



## Using gamification in education: Strategies and impact

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### ABSTRACT

In this digital era, education is the main basis that supports people's skills in facing future technological developments. Shifting learning dynamics require innovation that can accommodate these changes and one answer that has developed is the use of gamification in education to encourage the development of a more dynamic and relevant curriculum. The aim of this research is to examine the strategy and impact of gamification in Indonesian education. The method used in this research is a literature review to examine the strategies and impact of gamification in Indonesian education from various scientific articles that have been previously published in national and international journals. From the research results obtained, gamification in education is an innovative and interesting approach to improving learning. Applying the right game elements and strategies, gamification can make learning more interactive, fun and effective. The positive impact can be seen in increasing motivation, interaction, cognitive abilities and student achievement. Therefore, it is important for educators to consider the use of gamification in learning.

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### ABSTRAK

Pada era digital ini, pendidikan sebagai dasar utama yang mendukung keterampilan masyarakat dalam menghadapi perkembangan teknologi di masa mendatang. Pergeseran dinamika pembelajaran membutuhkan inovasi yang dapat mengakomodasi perubahan ini dan salah satu jawaban yang telah berkembang yaitu penggunaan gamifikasi dalam pendidikan mendorong pengembangan kurikulum yang lebih dinamis dan relevan. Tujuan dilakukannya penelitian ini untuk mengkaji strategi dan dampak gamifikasi di pendidikan Indonesia. Metode yang digunakan dalam penelitian ini adalah literature review untuk mengkaji strategi dan dampak gamifikasi di pendidikan Indonesia dari berbagai artikel ilmiah yang telah diterbitkan sebelumnya pada jurnal nasional dan internasional. Dari hasil penelitian didapatkan gamifikasi dalam pendidikan merupakan pendekatan inovatif dan menarik untuk meningkatkan pembelajaran. Penerapan elemen permainan dan strategi yang tepat, gamifikasi dapat membuat pembelajaran menjadi lebih interaktif, menyenangkan, dan efektif. Dampak positifnya terlihat pada peningkatan motivasi, keterlibatan, kemampuan kognitif, dan ketercapaian peserta didik. Oleh karena itu, penting bagi para pendidik untuk mempertimbangkan penggunaan gamifikasi dalam pembelajaran.

**Kata Kunci:** Digital; Gamifikasi; Strategi Pembelajaran

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## INTRODUCTION

In this digital era, education serves as a fundamental pillar that supports society's ability to adapt to future technological developments. The shifting dynamics of learning demand innovations that can accommodate these changes, and one of the emerging answers is the use of gamification in education. Gamification refers to the use of game-like elements in non-game contexts to enhance learners' motivation and engagement. The implementation of gamification is not merely a trend in the educational world, but a necessity that drives the development of a more dynamic and relevant curriculum ([Fakhrunnisa, 2023](#)).

In responding to the Digital Era, gamification strategies offer new ways to guide learning. Not only does it capture attention, but gamification can also provide enjoyable learning experiences, stimulate creativity, and improve memory retention. By aligning game features such as incentives, levels of difficulty, and point systems, educators can create learning experiences that encourage students to achieve learning goals. Its positive impact is evident in increased learner engagement, the development of collaborative skills, and enhanced subject matter comprehension ([Sari, 2023](#)).

Enhancing learner engagement is crucial, as is the development of collaborative abilities, which are essential in an increasingly interconnected world. Moreover, gamification has been proven to increase knowledge of topic concepts in a stimulating and engaging way ([Rodrigues et al., 2019](#)). These findings imply the potential for applying gamification in addressing the demands of educational change in the digital era. However, the impact of gamification in the educational world is not without its challenges. There must be a comprehensive understanding of how to incorporate game elements without compromising formal educational content. In addition, since each learner has different preferences and learning styles, the use of gamification must be tailored to the needs and characteristics of each learner ([Utaminingsih, 2023](#)).

Previous research conducted by [Zahara \(2021\)](#) has shown that integrating gamification with the traditional curriculum can enhance understanding and retention of learning materials. Another study by [Ahmad \(2022\)](#) revealed that the use of gamification in Mathematics education has a positive and beneficial impact on learners. However, earlier studies have primarily focused on the implementation of gamification in traditional curricula and Mathematics education, without providing an in-depth description of gamification strategies in education. Therefore, this study was conducted to examine the strategies and impacts of gamification in the Indonesian education system. It is expected that this research will provide a comprehensive description of the application of learning strategies utilizing gamification, serving as a valuable resource for educators.

## LITERATURE REVIEW

### Learning Strategies

The term *strategy* generally refers to a deliberate action taken to achieve a specific goal. Meanwhile, *learning* refers to activities carried out by educators and students to achieve educational objectives. According to Sumandy & Widana ([Dhamayanti, 2022](#)), a learning strategy is a method used to deliver material that considers the nature, scope, and learning activities, providing authentic experiences. The steps for developing a learning strategy begin with determining the goals to be achieved, then establishing the criteria for achieving those goals, eliminating differences among learners during learning activities, selecting relevant alternatives, and finally implementing the strategic plan and conducting an evaluation to measure the success of the strategy ([Kamalia, 2023](#)).

The learning strategies used by educators must meet the learning needs of students (learning readiness, learning interest, and learning profile). One learning strategy that has often been used is forming study groups based on the characteristics, learning needs, interests, or readiness of the students. This strategy is expected to create an inclusive learning environment and help optimize students' cognitive development (Ritonga, 2022). However, this strategy has become less effective today, as students now prefer learning that incorporates technology. Adapting technology in learning activities can serve as a non-monotonous strategy, as learning materials can be supplemented with animated images or videos, making them easier for students to understand (Helaluddin, 2019).

## Definition of Gamification

Zichermann and Linder (Fitriani, 2023) define gamification as the enhancement of tool branding initiatives through the application of game elements and mechanisms. Gamification shares several similarities with games, but the two are not identical. Gamification involves integrating online game elements, such as points, leaderboards, and badges, into a non-game context to increase engagement among employees and consumers (Rodrigues et al., 2019). The term "*gamification*" was coined by Nick Pelling in 2002, but it was not until the second half of 2010 that the term began to gain widespread adoption. As the term suggests, gamification is not about creating a game, but rather about transferring specific positive characteristics of a game into something that is not a game. The positive characteristics of a game are often loosely described as "fun," and they have the effect of engaging players in the activity. The enjoyment in gameplay is engineered by four building blocks, or defining characteristics, of a game: goals, rules, feedback systems, and voluntary participation (Hebebci, 2021).

In gamification, these constituent elements appear to a greater or lesser extent, but not as prominently. The purpose of designing gamified systems is to gain the psychological benefits of game systems for the user. They regard gamification as an effective alternative to traditional motivational and reward elements, namely intrinsic motivation (Aggarwal, 2021). The term "gamification" typically refers to the application of game design elements to non-game contexts. It is generally used to enhance player motivation and performance in tasks such as learning, well-being, rehabilitation, or work efficiency. For instance, demonstrating how gamification can increase player motivation for complex or monotonous tasks. In recent years, gamification has emerged as a trend in the business and marketing sectors, gaining attention from scholars, educators, and practitioners across various fields. However, gamification is not a new concept; it is rooted in marketing efforts, such as point cards and reward memberships, as well as educational structures like levels, grades, and degrees, and workplace productivity (Wirapraja, 2021).

Gamification has garnered the attention of academics, practitioners, and business professionals across various fields, including education, information studies, human-computer interaction, and health. One area that leverages gamification is learning. Game-based learning uses actual games to teach knowledge and skills (Sailer, 2020). Learning games are self-contained units with a definite beginning, play, and ending. Learners know that they are engaged in a game activity, and ultimately, there is a "win state." Games can provide various types of learning content in different settings. Gamification, on the other hand, utilizes only specific game elements. Learners do not play an entire game from start to finish; they participate in activities that incorporate elements of video or mobile games, such as earning points, overcoming challenges, or receiving badges for completing tasks (Hakak, 2019).

## Benefits of Gamification

Gamification is the application of game elements in non-gaming contexts to enhance motivation, engagement, and performance. According to [Kurdi \(2021\)](#), several benefits of gamification include:

1. High motivation: Gamification can increase intrinsic motivation by providing players with challenges and personal satisfaction. Users are often motivated by rewards, points, or recognition offered through gamification.
2. Increased engagement: Game elements such as missions, levels, and achievements can enhance user interaction. Gamification can build a community of users who share similar interests and goals.
3. Skill development: By using game elements, gamification can facilitate the process of learning and skill development. For example, gamification can be used in business training to enhance team skills or to deepen understanding of business concepts.
4. Improved performance: Users can motivate themselves to achieve goals by utilizing a gamification system. In a business context, gamification can be utilized to enhance employee productivity by offering incentives and rewards.
5. Improved information retention: Game aspects such as storytelling, challenges, and surprises can make learning more engaging and improve information retention.
6. Customer Engagement: By incorporating gamification elements into products or services, businesses can enhance customer loyalty. Competition among users or teams can enhance customer engagement and loyalty.
7. Behavioral change: In some cases, gamification can help change user behavior, such as encouraging a healthy lifestyle or responsible shopping habits.
8. Innovation and creativity: Gamification systems can be used to motivate collaboration and boost creativity in the workplace.
9. Data analysis and decision-making: The use of gamification systems generates data that can be analyzed to understand user behavior and support data-driven decision-making.
10. Flexibility and technological adoption: Gamification can be used as a tool to introduce and support the adoption of new technologies.

## Advantages and Disadvantages of Gamification

According to [Manzano-León \(2021\)](#), gamification has several advantages that can be highly beneficial when used as a learning strategy, such as:

1. Motivation and engagement: Gamification can increase both intrinsic and extrinsic motivation, encouraging active participation. Game elements make the experience more engaging and interactive, enhancing user involvement.
2. Goal achievement: Gamification systems can help maintain focus on achieving goals by providing incentives and rewards.
3. Effective learning: Gamification can make learning more enjoyable and improve information retention.
4. Competition and collaboration: Competition can encourage active participation and efforts to achieve the best results. Gamification elements can also be used to enhance collaboration and teamwork.
5. Data analysis and decision-making: The implementation of gamification generates data that can be analyzed to understand user behavior and support better decision-making.
6. Flexibility: Gamification can be applied in various contexts, including education, business, health, and more.

In addition to the advantages mentioned above, gamification also has its drawbacks. [Ekici \(2021\)](#) outlines the following disadvantages of gamification:

1. Addiction and neglect of responsibility: Some individuals may develop dependence on game elements, neglecting daily responsibilities.
2. Motivational gap: The gamification approach may not be practical for everyone, as individual motivations can vary.
3. Inaccurate performance measurement: Performance measurement based on gamification may not always reflect actual performance.
4. Repetitiveness: If not well designed, gamification can become monotonous or lose its appeal over time.
5. Lack of intrinsic factors: Gamification that is too focused on extrinsic rewards may diminish intrinsic experiences.
6. Potential for manipulation: In some cases, gamification can be misused or applied unethically to manipulate user behavior.
7. Development and maintenance costs: Developing and maintaining gamification systems can require financial investment and other resources.
8. Design challenges: If not designed well, gamification can be ineffective or even counterproductive.

In the context of learning and education, both digital and face-to-face gamification have their own advantages and disadvantages. Digital games are convenient, flexible, and offer various rewards, while face-to-face games provide a more interactive and immersive learning experience. However, regardless of the format, gamification can be an effective tool for encouraging engagement and enhancing learning (Gentry, 2019). Educators can help students stay focused by aligning games with learning objectives, setting clear goals, providing constructive feedback, incorporating social elements, and clearly communicating the educational benefits of the game. Thus, gamification can be a powerful tool to help students learn and retain information in an engaging and enjoyable manner (Fitria, 2022).

## METHODS

The method used in this study is a literature review. According to Sugiyono (Ridwan, 2021), a literature review is related to theoretical studies involving values, culture, and norms found in the social environment being studied. A literature review utilizes findings from various conceptual information as well as qualitative and quantitative data from previously published scientific articles. The literature review method was chosen to provide a detailed description of the use of gamification in learning strategies, as obtained from various sources. The data sources used in this study include journal articles from both national and international publications. These sources were collected by searching through Google Scholar using predetermined keywords (Ramanda, 2019).

According to Creswell in (Ridwan, 2021), the steps in conducting a literature review are: 1) determining keywords to facilitate source searching; 2) reviewing abstracts of research sources; 3) creating a literature map that organizes and connects research topics to be used as a reference for a complete literature summary; 4) organizing research results systematically according to theories and concepts relevant to the research topic; and 5) presenting an overview of the research topic based on the findings of the literature review. The keywords used for source searching on Google Scholar include 'gamifikasi', 'gamification', 'gamifikasi dalam pendidikan', 'gamification for education', and 'strategi pembelajaran'. The search process was conducted using Google Scholar to find both national and international journals related to gamification and contemporary education. An analysis was then conducted by reviewing the abstracts of relevant journals to identify the most suitable sources for this study. Finally, the research findings were organized and presented to form a discussion relevant to the topic.

## RESULTS AND DISCUSSION

### Gamification in Education

Gamification in education is an innovative and engaging approach to enhancing learning. By implementing game elements such as points, levels, challenges, and rewards, learners become more motivated and actively engaged in the learning process. According to Zichermann, gamification is the process of applying game thinking and game mechanics to engage users and solve problems. A more general definition of gamification is the use of game design elements in non-game contexts ([Wulantari, 2023](#)).

One example of gamification in education is the use of point and level systems. Games can offer three psychological benefits—cognitive, emotional, and social—that enhance a player's motivation to engage with the game. Learners can earn points by completing tasks or answering questions correctly. The more points they collect, the higher their level will be ([Shaliha, 2022](#)). With this system in place, learners feel challenged to reach targets and advance to higher levels. They can also track their own progress and compete with peers to achieve higher rankings. In addition, gamification can involve competition. With ranking systems, learners compete to achieve the highest position. They will strive to work together in teams to achieve the best results. This not only boosts their enthusiasm for learning but also develops their social and teamwork skills ([Wirapraja, 2021](#)).

Gamification can also incorporate engaging stories and characters. By connecting learning with a game world, learners feel immersed in the narrative. They become integral to the story and must complete specific missions to advance the plot. This makes learning more interesting and motivates learners to continue ([Fadilla, 2022](#)). The application of gamification in education makes learning more interactive, enjoyable, and effective. Learners feel more motivated, actively engaged, and able to develop various essential skills. Therefore, it is important for educators to consider integrating gamification into their teaching strategies ([Marisa, 2020](#)).

### Steps of Gamification and Its Implementation in Education

Yuan in [Rosly \(2017\)](#) outlines steps in implementing gamification in learning activities as follows:

1. Understanding the target group and context, educators need to understand the learning objectives before applying gamification to learning activities. Factors to consider include age, learning ability, student skills, the program being implemented, learning location, and number of learners.
2. Identifying learning objectives, so that the learning objectives can be achieved. The learning objectives are divided into three: ensuring students complete the assigned tasks, allowing students to ask questions if they do not understand the task, and completing the task within the agreed time.
3. Structuring the experience, educators need to understand the application modules that the learners will use. In this context, educators need to encourage learners to overcome the obstacles they encounter in order to gain meaningful learning experiences.
4. Identifying resources, at this stage, educators need to pay attention to the gamification resources to be used. The resources to consider are the game mechanisms that enable them to achieve the learning objectives.
5. Implementing gamification elements, the implementation of gamification elements will help educators assess and monitor the performance of learners. Gamification elements consist of two types: self-

elements, which allow learners to compete with themselves, and social elements, which allow learners' achievements to be viewed by others.

According to [Winatha \(2020\)](#), several games can be implemented in learning activities as follows:

1. Sink or Swim, a group game that involves giving questions to each student group under specific rules. The rules of this game are that students play in small groups. Each group member must answer questions in turn. If a member answers correctly, the group is allowed to "sink" members of other groups or "save" members of their own group. Group members who are eliminated must stand, while those who are saved are allowed to sit again. Questions can be presented using Microsoft Office PowerPoint.
2. Kahoot!, an online game using Kahoot! A platform that requires students to answer questions using internet-connected devices. Students must answer questions individually or without collaborating with others.
3. Uno Stacko, a game similar to Sink or Swim, but requires Uno Stacko blocks, and students are divided into groups of 8–9. The rules are that students play in groups and answer questions one at a time. If a member answers correctly, members of other groups must pull out a block according to the question's color, and vice versa. If the blocks fall, the entire group will lose 5 points, and the group with the fewest blocks removed wins. The questions in this game are placed inside Uno blocks of different colors.

## **The Impact of Utilizing Gamification in Education**

Gamification in education refers to the integration of game elements and concepts into learning environments to enhance engagement, motivation, and overall learning outcomes. Leveraging gamification utilizes the intrinsic appeal of games to make learning more enjoyable and effective. According to [Solviana \(2020\)](#), there are several impacts of using gamification in education:

1. Enhancing cognitive abilities and learner achievement, the implementation of gamification in educational settings has shown promising results in improving cognitive load and learner achievement levels. Gamification integrates game components into the learning environment, engaging learners in ways that encourage active participation and real-time feedback. Learners often respond positively to the implementation of gamification, indicating that this strategy is well-received. Thus, gamification can be considered a valuable strategy for enhancing the learning experience and leading to improved academic performance ([Suarmini, 2020](#)).
2. Improving the learning experience of learners, to advance in many games, players must complete challenges and make decisions. When learners face problems in a game-based environment, gamification in education supports the development of critical thinking and problem-solving skills. Gamification provides learners with real-time feedback on their performance, enabling them to learn from mistakes and make improvements ([Tyaningsih, 2022](#)).
3. Enhancing problem-solving skills, to progress through a game, players must overcome challenging tasks and make wise decisions. In the context of gamification in education, the problems or obstacles within the game environment offer significant opportunities for players to develop cognitive abilities. Gamification, a learning strategy that utilizes game elements in a non-game context, facilitates substantial development of critical thinking and problem-solving skills. Gamification is a valuable method for increasing learner engagement and motivation. Learners are placed in situations that require analytical thinking and effective decision-making when they encounter obstacles in a game. This approach encourages critical thinking by teaching learners

how to evaluate information, formulate solutions, and take action based on thoughtful reasoning (Nuraini et al., 2023).

4. A learning flow customized to the learner, gamification allows for a more personalized learning experience. Learners can study at their own pace, and the system can adapt to diverse learning styles and preferences, providing a personalized experience for each learner. Gamification, as an innovative method in education, enables the creation of a more personal learning environment. Learners are allowed to set their own learning pace within this environment, allowing them to adapt to varying levels of information intake. As a result, gamification is not only a tool for boosting student engagement; it also fosters a learning environment that supports individualized learning (Oliveira et al., 2022).

## Discussion

In the digital era, the use of gamification in education has become a necessity that drives the development of a more dynamic and relevant curriculum. Gamification refers to the use of game elements in non-game contexts to enhance learner motivation and engagement. By implementing game elements, such as point and level systems, and incorporating aspects of competition and engaging narratives, gamification can make learning more interactive, enjoyable, and effective (Kresnayana, 2023).

In today's education context, it is increasingly common for teachers or educators to use various methods and media in learning activities. One of these is by incorporating gamification into the learning process. Games can increase student participation in the classroom. The application of a learning model based on blended learning, which combines face-to-face and online sessions (Helsa, 2022), enables the use of gamification in both online and face-to-face learning settings. The benefits of the blended learning model include improved learning outcomes, increased student activity, and enhanced learning motivation. Therefore, it is expected that combining this blended model with gamification can maximize the learning process (Risnawati, 2023).

Gamification can be used as a supporting medium or method in learning. One strategy is to integrate games as supplementary media during lessons. A possible strategy for utilizing gamification in education is to combine conventional learning with game-based elements to train students' skills, such as through game-integrated quizzes, thereby avoiding monotony and creating a more engaging learning experience that motivates students to be more enthusiastic about the learning process (Sodikin, 2023).

## CONCLUSION

Based on the literature review above, gamification in education is an innovative and engaging approach to enhance learning. By incorporating game elements and appropriate strategies, gamification can make learning more interactive, enjoyable, and effective. Its positive impact is evident in the increased motivation, engagement, cognitive abilities, and learner achievement. Therefore, it is important for educators to consider the use of gamification in the learning process.

The use of gamification in education brings positive impacts. With gamification, learners become more motivated, actively engaged, and develop a range of essential skills. The implementation of gamification can also enhance learners' cognitive abilities and learning outcomes, improve their learning experience, and strengthen their problem-solving skills. In addition, gamification enables learning pathways tailored to learners' needs, providing a more personalized and practical learning experience.

One strategy for utilizing gamification in education is by combining conventional learning with game-based methods that are favored by learners. By integrating games as supporting media in the learning process,

learners will be more enthusiastic and actively involved. Moreover, gamification can also be combined with blended learning, which integrates face-to-face and online learning, to optimize learners' learning activities.

## AUTHOR'S NOTE

The author declares that there is no conflict of interest regarding the publication of this article. The author affirms that the data and content of the article are free from plagiarism.

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