Jurnal Ilmiah Mandala Education (JIME)
Vol 11 No. 4 Oktober 2025
p-ISSN : 2442-9511, e-2656-5862
DOI: *10.58258/jime.v11i4.9306/http://ejournal.mandalanursa.org/index.php/JIME*

Analysis of the Application of Game-Based Learning Methods on Students' Mathematics Learning Outcomes in Grade V of SDN 2 Bentek in the 2024/2025 Academic Year

Tiratul Aini[1], Nunung Mardianti[2], Tuti Alawiyah[3]
[1.2] Pendidikan Guru Sekolah Dasar (PGSD) STKIP Hamzar
[3] Pendidikan Anak Usia Dini (PAUD) STKIP Hamzar

Article Info

Article history:
Accepted: 13 August 2025
Publish: 2 October 2025

Keywords:
Game-Based Learning Method
Mathematics Learning,
Learning Outcomes.

Abstract

This study focuses on analysing the application of game-based learning methods in mathematics learning in fifth grade elementary school. In addition, this study also aims to identify factors that influence the effectiveness of applying game-based learning methods in mathematics learning and to describe the impact of applying game-based learning methods in improving mathematics learning outcomes. The research method used is qualitative research with a descriptive type and employs the Miles and Huberman design model.The research results indicate that the implementation of Game-Based Learning (GBL) in mathematics education has proven effective in enhancing student engagement and learning outcomes. This approach aligns with Csikszentmihalyi's Flow Theory and Piaget-Vygotsky's Constructivism Theory, where learning through games fosters full engagement and deeper conceptual understanding. The implementation of Game-Based Learning through *systematic stages—from planning, preparing materials, conducting interactive activities, to reflection—successfully creates a enjoyable and meaningful learning environment. Indicators of success include students' ability to connect abstract concepts with games, increased group participation, and positive student responses. However, its effectiveness heavily depends on time management, availability of teaching materials, student enthusiasm, and adequate facilities and resources. The positive impact of the game-based learning method is evident in increased motivation, activity, and understanding of mathematics among students, while also developing logical and collaborative thinking skills. Although it requires extra preparation regarding media and time, its benefits in creating interactive and contextual learning make the game-based learning method an innovative alternative. For optimization, teachers need to adapt this method to classroom conditions and address its weaknesses through careful planning. Thus, the game-based learning method can be applied as a dynamic mathematics learning strategy, especially at the elementary school level, to achieve effective and memorable learning outcomes.*

Corresponding Author:
Tiratul Aini
STKIP Hamzar

1. INTRODUCTION

Hamid (2013) stated that education plays a crucial role in human existence and constantly adapts to changing times. Amidst the flow of information accessible to students in the industry 5.0 era, educators must implement creative and efficient teaching methods. The education system continues to evolve over time, so innovation in the world of education is essential to improve the quality of education. Education in this ever-evolving era demands innovation in the teaching process, one example of which is the application of methods used by teachers to facilitate learning activities in the classroom.

According to Santoso (2021), technology-supported education can be implemented by utilizing tools such as mobile learning applications and online learning platforms. This can help students learn independently and improve the efficiency of the learning process.

According to Hasriadi (2022) in his article regarding learning methods that can be implemented in accordance with current developments, such as: *Flipped Learning* Methods is a learning approach that can be applied in online teaching and learning activities. The *Blended Learning* method is an innovative learning method that can integrate us into the face-to-face learning process or *online*. *E-Learning* Method is a new, creative method that can be applied to learning, the basis for using technology and communication and learning methods that encourage students to be more active in the learning process than teachers.

Mathematics, as a basic subject, is often feared by students because it is considered difficult and boring. Consequently, students feel uninterested and unmotivated in learning mathematics. A study by Ayu et al. (2021), "Analysis of Factors Causing Difficulties in Learning Mathematics," found that students face three difficulties in learning mathematics: difficulty understanding concepts, difficulty with arithmetic skills, and difficulty solving problems.

Many students, especially those in elementary school, often struggle to grasp mathematical concepts. This is due to conventional and unengaging learning methods, which can leave them bored and unmotivated.

According to Susanti et al. (2024), the use of less engaging methods leads to a lack of interest in learning, and students become easily bored during the learning process. Monotonous methods can lead to students becoming easily bored and less interested in learning. Therefore, innovative and engaging learning methods are needed to increase student interest and motivation in learning mathematics. One alternative method that can be used is the interactive *game-based learning* method.

Game-Based Learning (GBL) is an innovative approach that can increase student interest and learning outcomes through game-based learning. Through the use of games as a learning medium, the *game-based learning* method provides a fun and effective learning experience with elements of challenge, interaction, and reward.

Anggraini et al., (2021) stated that the *game-based learning* method has advantages, namely helping understanding of the subject, motivating student involvement, fostering a positive learning environment, providing enthusiasm for learning, and encouraging direct and active students' interaction. *Game-based learning* designed to create a fun and interesting learning environment, so researchers want to examine its impact on the learning outcomes of fifth grade elementary school (SD) students.

Based on the results of initial observations at SDN 2 Bentek, it is one of the schools that applies the *game-based learning* method to improve mathematics learning outcomes. This can be seen in the learning process, which often uses play methods.

This was also conveyed by Mrs. Handini Ari Astiti S.Pd as a Mathematics teacher at SDN 2 Bentek, *game-based learning* method applied to mathematics subjects. The response or feedback from students was very good and positive, even very enthusiastic in the learning process after the method was applied *game-based Learning*.

Based on the background description, the researcher chose the title "Analysis of the Application of the *Game-based Learning* Method on the Mathematics Learning Outcomes of Students in Grade V of SD Negeri 2 Bentek"

2. MATERIALS AND METHODS

According to Setyosari (2010), qualitative research is research that uses observation, interviews, content analysis, and other data collection methods to present responses from subjects. This type of research is descriptive research with a case study method, where the researcher will describe in detail the process of implementing the research on *game-based learning* and students' learning outcomes in mathematics.

According to Creswell (2007), a case study is a research approach used to understand a problem or issue using a case study. Examples of cases include an event, activity, process, individual, or group. The purpose of a case study is to understand the problem in depth. Researchers need to investigate and explore one or more cases over a specific period of time and collect data from various sources (interviews, observations, reports, and documentation).

This research was conducted at SDN 2 Bentek, located in Karang Lendang Hamlet, Bentek Village, Gangga District, North Lombok. The research began in the even semester of the 2024/2025 academic year.

The data sources in this study are primary data and secondary data. The primary data in this study is data on the application of the *game-based learning* method on students' mathematics learning outcomes at SDN 2 Bentek. Meanwhile, secondary data in this study is additional data that is still related to the primary data, such as supporting factors in the application of the *game-based learning* method on students' mathematics learning outcomes at SDN 2 Bentek. Primary data, namely Grade V teachers, Principals and Grade V students. While secondary data were obtained from written documents and photo documents of activities. The data collection techniques used are:

a. Observation

Based on its purpose, observation is defined as a data collection technique that relies on direct or indirect sensing of the object being studied. This allows the resulting data to be descriptive *setting* research, subjects, events and the meanings conveyed by participants. In this study, the researcher used participant observation techniques (*complete participant)* where in this study the researcher acts as an observer who is generally known by the research subjects (Sutikno P.H. Sobry, 2020)

b. Interview

An interview is a method used to gather information directly with an informant face-to-face to obtain complete and in-depth data. This means the informant is free to answer questions completely and in-depth, leaving nothing to hide. This method aims to make the interview feel like a conversation (Arsianto, 2011).

c. Documentation

Documentation is a method of collecting data for use in social research methodology in researching historical data, in the form of documentation data in the form of letters, memories and reports as well as diaries.

Data analysis in qualitative research is a systematic process for organizing field notes collected from interviews, observations, and other sources. The data analysis used in this study includes: data collection, data reduction, data presentation, and drawing conclusions.

In research, checking the validity of data is crucial and can be done through triangulation techniques. The triangulation techniques used in this study include data source triangulation, technical triangulation, time triangulation, and member checking.

3. RESULTS RESEARCH FINDINGS

1) Application of *Game-based Learning* Method in Mathematics Learning in Class V SDN 2 Bentek.

Based on the results of observations and interviews conducted in class V of SDN 2 Bentek, the application of the *Game-based Learning* method in mathematics learning has been proven effective in increasing student enthusiasm and engagement. Of the 23 students, positive responses were seen, including enthusiasm, enjoyment, and active participation in completing tasks or game challenges designed by the teacher.

On the other hand, students showed increased motivation and understanding of the material through games. They were able to connect mathematical concepts to game activities, complete challenges, and provide positive feedback on this method. Teachers conducted reflections with students to evaluate the learning.

2) Factors Affecting the Effectiveness of Method Implementation *Game-based Learning* in Mathematics Learning

Factors that can influence effectiveness in mathematics learning are divided into 4 factors, including: a. When managing time for implementing game methods during the learning process, teachers must be able to optimize the management of time or game duration so that learning planning and objectives can be achieved. b. Materials *game* is one of the factors that can influence the effectiveness of the application of the game-based learning method because sometimes the time needed in the game has been adjusted, but because of the enthusiasm of students in working on the questions given by the teacher in a short time, the material can be...*game* The provided time runs out but the allotted time is still remaining, causing the game to end sooner than the allotted time. c. Student enthusiasm and readiness can be seen from several students who work on the questions given with enthusiasm and enthusiasm so that they finish quickly and there are also students who take a little longer to finish so that the time in the game can increase or decrease. d. The last factor is the availability of facilities and infrastructure *for games* because in implementing *games, the* media needed that supports the game implementation process must be provided by the teacher in advance so that the learning process can run according to the established plan.

4. DISCUSSION

1) Application of *Game-based Learning* Method in Mathematics Learning in Class V SDN 2 Bentek.

In the process of learning mathematics that applies the *game-based learning* method, one type of *game.* The game used is the "Market Day" type. Market Day is a learning game grouped based on its mechanism because the market day game activities mimic buying and selling activities or transactions. According to Amri et al. (2023), the Market Day Project is a project-based learning model that involves students in a real market simulation, where they learn about mathematical concepts such as prices, money, comparisons, and others through practical experience.

On the student side, there was an increase in motivation and understanding of the material through games. They were able to connect mathematical concepts with activities in *game,* completing challenges and providing positive feedback on this method. Teachers also manage time effectively and reflect with students to evaluate learning.

2) Factors Affecting the Effectiveness of Method Implementation *Game-based Learning* in Mathematics Learning

Based on the results of observations and interviews with teachers, there are several factors that influence the effectiveness of implementing the *game-based learning* method in mathematics learning. These factors include: a). Time management is one of the factors that influences the effectiveness of learning because the duration of the game must be adjusted to the time needed for an effective game, which is around 30 minutes. This is in line with Oktavia (2022) who stated that one of the advantages of *game-based learning*, among others: Increasing effectiveness in learning. b). Materials *Game* also includes factors that influence the effectiveness of the application of the *game* method because the availability of game materials must be sufficient so that the game activity does not end prematurely. This is in accordance with Oktavia (2022) one of the advantages of *game-based learning*, among others: Increasing effectiveness in learning. c). Student enthusiasm and readiness are factors that influence the implementation of the game method, this is caused by differences in student enthusiasm and speed in completing tasks which can affect the flow of the game.

In line with this, Nina Ninthya (2024) stated that one of the impactful factors is that interactive teaching methods can encourage active student participation. Based on a literature review, a learning approach that emphasizes games has proven successful in increasing student engagement and enthusiasm by utilizing fun, competitive, and interactive

game aspects. d). Facilities and infrastructure can influence the effectiveness of implementing game methods in the mathematics learning process; therefore, the application of game methods requires adequate learning media to attract student interest.

Taking into account the above factors, the application of the *game-based learning* method can be more effective in increasing students' motivation and understanding in learning mathematics if teachers can address the factors that influence the application of the *game-based learning* method.

4. CONCLUSION

Based on the results obtained from the research at SDN 2 Bentek and the discussion, the following conclusions can be drawn:

1) Application of *Game-based Learning* Method in Mathematics Learning in Class V SDN 2 Bentek.

Application of the *Game-based Learning* (GBL) method consists of several stages, namely: Preparation: the teacher chooses a game according to the material, the number of students in the class and determines the duration or time needed to implement *game.* Next, the teacher creates a teaching module before the math lesson. Media Use: The teacher prepares the media and materials of the game needed in applying the *game-based learning* method, for example laptops, picture cards, and other media. Implementation of Game Market Day: the application of the game method in mathematics learning begins from the beginning with the teacher explaining the rules of the new game after which the game begins until it ends, guided by the teacher. Evaluation: at the end of the game, the teacher will evaluate the results of the students' work by correcting the students' work individually.

2) Factors Affecting the Effectiveness of Method Implementation of *Game-based Learning* in Mathematics Learning.

There are several factors that can influence the effectiveness of implementing the *game-based learning* method in mathematics learning, among others: a). Time management: the duration of the game must be appropriate so that planning and learning objectives can be achieved. b). *Game* Materials: availability of game materials or *game* materials must be adequate so that the game activity does not end before the specified time. c). Student enthusiasm and readiness: differences in student enthusiasm and speed in completing can affect the flow of the game. d). Readiness of facilities and infrastructure of *game:* in the application of the method *game,* requires adequate media.

5. ACKNOWLEDGEMENTS

Thank you to the entire extended family of SDN 2 Bentek who have given the researcher the opportunity to carry out this research and to the entire academic community of STKIP Hamzar who always support this research.

7. BIBLIOGRAPHY

A. Fauzi & N. Indriyani, (2022), Penerapan Permainan Lego dalam Pembelajaran Pecahan Sederhana di SD, *Jurnal Pendidikan Matematika SD*, Vol. 4

Almirah Nur Sakiinah dkk, (2022), Revolusi Pendidikan di Era Society 5.0; Pembelajaran, Tantangan, Peluang, Akses, dan Keterampilan Teknologi, *Jurnal Pendidikan Transformatif (Jupetra)*, Vol. 1, No.2.

B. Santoso & L. Wijaya, (2023), Simulasi Pasar dalam Pembelajaran Matematika Realistik di Kelas IV SD, *Jurnal Inovasi Pembelajaran Matematika*, Vol. No. 2.

D. Kurniawan, (2023), Pengaruh Permainan Tangram terhadap Kemampuan XGeometri Siswa Kelas III SD, *Jurnal Pendidikan Sains dan Matematika*, Vol. 6 No.1.

E. Kurniawan (2024). Game-Based Learning dalam Pendidikan: Tinjauan Sistematis di Indonesia, *Jurnal Inovasi Pendidikan*,Vol. 5 No.1.

Faisal Amri dkk, (2023) Penerapan Market Day Project dalam Meningkatkan Partisipasi Siswa Pada Matematika Kelas VIB SDN Bakalan, *Prosiding Nasional Pendidikan Profesi Guru Universitas Sarjanawiyata Tamansiswa*, Vol. 2, No. 1, Hal. 1266.

F. Pratama & G. Utami, (2021). Game RPG 'Pahlawan Kemerdekaan' sebagai Media Pembelajaran Sejarah Indonesia, *Jurnal Pendidikan Sejarah*, Vol. 9 No.3,

Fitria Carli Wiseza dkk, (2023) Penggunaan Model Pembelajaran *Game Based Learning* Terhadap Hasil Belajar IPS *Jurnal Pendidikan dan Sosial Keagamaan*, Vol.10.

Galuh Wilujeng Nugraheni, (2022), Skripsi Penerapan Pendekatan *Game Based Learning* Menggunakan Media *Maze Game* dalam Meningkatkan Hasil Belajar Siswa Tematik Kelas II di SDN Krenceng 1.Jakarta.

Hasriadi (2022), Metode Pembelajaran Inovatif di Era Digitalisasi, *Jurnal Sinestesia,* Vol.12, No.1.

Jihan Nabila dkk, (2023), Persepsi Siswa Terhadap Penerapan Model G*ame Based Learning* Pada Pembelajaran Matematika, *Didaktik: Jurnal Ilmiah PGSD FKIP Universitas Mandiri* , Vol.9, No.5.

Khoirun Nisa dkk, (2024), Model Pembelajaran *Game Based Learing* Terhadap Peningkatan Hasil Belajar Bahasa Arab, *Klimatuna:Journal Of Arab Education*.Vol.04, No.01.

Kholifatun Nur Afiyah & Wulan Sutriyani, (2024), Efektivitas Metode Game-Based Learning Berbantuan Media Flashcard Pecahan Terhadap Hasil Belajar Matematika Siswa, Linear*: Journal of Mathematics Education,* Vol. 5, No.2.

Kukuh Santoso & Lailatul Masfufah, (2022), Upaya Peningkatan Hasil Belajar Dan Motivasi Siswa Menggunakan "Kopi Hangat" Berorientasi *Game Based Learning* di Mtsn 1 Kota Magelang, *Math Locus: Jurnal Riset dan Inovasi Pendidikan Matematika*, Vol. 3, No. 2.

Kurniawan, D., & Febriani, R. (2023). Analisis Penerapan *Game Based Learning* Terhadap Motivasi dan Hasil Belajar Matematika Siswa SD, *Jurnal Pendidikan dan Pembelajaran*, Vol.11 No.2.

Mahesya Az-zahra Andryannisa dkk, (2023), Upaya Meningkatkan Hasil Belajar Siswa dengan Menggunakan Metode Resitasi Ppada Mata Pelajaran Akidah Akhlak di SD Islam Riyadhul Jannah Depok, *Pediaqu: Jurnal Pendidikan Sosial dan Humaniora* Vol.2, No.3.

Moh. Sholeh Hamid, (April 2013), *Metode Edutaiment*, Diva Press. Hal 11.

Muhammad Rizal Pahlebiannur dkk, (Maret 2022), *Metodologi Penelitian Kualitatif*, Pradina Pustaka.

Nina Ninthya Br Sembiring dkk, (2024), Pengaruh Metode *Game Based Learning* Terhadap Minat Belajar Siswa Pada Mata Pelajaran Ipa Kelas Iv Sd 040547, *Jurnal Pendidikan Media, Strategi & Metode*, Vol. 01, No.2.

Nugroho, F. (2022). *Game Based Learning* Sebagai Inovasi Pembelajaran Matematika di Era Digital. *Prosiding Seminar Nasional Pendidikan Matematika*, Vol.1 No.1.

Nunung Gustri Ramdani dkk, (2023), Definisi dan Teori Pendekatan, Strategi, dan Metode Pembelajaran, *Indonesian Journal Of Elementary Education*, Vol. 2, No.1.

Nurul Rahmin dkk, (2024), Pentingnya Berpikir Kritis dalam Pembelajaran Matematika, *Griya Jurnal Of Education An Application*, Volume. 4, No. 1.

Putri Murniati, (2024), Pengaruh Media Takalintar dengan Model *Promblem Based Learning* Tehadap Hasil Belajar Matematika Siswa Kelas Iii Sd Negeri 69 Banda Aceh, Fakultas Tarbiyah dan Keguruan Universitas Islam Negeri Ar- Raniry Banda Aceh, Banda Aceh.

Putri, R. A., & Suryani, N. (2022), Pengaruh *Game Based Learning* Terhadap Hasil Belajar Matematika Siswa Sekolah Dasar. *Jurnal Pendidikan*,Vol 10 No. 2.

R. Aisyah & D. Hidayat, (2023). Penggunaan Game Edukasi Berbasis Android untuk Meningkatkan Hasil Belajar IPA di SD, *Jurnal Pendidikan Sains Indonesia,* 11 No.2.

R. Apriyani & D. Hidayat , (2023), Pengaruh Penggunaan Aplikasi Kahoot! terhadap Hasil Belajar Matematika Siswa SD, *Jurnal Pendidikan Dasar,* Vol. 5 No1.

Ririn Oktavia, (2022), *Game Based Learning (*GLB) Meningkatkan Efektivitas Belajar.

S. Utami & F. Rahman , (2023), Efektivitas Permainan Ular Tangga Modifikasi dalam Pembelajaran Penjumlahan di Kelas II SD, *Jurnal Ilmiah Sekolah Dasar*, Vol. 7 No.2.

S. Wijaya et al. (2022). Analisis Pengaruh Quizizz terhadap Engagement Siswa dalam Pembelajaran Daring, *Jurnal Teknologi Pendidikan*,Vol. 10No.1.

Sari, D. P., & Utomo, B. (2023). Efektivitas Metode *Game Based Learning* Dalam Meningkatkan Kemampuan Berpikir Kritis Matematika Siswa SD. *Jurnal Pendidikan Matematika*, Vol. 12 No.3.

Sri Ayu dkk, (2021), Analisis Faktor Penyebab Kesulitan Belajar Matematika, *AKSIOMA: Jurnal Program Studi Pendidikan Matematika*, Vol. 10, No.3.

Sugiyono. (2015). *Metode Penelitian Kuantitaif Kualitatif dan R & D*. Bandung: Alfabeta

Susanti, dkk, (2024) Dampak Negatif Metode Pengajaran Monoton Terhadap Hasil Motivasi Belajar Siswa, *PEDAGOGIK Jurnal Pendidik*, Vol. 2, No. 2.

T. Santoso (2023). Augmented Reality untuk Meningkatkan Pemahaman Konsep Fisika, *Jurnal Ilmu Pendidikan*, Vol 12 No.2.

Umar, (2019), *Metode Penelitian Kualitatif*, Cv. Nata Karya.

Wahyudi, A., &Pratiwi, I. (2021). Implementasi Pembelajaran Berbasis Permainan *(Game Based Learning)* Pada Mata Pelajaran Matematika di SD, *Jurnal Ilmiah Pendidikan dasar*,Vol. 8 No.1.

Yesi Nofitasari dkk, (2023), Meningkatkan Prestasi dan Motivasi Belajar Siswa dengan Pengajaran Berbasis Game-Based Learning pada SiswaKelas X-2 SMA Negeri 13 Surabaya