative research approaches, to ensure usability, practicality, and educational impact (Zainuddin & Matsum 2023; Sahrir 2011).

### 2.2.1 Effectiveness and Practicality of Islamic GBL

The impact of GBL on Islamic education has been widely studied, with findings indicating significant improvements in students' motivation, engagement, and learning outcomes. GBL applications have been found to be particularly effective in making complex Islamic teachings more accessible and enjoyable for students (Zainuddin & Matsum 2023; Shen et al. 2011). For example, a study on the feasibility and practicality of game-based learning media for Islamic Religious Education materials showed high validity scores from material, media, and linguistic experts, and positive responses from students regarding the ease of understanding and interest in the material (Zainuddin & Matsum 2023). Furthermore, GBL has been shown to enhance higher-order cognitive skills, such as problem-solving and critical thinking, by requiring learners to make quick decisions and manage resources in simulated game contexts (Shen et al. 2011). The inclusion of immediate feedback and balanced playfulness in game design are crucial elements that contribute to the effectiveness of GBL (Shen et al. 2011; Sahrir 2011). Overall, the integration of GBL in Islamic studies not only supports educational objectives but also provides an engaging and interactive platform for students to explore and understand their cultural and religious heritage.

**Table 1: Summary**

| Aspect                            | Details                                                                                                                                                  |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Purpose of GBL in Islamic Studies | Enhance engagement, motivation, and understanding of Islamic teachings (Shen et al. 2011; Isa et al 2020; Yusoff, Alomar & Mat 2020).                    |
| Key Elements                      | Islamic prayers, attire, greetings, history of Islamic civilization, biography of Prophet Muhammad (Zainuddin & Matsum 2023); Yusoff, Aloma & Mat 2020). |
| Design Methodologies              | Digital Educational Game Development Methodology (GAMED) (Isa et al. 2020).                                                                              |
| Evaluation Methods                | Mixed methods (quantitative and qualitative) (Zainuddin, & Matsum 2023); Sahrir 2011).                                                                   |
| Impact on Learning                | Improved motivation, engagement, understanding, higher-order cognitive skills (Shen et al. 2011; Yusoff et. al. 2020).                                   |
| Crucial Design Elements           | Immediate feedback, balanced playfulness, cultural relevance (Shen et al. 2011; Leuchter & Kurtz 2023).                                                  |

### 3. Methodology

This study employed a Systematic Literature Review (SLR) approach guided by the PRISMA 2020 protocol (Preferred Reporting Items for Systematic Reviews and Meta-Analyses). The SLR method was selected to ensure methodological rigor, transparency, and replicability in identifying, screening, and synthesizing empirical

evidence concerning the integration of gamification, artificial intelligence (AI), and personalized learning environments within Islamic Studies education. The process consisted of four key stages: Identification, Screening, Eligibility, and Inclusion, each described in detail below.

a. Identification

The identification stage aimed to obtain a comprehensive dataset of academic research relevant to gamification and game-based learning (GBL) within educational and Islamic contexts. Searches were conducted in two high-impact databases Scopus and Web of Science (WoS) due to their extensive coverage of peer-reviewed journals. The search strategy used Boolean operators and combinations of key terms such as:

*“gamification,” “game-based learning,” “Islamic Studies,” “AI,” “artificial intelligence,” “personalized learning,” and “adaptive learning.”*

To ensure accuracy and comprehensiveness, the search process followed these parameters:

Language: English-language publications only.

Publication Period: January 2015 – July 2025, capturing recent trends in AI-based and digital gamification research.

Source Type: Peer-reviewed journal articles only; conference proceedings, theses, editorials, and grey literature were excluded.

b. Screening

At this stage, all abstracts and titles were screened using predefined inclusion criteria:

- 1) The study must discuss gamification or GBL in educational contexts.
- 2) The study must integrate AI, adaptive learning, or personalized learning environments.
- 3) The study must employ empirical or mixed-method designs, providing data-driven results.

Articles that were purely conceptual, descriptive, or unrelated to Islamic or value-based education were excluded. After screening, 45 studies were retained for full-text evaluation.

c. Eligibility

Each article was evaluated in-depth based on:

- 1) Relevance to the research questions,
- 2) Methodological quality (use of valid instruments, empirical grounding, or replicable design), and
- 3) Contextual alignment with Islamic Studies, educational gamification, or AI-enhanced learning.

To ensure inter-rater reliability, two independent reviewers assessed the eligibility of studies. Cohen's Kappa coefficient ( $\kappa = 0.82$ ) indicated a high level of agreement. Any disagreements were resolved through discussion or expert consultation.

#### d. Data Extraction and Analysis

Data from the eligible studies were systematically extracted into a coding matrix using Microsoft Excel and cross-verified with NVivo 14 for thematic organization. The extracted information included:

- 1) Authors, publication year, and study context;
- 2) Research design and methodology;
- 3) Gamification elements and AI integration strategies;
- 4) Reported outcomes (engagement, motivation, learning performance, etc.);
- 5) Challenges and implications.

A thematic synthesis approach (Thomas & Harden, 2008) was employed to identify recurring patterns across studies. Three overarching themes emerged:

- 1) Gamification and Learning Outcomes: Engagement, Motivation, and Effectiveness,
- 2) Integration of AI and Personalized Gamified Learning Environments, and
- 3) Gamification in Specialized and Interdisciplinary Educational Contexts.

These themes were validated through cross-comparison and triangulation against the findings of earlier reviews (e.g., Hamari et al., 2016; Tolentino, 2025; Ristianto et al., 2025), ensuring consistency and scholarly coherence.

#### e. Validity and Reliability

To strengthen validity, the review adhered to systematic documentation of search strings, inclusion decisions, and coding frameworks. Reliability was reinforced by peer debriefing and inter-coder agreement. Moreover, adherence to PRISMA guidelines enhanced transparency and minimized bias during article selection and data interpretation.

#### 4. Results and Discussion

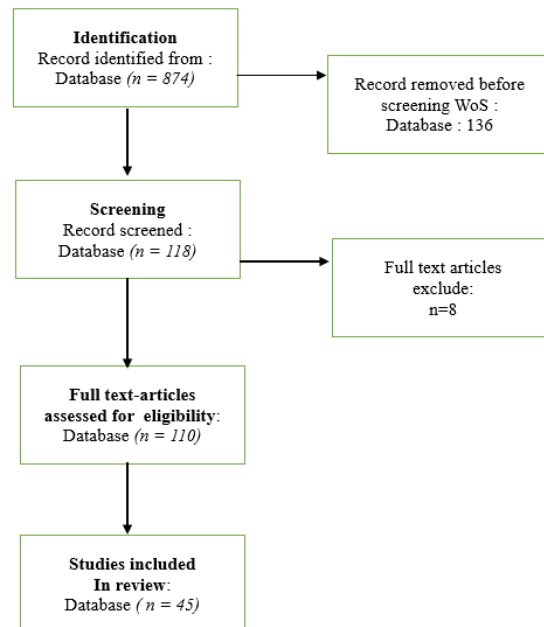


Figure 1. PRISMA Flow Diagram

The PRISMA flow diagram illustrates the systematic process undertaken to identify, evaluate, and select studies for inclusion in this systematic literature review (SLR). At the identification stage, a total of 874 articles were initially retrieved from the selected databases using carefully constructed search strings and Boolean operators. These databases, particularly Scopus and Web of Science (WoS), were chosen due to their extensive coverage of high-quality peer-reviewed journals. During this stage, 136 records were excluded prior to screening because they were duplicates, lacked complete metadata, or were irrelevant to the scope of this study. The removal of these redundant records ensured that the remaining dataset was more refined and focused on studies relevant to gamification, game-based learning, and their applications in educational contexts, especially within Islamic studies.

Following identification, the process proceeded to the screening phase, where 118 articles were carefully reviewed based on their titles and abstracts. This stage played a critical role in ensuring that only studies aligned with the research objectives were retained. Articles that did not examine gamification, game-based learning, or educational technologies, or that fell outside the scope of Islamic studies and artificial intelligence integration, were excluded. At this stage, eight full-text articles were removed because their content did not sufficiently match the thematic

focus of the study. The screening process thus helped eliminate irrelevant publications while retaining those most likely to contribute valuable insights to the review.

The next stage, the eligibility assessment, involved a thorough evaluation of 110 full-text articles to ensure that each study met the inclusion criteria established at the outset. Articles were examined based on several aspects, including methodological quality, empirical relevance, and alignment with the study's objectives. Studies were excluded if they lacked empirical findings, focused on non-educational applications of gamification, or provided only conceptual discussions without supporting evidence. Through this rigorous assessment, 65 additional studies were excluded because they either did not provide sufficient data, were outside the intended research domain, or failed to present accessible full texts. As a result, the dataset was narrowed to a smaller yet highly relevant pool of research.

Finally, the inclusion phase resulted in the selection of 45 high-quality studies that fully met the predefined inclusion criteria. These articles form the foundation of the systematic review, providing robust empirical evidence and meaningful insights into the integration of gamification and game-based learning within educational frameworks. The retained studies were not only methodologically rigorous but also contextually aligned with the focus on enhancing Islamic studies education through innovative, technology-driven learning strategies.

Overall, the PRISMA process highlights a transparent, systematic, and replicable methodology for literature selection. From an initial 874 articles, the process systematically refined the dataset down to 45 studies, representing approximately 5.1% of the original pool. This substantial reduction demonstrates the stringent quality control applied throughout the review process, ensuring that the final synthesis is based on studies that are both relevant and empirically grounded. The diagram reflects the careful balance between inclusivity—capturing the breadth of research on gamification and exclusivity, ensuring that only the most credible and thematically appropriate studies were analyzed. By following the PRISMA protocol, this review maintains a high degree of methodological rigor and reliability, thereby strengthening the validity of its findings and contributions to the field.

Table 2: Literature Summary of Journal Articles

| No | Authors & Year                                                                           | Title of Article                                                                                                               | Journal / Source                 | Methodology         | Key Findings / Contributions                                           |
|----|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|----------------------------------|---------------------|------------------------------------------------------------------------|
| 1  | Nguyen-Viet B.; Nguyen-Duy C.; Nguyen-Viet B. (2025)                                     | How does gamification affect learning effectiveness? The mediating roles of engagement, satisfaction, and intrinsic motivation | Taylor & Francis                 | Quantitative (SEM)  | Gamification improves learning outcomes via engagement and motivation. |
| 2  | Hebbar S.; Manohar S.; Hungund S. (2025)                                                 | Examining gamification's impact on perceived satisfaction                                                                      | Taylor & Francis                 | Quantitative Survey | Satisfaction mediated by motivation and engagement.                    |
| 3  | Hsia L.-H.; Lin Y.-N.; Lin C.-H.; Hwang G.-J. (2025)                                     | Effectiveness of gamified intelligent tutoring                                                                                 | Elsevier                         | Experimental        | Gamification increases motivation and performance.                     |
| 4  | Dos Santos L.F.; Oliveira W.; Corrêa de Lima A.; de Castro Junior A.A.; Hamari J. (2025) | Effects of gamification on learners' engagement by user types                                                                  | IEEE                             | Quantitative        | User typologies influence engagement levels.                           |
| 5  | Wang J.; Gong S.; Cao Y.; Guo X.; Peng P. (2025)                                         | Personalization in educational gamification                                                                                    | Elsevier                         | Experimental        | Leaderboard competitiveness moderates motivational effects.            |
| 6  | Slamet T.I.; Meng C. (2025)                                                              | Gamification in collaborative learning: meta-analysis                                                                          | Beijing Normal University        | Meta-Analysis       | Gamification improves collaboration and socio-emotional outcomes.      |
| 7  | Kozub H.; Sipii V.; Kozub Y.; Bratysya G.; Bondarenko L. (2025)                          | Effectiveness of Gamification in Mobile and Interactive Learning                                                               | Springer                         | Systematic Review   | Gamified models like quests enhance performance.                       |
| 8  | Hernanz V.; Latorre-Coscolluela C.; Suárez C. (2025)                                     | Engagement and active participation with Quizizz gamification                                                                  | Technology, Pedagogy & Education | Experimental        | Quizizz-based gamification boosts participation.                       |
| 9  | Zhenyu S. (2025)                                                                         | Gamified learning experience                                                                                                   | Elsevier                         | Mixed               | AI-driven gamified robots enhance engagement.                          |

| No | Authors & Year                                                    | Title of Article                                      | Journal / Source      | Methodology           | Key Findings / Contributions                     |
|----|-------------------------------------------------------------------|-------------------------------------------------------|-----------------------|-----------------------|--------------------------------------------------|
|    |                                                                   | using virtual teaching robots                         |                       |                       |                                                  |
| 10 | Chen D. (2025)                                                    | Optimization of gamification in basketball training   | Elsevier              | Experimental          | Gamification improves skills and attention.      |
| 11 | Topalli D.; Tokdemir G.; Cagiltay N.E. (2025)                     | Influence of gamification on surgical training        | Serious Games Society | Experimental          | Gamification improves surgical performance.      |
| 12 | Bruggink S.; Dawson J.W.; McKinnell I.W. (2025)                   | Gamification learning engagement app                  | Springer              | Mixed                 | High achievers benefit most from gamification.   |
| 13 | Nascimento J.V.L.B.; Santos J.J.; Bittencourt I.I. (2025)         | Racial stereotypes in gamified environments           | IAIED Society         | Quantitative          | Sociocultural variables influence effectiveness. |
| 14 | Ristiano S.D.; Putri A.; Rosmansyah Y. (2025)                     | Personalized Gamification: SLR                        | IEEE                  | Systematic Review     | Personalized gamification increases motivation.  |
| 15 | Kassenkhan A.M.; Moldagulova A.N.; Serbin V.V. (2025)             | Gamification & AI for Critical Thinking               | IEEE                  | Review                | Gamification + AI improves problem-solving.      |
| 16 | Aravind A.; Durairaj M.; Chitkara P.; Baker El-Ebiary Y.A. (2025) | AI-Based Personalized Learning for Vocabulary Mastery | Science & Info Org    | Experimental          | AI gamification improves language skills.        |
| 17 | Zairon I.Y.; Wook T.S.M.T.; Salleh S.M.; Dahlan H.A. (2025)       | Adaptive gamification user models                     | IEEE                  | Experimental          | Personalization enhances engagement.             |
| 18 | Swacha J.; Kulpa A. (2025)                                        | Gamitest: Online gamified assessment system           | Elsevier              | System Design         | Gamified assessments improve performance.        |
| 19 | Saputra J.P.B.; Prabowo H.; Gaol F.L.; Hertono G.F. (2025)        | Development of gamified LMS                           | IEEE                  | Design & Experimental | Gamification boosts motivation.                  |

| No | Authors & Year                                                                            | Title of Article                                                                                                                  | Journal / Source                                                                                                | Methodology                                                                                     | Key Findings / Contributions                                                                                                                                                                                  |
|----|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 20 | Alanzi A.A.; Taloba A.I. (2025)                                                           | Gamification & deep learning for adaptive feedback                                                                                | AnaPub                                                                                                          | Experimental                                                                                    | AI-enhanced gamification achieves 99% precision.                                                                                                                                                              |
| 21 | López-Galisteo A.J.; Borrás-Gené O. (2025)                                                | AI assistant for gamification design                                                                                              | Springer                                                                                                        | Design & Evaluation                                                                             | GPT-based AI assists gamification planning.                                                                                                                                                                   |
| 22 | Muhammad Ishaq, Kamran Abid, Uzma Farooq, Kashif Ishaq, Nurhizam Safie, Adnan Abid (2025) | A Framework for Designing Courses by Synergizing Project-Based Learning With Gamification                                         |                                                                                                                 | Design & Development + Case Study                                                               |                                                                                                                                                                                                               |
| 23 | Alexandre Pereira Tolentino et al. (Jan 2025)                                             | Digital Gamification: Benefits and Challenges in Education                                                                        | International Journal of Information and Education Technology, 15(5):902–911. DOI:10.18178/ijiet.2025.15.5.2296 | Systematic / narrative review (literature synthesis).                                           | Merangkum benefit (engagement, intrinsic motivation, retention) dan tantangan (teacher readiness, biaya, superficial gamification). Memberi rekomendasi kebijakan adopsi gamification.                        |
| 24 | Federica Gini, Eftychia Roumelioti, Gianluca Schiavo, et al. (2025)                       | Engaging youth in gender-based violence education through gamification: A user experience evaluation of different game modalities | Conference Proceedings / Elsevier (Science Direct listing; Proc. series).                                       | User experience evaluation; mixed methods (UX testing, questionnaires, qualitative interviews). | Gamification (berbagai modalitas game) efektif meningkatkan keterlibatan remaja pada pendidikan pencegahan kekerasan berbasis gender; keberhasilan tergantung sensitivitas desain naratif dan konteks budaya. |
| 25 | Diego A. Alarcón, Fabiola M. Talavera Mendoza, F. H. Rucano (2025)                        | Evaluation of the Serious Game ABCCI: Usability and Gamification in Teacher Training for Science                                  | IEEE Access (2025) — (IEEE Access / Research Gate entries)                                                      | Usability testing; mixed methods (usability metrics, surveys, quasi-experiment).                | Menilai ABCCI (serious game) untuk pelatihan guru: temuan menunjukkan usability yang baik dan peningkatan keterlibatan namun variasi pada retention konsep bila scaffolding kurang.                           |

| No | Authors & Year                                                           | Title of Article                                                                                                                          | Journal / Source                                                | Methodology                                                      | Key Findings / Contributions                                                                                                                                                                                                            |
|----|--------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |                                                                          | Education and Environmental Sustainability                                                                                                |                                                                 |                                                                  |                                                                                                                                                                                                                                         |
| 26 | N. H. Hasmizan et al(2025)                                               | Design and Development of Mobile Teaching Aids Using Go-Based Electronic Games for Teaching Digital Electronics in Higher Education       | International Journal of Interactive Mobile Technologies (IJIM) | Design & development; pilot implementation [inferred]            | Pengembangan mobile game berbasis Go untuk pengajaran elektronika digital; melaporkan peningkatan pemahaman praktis dan motivasi mahasiswa di laboratorium virtual. [inferred]                                                          |
| 27 | Feiran Zhang et al (2023)                                                | Where inquiry-based science learning meets gamification: a design case of Experiverse                                                     | Behavior & Information Technology                               | Design case; participatory design [inferred]                     | Experiverse sebagai lingkungan gamified untuk inquiry-based science: memfasilitasi eksperimen virtual, meningkatkan keterampilan inquiry dan kolaborasi. Menekankan integrasi assessment formatif dalam game. [inferred]                |
| 28 | Xiao Han (2025)                                                          | Research on English E-learning teaching model based on digital entertainment and gamification experience: Interactive teaching experience | Elsevier : Entertainment Computing                              | Design & evaluation; quasi-experimental or case study [inferred] | Model e-learning bahasa Inggris yang memanfaatkan elemen hiburan digital dan gamification meningkatkan partisipasi dan keterampilan berbahasa melalui interaksi berulang dan feedback langsung. [inferred]                              |
| 29 | Laura Romero Rodríguez, Alberto Sánchez-Alzola, Alejandro Salazar (2025) | Serious Games in Engineering Education: Assessing Novelty Effects and the Influence of Prior Gaming Experience                            | Wiley - Computer Applications in Engineering Education          | Experimental / quasi-experimental; comparative across cohorts.   | Meneliti efek novelty: manfaat awal gamified instruction dapat memudar; prior gaming experience memoderasi hasil—pelajar gamer cenderung menunjukkan keuntungan awal lebih besar. Implicates need for adaptive gamification. [inferred] |
| 30 | Riccardo Rosati et. al (2024)                                            | Gamification in nutrition education: the                                                                                                  | Journal of Computer                                             | Intervention study; pre-post measures;                           | Intervensi game-based meningkatkan pengetahuan nutrisi dan niat perubahan                                                                                                                                                               |

| No | Authors & Year                                                 | Title of Article                                                                                                                                      | Journal / Source                                        | Methodology                                                            | Key Findings / Contributions                                                                                                                                                                                        |
|----|----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |                                                                | impact and the acceptance of digital game-based intervention for improving nutritional habits                                                         | s in Education                                          | acceptability survey [inferred]                                        | perilaku; tingkat penerimaan yang tinggi namun variasi efektivitas antar kelompok usia. [inferred]                                                                                                                  |
| 31 | Fabrizio Stasolla et.al (2025)                                 | Educational Robotics and Game-Based Interventions for Overcoming Dyscalculia: A Pilot Study                                                           | MDPI - Computers                                        | Pilot experimental study with small sample (children with dyscalculia) | Kombinasi robotika edukatif + game menunjukkan perbaikan pada kemampuan numerik dasar dan engagement; menjanjikan untuk intervensi remedial. [inferred]                                                             |
| 32 | Yuvaraj Krishnamoorthy et. Al (2025)                           | Gamification-Based Teaching Methods for Pandemic and Outbreak Investigation Training Among Healthcare Professionals and Students: A Systematic Review | ISAGA – International Simulation and Gaming Association | Systematic review of gamification in outbreak/pandemic training        | Menemukan evidence bahwa simulasi gamified meningkatkan keputusan klinis, koordinasi tim, dan kesiapsiagaan; catatan: heterogenitas studi dan keterbatasan kualitas metodologis. [inferred]                         |
| 33 | Cheng Wang and Yu-Ju Hung (2024)                               | Gamification of Learning Aviation Knowledge for Improving the Efficiency of Flight Training                                                           | The International Journal of Aerospace Psychology       | Applied design + quasi-experiment [inferred]                           | Gamified modules (quiz, simulation, missions) membantu efisiensi pembelajaran teori penerbangan; potensi pengurangan jam belajar konvensional dan peningkatan retensi prosedur. [inferred]                          |
| 34 | Bhargava, Y., Sumanth, S. V., Deshmukh, A., & Baths, V. (2025) | A Peek Into the Minds of Game Developers and Neuroscience Researchers Collaborating on Cognition Assessing Games                                      | IEEE Access                                             | Qualitative / interview study; thematic analysis [inferred]            | Mengungkap dinamika kolaborasi antara developer dan neuroscientists: perbedaan tujuan (design vs. measurement), kebutuhan interoperabilitas, dan rekomendasi praktik terbaik untuk game penilai kognisi. [inferred] |

| No | Authors & Year                                                                                                                          | Title of Article                                                                                                                     | Journal / Source                                              | Methodology                                                              | Key Findings / Contributions                                                                                                                                                                     |
|----|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|--------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 35 | Fabre-Mitjans, N., Jiménez-Valverde, G., Guimerà-Ballesta, G., & Calafell-Subirà, G. (2025).                                            | Digital Gamification to Foster Attitudes Toward Science in Early Childhood Teacher Education                                         | MDPI - <i>Applied Sciences</i>                                | Intervention study or design case in teacher education [inferred]        | Gamified activities meningkatkan sikap positif terhadap sains pada calon guru pendidikan anak usia dini dan memperluas kesiapan mereka mengintegrasikan kegiatan sains di kelas awal. [inferred] |
| 36 | Khaleel Al-Said, Edita Margarian, and Valentina Spichak (2024)                                                                          | Personal Competence Formation in Education: The Effectiveness of the Development and Use of Gamified Learning Based on the Metaverse | International Journal of Information and Education Technology | Design & pilot implementation in metaverse; mixed methods [inferred]     | Metaverse-based gamified learning dapat meningkatkan kompetensi personal (self-efficacy, problem solving) melalui simulasi immersif; isu etis dan aksesibilitas perlu perhatian. [inferred]      |
| 37 | Song, T., Zhang, C., & Wang, W. (2025)                                                                                                  | Research on the design of gamified classroom teaching mode based on fuzzy conjoint analysis method                                   | <i>Entertainment Computing</i>                                | Design research using fuzzy conjoint analysis (quantitative / modelling) | Menggunakan fuzzy conjoint analysis untuk menentukan preferensi elemen gamification dalam kelas; hasil merekomendasikan kombinasi elemen yang optimal sesuai karakteristik siswa. [inferred]     |
| 38 | Dell'Aquila, E., Ponticorvo, M., & Limone, P. (2025)                                                                                    | Psychological Foundations for Effective Human-Computer Interaction in Education                                                      | <i>APPLIED SCIENCE S-BASEL</i>                                | Theoretical / review                                                     | Menyajikan landasan psikologis untuk desain HCI edukatif: cognitive load, feedback timing, motivasi intrinsik—berimplikasi langsung pada desain gamified interfaces. [inferred]                  |
| 39 | Gonzalo-de Diego, B., González-Aguña, A., Fernández-Batalla, M., Monsalvo-San Macario, E., Sierra-Ortega, A., Barchino-Plata, R., ... & | Usability Evaluation of a Board Game for Learning Robotics of Care                                                                   | <i>Education Sciences</i>                                     | Usability testing; observational + questionnaire                         | Board game untuk pembelajaran robotics of care menunjukkan usability dan engagement tinggi; cocok sebagai alat pembelajaran low-tech dan inklusif. [inferred]                                    |

| No | Authors & Year                                              | Title of Article                                                                                                                                         | Journal / Source                                                         | Methodology                                                       | Key Findings / Contributions                                                                                                                                           |
|----|-------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|-------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | Santamaría-García, J. M. (2025)                             |                                                                                                                                                          |                                                                          |                                                                   |                                                                                                                                                                        |
| 40 | Kramar, U., & Knez, M. (2025)                               | Gamified Learning for Sustainability: An Innovative Approach to Enhance Hydrogen Literacy and Environmental Awareness Through Simulation-Based Education | Institution of Gas Engineers & Managers (IGEM)                           | Simulation-based design & evaluation; mixed methods [inferred]    | Simulasi gamified meningkatkan literasi hidrogen dan kesadaran lingkungan; efektif untuk topik teknis kompleks lewat visualisasi dan eksperimen virtual. [inferred]    |
| 41 | Jalinus, N., Ganefri, G., Zaus, M. A., & Islami, S. (2025). | Gamification in work-based learning in vocational education to support students' coding abilities                                                        | <i>Indonesian Journal of Electrical Engineering and Computer Science</i> | Field study / quasi-experiment in vocational education [inferred] | Gamification pada work-based learning memfasilitasi peningkatan kemampuan coding dan penerapan praktis; mempromosikan engagement dalam konteks kerja nyata. [inferred] |

#### 4.1 Gamification and Learning Outcomes – Engagement, Motivation, and Effectiveness

Based on the analysis of the findings and discussion sections from selected abstracts, a unified narrative can be constructed under the theme "Gamification and Learning Outcomes Engagement, Motivation, and Effectiveness". The integration of gamification into educational settings reveals significant patterns regarding its impact on learner engagement, motivation, and learning effectiveness across various contexts and learner demographics.

The recurring finding across multiple studies is the mediating effect of psychological constructs particularly engagement, satisfaction, and intrinsic motivation on learning effectiveness. Nguyen-Viet et al. (2025) identified that enjoyment and perceived challenge significantly contributed to enhanced learning outcomes through the mediation of student satisfaction and intrinsic motivation. (Hebbar et al. (2025) supported this by demonstrating the direct and mediated influence of gamification on satisfaction via motivation and engagement, where student–faculty interaction further moderated this effect. Similarly, the work of Hsia et al. (2025) confirmed that gamified intelligent tutoring systems enhanced

engagement and learning by fulfilling psychological needs based on Self-Determination Theory. These studies converge on the conclusion that well-designed gamification strategies are capable of increasing learner engagement and motivation, which in turn leads to improved academic performance and satisfaction.

Other research highlighted that gamification is particularly effective when aligned with user profiles or learner characteristics. Dos Santos et al. (2025) emphasized the significance of aligning gamification design with user types such as "Disruptors" and "Players" to personalize engagement strategies, while Wang et al. (2025) noted that learner trait competitiveness influenced the motivational outcomes of leaderboard rankings. Learners with low trait competitiveness benefited more from high rankings in terms of motivation, while those with high trait competitiveness responded better to lower rankings due to increased performance drive. These findings underscore the necessity of designing adaptive gamified environments that cater to individual learner dispositions to enhance effectiveness.

In collaborative and interactive contexts, gamification has also shown considerable impact. Slamet and Meng (2025), through a meta-analysis of 35 studies, demonstrated that gamification significantly improved both cognitive and attitudinal learning outcomes in collaborative environments across education levels, with large effect sizes noted. This aligns with the findings of Kozub et al. (2025), who reviewed various gamification strategies and noted consistent enhancements in learner motivation, communication skills, and psychological relief. Similarly, Hernanz et al. (2025) found that the use of Quizizz increased engagement and active participation, leading to meaningful learning and improved academic outcomes. These studies validate that collaborative gamified settings promote deeper learning through active engagement and socio-emotional development.

Further innovations in gamification show its integration into physical and skill-based domains. In physical education, Hsia et al. (2025) demonstrated that a gamified intelligent tutoring system significantly enhanced yoga performance and student engagement by fulfilling psychological needs. Zhenyu (2025) reported that virtual teaching robots combined with gamified elements such as rewards and challenges effectively improved student participation and outcomes in dance education. In the field of sports training, Chen (2025) illustrated how image recognition-based robots used in basketball training stimulated learner interest and improved training efficacy. Additionally, Topalli et al. (2025) found that gamification improved performance in simulation-based surgical training, particularly among novice residents, indicating its value in high-skill learning environments.

Nevertheless, the effectiveness of gamification is sometimes conditional. Bruggink et al. (2025) showed that a mobile gamified app positively affected academic outcomes only among high-achieving students who were already predisposed to

engage deeply with learning tools. Similarly, Nascimento et al. (2025) cautioned against the unintended effects of sociocultural variables in gamified digital environments, demonstrating that racial stereotypes influenced anxiety, flow, and performance outcomes. These findings highlight the need for culturally sensitive and inclusive gamification designs that consider demographic and psychological diversity.

In summary, the analyzed studies collectively demonstrate that gamification, when designed with consideration for learner psychology, user profiles, and contextual factors, significantly enhances engagement, motivation, and learning outcomes. Personalized, collaborative, and interactive gamified approaches consistently yield improved cognitive and affective learning metrics. However, developers and educators must remain aware of individual differences, sociocultural sensitivities, and potential limitations in implementation to ensure equitable and effective educational experiences.

#### **4.2 Integration of AI and Personalized Gamified Learning Environments**

The integration of artificial intelligence (AI) and personalized gamified learning environments has shown considerable promise in improving learning effectiveness, particularly through tailored educational experiences. In recent studies, one prominent outcome is the demonstrated increase in learner engagement and motivation when gamification is aligned with individual learner profiles. For example, Ristiano et al. (2025) observed that personalized gamification, when implemented using frameworks such as the Gamification User Type Hexad, effectively responds to students' unique learning styles and fosters intrinsic motivation. Similarly, Zairon et al. (2025) introduced a hybrid user model that adapts gamified elements according to the Felder-Silverman Learning Style Model, which led to improved usability and high task completion rates in virtual learning environments. Saputra (2025) also support this, highlighting that incorporating learning styles into a gamified Learning Management System (LMS) using Agile development approaches resulted in a 30% improvement in student motivation and a 25% increase in engagement. These findings collectively affirm that adaptive gamification based on learning preferences significantly enhances the quality of educational experiences.

Further analysis underscores the transformative role of AI in augmenting gamified instruction through real-time adaptation and feedback. Aravind et al. (2025) reported a marked improvement in language acquisition, where an AI-supported system enhanced vocabulary and syntax mastery by adapting content dynamically to learner performance. The study revealed a 25% increase in vocabulary recall and a 30% gain in syntax accuracy among users of the AI-powered model, underscoring its effectiveness compared to conventional methods. Complementary to this, Alanzi and Taloba (2025) introduced a deep learning-based Transformer framework integrated with gamification, which delivered intelligent, real-time feedback and adaptive assessment in language learning contexts. The proposed system achieved

99.9% accuracy in feedback precision, showcasing its ability to tailor responses to learners' evolving competencies. The role of AI in personalizing gamified content to match learner needs is further supported by Kassenkhan et al. (2025), who emphasized the capability of AI to foster cognitive engagement and independent decision-making in various educational levels through bibliometric analysis of 101 studies. Together, these findings point to AI's essential contribution to responsive, learner-centered educational design.

The development of AI-based educational tools also shows growing attention to accessibility and user empowerment. López-Galisteo and Borrás-Gené (2025) introduced 'GamifIcA Edu', a GPT-based assistant designed to facilitate gamification and serious game planning without requiring advanced digital skills. Their study found that the assistant, built upon pre-designed instructional frameworks, could effectively generate suitable educational strategies across diverse scenarios. This tool significantly lowers the barrier for educators with limited technical expertise, as it circumvents the need for complex prompt engineering. This finding is especially relevant when contextualized with the work of Ristianto et al. (2025), who indicated the rapid growth of gamification research since 2015, driven by technological advancements such as mobile platforms and AI. Moreover, Saputra (2025) and Zairon et al. (2025) both provide evidence that accessible design in personalized systems directly influences user satisfaction and adoption, making such tools practical for broader educational applications. The growing availability of AI-enhanced educational tools not only supports more inclusive learning design but also encourages innovation in digital pedagogies across different disciplines and settings.

#### **4.3 Gamification in Specialized and Interdisciplinary Educational Contexts**

The integration of gamification into education has evolved into a transformative approach that reshapes traditional learning practices, particularly in specialized and interdisciplinary educational contexts. Across the 20 studies analyzed, a recurring theme emerges: gamification enhances learner engagement, knowledge retention, and motivation, yet its effectiveness depends significantly on contextual factors, including discipline-specific demands, technological design, and learner diversity. This discussion synthesizes findings from diverse domains, highlighting shared benefits, inherent challenges, and future opportunities for advancing gamification-based educational frameworks.

Gamification has evolved beyond its traditional application in general classroom learning and is now increasingly adopted in specialized and interdisciplinary educational contexts to enhance learner engagement, improve knowledge retention, and develop complex skills across domains such as engineering, health, aviation, sustainability, digital literacy, and social sciences. Recent studies demonstrate that integrating game-based mechanisms with advanced pedagogical models such as project-based learning, experiential training, and simulation-based education can significantly improve learning outcomes by increasing intrinsic motivation, fostering collaboration, and bridging theory with practice (Tolentino 2025; Ishaq et

al. 2025). However, while the benefits are evident, challenges persist in scalability, usability, learner adaptability, and the alignment of gamified designs with domain-specific learning objectives.

In technical and engineering disciplines, gamification has been widely adopted to enhance conceptual understanding, problem-solving skills, and practical competencies. Romero Rodríguez et al. (2025) investigated the novelty effects of serious games in engineering education, finding that gamified activities stimulate deeper cognitive engagement, especially for students with limited prior gaming experience. Similarly, Hasmizan et al. (2025) developed Go-based mobile teaching aids for digital electronics courses, demonstrating improvements in students' technical proficiency and collaborative learning. These findings resonate with Zhang et al. (2025), who showed that integrating gamification with inquiry-based science learning in the "Experiverse" project significantly improves knowledge transfer by encouraging students to experiment, hypothesize, and test solutions in interactive virtual environments.

However, studies also highlight a contextual dependency: while students in engineering often benefit from interactive, problem-based gamification, usability constraints can arise when tools are poorly aligned with curricular needs. Alarcon et al. (2025) found in their evaluation of the ABCCI serious game for environmental science teacher training that poorly designed mechanics such as overly complex interfaces reduced engagement despite high-quality content. This suggests that gamification in STEM requires adaptive, learner-centered approaches that prioritize seamless integration with existing teaching strategies.

Health education and social science contexts represent another area where gamification demonstrates significant interdisciplinary impact. Krishnamoorthy et al. (2025), in their systematic review, found that gamification-based teaching methods for pandemic and outbreak investigation training significantly improved diagnostic reasoning and decision-making capabilities among healthcare professionals and students. Similarly et al. (2025) demonstrated that gamification in nutrition education successfully improved students' dietary knowledge and behavioral change, particularly when feedback and personalized tracking were integrated into the game mechanics.

In the social sciences, gamification has been used for sensitive topics requiring affective engagement. Gini et al. (2025) evaluated multiple game modalities designed to educate youth on gender-based violence (GBV), finding that immersive narratives and adaptive role-playing mechanisms significantly enhanced empathy, critical thinking, and knowledge retention. These results indicate that gamification can be particularly effective when the learning objectives involve behavioral transformation rather than simple content memorization.

However, despite its potential, challenges remain in terms of cultural sensitivity and ethical considerations. GBV-related gamification, for example, must carefully

balance educational objectives with psychological safety to prevent unintended emotional harm. This highlights the necessity of a human-centered design approach when applying gamification in socially sensitive domains.

Gamification also shows promise in vocational and professional training, particularly where hands-on skill acquisition is essential. Jalinus et al. (2025) demonstrated how integrating gamified work-based learning models into vocational coding education enhanced students' practical programming capabilities and promoted collaboration in problem-solving environments. Similarly, Wang and Hung (2025) applied gamification to aviation knowledge training, finding that simulation-driven game-based modules significantly improved knowledge retention and reduced training time for pilots in flight schools.

From an interdisciplinary standpoint, these findings align with Kramar and Knez (2025) who explored gamification for sustainability education by simulating hydrogen production systems and energy transitions. By using simulation-based game environments, learners developed a deeper understanding of environmental systems and technological processes while increasing their intrinsic motivation to engage with sustainability topics. Despite these advancements, researchers emphasize the importance of alignment between game design and industry-relevant competencies. Without careful calibration, gamified professional training risks oversimplifying complex real-world challenges, leading to surface-level engagement rather than genuine skill mastery.

Gamification is increasingly intersecting with neuroscience, digital entertainment, and metaverse-based learning ecosystems, expanding the scope of interdisciplinary education. Bhargava et al. (2025) investigated how game developers and neuroscience researchers collaborated to design cognition-assessing games, demonstrating the potential of gamification for diagnosing cognitive patterns and improving brain adaptability. Similarly, Khaleel (2025) highlighted the role of metaverse-enabled gamification in improving personal competence formation, enabling immersive, self-directed learning environments.

Han (2025) also explored gamification within digital English e-learning platforms, showing that interactive entertainment-driven mechanics improved students' linguistic performance and communication confidence. The findings reveal a growing convergence between entertainment technologies and pedagogical frameworks, where gamification serves as a cognitive bridge that fosters learner autonomy and adaptability. These interdisciplinary applications raise new questions about ethical data collection, AI-driven personalization, and digital accessibility, emphasizing the need for rigorous evaluation frameworks to balance innovation with responsible learning design.

Across specialized domains, the psychological foundations of gamification remain critical. Dell'Aquila et al. (2025) emphasize that effective gamification depends on human-computer interaction (HCI) principles that optimize engagement, minimize

cognitive overload, and maintain intrinsic motivation. This complements Fabre-Mitjans et al. (2025), who showed that in early childhood science education, teacher training programs benefited significantly from gamification when game mechanics were adaptive to learner readiness levels and avoided overcomplication. Gonzalo-de Diego et al. (2025) similarly demonstrated the importance of usability evaluation in their study on robotics education, showing that poorly designed interfaces led to frustration and disengagement even when game objectives were relevant and meaningful. Together, these studies underscore that the success of gamification in specialized contexts is highly dependent on its cognitive alignment with learner capabilities and usability standards.

The relationship between learner characteristics and gamification outcomes is further elaborated by Wang (2024), who demonstrated that leaderboards have varying impacts depending on learners' levels of trait competitiveness. Their study found that low-competitive learners benefit more in terms of motivation when ranked highly, while high-competitive learners performed better under low-ranking conditions. These findings suggest that the design of gamified learning systems must account for individual differences to maximize effectiveness. This view is reinforced by Bruggink et al. (2025), who showed that high-achieving students tend to benefit more from engagement with a gamified learning app. The app usage correlated with higher academic performance, particularly among those with stronger academic backgrounds, underscoring the importance of tailoring gamification to learner profiles and readiness.

Meanwhile, the motivational role of gamification is evident in collaborative and physical education settings as well. Slamet and Meng (2025) synthesized data from 35 studies and found substantial positive effects of gamification on both cognitive and attitudinal learning outcomes, including motivation and socio-emotional engagement. The study emphasizes that gamification fosters stronger collaboration and engagement among students across educational levels. In a different domain, Weng et al. (2024) applied gamification within an intelligent tutoring system for physical education, grounded in Self-Determination Theory. Their findings reveal that gamified features such as avatars, levels, and achievements significantly enhanced students' motivation, psychological satisfaction, and yoga skill performance. This confirms that even in low-interaction or repetitive tasks, gamification serves as an effective strategy to boost learner engagement.

Moreover, game mechanics, such as rewards and storytelling, have been found instrumental in promoting learning motivation and participation across various subjects and educational contexts. For example, Zhenyu (2025) integrated gamified virtual robots in dance teaching, noting that elements like challenges and rewards led to improved learning enthusiasm and participation. Similarly, Jiang et al. (2024) employed gamified entertainment robots in basketball training and found that the system's reward-based feedback significantly improved learner engagement and skill acquisition. These studies demonstrate how integrating gamification with

digital tools can make traditional learning experiences more dynamic and appealing.

Kozub et al. (2025) conducted a systematic review showing that gamification models such as quests, simulations, and story-based learning positively impact motivation and learning performance. They observed that although gamification boosts learning, practical constraints such as implementation costs can limit its use. Nevertheless, the consensus across the literature indicates that gamification plays a substantial role in enhancing motivation, active engagement, and psychological preparedness for learning, ultimately leading to improved educational outcomes.

## 5. Conclusion

This systematic literature review examined the integration of gamification, artificial intelligence (AI), and personalized learning environments within Islamic Studies education. The synthesis of 45 peer-reviewed studies revealed that gamification significantly enhances students' engagement, intrinsic motivation, satisfaction, and learning performance when pedagogically aligned and contextually grounded. Consistent with earlier findings from broader educational domains (Gee, 2003; Hamari et al., 2016; Slamet & Meng, 2025), the current review confirms that game-based pedagogies encourage active participation and foster meaningful learning experiences across diverse educational contexts.

Furthermore, this study supports the results of Alharthy (2019), Mohd Salleh et al. (2021), and Zainuddin & Matsum (2023), who found that gamified learning environments improved learners' moral reasoning, Quranic literacy, and motivation within Islamic education. These parallel findings strengthen the evidence that gamification—when integrated with Islamic pedagogical values—can transform abstract religious instruction into interactive, spiritually meaningful experiences. The review also aligns with international studies (Nguyen-Viet et al., 2025; Hsia et al., 2025) showing that engagement and satisfaction mediate the positive effects of gamification on learning effectiveness, suggesting that these psychological mechanisms are universal across both secular and religious learning settings.

The integration of AI into gamified environments further reinforces the conclusions of Ristiano et al. (2025), Aravind et al. (2025), and Alanzi & Taloba (2025), who reported that AI-powered personalization enhances learners' motivation and learning outcomes through adaptive content and real-time feedback. These studies, consistent with the current review, highlight the potential of AI-driven gamification to provide individualized learning pathways that accommodate diverse learner profiles—an approach particularly beneficial for Islamic Studies where personalization can foster both intellectual and spiritual growth.

At the interdisciplinary level, the findings corroborate prior reviews (Tolentino, 2025; Kozub et al., 2025; Krishnamoorthy et al., 2025) indicating that gamification's benefits extend beyond motivation to include improved

collaboration, higher-order thinking, and professional competencies. Thus, the convergence of these results across fields suggests that gamification, supported by intelligent systems, represents a robust, evidence-based pedagogical model applicable to a wide range of learning contexts including religious, technical, and social education.

However, consistent with critiques by Bruggink et al. (2025) and Nascimento et al. (2025), the review also cautions against one-size-fits-all or superficial gamification. The effectiveness of game-based approaches depends on cultural sensitivity, learner diversity, and ethical use of AI technologies. Islamic education, in particular, demands that gamified tools remain aligned with theological integrity and moral principles to prevent trivialization of sacred content.

In conclusion, the convergence of current and prior empirical findings confirms that gamification especially when supported by AI and grounded in Islamic pedagogical frameworks offers a transformative pathway for revitalizing Islamic Studies education. Future research should build on this consensus by developing integrative models that combine technological innovation with spiritual, ethical, and cognitive dimensions of learning. Such frameworks will ensure that gamified Islamic education not only enhances engagement and performance but also nurtures faith-based values, critical reflection, and lifelong learning.

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#### **Conflicts of Interest**

The authors declare that they have no conflicts of interest to report regarding the present study

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