



Digital Gamification in Senior High School Language Learning: A Systematic Literature Review Based on PRISMA 2020

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Article Info

Article history:

Received June 9, 2026

Revised Aug 2, 2026

Accepted Aug 18, 2026

Keyword:

digital gamification;
learning-media
management;
language learning;
PRISMA

ABSTRACT

Digital transformation and the pedagogical demands of Society 5.0 are accelerating the adoption of gamification in senior-high-school language classrooms, yet research on how such gamification is managed remains scattered and has not been synthesized systematically. This study synthesizes empirical evidence on the management of digital gamification-based language-learning media in senior high schools, covering planning, organizing and implementation, evaluation, managerial challenges, and platform mapping. A Systematic Literature Review following the PRISMA 2020 protocol was conducted, searching Scopus, Google Scholar, ERIC, and DOAJ for studies published between 2022 and 2026; fifteen empirical articles met the inclusion criteria and were analyzed through thematic synthesis. The results show that effective management hinges on aligning game mechanics with linguistic objectives rather than on technological sophistication alone. The dominant obstacles are infrastructural inequality, gaps in teachers' digital-pedagogical competence, and the limited validity of automated assessment. Kahoot! and Quizizz dominate current practice, but their use remains concentrated on receptive and grammar-related skills. The study proposes a cyclical framework for managing language gamification and underscores the need for further research on productive-skill applications within local contexts.

ABSTRAK

Transformasi digital dan tuntutan pedagogi Society 5.0 mendorong percepatan adopsi gamifikasi dalam pembelajaran bahasa di Sekolah Menengah Atas, namun kajian mengenai pengelolaannya masih tersebar dan belum disintesis secara sistematis. Penelitian ini mensintesis bukti empiris mengenai pengelolaan media pembelajaran bahasa berbasis gamifikasi digital di SMA, mencakup perencanaan, pengorganisasian dan pelaksanaan, evaluasi, tantangan manajerial, serta pemetaan platform. Systematic Literature Review dilakukan berdasarkan protokol PRISMA 2020 dengan penelusuran pada Scopus, Google Scholar, ERIC, dan DOAJ untuk publikasi 2022-2026; lima belas artikel empiris memenuhi kriteria inklusi dan dianalisis melalui sintesis tematik. Hasil menunjukkan bahwa pengelolaan yang efektif bertumpu pada penyelarasan mekanik permainan dengan tujuan linguistik, bukan semata pada kecanggihan teknologi. Hambatan dominan meliputi ketimpangan infrastruktur, kesenjangan kompetensi pedagogis-digital guru, dan keterbatasan validitas penilaian otomatis. Kahoot! dan Quizizz mendominasi praktik saat ini, tetapi penggunaannya masih terpusat pada keterampilan reseptif dan tata bahasa. Studi ini mengusulkan kerangka siklus pengelolaan gamifikasi bahasa dan menegaskan perlunya riset lanjutan pada keterampilan produktif dalam konteks lokal.

Kata kunci: gamifikasi digital; pengelolaan media pembelajaran; pembelajaran bahasa; PRISMA; systematic literature review.



INTRODUCTION

Senior secondary education now stands at the intersection of digital-literacy demands and pedagogy suited to digital-native learners. The disruption brought by Industry 4.0 has reshaped nearly every aspect of teaching and learning by placing digital technology at the center of educational infrastructure, and the subsequent shift toward Society 5.0 pushes schools to produce graduates who are not merely technologically literate but also critical, creative, and collaborative thinkers. Learning must move from one-directional transmission of knowledge toward an interactive, personalized, and meaningful ecosystem, and this shift carries particular urgency at the senior-high-school (SMA) level. This urgency is reinforced by national connectivity data: internet penetration in Indonesia reached 79.5 percent in 2024, involving more than 221 million of the country's roughly 278.69 million people, with smartphones as the primary access device (Kristianti, 2024). Such widespread connectivity creates both opportunity and pressure for language instruction, a subject that depends heavily on active engagement, constant repetition, and authentic context to build communicative competence.

Gamification has emerged as a response to the persistent problem of low intrinsic motivation in second-language classrooms. By embedding game mechanics such as points, badges, leaderboards, levels, and narrative into learning activities, it aims to make language practice more engaging and immersive, a potential reflected in market forecasts projecting that the global game-based learning market will roughly double within five years, driven by demand for more interactive and personalized instruction.

Yet the reality in many Indonesian senior high schools is more paradoxical than this optimism suggests. Investment in digital gamification platforms continues to rise, but many initiatives run sporadically, fail to sustain themselves, or amount to little more than an entertainment interlude disconnected from the curriculum. Early evidence suggests these failures rarely stem from the technology itself; the root cause lies in a management dimension that research has largely overlooked. Technology implemented without adequate management tends to produce ineffective programs, yet prior research has concentrated overwhelmingly on the cognitive effectiveness of gamification - vocabulary-score gains or grammar retention - while paying little attention to the managerial dimension that determines whether a program endures. Weak management manifests as unstructured planning, minimal organization of resources, reactive implementation, and partial evaluation.

The senior-high-school context adds its own layer of complexity to gamification management. Unlike primary or tertiary education, SMA classrooms are shaped by national-exam pressure, university-entrance competition, densely fragmented subject schedules, and adolescent learners who combine high autonomy with vulnerability to digital distraction. These factors demand a management

approach tailored specifically to this level rather than one borrowed wholesale from other educational stages.

The literature itself is far from unanimous. Several empirical studies report that gamification significantly improves motivation, vocabulary retention, and participation in language learning, while others find inconsistent outcomes - motivation gains that prove temporary as the novelty effect fades (S. Zhang & Hasim, 2023), or learning anxiety triggered by unhealthy leaderboard competition (Edwards, 2022). The disagreement extends to management practice itself: some studies argue that success depends on structured planning tightly integrated with the curriculum (Heni, Sudarsono, & Regina, 2024), while others emphasize that dynamic student motivation profiles demand flexible, adaptive approaches (Chotib et al., 2025). A similar split appears in platform choice - studies favoring simple tools such as Kahoot! or Quizizz for ease of classroom management by Johan et al., (2022) sit uneasily alongside research advocating more sophisticated, personalized Mobile-Assisted Language Learning (MALL) systems (Maharani, Degeng, & Razali, 2024). Taken together, these contradictions indicate that understanding of digital gamification management in SMA settings remains fragmented and far from academic consensus.

Several systematic reviews already exist on adjacent topics gamification integration in higher-education e-learning, the effectiveness of gamification for English vocabulary learning, or the use of specific digital platforms and these provide a valuable foundation regarding effective game elements and their impact on learning outcomes. To the authors' knowledge, however, no systematic literature review has comprehensively and specifically synthesized the management dimension of digital gamification media for language learning at the senior-high-school level using a rigorous PRISMA protocol. This gap constitutes both the starting point and the original contribution of the present study.

Accordingly, this study aims to systematically synthesize empirical literature on the management of digital gamification-based language-learning media in senior high schools. Specifically, it examines five management dimensions: (1) planning, including alignment of learning objectives, platform selection, and game-mechanic design; (2) organization of resources and classroom implementation; (3) approaches and indicators used to evaluate effectiveness on process and outcome; (4) dominant managerial challenges and corresponding solution strategies; and (5) the mapping of digital platforms and gamification elements onto specific language skills at the SMA level. By addressing these five dimensions, the study aims to offer a clear roadmap for teachers, principals, platform developers, and policymakers seeking to design effective and sustainable gamification management at the senior-secondary level.

METHOD

This study applies a Systematic Literature Review (SLR) method following the PRISMA 2020 Statement (Preferred Reporting Items for Systematic Reviews and Meta-Analyses). SLR is defined as a structured scientific approach focused on searching, appraising, and synthesizing the entire body of academic documentation within a field of study. The PRISMA protocol was chosen because it is internationally recognized for ensuring transparency, a clear audit trail, and scientific accountability throughout the selection and synthesis process; its 27-item checklist and four-stage flow diagram ensure that every step, from initial identification through final reporting, can be replicated by other researchers while minimizing subjective bias. The model was applied specifically to answer research questions centered on the governance of gamification media, a domain that currently requires a comprehensive synthesis of empirical findings scattered across multiple databases and geographic contexts.

Inclusion and exclusion criteria were established prior to the search process to safeguard the validity and methodological quality of the synthesis. Selection parameters were built on a modified PICo (Population, Interest, Context) framework adapted to this study's management focus, detailed systematically in Table 1.

Table 1. Study Inclusion and Exclusion Criteria

Criterion	Inclusion	Exclusion
Educational level	Senior high school (SHS) or equivalent (ages 15-18)	Primary education, higher education, non-formal education
Focus of study	Digital gamification-based language (L1/L2) learning	Non-language gamification (mathematics, science, etc.)
Study type	Empirical studies (quantitative, qualitative, mixed-methods)	Opinion pieces, editorials, conference posters without primary data
Year of publication	2022-2026	Before 2022
Language	English and Indonesian	Other languages without translated versions
Accessibility	Full text accessible	Abstract only available

Based on this framework, five research questions were formulated: RQ1 - How is the planning stage of digital gamification-based language-learning media at senior high schools described in the literature, particularly regarding alignment of linguistic objectives, platform selection, and game-mechanic design with curricular realities? RQ2 - How does the literature describe the organization of resources and the implementation of digital gamification media in SMA language classrooms, including time management, device allocation, group dynamics, and the teacher's role as digital classroom manager? RQ3 - What evaluation approaches and indicators are used to measure the effectiveness of digital gamification media in language learning at SMA, and how does the validity of automated (learning-analytics) assessment compare with authentic assessment? RQ4 - What

managerial challenges are most dominant in managing digital gamification media for language learning at SMA, and what solution strategies does the literature recommend to address them? RQ5 - Which digital platforms and specific gamification elements appear most frequently in the literature, and how are they mapped onto receptive versus productive language skills at the senior-high-school level?

The 2022–2026-time frame was deliberately chosen to capture the escalating growth phase of mobile learning and web-based gamification platforms widely implemented in secondary institutions, while the restriction to Indonesian- and English-language sources ensured that all substantive content could be comprehensively extracted by the research team without linguistic-interpretation constraints, while still capturing local contextual characteristics relevant to this review.

The management-dimension focus served as the most fundamental filtering instrument, a decision that is critical given that most prior gamification research has concentrated on student learning outcomes while neglecting the managerial processes operating behind the scenes.

The literature search was conducted systematically across four major databases: Scopus, Google Scholar, ERIC (Education Resources Information Center), and DOAJ (Directory of Open Access Journals), using a structured Boolean keyword strategy combining ("gamification", "game-based learning", "gamifikasi", "pembelajaran berbasis permainan") AND ("language learning", "pembelajaran bahasa", "EFL", "bahasa Indonesia") AND ("high school", "secondary school", "SMA", "sekolah menengah atas") AND ("management", "implementation", "pengelolaan", "evaluation").

The initial search identified 200 records across the four databases. Before screening, 120 records were removed based on preliminary restriction criteria - publication-year range, document type (journal articles only), open-access availability, final publication status, and language - leaving 80 records for title-and-abstract screening. Of these, 35 were excluded for failing to meet relevance criteria, leaving 45 reports sought for retrieval; all 45 were successfully retrieved (0 not retrieved) for full-text eligibility assessment. At the full-text stage, 30 reports were excluded for specific reasons - lack of specific focus on the SMA level, absence of managerial/management content, or inadequate methodology or field data - leaving a final corpus of 15 articles meeting all inclusion criteria. This screening flow is presented transparently in the PRISMA diagram in Figure 1.

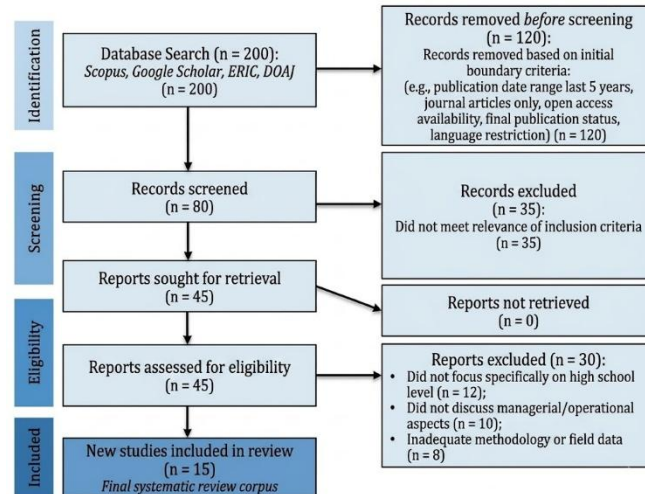


Figure 1. PRISMA 2020 Flowchart for the Literature Selection

Data analysis employed a thematic-synthesis approach. Each article in the final corpus was read closely and its information extracted into a data matrix covering: (1) publication metadata; (2) study context (country, educational level, language subject); (3) platform and gamification elements used; (4) management aspects addressed (planning, organizing, implementing, evaluating); (5) reported challenges and solution strategies; and (6) key findings on effectiveness. Through an iterative coding process, data from this matrix were abstracted and grouped into major themes that directly address the five research questions, with validity maintained through repeated discussion between the authors to reach consensus on theme interpretation.

RESULTS AND DISCUSSIONS

The synthesis of fifteen selected articles published between 2022 and 2026 is organized around the five research questions concerning the dynamics, challenges, and management strategies of gamification media in senior-high-school language learning. Table 2 summarizes the characteristics of the fifteen included studies.

Table 2. Characteristics of the 15 Included Studies (PRISMA 2020 SLR)

No	Author & Year	Country & Level	Design	Platform & Elements	Key Findings
1	Yazid et al. (2024)	Islamic senior high school, Indonesia	Qualitative case study (semi-structured interviews, n=10)	Not platform-specific; general gamification perceptions	Gamification increased engagement, motivation, and positive attitudes; teachers need to design dynamic activities
2	Taracatac (2022)	Senior high school (Grade 11), Philippines	Descriptive quantitative (survey, n=70)	General online gamified activities (enjoyable, interactive, participative elements)	Educational, interactive, and participative gamification elements significantly increased online learning engagement
3	Farisca & Warni (2025)	Public senior high school, Bekasi, Indonesia (Grade XI)	Explanatory sequential mixed-methods (n=33)	Points, challenges, badges (teacher-designed)	Gamification significantly increased academic motivation

4	Saniah & Susanti (2026)	Senior high school, Cianjur, Indonesia	Quantitative, SEM (n=100)	Points, badges, leaderboard, supported by learning analytics	and creativity; constrained by device access and connectivity Gamification improved self-regulated learning through the mediation of motivation and engagement; learning-analytics support strengthened management
5	Shafqat et al. (2025)	Secondary schools (urban & rural), Pakistan	Mixed-methods (survey, pre-post test, interviews)	AI-based gamification platform	Significant gains in vocabulary, grammar, and comprehension; urban-rural achievement gap linked to digital-infrastructure access
6	Andaresta & Firdaus (2025)	SMA Tunas Bangsa, Indonesia	Qualitative case study (interviews, observation, FGD)	Quizizz - integrated reading, listening, writing, speaking	Quizizz effectively assessed receptive skills but was weak for assessing speaking; required additional task-design effort from teachers
7	Aulia & Warni (2024)	Senior high school, Jakarta, Indonesia	Descriptive qualitative (interviews, observation, n=8)	Quizizz as an assessment tool	Quizizz was perceived as effective and enjoyable; increased interest, motivation, confidence, and vocabulary mastery
8	Mubarak et al. (2025)	Senior high school, Jember, Indonesia	Quasi-experimental (experimental-control group)	Kahoot! - vocabulary quizzes	Kahoot! produced significantly greater vocabulary gains than the control class
9	Maharani et al. (2024)	Senior high school, Malang, Indonesia	Qualitative-descriptive (Likert questionnaire + interviews, n=53)	Duolingo - grammar (MALL)	93% of students responded positively; Duolingo was rated effective for improving grammar understanding and motivation
10	Heni et al. (2024)	SMAN 1 Pontianak, Indonesia (Grade XI)	Design & Development Research (ADDIE: Analyze-Design-Develop)	Kahoot! - grammar, aligned with school syllabus and textbook	Curriculum-aligned Kahoot! was rated feasible and recommended by experts for grammar instruction
11	Wulandari et al. (2025)	SMA Negeri 2 Tanjungpinang, Indonesia	Qualitative (interviews with 2 teachers)	LMS, collaborative apps, Elsa Speak (gamification-supportive)	ICT improved teaching effectiveness, but infrastructure and teacher training remained limited
12	Munirah & Sahriani (2024)	Secondary education, Indonesia	Quantitative experimental, longitudinal	Quizizz - language-learning motivation	Quizizz sustained higher motivation over time compared to conventional methods
13	Johan et al. (2022)	Secondary school, Malaysia	Qualitative (teacher & student interviews)	Kahoot!, Quizizz	Positive teacher and student perceptions; gamification raised engagement and achievement but required careful live-session time management
14	Pangaribuan et al. (2026)	SMA Negeri 1 Sunggal, Indonesia	Descriptive qualitative (questionnaire + interviews + observation; 72 students, 2 teachers)	Quizizz - grammar & vocabulary	Gamification effectiveness depended on adequate infrastructure, teacher training, and balanced instructional design
15	Luo (2024)	Secondary schools, China	Mixed-methods (interviews n=361; survey n=512)	Generic gamified EFL tools	Perceived usefulness and perceived ease of use were the strongest predictors of teachers' adoption intention, outweighing perceived risk

The planning stage forms the foundation that determines whether a digital gamification medium succeeds. Synthesis of the literature reveals two underlying planning paradigms at the SMA level: structured curriculum-driven planning and ad-hoc adaptive planning. The structured pattern is adopted by educators who follow instructional-development models such as ADDIE (Analysis,

Design, Development, Implementation, Evaluation) or ASSURE, conducting in-depth needs analysis that identifies student characteristics, basic language competencies (listening, reading, speaking, writing), and infrastructure readiness (Chon & Shaleh, 2024), then designing game mechanics - point accumulation, badge systems, leaderboards - explicitly aligned with curricular learning outcomes and objectives (Sailer & Homner, 2020). The ad-hoc pattern, by contrast, involves spontaneous adoption of digital applications driven by technology trends or an immediate need to break classroom monotony, without any written planning document; while it can produce a short-lived boost in affective engagement, it risks gamification fatigue and declining meaningful engagement once the novelty effect fades (Manik, Wiraningsih, Budiarte, & Sapurta, 2026). The literature further shows a near-absence of student involvement as co-designers of game mechanics, a missed opportunity given the potential of such involvement to strengthen intrinsic motivation through autonomy and competence needs, as framed by Self-Determination Theory (Ryan & Deci, 2020).

Organizing and implementing digital gamification in SMA classrooms demands dynamic facilitation across time management, classroom management, and technical-infrastructure readiness, with the teacher acting as a digital orchestrator who paces instruction so that competitive elements do not crowd out the substance of language content (Almanda, Rahmawati, & Redjeki, 2025). Table 3 summarizes best practices, main challenges, and consensus solutions across three management dimensions.

Table 3. Summary of Gamification Management Practices

Management Dimension	Best Practice	Main Challenge	Consensus Solution in Literature
Time allocation	10-15minutes synchronous sessions as warm-up/reflection	Displacement of instructional time	and Micro-gamification within core tightly bounded time slots
Infrastructure	Low-bandwidth, offline-ready platforms	Signal disparity, bandwidth limits, and data-quota constraints	Hybrid/asynchronous models and school-provided device pooling
Grouping	Paired/team-based leaderboards	Domination by performing individuals	high-Heterogeneous team formation with rotating roles

Effective implementation relies on a micro-gamification approach, in which brief gamified quizzes or activities are delivered at the start of a lesson to trigger retrieval practice or at the end of a session as formative evaluation (Areed, Amasha, Abougalala, Alkhalaf, & Khairy, 2021), a pattern that prevents cognitive overload and preserves the remaining time for deeper communicative interaction.

Infrastructure constraints - limited Wi-Fi availability, unequal smartphone ownership, and data-quota costs - are the most frequently reported systemic barriers in the Indonesian school context (Imaduddin & Firdaus, 2025); teachers commonly respond with heterogeneous peer-tutoring groups sharing one device among two or three students, or by using paper-based interactive tools such as Plickers that require a device only on the teacher's side (Taşkın & Çakmak, 2022). School-level managerial support - computer-lab provision and operational funding for internet facilities - remains a key variable sustaining gamification implementation (Alfathdil, Wachyudi, & Utami, 2025).

Evaluation of gamification-based language learning sits at the intersection of automated-data efficiency and the need for authentic assessment. Learning-analytics features embedded in digital platforms give teachers real-time access to formative data - cumulative scores, per-item accuracy, response time, and individual progress charts (Zhu, Guo, & Yang, 2023). While this automated analytics is efficient for diagnosing learning difficulties, the literature highlights a persistent construct-validity limitation: most built-in gamification instruments rely on multiple-choice or short-answer formats that capture only lower-order cognitive domains (Bloom's C1-C3), such as grammar memorization and vocabulary identification (Zhang & Huang, 2024). To secure validity and reliability, the literature recommends a hybrid assessment framework in which automated platform data serves specifically as a motivational trigger and formative feedback mechanism (assessment for learning), while authentic communicative competence (assessment of learning) continues to be measured through rubric-based performance assessment such as oral presentations, narrative essays, and interactive text analysis (Z. Zhang & Huang, 2024). To secure validity and reliability, the literature recommends a hybrid assessment framework in which automated platform data serves specifically as a motivational trigger and formative feedback mechanism (assessment for learning), while authentic communicative competence (assessment of learning) continues to be measured through rubric-based performance assessment such as oral presentations, narrative essays, and interactive text analysis (Dai et al., 2026).

Managing the integration of digital gamification in the SMA environment involves a multidimensional set of challenges, which the synthesis groups into exogenous (external/systemic) and endogenous (internal/pedagogical) categories. The digital divide driven by unequal urban-rural technology access constitutes a clear exogenous factor (Yousaf, Akram, Syeda, Khan, & Naqvi, 2025), compounded in some schools by personal-device bans that become operational barriers when not offset by adequate school-owned computer facilities. On the internal side, the central challenge lies in teachers' Technological Pedagogical Content Knowledge (TPACK) capacity (Adipat et al., 2023); limited digital-pedagogical literacy tends to produce gimmickification, the mere transfer of conventional quizzes onto digital platforms without any renewal of interaction strategy (Rifqa Elvi

Mufida, Anita Dwi Lestari, Al Hikmah, Marsa Amalia Rosita, & Taufik Muhtarom, 2025),), while poorly managed speed-based leaderboards risk triggering language anxiety among lower-performing students (Philpott & Son, 2026). Effective solution strategies center on sustained school-management commitment to strengthening teacher capacity through subject-teacher forums (MGMP), clear device-use policy guidelines, and team-based gamification goals that reduce individual anxiety (Greaves & Vlachopoulos, 2023); capacity-building through professional forums such as MGMP is critical for deepening TPACK integration so that teachers move beyond operating gamification features toward embedding them in mature pedagogical scenarios (Meletiou-Mavrotheris & Paparistodemou, 2024).). Through this combination of supportive managerial leadership and inclusive game design, digital-technology integration in SMA classrooms can be sustained without sacrificing students' emotional wellbeing or the quality of communicative interaction.

Literature extraction further reveals a comprehensive mapping of popular digital platforms, dominant gamification elements, and their distribution across the four language skills, summarized in Table 4.

Table 4. Mapping of Gamification Platforms by Category, Popular Examples, Core Elements, Dominant Language-Skill Domain, and Effectiveness

Platform Category	Popular Examples	Main Gamification Elements	Dominant Language-Skill Domain	Level of Effectiveness/Impact
Interactive quiz	Quizizz, Kahoot!, Blooket, Gimkit	Points, timer, leaderboard, power-ups, avatars	Listening, reading, vocabulary & grammar	Very high for short-term retention and affective engagement
Self-paced learning app	Duolingo, Memrise, Busuu	Streaks, XP, hearts/lives, badges, leagues	Basic vocabulary, basic grammar, pronunciation	Moderate-to-high for self-directed learning
AI/voice-based app	ELSA Speak, Speeko, Padlet Audio	Real-time feedback, phonetic accuracy score, stars	Speaking, pronunciation	Very high for fluency and anxiety reduction
Digital collaborative board	Padlet, Canva, Wakelet	Likes, upvotes, badges, public showcase	Writing, interactive reading	High for creative writing and peer review

This mapping exposes a significant imbalance in the language-skill coverage that gamification currently accommodates. In SMA contexts, most implemented platforms remain concentrated on receptive skills - reading and listening - and basic linguistic elements such as grammar and vocabulary (Aderonke A, David O, Nkechi, & Issac O, 2025), typically delivered through interactive quiz formats prized for instant automated feedback; while efficient for rapid evaluation, this dominant format risks confining student learning experiences to mechanical, lower-order cognitive processing. Productive-skill development, such as argumentative essay writing and spontaneous communicative speaking, remains markedly underdeveloped within current gamification ecosystems (Ashrafova, 2025). Although newer technologies such as AI-based pronunciation applications and digital collaborative boards are beginning to appear, their use at the SMA level frequently encounters pedagogical obstacles;

without structured instructional scaffolding from teachers, such platforms risk becoming little more than a formal digitalization gimmick that reduces authentic communicative depth rather than enhancing it (Luo, 2023).

CONCLUSIONS

This systematic review maps the landscape of digital gamification management in senior high school (SMA) language learning and reveals a shift from technology adoption toward more systematic pedagogical integration, although a substantial gap remains between theoretical potential and classroom implementation. The synthesis of fifteen selected studies indicates that successful gamification depends less on platform sophistication than on teachers' managerial capacity to plan, organize, evaluate, and adapt implementation to contextual challenges. Key findings include the contrast between structured planning models such as ADDIE and ASSURE and spontaneous, trend-driven planning; the teacher's role as a digital orchestrator who balances classroom and time management through micro-gamification; the tension between learning analytics that predominantly assess lower-order cognitive skills and the need for hybrid assessment of authentic competence; infrastructure and teacher TPACK limitations that can be addressed through MGMP-based capacity building and team-oriented strategies; and the dominance of quiz-based platforms for receptive skills and grammar, with speaking and writing remaining underdeveloped. The review's principal contribution is its management-centered perspective, demonstrating that effective gamification management, rather than technological sophistication, is a decisive factor in achieving sustainable outcomes in the SMA context.

These findings have implications for teachers, school leaders, platform developers, and policymakers. Teachers should prioritize pedagogical design, introduce gamification gradually, and involve students in activity design; principals should provide continuous professional development, adequate infrastructure, and flexibility for experimentation; platform developers should strengthen session-control, feedback, and authentic-assessment features; and policymakers should incorporate digital-gamification literacy into PPG curricula and develop context-sensitive guidelines for Indonesian schools. The review is limited by its reliance on four databases, restriction to English- and Indonesian-language publications, and substantial heterogeneity in research designs, instruments, and outcome measures, which prevented quantitative meta-analysis and necessitated qualitative thematic synthesis. Future research should therefore examine gamification management in Indonesian SMA contexts, particularly for productive skills such as speaking and writing, investigate its long-term sustainability beyond novelty effects, and explore affective outcomes such as language anxiety and learner resilience, which remain insufficiently studied.

CKNOWLEDGMENT

The authors would like to express their sincere gratitude and appreciation to all individuals and institutions who contributed to the completion of this study. Special thanks are extended to Universitas Islam Negeri (UIN) Sunan Gunung Djati Bandung for providing the institutional support and academic environment necessary to conduct this research.

We are also deeply grateful to the researchers, authors, and open-access journal publishers whose empirical studies and data provided the foundation for this systematic literature review. Permission was sought and obtained from all referenced sources and contributors where required.

This research was conducted independently and did not receive any specific grant or funding from public, commercial, or non-profit funding agencies.

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