



Trends in gamification of Indonesian language learning in elementary schools: bibliometric analysis

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Abstract

This study analyzes trends in scholarly publications on gamification in learning, particularly in Indonesian language education in elementary schools, using a bibliometric approach combined with a systematic literature review (SLR). Articles indexed in Scopus and Google Scholar from 2020 to 2024 were reviewed, and thirty-one relevant documents were selected through PRISMA filtering. Data were analyzed using VOSviewer through three visualizations—co-occurrence mapping, overlay visualization, and density visualization—to identify dominant themes, keyword relationships, and thematic evolution over five years. The overlay visualization shows a shift in research focus from earlier topics related to motor development, motor skills, and movement assessment, which dominated publications in 2020–2021, to emerging themes in 2023–2024. These recent studies highlight the application of gamification in elementary schools to improve students' motivation, reading and writing skills, and computational thinking. The prominence of yellow nodes reflects the increasing research intensity and emphasizes the relevance of gamification for improving early literacy outcomes in Indonesian language learning. The density visualization identified several underexplored areas, indicated by low-density keywords such as implementation, Indonesian, and classroom action research. This gap indicates that studies integrating gamification with communicative approaches are still limited, offering opportunities for further research on classroom implementation, instructional design, and empirical evaluation of learning outcomes. Overall, these findings confirm that gamification has become a significant trend in elementary education research. However, further study is needed to deepen the understanding of its pedagogical alignment and effectiveness. This study provides directions for future research and contributes to the development of innovative Indonesian language learning practices.

Keywords: Gamification; Bibliometric Analysis; Learning Outcomes; Elementary School

INTRODUCTION

Education plays a fundamental role in human life, serving to enlighten and develop the full potential of students. The importance of education aligns with the teachings of Tamansiswa, "Lawan Sastra Ngesti Mulya," which emphasizes that knowledge is the gateway to glory and happiness (Sri Wahyuningsih et al., 2024; Novitasari & Walid, 2024; Bagas Permana Putra, 2025). In this context, a teacher's primary role is to ensure each student achieves the best possible learning outcomes. This task begins with the essential step of deeply understanding each individual's unique needs, learning styles, and abilities.

In addition to focusing on lesson content, teachers are also required to create a conducive, supportive, and enjoyable learning environment. This effort is crucial because learning outcomes are heavily influenced by student motivation. Based on the definition by Dweck et al., (2023), Yuliana Sari et al., (2023) defines motivation as the energy that drives every behavior, whether originating from the mind or the environment. This energy drives individuals to plan and take action to achieve predetermined goals.

However, in its implementation, the educational process often faces serious obstacles, such as inadequate facilities and infrastructure, and uneven development of

science and technology. (Saputri & Fatmawati, 2024 ; Wijaya, 2024) The biggest challenge, especially at the elementary school (SD) level, is the low interest and motivation of students to learn (Muhammad Faturohman et al., 2025) . This low enthusiasm generally occurs due to the use of conventional or *teacher-centered teaching methods* , where teachers dominate the class too much, so that students become passive (Andriani et al., 2023) . This situation is exacerbated by monotonous Student Worksheets (LKPD) and exam questions.

Therefore, teachers must have the ideas and skills to choose and use innovative and engaging teaching strategies, so that student motivation can be raised and the learning process can be maximized (Kinanti & Hernawan, 2023) . The need for this innovation is very urgent considering the findings regarding the low language skills of elementary school students, which include four aspects of skills (listening, speaking, writing, and reading) (Sasi et al., 2025) . This problem is triggered by various factors, including poor reading habits, lack of confidence and writing practice, as well as less varied teaching methods and low interest in learning (Aldhira Rachma Nafili, 2024; Anggraini et al., 2025; Aisyah Fadhilah et al., 2025).

The communicative approach is rooted in the view that the primary goal of language learning is the ability to use language to communicate. Therefore, learning using this approach is designed to provide sufficient opportunities for students to develop their language skills and apply them through various language activities, both productive (speaking and writing) and receptive (listening and reading) (Pinheiro & Quevedo-Camargo, 2020) . Importantly, these language activities must be carried out in real and relevant situations, not in artificial or contrived contexts. The application of the

communicative approach is often realized through activities that require oral interaction, such as discussions, speeches, debates, and role-playing. (Malika Salomova, 2019; Hue, 2024)

Given that today's students are highly accustomed to digital technology, integrating technological and entertainment elements (innovation) is a promising solution. This strategy has proven effective in promoting 21st-century learning. This innovation is crucial to ensure that the communicative approach in Indonesian can run effectively, so that students are motivated to actively communicate (Sumaryanti, 2023) . Without digital breakthroughs, achieving the main goal of the communicative approach, namely mastering real language skills, will be hampered. Therefore, gamification has emerged as a necessary digital strategy to revitalize the classroom atmosphere and increase student engagement (Labibah, 2024; Seeletse et al., 2024).

This study aims to analyze the role of gamification as a solution to improve learning outcomes and address the low language skills of elementary school students in the context of Indonesian language learning with a communicative approach. These low language skills, which include listening, speaking, writing, and reading, are caused by various factors such as poor reading habits, lack of self-confidence, lack of writing practice, as well as learning environment issues, monotonous teaching methods, and low student interest in learning. (Muthia & Salsabila Pratiwi, 2024 ; Hidayati et al., 2024; Kristanto et al., 2025)

Gamification is a learning strategy that applies elements of games or *video games* to motivate and engage students. This technique makes the learning process more enjoyable and inspires students to learn continuously. Gamification engages all students regardless of status, creates a relaxed learning

environment, and helps develop critical thinking skills, a sense of responsibility, cooperation, and positive competition.

RESEARCH METHODS

This study uses a Systematic Literature Review (SLR) that refers to the PRISMA guidelines to ensure a systematic, transparent, and replicable process. This SLR approach is combined with bibliometric analysis, a method that is increasingly popular in business and educational research (Chopkar, 2025). In line with this function, this study uses a literature review approach to understand the latest conditions and developments related to gamification trends at the elementary school level, so that the resulting analysis can provide a comprehensive picture of the direction and focus of research in this field (Bagas Permana Putra, 2025). Bibliometrics are used to identify new trends in article performance, map author collaborations, and trace the intellectual structure of a field (Effendi, 2021).

The bibliometric analysis flow, as described by Donthu et al. (2021) and Passas (2024), includes: identifying objectives, selecting a bibliometric research design, selecting a database, extracting metadata, cleaning data, analyzing publication performance, conducting intellectual mapping (co-authorship, co-citation, keyword co-occurrence), and drawing conclusions. This flow is visualized in Figure 1.



Figure 1
Analysis steps

Bibliometrics (Donthu et al., 2021; Passas, 2024)

A structured search strategy was developed to find articles related to gamification in

Indonesian language learning in elementary schools. The search was conducted using the Scopus and Google Scholar databases, with metadata processed through the Publish or Perish (PoP) application. The keyword selection process began with identifying core concepts, exploring synonyms, and grouping terms using Boolean operators. In the initial search stage, keywords were divided into three main focus clusters:

1. *"Gamification AND Elementary School"* → yielded 137 articles
2. *"Gamification AND Primary School"* → yielded 171 articles
3. *"Gamification AND Learning Outcomes"* → generated 196 articles

These three keyword clusters were used to ensure comprehensive coverage of the literature, from the context of educational levels, gamification implementation, to its impact on learning outcomes. All articles from the initial search were then processed through the PoP to eliminate duplication and ensure the articles were in downloadable *full-text file format (PDF or Article file)*.

The flow of determining the keywords used is shown in Figure 2, which shows the process of selecting and grouping keywords from the exploration stage to finalizing the search query.

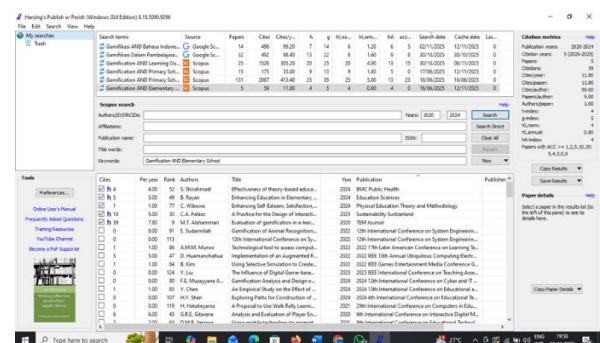


Figure 2
Define preferred keywords

Inclusion–exclusion criteria were applied to ensure that only relevant and high-quality articles were analyzed. Articles were included if: 1) Published in 2020–2024, 2) Are journal articles (full-text) with open access, 3) Obtained from Scopus and Google Scholar

via pop, 4) Have a suitable gamification theme and participants are elementary school teachers/students, 5) Relevant to the focus of Indonesian language learning.

Articles were excluded if: 1) not a journal article, 2) published outside the year range, 3) did not discuss gamification, 4) participants were not in elementary school, 5) or did not meet the completeness of the documents.

Table 1
Inclusion and Exclusion Criteria

Criteria Inclusion	Criteria Exclusion
The publication type is an article and (<i>Full Text</i>) with the document access type being open Access which is obtained from the <i>Publish Or database. Perish</i> Which indexed <i>Scopus AND Scholar</i> .	Types of Publications other than articles obtained from <i>database Publish Or Perish</i> .
Year Publication Period 2020-2024	Year Publication No Period 2020-2024
All over Language can used in research This in accordance with need and relevant research context.	Other
Publications with similar research topics will be selected based on the level of detail and the most recent relevance of the findings presented.	Other
The theme of the article content is Gamification with participants his research is Elementary School Students and Elementary School Teachers.	Theme besides <i>Gamification</i>

Source : *Harzing's Publish or Perish*

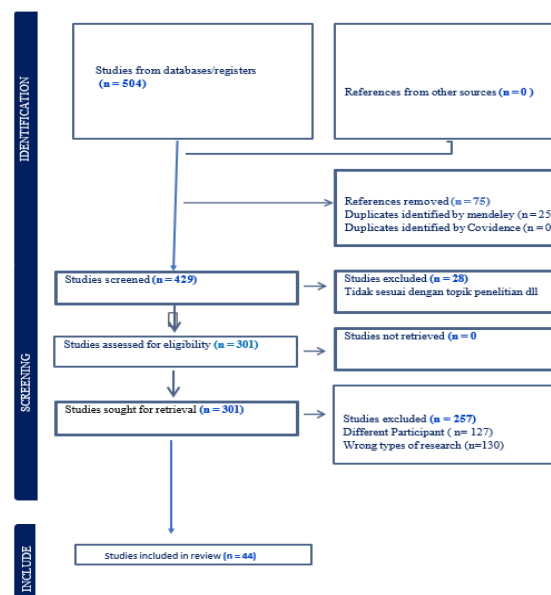


Figure 3:
PRISMA Flow Diagram

The entire process is presented in the PRISMA Flowchart in Figure 3. The screening process is carried out in layers following the PRISMA guidelines, starting with the identification stage, initial screening, feasibility review, and finally determining the final article. In the identification stage, all searched articles are collected and duplicates are removed. Next, in the initial screening stage, titles and abstracts are checked for relevance to the research topic. Irrelevant articles are eliminated at this stage. In the feasibility review stage, articles are read in full to ensure their methodology, context, and research focus align with the objectives of the SLR. Successful articles are then selected for analysis.

Data extraction was performed by transcribing key information from articles meeting the inclusion criteria into a digital spreadsheet. The extracted information included: author names, year of publication, article title, abstract, research objectives, research methods used, sample characteristics, research findings, and key keywords. For bibliometric purposes, additional data such as author affiliation, country of origin, number of citations, and journal name were also recorded. This extraction process ensured that each article was analyzed consistently and systematically,

The analysis was conducted using two complementary approaches: content analysis and bibliometric analysis. Content analysis was used to identify key themes, patterns of gamification implementation in Indonesian language learning, dominant learning strategies, challenges faced by teachers, and how gamification supports students' language skills. Bibliometric analysis was conducted using software such as VOSviewer to visualize keyword co-occurrence networks, author collaboration maps, relationships between publications, and journal distribution. The output of this bibliometric analysis provides an overview of research trends, emerging themes, and research gaps that can still be explored.

RESULTS AND DISCUSSION

Table 2
Number and Percentage of Publications on
Gamification Trends in Indonesian Language
Learning (2020-2024)

Source : Harzing's Publish or Perish

Tahun Publikasi	Jumlah Publikasi
2020.0	99
2021.0	88
2022.0	96
2023.0	109
2024.0	112

1. Partner Bibliography Writer

[illegible]

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Table 3

Authors with the Most Documents Related to Gamification Trends in Indonesian Language Learning to Improve Student Learning Outcomes.

No	Author	Number of Documents	Quote
1.	Bakkes, Sander	1	6
2.	Brons, Annette	1	6
3.	De Schipper, Antoine	1	6
4.	Krose, Ben	1	6
5.	Mironcika, Svetlana	1	6
6.	Schouten, Ben	1	6
7.	Toussaint, Huub	1	6
8.	Anderle, Francesca	1	3
9.	Cattoni, Angela	1	3
10.	Pasqualotto, Angela	1	3
11.	Venuti, Paola	1	3
12.	Bjursten, Eva Lena	1	2

The table above shows a list of authors each of whom has One publication related trend gamification in learning Indonesian, with amount different quotes as indicator influence work they. Some researchers such as Bakkes, Brons, and De Schipper obtained six quote, so that seen more stand out compared to other writers who only receive two to three quotes. Variations amount quote This reflect level relevance and visibility study they in study gamification, as explained in analysis bibliometrics that frequency quote can describe how much big contribution something publication to development field certain (Shafiei & Khazaneha, 2018; Surendar et al., 2024)

2. Partner Bibliography Document

This table presenting a list of articles journal international indexed in Scopus and has more from ten quotes. Articles This in a way specific discussing Gamification Trends in Indonesian language learning for increase performance Study students at the level Elementary school.

Table 4

Publications That Have Amount Most Citations Related to Keywords Gamification Trends For Improving Learning Outcomes Students in Elementary School

No	Document Title	Main Author	Year	Quote
1.	The effect of gamification on students' motivation and learning performance in the field of education: A meta-analysis	Setyawan, F.	2020	33
2.	Using Augmented Reality in K-12 Education: An Indicative Platform for Teaching Physics	Volioti, C	20221	18
3.	The impact of serious games on mathematics fluency: A study in Primary Education	Cedeño, J	20211	16
4.	Evaluating the effectiveness of a gamified learning platform in higher education	Panggabean, HH	2024	10
5.	Sustainable mobility learning: Technological acceptance model for gamified experience with ClassCraft in primary school	Sipone, S	2023	9

Source : Harzing's Publish or Perish

The table above display a list of publications with amount quote highest that discusses keywords related trend gamification

For increase results Study students at school basic . Every document in table This show level different influences , visible from variation amount citation , where Setiawan's (2020) publication obtained most cited , followed by works Voloitci (2022), Cedeño (2021), Panggabean (2024), and Sipoen (2023). The high number of citations in several articles indicates that the topic of gamification in elementary education is increasingly relevant and is frequently referenced by other researchers. This trend aligns with bibliometric mapping, which explains that highly cited publications typically make significant contributions to the development of gamification studies and their effectiveness in improving student learning outcomes (Jiaxin Ren et al., 2024 ; Kavitha et al., 2025; Hanafi et al., 2025) .

1. Keyword pairs

This table shows the results of keyword analysis of Scopus international journal articles processed using the PoP process.

Table 5
Keywords that are Related to Student Learning Outcomes through Gamification Trends in Indonesian Language Learning

Keyword	Occurrences	Total Link Strength
Gamification	2	16
Children	1	12
Motivation	1	4
Game	1	12

Source : Harzing's Publish or Perish

Data from Publish or Perish, combined with RIS files, was then analyzed using bibliometric software to generate a keyword network visualization. Figure 2 shows the relationship between gamification topics and keywords related to learning outcomes. This visualization demonstrates the connection between gamification and various key terms, providing an overview of the research focus related to gamification and learning outcomes in Indonesian language learning.

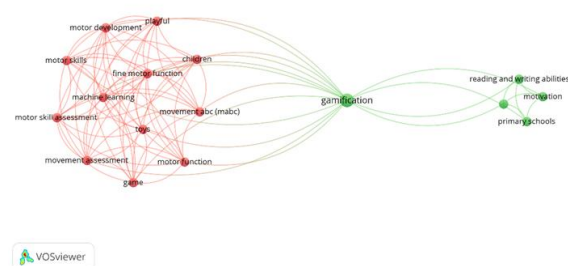


Figure 6
Network Visualization of the Occurrence of Common Keywords

The network visualization shows variations in color and size for each node connected at a certain distance. Colors indicate groups of keywords grouped together in thematically related clusters. The first cluster (red) is the densest and focuses on the development and assessment of children's motor skills, which are often associated with the application of gamification and play activities. Meanwhile, the second cluster (green) highlights the elementary school context, particularly improving student reading and writing skills and motivation. The *gamification node* serves as the main connecting point between the two clusters, illustrating a research trend that integrates gamification-based motor approaches to improve learning outcomes, particularly in literacy (Vijay & Jayan, 2023; Dinihari et al., 2024; Hu & Fu, 2024) .

In the Overlay Visualization, it shows the publication year of research results for the last 5 years as shown in the image below.

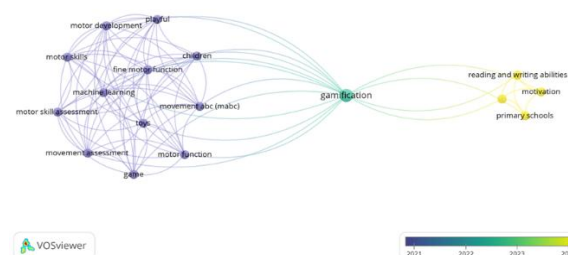


Figure 7
Overlay Visualization of Keyword Co-Occurrence Based on the Last 5 Years of Publications

The Overlay Visualization clearly shows how the distribution of publication years shapes the dynamics of research theme development over the past five years, as shown in Figure 7. The VOSviewer Keyword Network Map not only shows the interconnections between concepts but also charts the evolution of research focus through color shifts, from dark blue, representing the earliest publications (circa 2021), to bright yellow, marking the most recent research themes in 2024. The blue-purple clusters demonstrate the dominance of early topics centered on motor development, motor skills, movement assessment, and the use of play elements (playful, toys) as a learning approach. This finding indicates that in the initial phase, research on gamification focused more on developing children's basic skills, particularly motor skills, which form the foundation of play-based activities.

In contrast to these clusters, the dominance of yellow on the right side of the map indicates a shift in research focus toward newer topics aligned with the needs of 21st-century learning: the application of gamification in primary schools to improve motivation and reading and writing abilities. The strong presence of yellow in these keywords indicates that in the past three years, research has focused more on how gamification can strengthen elementary school students' language skills, particularly reading and writing, which are often associated with the development of computational thinking in Indonesian language learning. This shift reflects the increasing urgency of literacy-oriented learning and higher-order thinking skills.

Meanwhile, the green and dark blue colors scattered across several keywords indicate previously explored research topics that are beginning to experience a decline in research intensity. This indicates that the research focus has shifted toward more contextual and complex gamification strategies. Transparent or dim areas reflect research gaps, i.e., areas

of research that have not yet been widely explored. These gaps open up opportunities for future researchers to develop more in-depth studies, for example, integrating gamification with a communicative approach in Indonesian language learning or evaluating gamification implementation in a direct classroom context. Thus, this overlay visualization not only illustrates developing trends but also provides new directions for future research through clear and measurable thematic mapping.

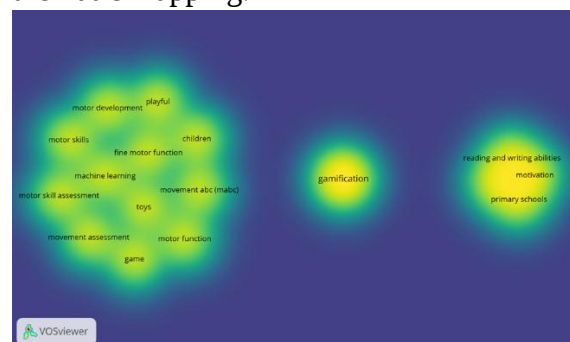


Figure 8
Density Visualization VOSviewer

The VOSviewer Keyword Network Map depicting publication trends from 2020–2024 shows a shift in the focus of gamification research in learning over that period. The dark blue color in the visualization shows the initial themes that dominated research around 2021, particularly those related to motor skills development, such as motor skills, movement assessment, and movement ABCs (MABC). This area appears dense and dimly lit, indicating that research in the initial phase still focuses on basic aspects of child development and the general use of game elements in elementary education contexts.

Conversely, the bright yellow color on the right side of the visualization shows topics that emerged as the most recent trends, particularly from 2023–2024. The dominant theme in this area points to the more specific application of gamification in primary school contexts to improve motivation and reading and writing abilities. This focus on

strengthening reading and writing skills aligns with 21st-century literacy needs and is relevant to previous research (Valentinna et al., 2024; Sidabutar et al., 2023). The strong yellow color intensity indicates that these topics are the focus of recent research attention, particularly those related to computational thinking and Indonesian language learning in elementary schools.

Meanwhile, keywords that appear dimmer or less prominent, such as implementation, language, and classroom action research, reflect areas that are still rarely explored in the context of gamification. The lack of intensity in these themes indicates a significant research gap, particularly regarding the implementation of gamification integrated with a communicative approach to Indonesian language learning. This gap opens up ample opportunities for further research to examine how gamification can be applied more contextually in the classroom, evaluate its effectiveness on students' language skills, and develop learning models that are not only enjoyable but also capable of significantly improving academic performance. Thus, this density visualization map not only displays research density but also provides strategic direction for the development of future gamification research.

CONCLUSION

Based on a bibliometric analysis of 504 Scopus articles from 2020–2024, research on gamification in Indonesian language learning in elementary schools shows significant growth, with publications peaking in 2024 and research focused on improving motivation, reading and writing skills, and other language skills. These findings provide an important contribution to science, particularly in strengthening empirical evidence that gamification can address low learning motivation and improve elementary school students' learning outcomes, while offering a more interactive and effective

learning approach than traditional methods. However, the analysis also reveals a research gap, particularly regarding the integration of gamification with a communicative approach in Indonesian language learning. Therefore, further research is recommended to explore more contextual gamification models, test the effectiveness of game designs oriented toward language competency, and expand the study to aspects of practical implementation in the classroom to enrich the research repertoire and support learning innovation in elementary schools.

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