

# Gamification Strategy Through Snake Ladder Game

## Systematic Literature Review

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### ABSTRACT

Gamification is a concept that is carried out in order to improve the results of the delivery of information. One gamification strategy that implements the elements of a game into a non-game contexts to resolve the issue with the aim of motivating the user in the process study will examine systematic adaptation of the concept of gamification strategy in learning media, in particular the use of universal games such as snakes systematic literature review and scientific publication articles from 2014 to 2020 regarding gamification strategies in learning using media. This strategy concept for early childhood based on the packaging of game rules, the interface of games and the needs of learning.

**Keywords:** learning early childhood, game snakes and ladders, a literature review

## 1. INTRODUCTION

Developments in information technology have now been influential in public life, especially in the current pandemic at 2020 [1], changes in the form of exchange of information sought utilize technology, one of which is an online application in disseminating information. Applying online in disseminating information, one of which occurs in the world of education as a solution to learning methods during the Covid-19 Pandemic [2]. However, not all online activities can be a fun learning elaborate on gamification strategies in the online learning process. Gamification itself has been widely used as an application in learning. Previous research states that the use of the increase motivation and interest is an important development in learning, so that the gamification strategy will encourage behavior [3].

The exploration of gamification strategies as learning medium has been carried out in several learning situations, such as gamification strategies for the use of interactive multimedia at the high school level through interactive multimedia trials on hydrosphere material, gamification strategies for [4], to gamification strategies for learning animation [5] and foreign language [6], all of which show a significant improvement in learning outcomes. Previous research shows a similarity, that gamification strategies tend to be successfully implemented at education levels. This happens patterns at the primary and secondary education levels in order to

apply the concept of gamification are easier to direct [7]. It triggers a problem on the right gamification strategy review for the lower level objects, namely education to early childhood.

Basically, gamification strategy can be interpreted as a strategy concept based on games, aesthetics and stimulates one's thinking ability, motivates and solves problems in learning at all levels or groups. In addition, gamification strategies can also be interpreted specifically as the use of game media that can increase attractiveness [7] and social participation [8]. Accordingly, at this time of creativity presents the concept of strategygamification in order to meet the needs of a child's learning age early into an urgency.

An important point in the use of gamification strategy is precisely select and adopt a concept of the game which are universal. It is universal in a narrow sense, namely the game is known and commonly known, has easy and common game rules and this game has been widely played at all age levels [9]. The results showed that the game of snakes and ladders is a form of universal game that can be played and adapted in the learning concept [10].

## 2. METHOD

Researchers found the urgency of the research questions whether How the concept of strategy

gamification that adoption in a game of snakes and ladders as a learning media for early childhood to do?

Therefore, then we need a systematic literature review (SLR) on the study of the concept of gamification strategy that adoption in a game of snakes and ladders as a learning medium children aged prematurely [11]. The study will also examine some of the literature that supports the gamification strategy adopted in the game of snakes and ladders as a learning [12] medium for early childhood to increase attractiveness, interaction and understanding.

This study aims to answer “How the concept of strategy gamification that adoption in a game of snakes and ladders as a learning media for early childhood to do?” The author uses a Systematic Literature Review (SLR) to provide a systematic review by synthesizing study results, categorical structures to classify reports and research results that have been published can provide a novelty that is appropriate for adapting the gamification concept to the study from home process during the pandemic. Writing this report involves a process of categorizing the keywords to be used and determining the criteria for inclusion through data extraction and analyzing the literature sourced from conference articles and papers. The source of journals and scientific articles is limited to using the period 2014 to 2020.

**2.1 The Process of Collecting Scientific Articles and Journals**

The literature for this review was obtained from a variety of databases, including Google scholar, Springer, Research gate, ERIC and Science Direct. Certain keywords used to search for articles are (“gamification” or “gamify” or “gamified”) and (“learning media”). Then the author will do an elimination based on duplicate data from the articles obtained with the following scheme in Figure 1.

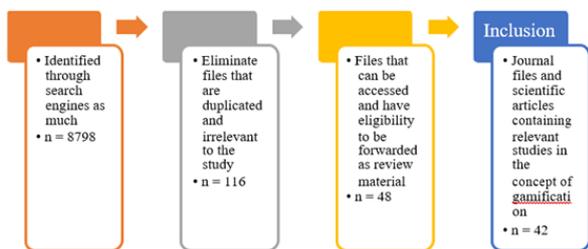


Figure 1 The Process of Selecting Journals and Scientific Articles

**2.2 The Process of Collecting Scientific Articles and Journals**

The identified scientific journals and articles are evaluated and selected based on compliance with the relevance and quality criteria. Evaluating the relevance

and quality of the articles selected in this method using the following limitations:

- The quality of the sample is sufficient to generalize the research findings.
- The Process of Collecting Scientific Articles and Journals.
- Statistical data provide sufficient constrains to enable researcher assessed the effect gamify cation on student learning.
- The study is published in a peer reviewed journal or in the process of a scientific conference as a journal or scientific article.

From 48 journals and articles that have entered the criteria, there are 42 articles and scientific journals that are in accordance with the concept of this research, namely the identities are arranged in Table 1.

Table 1 Data Extraction of Journals and Scientific Articles

No	Search Source	Journal Eligibility	Selected / Relevant Journals
1	Google Scholar	22	20
2	Springer	7	6
3	Research Gate	5	4
4	ERIC	3	2
5	Scient Direct	11	10
	<b>Total</b>	<b>48</b>	<b>42</b>

**3. RESULTS AND DISCUSSIONS**

**3.1 Gamification**

Gamification is a term that is not only limited to using in-game elements to be applied in non-game contexts [13]. However, the term gamification is a combined concept in presenting information through the implementation of games [14] and encouraging users such as feelings of pleasure, behavior to solve problems, motivation, direct feedback and cognitive development [15] through the inserted content. Gamification will illustrate an idea that is not entirely new by adopting from games to be developed to attract interest in several fields, such as education and economics.

Gamification can be implemented in life, because literally playing games is something that has existed in humans since the dawn of civilization and, in particular, recent research has shown that gaming can contribute to faster reactions and also to increase brain activity [16], enabling it. people to live longer and delay dementia [17].The concept of gamification is different from educational games or serious learning. In recent years Gamification has experienced rapid adoption in the sectors of business, education and health. This is driven by its potential to shape user behavior in the desired direction [18].

### 3.2 Strategy Gamification As a Learning Media

Gamification techniques are generally used in education to increase students' motivation and involvement in learning tasks. The involvement of students in the concept of gamification in learning activities can produce better learning outcomes [19]. Gamification can provide positive benefits in education, namely increasing student motivation and involvement in learning activities which will indirectly increase student grade acquisition [20] and influence behavior [21].

Gamification in the education system looks at values from a point perspective and the order in which they reach as levels. Examples of implementing game elements in learning are levels to display participant status, rankings, and progress; challenges and quests where there is something participants need to do to motivate; a competition that allows coaches to perform tasks faster or better; cooperation encourages participants to work together and collaborate for better results [22].

### 3.3 Identification of Journal and Scientific Article Identity

As a first step to approach the SLR on the concept of gamification strategies for teaching children age early, it is necessary to review the data grouping something presentation used. With regard to the categorization of gamification strategies that adopt the game of snakes and ladders as a learning media, it can be identified based on the identity of the journals and scientific articles used.

### 3.4 Gamification Strategies In Education

In order to support the learning process, it is necessary to look again at the appropriate game model / application in adopting gamification in the field of education. Therefore, researchers lowered 31 literature that has a focus on education, into a specific study as follows in Table 2.

The Based on Table 2, it is explained that 58.1% have explained specifically the game used, namely using the snake and ladder game by 25.8%, the use of multimedia in the form of animation by 22.6% and the use of other media, such as the use of Powtoon [20] and others by 9.7%. Meanwhile, outside the data that adopts gamification for education, it also includes gamification in the process of disseminating information adapted to the game of snakes and ladders, at least found in the journal using snakes and ladders to explain disease [33] and the dangers of landslides [35]. As far from the literature review, generally the game of snakes and ladders is used because the rules are much simpler and universal, but so far the use of snakes and ladders is only limited to conventional games such as modification of game boards [27] not digital.

**Table 2 Derivatives of Game Adoption from the Concept of Gamification Based on the Reviewed Journals**

Derivatives of Gamification Adoption in Learning Media	f	%
The use of the snake and ladder game	8	25,8%
Use of multimedia / animation	7	22,6%
Use of other game media	3	9,7%
Not Specifically Explained The Adoption Of Gamification	13	41,9%
<b>Total</b>	<b>31</b>	<b>100%</b>

To answer the research questions, we conducted a concept-focused review that focused on gamification strategies against relevant previous research results by describing gamification strategies affecting certain variables as learning outcomes. The variables that show being influenced by the gamification strategy are variables with the following keywords: (1) attractiveness; (2) interaction or participation; (3) understanding; and (4) motivation. These are grouped into the following Table 3.

**Table 3 Variables That Often Bind in Using Gamification Strategy Concepts**

Affected Variable	f	%
Attractiveness	14	33,3%
Engagement / Participation	6	14,3%
Understanding	17	40,5%
Motivation	5	11,9%
<b>Total</b>	<b>42</b>	<b>100%</b>

These results are an inseparable whole and show that the gamification strategy will have an influence on understanding (40,5 %), attractiveness (33.3%), involvement or interaction of users (14.3%) and motivation. (11,9%). This research shows that gamification strategies have an effect when applied to the context of activities. A correlation upon the success of gamification strategy for using information system design can lead to changes in motivation, attractiveness and understanding.

One of the concepts of the gamification strategy is to provide a challenge and innovation from the use of game media, in order to provide a change in motivation, attractiveness and understanding. Therefore, in adopting this snake and ladder game, the gamification strategy will focus on applying existing design elements by adding an information system design to support an activity goal in the snake and ladder game. This is done in order to provide suitability for users in research, that early childhood.

### 3.5 Gamification Strategy Concept Adopted in Snakes and Ladders Game

The first question in the study was about gamification strategy in the game of snakes and ladders as a media of learning for children. Therefore, based on the previous table it is known, that there are 31 out of 42 literature stating that gamification strategies can be applied in

learning. Then a group slice was carried out and re-elimination based on the suitability of the adoption of the snake and ladder game as a medium for learning or conveying information.

Based on the above data, shown the journals and scientific articles cited a study gamification generally tend to be used for the learning context, as many as 73,8 % libraries and to the context of non-learning by 26.2%. But in both these contexts there is a wedge on gamification strategy adopted by the game of snakes and ladders, which amounted to 23, 8 % of both groups. The remaining 54, 76 % and 21.4% of both contexts applied a gamification strategy without adopting the snake and ladder game, or explaining the adoption of other models. Continuing from the data, the object of adopting a ladder snake is presented in Table 4.

**Table 4 Group of Objects for Users of the Snake and Ladder Game**

Object	f	%
Specifik Children	2	20%
Teen Specific	4	40%
Adult Specific	1	10%
Used all ages	3	30%
Total	10	100%

The adoption of the snake and ladder game is a common thing and according to the gamification strategy in solving problems in the age group as user objects. Based on the elimination of journals and their groupings, it is stated that 40% of research dominates the gamification strategy by adopting the game of snakes and ladders which are mostly done at the adolescent level, including as a learning medium for certain materials [9], [14]. However, the adoption of the game of snakes and ladders as a gamification strategy can also be carried out in children (20%) and all ages (30%), therefore it is also possible that the gamification strategy to adopt the game of snakes and ladders can be done in early childhood, such as providing introductory content on the dangers of tuberculosis [33] and other content, for example the Covid-19 Pandemic.

The gamification strategy which later adopted a universal game was to use the game of snakes and ladders. The analysis of this is that the simplicity of the rules for playing snakes and ladders is an advantage and a challenge to develop newness when improvising the game. The reason for choosing the game of snakes and ladders is that the game rules are universal (known to many people) and have moral values [31] when presented as a learning medium, it will turn learning into fun and have challenges/goals [13]. In this section, the concept of gamification can be adapted into a game that will be “entered and accepted” [43].

One of the novelties of the entire journal reviewed is not to mention the digital game of snakes and ladders, but rather as conventional games and board games. The

object of this game of snakes and ladders also tends to be subjects, such as medical introduction [9], social knowledge [10], mathematics [34] to English [11] and only a few try to make snakes and ladders a medium of information on a potential non school learning.

Research with the concept of gamification will have the potential to provide three psychological benefits, namely cognitive, emotional and social [42], so that it can increase players’ motivation in learning the implied meaning of a game [14], [41], especially if the implementation of a game is added by a challenge in the form of a separate reward [28] will be a special attraction [39]. The game of snakes and ladders itself has the purpose and meaning of competition, where the game will provide an approach by giving both virtual and non-virtual rewards that can encourage someone to do “more” than others. So that in this study a state of art can be recommended, which is to use the concept of a gamification strategy for education based on the digital snake and ladder game to support learning.

**4. CONCLUSION**

This study reveal gamification appropriate strategy to be adopted through the game of snakes and ladders for children age prematurely. It is hoped that the results of this literature review can be used as a reference for further research on gamification strategies, especially in the field of learning.

The conclusion from the first research question, is that the use of the gamification strategy adopted in the game of snakes and ladders as a learning medium for early childhood is appropriate and can be implemented, considering the adoption of the use of the snake and ladder game as a learning medium is 23.8% of the gamification strategy for learning. 73.8%. The snake and ladder game itself is specifically intended for early childhood because the data shows that 30% of snake and ladder games can be enjoyed by all age levels and 50% for children including early childhood.

The conclusions of the second question is the strategy that adoption gamification in the game of snakes and ladders as a medium of learning for children ages early can increase the attractiveness, interaction and understanding. Results SLR concept of strategy gamification to adoption in the use of snakes and ladders game can successively convey understanding (40, 5 %), changes in the appeal (33.3%) and involvement (14.3%) in the learning process. It takes a kebararuan to innovate and gave an improvised game of snakes and ladders in order to increase the attractiveness of the time devoted early chilhood.

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