



Integrating Board Games in Primary Classrooms to Build Dynamic Learning Environments: A Systematic Review

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Abstract: In recent years, the development of educational technology has provided various tools to create more interactive and engaging learning methods. One increasingly popular approach is gamification, which has proven effective in enhancing student engagement and motivation. Learning media such as board games hold significant potential to strengthen active student participation, provide enjoyable learning experiences, and foster the development of their social and cognitive skills. Based on this premise, this study aims to analyze the effectiveness of board games as an educational tool to enhance the engagement of elementary school students. The authors employed a Systematic Literature Review to examine research on the effectiveness of board games as an educational medium for improving student engagement in elementary schools. Data mining was conducted using Publish or Perish with relevant keywords such as "board game," "student engagement," and "elementary school." The research process involved selecting articles based on strict inclusion and exclusion criteria. After collecting initial data, the articles were filtered using the PRISMA framework. The study's findings indicate that students who learn using board games exhibit higher levels of engagement and motivation compared to those taught through conventional methods, primarily due to the more interactive and enjoyable learning environment. Gamification elements such as challenges, scores, and rewards effectively enhance students' social and cognitive skills while deepening their understanding of the subject matter. These findings suggest that integrating board games into the elementary school curriculum can be an effective approach to creating a dynamic learning environment that supports students' holistic development..

Keywords: Board Game, Elementary School, Student Engagement.

INTRODUCTION

Technology offers numerous tools that teachers can use to create more engaging, interactive, and enjoyable learning methods, enabling students to become more involved and achieve better learning outcomes. The integration of technology-based learning tools and gamification elements has been shown to significantly

boost student enthusiasm by incorporating engaging challenges into the learning content. This approach makes the learning process more interactive and enjoyable, while also promoting active student participation (Muzkiyah & Nugroho, 2024). Gamification in learning is most effective when the games are designed to be both engaging and relevant to the subject matter. The level of difficulty and challenges should also be tailored to the students' abilities, ensuring they feel sufficiently challenged without becoming frustrated, thereby creating a balance that fosters optimal learning (Sappaile et al, 2024).

Through elements commonly found in games, gamification has the potential to make the learning process more engaging, interactive, and motivating, encouraging students to actively participate. This technique is considered effective as it can be applied across various educational levels, from elementary to higher education, to enhance student engagement and learning outcomes. By incorporating elements such as scores, challenges, and rewards, gamification boosts student motivation through enjoyable and meaningful activities, while challenges and instant feedback help reinforce their understanding. Furthermore, gamification supports the development of critical thinking and creativity by fostering innovative problem-solving skills (Santria & Hartono, 2019).

The use of games in education not only focuses on academic learning but also fosters the development of social and cognitive skills that support learning in everyday life. Games help create an environment where students can express themselves more freely and learn without fear, thereby enhancing the effectiveness and quality of the learning process (Pinedo et al, 2022). Through games, students not only gain academic knowledge but also acquire social and critical thinking skills that are valuable in real-life situations (Munawarah et al, 2024).

Students who learn through games demonstrate greater learning motivation compared to those taught using conventional methods, primarily due to external incentives such as rewards, which boost their enthusiasm. Additionally, students engaging with games, particularly board games, are not only more physically and actively involved in the learning process demonstrating improved focus and active participation but also emotionally engaged, feeling more interested and motivated during learning activities (Zheng et al, 2024). Through board games, students develop teamwork and problem-solving skills while fostering positive social relationships within the classroom. Beyond making learning more engaging, board games also spark students' interest and enhance their speaking and listening skills through active participation (Rodríguez-Ferrer et al, 2023; Sandy et al, 2023).

In this study, the authors employed a Systematic Literature Review to analyze global research trends regarding the impact of board games on student engagement in the classroom. The authors also aimed to outline the key findings from the selected articles through data collection using Publish or Perish, focusing specifically on differences in student engagement levels between conventional teaching methods, learning motivation, and active classroom participation, as well

as the design and elements of board games used in various studies. This study aims to examine the impact of using board games as a learning medium on elementary school students' engagement in the learning process. Specifically, it focuses on comparing the level of student engagement between those who learn through board games and those who are taught using conventional teaching methods. Furthermore, the study seeks to evaluate the effectiveness of board games as engaging and interactive educational tools in enhancing students' learning motivation and active classroom participation. In addition, it identifies the various types of board game designs used and analyzes how these design elements contribute to increasing student engagement during learning activities.

METHOD

This study employs a Systematic Literature Review to examine research on the effectiveness of board games as an educational tool for enhancing student engagement in elementary school students. A Systematic Literature Review is a method designed to be systematic, transparent, comprehensive, and reproducible, aimed at reviewing all existing research objectively. This approach provides an overall picture of the topic without being influenced by specific biases, thus offering a deep and balanced understanding of the subject matter (Nightingale, 2009; Okoli, 2015). The articles for this study were collected through database mining using Publish or Perish.

To assess the eligibility of the collected articles, inclusion and exclusion criteria were established, as outlined in Table 1. The review process adhered to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. PRISMA aims to improve the quality of reporting in systematic reviews and meta-analyses by providing a framework that emphasizes transparency and comprehensiveness in conducting systematic literature reviews. This approach facilitates readers in evaluating the strengths and weaknesses of the systematic review (Moher et al, 2010; Shezaki et al, 2023).

Table 1. Included and Excluded Criteria

	<i>Included Criteria</i>	<i>Excluded Criteria</i>
Reason 1	Literature in the form of articles or journals, not books, proceedings, patents, citation, conferences	Literature in the form of books, proceedings, patents, citations, conferences
Reason 2	Articles or journals are international and written in English	Non-international articles or journals and not written in English
Reason 3	Literature published in the time span of 2014 - 2024	Literature that was published before 2014
Reason 4	Literature that discusses the application of game boards as	Literature that does not discuss the application of game boards as

	educational media	educational media
Reason 5	Literature that discusses how to increase student engagement	Literature that discusses how to increase student engagement
Reason 6	Literature targeting primary school students and teachers	Literature with research targets not to elementary school students and teachers

The data mining process was conducted on September 21, 2024, using the Publish or Perish application with the keywords “boardgame” OR “board game” AND “student engagement” AND “elementary school.”

Based on the data mining process, a total of 933 files were retrieved. These files originated from various sources such as Frontiers, ERIC, Springer, Science Direct, Taylor & Francis, MDPI Journal, ResearchGate, and others. After the data mining stage, the files were screened according to predefined criteria using Microsoft Excel. This screening process resulted in 275 articles categorized as complete and undamaged, leaving out 658 articles. From the remaining 275 articles, further sorting was conducted based on their titles, narrowing the selection down to 54 articles with titles relevant to the chosen topic. Consequently, 221 articles were excluded. These 54 articles were then further screened based on their abstracts, reducing the number to 26 articles that aligned with the topic, with 28 articles excluded. Finally, a full-text review of the remaining 26 articles was conducted, resulting in 13 articles that directly addressed the research questions, while the remaining 13 articles were excluded for not meeting the criteria.

To address the shortage of articles, the authors conducted additional data mining on Google Scholar using the same keywords. The files were then sorted based on their content, titles, abstracts, and full texts, resulting in 7 additional articles. This brought the total number of articles for the study to 20. These 20 articles were subsequently recorded in a logbook. The logbook serves as both a learning tool and an assessment instrument that supports the teaching and learning process. It fulfills multiple roles, including acting as a learning guide, documenting the learning process, and serving as an evaluation or assessment tool (Torabi et al, 2013). The logbook was organized into a table with columns covering the article title, year of publication, publisher, research method, research objectives, and key findings of each article. This logbook greatly assisted the authors in analyzing and identifying the selected prior studies.

Based on the articles that address the research questions, they will be further classified according to the specific research questions. The authors will then summarize the findings through a systematic description, providing a clear and comprehensive overview of the results.

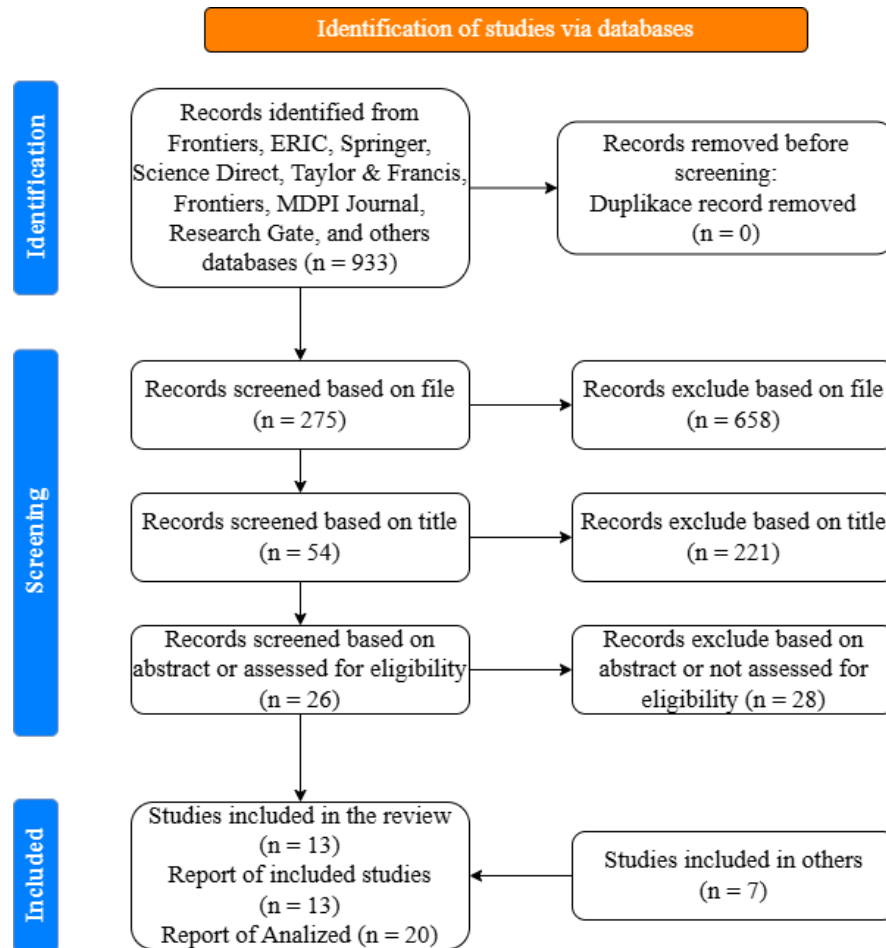


Figure 1.
PRISMA Diagram

RESULTS AND DISCUSSION

In this section, the authors will discuss the role of board games as an interactive learning medium in elementary education. The focus of the discussion is on how board games can enhance student engagement, motivate them to learn, and strengthen their social and cognitive skills. Additionally, the authors will explore the differences between conventional teaching methods and learning that incorporates board games, as well as analyze the design elements of board games that directly influence active student participation in the classroom. This discussion aims to provide a more comprehensive understanding of the effectiveness of board games in supporting a dynamic and enjoyable learning process.

Is there a difference in student engagement levels between elementary school students who use board games as a learning medium and those who are taught using conventional teaching methods?

Conventional teaching methods, which typically involve teacher-led instruction through lectures and summarizing key points during class, tend to encourage students to compete with their peers for the teacher's attention. Various

factors influence academic performance during students' developmental processes. In addition to explicit factors, such as the teaching methods employed by the teacher, there are also intrinsic or hidden factors, such as relationships with peers and learning motivation. Conventional teaching methods primarily focus on memorization and recall of information. This approach may not naturally foster intrinsic motivation for academic achievement, leading students to view these activities as obligations rather than personally meaningful endeavors. Such attitudes can result in stress and pressure to achieve high grades and stand out among peers. Furthermore, students may become afraid of making mistakes to avoid negative attention from the teacher (Lazarevic et al, 2024; Lasala, 2023; Tu & Chu, 2024). Games not only enhance students' creativity and enthusiasm for learning but also help teachers simplify the explanation of abstract concepts by using analogies derived from the games (Chiarello & Castellano, 2016; Kesuma et al., 2020).

To enhance active student engagement, teachers should create a gamified learning environment that incorporates collaborative learning strategies. They can also consider encouraging students to learn together in a collaborative and adaptive manner. This approach allows students to take a more active role in their learning process, fostering a deeper understanding of the material through exploration and interaction with their peers (Yu et al, 2021; Lasala, 2023).

Students who learn using board games exhibit greater learning motivation compared to those taught through conventional methods. This increased motivation is primarily driven by external incentives, such as rewards, which make them more enthusiastic about learning (Zheng et al, 2024; Lin et al, 2020).

Board games are considered effective in increasing students' interest and motivation in learning (Sandy et al, 2023). They also facilitate a more natural cognitive approach to understanding learning materials, ultimately encouraging students to engage more deeply with the content (Lazarevic et al, 2024). Board games create a more interactive and enjoyable learning environment, where students do not merely listen or receive information but actively participate in the learning process (Kuo et al, 2023). The integration of board games into learning has a positive impact on students' conceptual understanding (Lasala, 2023). Students find joy in learning through games, becoming more active and engaged in the process (Ober, 2016; Radzi et al, 2020). A supportive and enjoyable learning environment created through board games is a critical factor in ensuring successful learning outcomes, as well as fostering cognitive skills, communication, and creativity (Lazarevic et al, 2024). It is essential to consider not only how students interact with their peers but also how they engage with the games being used. Both aspects can influence the level of student engagement in the learning process and the way they interact with others (Baek & Touati, 2020). This board game contributes to the improvement of learning skills, with the majority of students providing positive feedback regarding the game design, clarity of questions, and teamwork fostered during the gameplay process (Pinhatti et al, 2019; Arayapisit et

al, 2023).

Compared to conventional teaching methods, which tend to be passive and focus on rote memorization, game-based learning using board games creates a more interactive and enjoyable atmosphere. This approach not only increases students' interest in the material but also strengthens their social skills, such as teamwork and communication. By integrating gamification elements, board games offer meaningful and relevant learning experiences, encouraging students to be more active and confident in the learning process. Overall, the integration of this medium in elementary education can serve as an innovative solution for creating a dynamic learning environment that supports the holistic development of students.

How effective is the use of board games as an engaging and interactive educational tool in enhancing elementary school students' learning motivation and active classroom participation?

Using games as a fun learning medium is one technique to motivate students to learn (Handarini et al, 2022). Additionally, incorporating games into the learning process can serve as a methodology to promote 21st Century Skills, such as reasoning, problem-solving, creativity, and social competence (Pinedo et al, 2022). Students' social skills can be enhanced when daily exercises are replaced with games. Research findings indicate that student communication and collaboration improve when games are used as a substitute for traditional exercises. Students become more active in learning with their peers, which not only enhances their cognitive abilities but also develops their social skills. This is crucial because games provide a safe and enjoyable environment where students feel more confident in displaying their social skills and overcoming feelings of shyness or fear. This enables learning to become more meaningful in a comfortable and relaxed atmosphere (Pinedo et al, 2022; Santria & Hartono, 2019).

Game-based learning can be an innovative and effective method for creating a positive classroom atmosphere. Through board games, students have the opportunity to interact in a fun environment, which not only fosters teamwork, communication, and problem-solving but also strengthens group dynamics and establishes a friendly classroom setting. Board games require direct student involvement, both individually and in groups. These activities encourage students to actively take on roles, make decisions, and communicate with their classmates, thereby enhancing their engagement and active participation in class. Active participation in board games boosts students' confidence, motivation, and enthusiasm. Moreover, the collaborative and competitive aspects of these games help develop cognitive and socio-emotional skills such as creativity, problem-solving, teamwork, and communication (Munawarah et al, 2024; Rodríguez et al, 2023; Khan et al, 2017).

Many board games require students to work in teams, share ideas, and collaborate to achieve common goals. This helps students learn to cooperate and

value one another, while also enhancing essential social skills for both academic learning and everyday life. Board games can also connect learning to real-world contexts by delivering lesson concepts through relevant scenarios or simulations. This allows students to gain a deeper understanding of the material as they see its application in real-life situations. Furthermore, due to their less formal nature, board games can reduce students' anxiety about learning, particularly for those who may lack confidence. In a more relaxed learning environment, students feel more comfortable taking risks, asking questions, and trying out new ideas without fear of making mistakes (Lasala, 2023; Pinedo et al, 2022; Munawarah et al, 2024; Rodríguez et al, 2023).

Board games as an educational medium are not only effective in boosting students' learning motivation but also play a crucial role in encouraging their active participation in the classroom. By creating an interactive and collaborative learning environment, board games help reduce students' anxiety while enhancing their confidence to engage. In addition to providing a more enjoyable learning experience, this medium supports the development of essential skills such as problem-solving, communication, and teamwork. This demonstrates that board games are not merely learning tools but also an effective medium for fostering comprehensive student engagement.

What types of board game designs are used, and how do the design elements of these board games influence student engagement in the learning process?

Effective learning is a crucial factor in enhancing student engagement in the learning process. In this modern era, technology provides numerous tools that can be utilized to create more engaging, interactive, and enjoyable learning methods, enabling students to be more involved and achieve better learning outcomes. One increasingly popular approach is gamification. This technique incorporates game elements into educational contexts to boost student engagement, motivation, and achievement (Sappaile et al, 2024; Muzkiyah & Nugroho, 2024). Gamification designed with the goal of student engagement can assist in selecting the most appropriate gamification elements to achieve various learning objectives, such as the development of cognitive, affective, and psychomotor aspects (Rivera & Garden, 2021; Bouchrika et al, 2021).

Gamification, which integrates game elements into the learning context, has emerged as an innovative approach to enhancing learning effectiveness. By incorporating common game elements, gamification has the potential to make the learning process more engaging, interactive, and motivating, encouraging students to actively participate. This innovation is considered effective as it can be applied across various educational levels, from elementary to higher education, to improve student engagement and learning outcomes. The application of gamification techniques in learning offers numerous benefits, both for students and the learning process itself (Sappaile et al, 2024; Santria & Hartono, 2019; Setambah et al, 2024).

1. Gamification has significant potential to enhance student engagement in learning. By presenting material in an engaging and interactive format, students are more likely to actively participate in the learning process. Elements such as scoring, challenges, and rewards motivate students to engage with greater enthusiasm, creating a more dynamic and appealing learning environment.
2. Gamification can enhance students' intrinsic motivation in learning. When students are engaged in enjoyable and meaningful activities, they tend to develop a stronger drive to learn and achieve their learning goals. Elements such as healthy competition, rewards, and character development provide additional encouragement, motivating students to continuously improve their performance and reach higher levels of achievement.
3. Gamification can improve students' understanding and retention of learning materials. By presenting content in a more visual, interactive, and engaging format, students have a greater opportunity to grasp the concepts being taught. Additionally, the use of challenges and games allows students to actively test their knowledge and receive immediate feedback, which helps reinforce their understanding of the material.

The implementation of gamification techniques in learning offers numerous benefits, but their effectiveness can be influenced by several factors that need careful consideration. First, an engaging game design is one of the key factors affecting the success of gamification. A creative and entertaining design captures students' attention, encouraging greater involvement in the learning process. Therefore, developing game elements that are both engaging and relevant to the learning material is crucial to achieving optimal effectiveness. Additionally, the level of difficulty and challenges within the game must be tailored to the students' abilities and interests to ensure they feel adequately challenged without becoming overly frustrated (Sappaile et al, 2024; Pinedo et al, 2022; Phillips et al, 2014).

Board games in game-based learning can be categorized into several types based on their purpose and benefits in the learning process. Motivation-based board games are designed to foster students' learning motivation, increase their interest, and build a positive attitude towards learning, without emphasizing instructional content as the primary goal. Skill-based board games provide students with opportunities to practice, memorize, and master vocabulary, sentence patterns, grammar, and other linguistic elements previously learned. Meanwhile, proficiency learning board games focus on helping students understand more complex concepts, with mastery of the material as the core of the learning process. Core competencies-based board games aim to enhance advanced skills such as teamwork and problem-solving among students. Additionally, there are other board games that may not fall under these four categories but can still be effectively utilized in educational contexts (Jan & Chang in Sandy et al, 2023).

Table 2 presents several examples of board games used to enhance student engagement in learning:

Table 2. Examples of Board Games Used in Learning

Name	Description
Chemopoly	A board game adapted from the mechanics of Monopoly to make learning more engaging and effective in boosting students' motivation and enthusiasm for chemistry lessons (Zanah et al., 2022).
"Donkey," "Snap," and "King" (DSK)	A board game designed to enhance mathematical understanding, particularly in learning fractions (Setambah et al, 2024).
Monopoly based Augmented Reality	A board game that integrates AR technology with Monopoly game elements to teach historical topics (Muzkiyah & Nugroho, 2024).
Monopoly	A board game used as a learning medium to teach English speaking skills, focusing on simple past tense and present perfect tense (Huda & Makrifah, 2023).
Scrabble	A board game used in English language learning to enhance vocabulary acquisition (Sandy et al, 2023).
The Ladder Snake Game	A board game used to replace daily exercises in mathematics learning, which not only enhances students' cognitive understanding of mathematics but also helps develop their interpersonal skills (Santria & Hartono, 2019).
Werewolf and Mafia	A board game implemented in English learning to improve speaking skills (Munawarah et al, 2024).
The 6 to 1 Game	This board game is designed to help students understand basic mathematical concepts, such as number operations and simple calculations. By using dice and a game board with specific rules, the game aims to encourage students to sharpen their quick calculation skills (Dio, 2015).

Based on the table presented, it can be concluded that the use of various types of board games in learning plays a significant role in enhancing students' motivation, engagement, and understanding of the material. Each type of game is designed with specific objectives tailored to meet different learning needs.

The design and elements of board games play a crucial role in determining the success of game-based learning. Elements such as scoring, challenges, and rewards not only motivate students but also create a more interactive and enjoyable learning experience. Achieving balance in game design, including adjusting difficulty levels and ensuring relevance to the learning material, is essential to keep students challenged without causing frustration. With the right approach,

gamification through board games can transform the learning process into a more dynamic experience, enhancing active student engagement while strengthening their understanding of the material and social skills. When effectively designed, this integration can serve as an innovative solution to improve the quality of learning in elementary education.

CONCLUSION

The findings of this study indicate a significant difference in student engagement levels between elementary school students who learn using board games and those who are taught through conventional teaching methods. Students engaged with board games show higher levels of participation, attention, and enthusiasm, suggesting that the interactive nature of board games fosters deeper involvement in the learning process. Board games are found to be highly effective in enhancing learning motivation and encouraging active classroom participation. Their playful, competitive, and collaborative structure creates a positive learning atmosphere that boosts students' intrinsic motivation and willingness to contribute actively during lessons. Various board game designs are utilized, incorporating elements such as point systems, rewards, challenges, storytelling, and visual aids. These gamification features significantly influence student engagement by making learning more contextual, enjoyable, and emotionally stimulating. Well-designed board games align educational content with game mechanics, which promotes both cognitive engagement and the development of social skills like teamwork and communication.

For future research, it is recommended to further explore the impact of board games across different educational levels, such as secondary school and higher education, to determine whether their effectiveness remains consistent across all levels. Additionally, research could focus on developing board game designs that are more specific to certain subjects, such as science or other fields, to optimize learning outcomes in those areas. Conducting longitudinal studies is also crucial to assess the long-term effects of using board games on students' motivation and engagement, as well as how their social and cognitive skills evolve over time.

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