Journal of Educational Sciences
Journal homepage: https://jes.ejournal.unri.ac.id/index.php/JES

P-ISSN 2581-1657
E-ISSN 2581-2203

# The Influence of Game-Based Learning Models on Reading Literacy Skills of Fourth Grade Students at SDN 24 North Rabangodu, Bima City

**Asti Adriani*, Anggih Tri Cahyadi, Nunung Fatimah**
*Pendidikan Guru Sekolah Dasar, STKIP Taman Siswa Bima, Bima, 84117, Indonesia*

**ARTICLE INFO**

*Article history*:

Received: 02 Aug 2025
Revised: 10 Aug 2025
Accepted: 03 Sept 2025
Published online: 10 Sept 2025

*Keywords:*

Reading Literacy,
Game-Based Learning,
Elementary School Students,
Reading Comprehension

* *Corresponding author:*

E-mail: astiadriani77@gmail.com

*Article Doi:*

https://doi.org/10.31258/jes.9.5.p.3581-3589



**A B S T R A C T**

This study aims to analyze the effect of a game-based learning model on the reading literacy skills of fourth-grade students at SDN 24 Rabangodu Utara, Bima City. The research was motivated by the low reading literacy levels of students, as indicated by poor text comprehension, slow reading speed, and limited vocabulary mastery. A pre-experimental method with a one-group pretest-posttest design was employed. The subjects were 18 students who took reading literacy tests before and after the implementation of a snakes and ladders game-based learning medium. Data were collected through tests, observation, and documentation, then analyzed using the Shapiro-Wilk normality test and paired sample t-test. The results showed a significant improvement in reading literacy scores, from an average of 63.56 in the pretest to 81.33 in the posttest ($p < 0.05$). Game-based learning proved effective in enhancing students' participation, motivation, and reading comprehension. This strategy is recommended as an alternative for literacy learning in primary schools and can be developed for other literacy aspects through digital media integration.

## 1. Introduction

Education in the 21st century demands learning that not only imparts knowledge but also develops students' critical thinking, creativity, collaboration, and communication skills. Indonesia's independent curriculum demands learning that focuses on project-based approaches, collaboration, and the use of interactive media (Wulandari & Hasim, 2025; Yuliani & Hartono, 2024). However, many teachers still use conventional methods such as lectures and note-taking, which result in a lack of student participation and active engagement (Nabila & Corry, 2024; Rafli et al., 2024). This situation necessitates innovative learning strategies that can increase student participation, motivation, and learning outcomes.

One method that is widely recommended is Game Based Learning (GBL), which is a method that applies games to the learning process, thus creating a challenging, interactive, and enjoyable experience (Putri et al., 2024; Zahra & Prasetyo, 2024). This method facilitates students to actively engage, collaborate, and develop critical thinking skills through challenges and feedback provided by both teachers and students (Nursaidah, 2024; Ricky, 2024). There are many studies that prove that GBL can improve student learning outcomes, social skills, and student motivation in various subjects, from science, social studies to civics (Handayani, 2024; Yuliani & Hartono, 2024). Another advantage of GBL is its ability to create a competitive yet collaborative learning atmosphere, thereby creating student enthusiasm.

In the context of learning about the socio-cultural diversity of society, the application of GBL is relevant because it is able to provide contextual learning experiences and motivate students to understand and appreciate the differences that exist in the environment (Putri et al., 2024; Handayani, 2024). Through the designed game media, students not only understand the material but also internalize the values of tolerance, cooperation and empathy towards cultural diversity (Zahra & Prasetyo, 2024; Rafli et al., 2024). Based on this, this study aims to examine the effect of the application of the Game Based Learning model on student learning outcomes in the material on the socio-cultural diversity of society.

The use of innovative teaching models, such as Project-Based Learning (PjBL), supported by interactive media, also has significant positive effects. The use of digital learning tools like Quizizz in the PjBL model significantly improves students' critical thinking skills, provides a calm learning environment, and encourages their active participation in the learning process (Holida & Rusmansyah, 2022).

Various studies have shown that game-based learning can be optimized through integration with guided inquiry models. The application of game-based guided inquiry, Educaplay, to geography material significantly improves critical thinking skills and student learning outcomes (Shakira & Pertiwi, 2025). These results align with findings confirming that combining learning models that encourage structured discovery with educational games can engage students, facilitate in-depth analysis, and help them draw logical conclusions (Purnama et al., 2022; Rambe et al., 2020). Media such as Educaplay allow teachers to tailor game content to learning objectives, making the learning process more interactive and meaningful (Purnama et al., 2022).

Game-based learning also has a significant impact on students' motivation, social interaction, and affective development (Nurdian, 2023). In early childhood education (PAUD), this method significantly increases children's engagement, enthusiasm, and cooperation, including skills such as sharing, empathy, and queuing (Nurdiana, 2023). These findings align with research examining the improvement of teamwork skills through educational games (Handayani & Indrawati, 2019; Kurniawan & Lestari, 2021). In fact, gamification elements, such as levels, points, and prizes, can stimulate students' intrinsic motivation at all levels of education (Saputra & Wijaya, 2022).

The use of digital media such as Educaplay provides a new dimension to the implementation of Game-Based Learning. Educaplay can provide a variety of interactive activities, from quizzes to memory games, tailored to the needs of the material (Sepriyanti et al., 2024). This media is also effective in improving essay writing skills in a play-while-learning approach (Batistuta & Hardiana, 2024). Furthermore, the dynamic visual and audio formats in digital platforms strengthen conceptual understanding and maintain student focus. The feedback provided can help students quickly identify errors, thus accelerating the process of game improvement (Dewi et al., 2023).

These findings confirm that interactive media-assisted Game-Based Learning has significant potential for application in socio-cultural diversity learning (Maharani & Fitriani, 2022; Damayanti & Prasetyo, 2020). This material not only requires mastery of cognitive knowledge but also fosters tolerance and the ability to interact across cultures (Maharani & Fitriani, 2022). Educational games based on local culture can help students understand diversity through direct experience (Damayanti & Prasetyo, 2020). Meanwhile, the contribution of games to fostering mutual respect is also crucial. By integrating local context into educational game design, socio-cultural diversity learning can be more contextual and shape students' character (Rahayu & Hidayat, 2021).

Furthermore, the educational model utilizes the Snowball Throwing method, combined with a Rolling Ball Game. This medium can increase student motivation to learn. This demonstrates that integrating participatory learning and models is crucial for creating an engaging and effective learning environment in the digital age (Putri & Ginanjar, 2025). Based on this background, the researcher is interested in conducting a study entitled "The Effect of Game-Based Learning Models on Reading Literacy Skills of Grade IV Students at SDN 24 Rabangodu Utara, Bima City".

## 2. Methodology

This study was conducted using a quasi-experimental method with a one-group pretest-posttest design. In this study, only one class was used, namely one group of students was given an initial test (pretest), then given treatment using a game-based learning model, after which a final test (posttest) was given to determine differences in students' reading literacy skills before and after being given treatment. References for observing students' reading literacy skills were primarily based on those presented in Table 1.

Table 1. Research Design

| **Pre-test ($O_1$)** | **PTreatment (X)** | **Post-test ($O_2$)** |
|---|---|---|
| $O_1$ | X | $O_2$ |

From Table 1, $O_1$ is a pretest in the form of a questionnaire where students learn without a game-based learning model, X is the treatment of using a game-based

learning model, and $O_2$ is the administration of a posttest to one group of students. The subjects used in this study were 18 fourth-grade students of SDN 24 Rabangodu Utara, Bima City, with the sampling technique used being a saturated sample. The researcher used a saturated sample approach where the sampling approach was to use all members of the population as samples.

This study used written statements (questionnaires) to collect data regarding students' learning motivation. The researcher conducted direct observations at SDN 24 Rabangodu Utara, Bima City, focusing on the Indonesian language learning activities of fourth-grade students during the learning process. To assess students' reading literacy skills, a questionnaire was administered. The collected data were then used to answer the research problem formulation. After the data were collected, they were analyzed through normality tests and hypothesis testing.

Before the normalization test is conducted, a validity test is first conducted. The validity test is conducted to ensure that the questionnaire instrument used can accurately measure students' reading literacy skills. In this study, the validity test was conducted in one class by distributing a questionnaire developed based on relevant reading literacy ability indicators. After all students completed the questionnaire, the data obtained were analyzed using the Pearson Product Moment correlation method with the help of the SPSS model 26 program. A test item is considered valid if it has a significance value (Sig.) of less than 0.05 and shows a strong correlation with the overall score. Test items that do not meet these criteria are revised or removed to improve the precision and accuracy of the instrument.

After the validation system is complete, the next step is to conduct a reliability test to assess the internal consistency between the items in the questionnaire. The reliability test in this study uses the Cronbach's Alpha method which is then analyzed using SPSS version 26. An instrument is said to be reliable if the Cronbach's Alpha value exceeds 0.60, indicating that the items in the questionnaire have an acceptable level of consistency. Based on the measurement results, all statements whose validity was tested also showed a high reliability value, indicating that the instrument is suitable for measuring students' reading literacy abilities.

After the validity and reliability of the instrument were confirmed, the data were then tested for normality and hypothesis testing. A normality assessment was conducted to determine whether the pre-test and post-test data were normally distributed, which is a prerequisite for selecting an appropriate statistical method. In this case, the Shapiro-Wilk test was used, as it is more suitable for small to medium sample sizes ($n < 50$). Data were considered normally distributed if the significance value (p) exceeded 0.05. The testing criteria were as follows:

a. Data is considered normally distributed if the p-value (sig.) is greater than 0.05.
b. Data is not normally distributed if the p-value (sig.) is below 0.05.

If the data meets these assumptions, hypothesis testing is continued using a paired sample t-test, as this study uses a One Group Pretest-Posttest design, where data are

paired (from the same group before and after treatment). This test aims to determine whether there is a statistically significant difference between the average pretest and posttest scores after the implementation of the learning media. The criteria for the paired sample t-test are as follows:

a. H0 is rejected and H1 is accepted if the 2-tailed significance value is > 0.05, which indicates a significant difference between the periods before and after treatment.
b. H0 is accepted and H1 is rejected if the 2-tailed significance value is <0.05, which indicates no significant difference between the pre- and post-treatment periods.

## 3. Results and Discussion

This snakes and ladders media is an educational game to train students to read in stages: (1) Blue (Beginning): simple letters & syllables. (2) Green (Words & Sentences): vocabulary and short sentences. (3) Yellow (Paragraph): short reading & simple questions. (4) Red (Story): complete story & content questions. The game is played with dice, pawns, snakes, and ladders. Students read according to the color of the box they occupy. Correct = continue / go up the ladder, wrong = go down / get hit by the snake. The goal is to make learning to read more exciting active, and gradual. The snakes and ladders media can be seen in Figure 1.

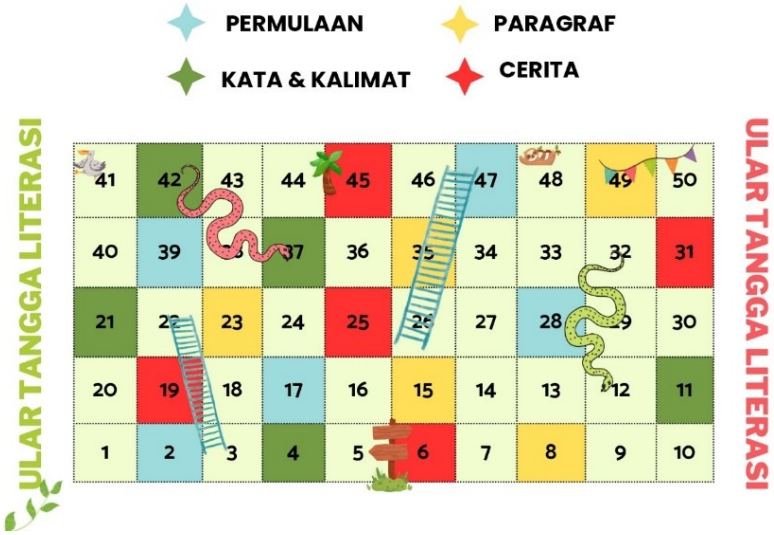


Figure 1. Learning Media based on the Snakes and Ladders Game

In the first meeting, the learning process was conducted conventionally without media, resulting in students appearing passive and unenthusiastic. In the second meeting, the teacher implemented a game-based learning media, Snakes and Ladders, which directly increased student engagement. Students became more active, motivated, and enthusiastic in learning, and the classroom atmosphere became more lively and collaborative. The use of game-based learning media has

proven effective in capturing students' attention and increasing their reading motivation.

### *Pretest and Posttest Scores*

A pretest and posttest were administered to 18 students at SDN 24 Rabangodu Utara, Bima City. To determine their initial reading literacy skills, a pretest was administered to students before treatment, followed by a posttest. Pretest and posttest data were obtained from a reading literacy skills questionnaire consisting of 14 statements using a Likert scale with the following answers: Strongly Agree (SS), Agree (S), Disagree (TS), and Strongly Disagree (STS).

Based on the results of statistical analysis, it can be seen that there is a significant difference between the pretest and posttest scores of students' reading literacy abilities after the application of snakes and ladders game-based learning media. This can be seen from the comparison of the average values that show a significant increase. The average value of learning motivation before treatment (pretest) was 63.56, while after treatment using snakes and ladders game-based learning media (posttest), the average value increased to 81.33. The results of the pretest and posttest in the diagram show a significant increase after the application of the treatment. It is known that the average value of students' reading literacy abilities before using snakes and ladders game-based learning media was 63.56, while after using snakes and ladders game-based learning media increased to 81.33. This indicates an increase in students' reading literacy abilities after the application of snakes and ladders game-based learning media. Can be seen in Table 2.

Table 2. Descriptive Statistics of Pretest and Posttest Results

| Statistics | Pretest | Posttest |
|---|---|---|
| N | 18 | 18 |
| Mean | 63.56 | 81.33 |
| Median | 62.00 | 82.00 |
| Mode | 60.00 | 85.00 |
| Standard Deviation | 5.87 | 4.91 |
| Minimum Value | 55.00 | 74.00 |
| Maximum Value | 72.00 | 88.00 |

### *Normality Test Results*

The normality test is a statistical procedure used to determine whether a variable's data is normally distributed. To see the data in a normally distributed state, see Table 3.

Table 3. Normality Test Results

| Variabel | N | Sig | Distribusi Data |
|---|---|---|---|
| Pretest | 18 | 0.143 | Normal |
| Posttes | 18 | 0.098 | Normal |

Based on the Shapiro-Wilk test conducted using SPSS version 26, the significance value was 0.143 for the pretest and 0.098 for the posttest. These values are greater

than the 0.05 significance level, so it can be concluded that the data are normally distributed. Thus, the assumption of normality is met, and the analysis can be continued using the parametric paired sample t-test. Table 3 above shows that the pretest and posttest data are normally distributed, because the Sig value is each > 0.05. This meets the requirements for using parametric tests such as the t-test. Once the assumption of normality is met, statistical analysis can proceed using the parametric paired-sample t-test, which requires normally distributed data. The consistent distribution of pretest and posttest scores indicates that changes in students' reading literacy skills can be validly analyzed using this method. This supports the validity of the hypothesis test results, as one of the main assumptions of the t-test has been met.

### *Hypothesis Test Results*

Hypothesis testing in this study used a paired sample t-test, because the research design used was a One Group Pretest-Posttest design, where the compared statistics were obtained from the same group of students under different conditions before and after the implementation of the snakes and ladders game-based learning media. The purpose of this test was to determine whether there were differences in students' reading literacy ability scores before and after the implementation of the snakes and ladders game-based learning media. The assumption of normality has been met with the help of the Shapiro-Wilk test results, which allows the use of this parametric test to be carried out. The following are the results of the processed data analysis presented in Table 4.

Table 4. Hypothesis Test Results

| Variabel | t-hitung | df | Sig |
|---|---|---|---|
| Pretest & Posttest | -10.456 | 17 | 0.000 |

A significance value of 0.000 < 0.05 indicates that there is a significant difference between the pretest and posttest results. Thus, $H_0$ is rejected and $H_a$ is accepted, which means that the use of game-based learning models has a significant influence on students' reading literacy skills. The real benefit of this approach is the creation of a more dynamic learning environment with minimal boredom. This provides a solution to previously identified problems, namely monotonous learning and minimal interaction. With GBL, teachers can provide challenges and feedback directly during the learning process.

Furthermore, this model also improves students' social skills by involving discussion, collaboration, and communication within teams while playing the game. This is relevant to literacy indicators, which encompass not only text comprehension but also the ability to interact and express ideas (Harahap et al., 2022). The implementation of the GBL model also demonstrates flexibility in learning design, as it can be adapted to various topics and levels. Going forward, this approach could be adopted more widely as part of innovative Indonesian language learning.

## 4. Conclusion

Based on the results of the paired sample T-test, it shows a significance value of 0.000, which is smaller than 0.05 (0.000<0.05), so it can be concluded that there is a significant difference between the learning motivation of elementary school students before and after using Wordwall learning media. The average difference value (mean difference) of 17.77 indicates that the score of students' learning motivation after using Wordwall learning media increased significantly compared to before being given treatment. Thus, the use of snakes and ladders game-based learning media has been proven to have a significant effect on improving students' reading literacy skills in the Indonesian language subject for grade IV elementary school.

## References

Batitusta, F. O., & Hardinata, V. (2024). The effect of implementing gadget-based Educaplay educational games on essay writing learning outcomes. *Jurnal Pendidikan*, 7, 2685–2690.

Damayanti, V., & Prasetyo, B. (2020). Game-based learning in early childhood education: An analysis. *Jurnal Inovasi Pendidikan*, Surabaya.

Handayani, H. (2024). The application of game-based learning in social studies learning to improve students' collaboration skills. *Jurnal Naradidik*, 19, 167–176.

Handayani, T., & Indrawati, S. (2019). The use of games to improve gross motor skills in early childhood education. *Jurnal Pembelajaran Anak Usia Dini*, Semarang.

Holida, R., & Rusmansyah, R. (2022). The effect of project-based learning model integrated with game-based learning in students' learning development: A review of recent literature.

Kurniawan, D. A., & Lestari, S. (2021). The effect of outdoor games on gross motor skills in early childhood. *Jurnal Ilmu Pendidikan*, Palembang.

Maharani, R., & Fitriani, L. (2022). Game-based learning as an approach to early childhood education. *Jurnal Pendidikan Anak*, Balikpapan.

Nabila, O. N., & Corry, L. (2024). The effect of Classpoint-based game-based learning model on students' activeness in history learning at SMA Mahardika Surabaya. *AVATARA, e-Journal Pendidikan Sejarah*, 15(3), 1–12.

Nur Saidah, Rangkuti. (2024). Implementation of the game-based learning model to improve student learning outcomes. *Jurnal Pendidikan dan Pembelajaran*, 13(1), 45–55.

Nurdiana, R. (2023). The use of game-based learning methods to improve gross motor skills in early childhood education. *Thufuli: Jurnal Pendidikan Islam Anak Usia Dini*, 1(2), 53–58.

Purnama, D., Suryani, N., & Suardana, I. (2022). The effect of using educational games on student engagement and critical thinking skills. *Jurnal Pendidikan dan Teknologi Pembelajaran*.

Putri, D. A. S., & Ginanjar, A. (2025). The effect of Snowball Throwing learning model with Rolling Ball Game media on students' learning motivation in online-based social studies learning in class VIII SMP N 33 Semarang. *JISSE: Journal of Indonesian Social Studies Education*, 3(1), 18–26.

Putri, N. A., Muzayanah, & Daru, S. A. (2024). The effect of game-based learning on learning outcomes in social and cultural diversity. *Journal of Education Research*, 5(3), 3723–3730.

Rafli, A. P., Julianto, E. I. C., Rizka, L. F., & Hidayati, F. (2024). The effect of game-based learning on social studies learning outcomes of junior high school students. *Jurnal Pendidikan Ilmu Pengetahuan Sosial*, 10(2), 123–132.

Rahayu, S., & Hidayat, T. (2021). Game-based learning methods in improving gross motor skills of early childhood. *Jurnal Pendidikan Usia Dini*, Cirebon.

Rambe, Y. A., Silalahi, A., & Sudrajat, A. (2020). The effect of guided inquiry learning model and critical thinking skills on learning outcomes. *Proceedings of AISTEEL*, 488, 151–155.

Ricky. (2024). The effectiveness of using game-based learning in improving students' learning motivation. *Jurnal Teknologi Pendidikan*, 8(4), 210–218.

Shakira, W., & Pertiwi, M. D. (2025). The effect of guided inquiry learning model assisted by Educaplay games on critical thinking and learning outcomes in geography for class X students of SMA N 3 Bukittinggi. *Pendas: Jurnal Ilmiah Pendidikan Dasar*, 2(10), 290–298.

Wulandari, P., & Hasim, W. (2025). The effect of digital-based game-based learning on reading literacy of elementary school students. *International Journal of Education and Social Science*, 12(1), 488–496.

Yuliani, A., & Hartono, S. (2024). The effect of game-based learning on student learning outcomes in PPKn subjects in elementary school. *Jurnal Ilmiah Pendidikan Dasar*, 9(2), 233–245.

Zahra, M. L., & Prasetyo, A. (2024). The application of game-based learning to improve science learning outcomes in junior high school. *Jurnal Inovasi Pendidikan Sains*, 14(1), 77–86.

How to cite this article:

Adriani, A., Cahyadi, A. T., & Fatimah, N. (2025). The Influence of Game-Based Learning Models on Reading Literacy Skills of Fourth Grade Students at SDN 24 North Rabangodu, Bima City. *Journal of Educational Sciences*, *9(5)*, 3581-3589.