Research Article

Primary Education Insight
Volume 1, Number 1, 2025
E-ISSN : 3110-5653
Open Access: https://creativesmartvisionary.com/pedi
DOI: https://doi.org/10.65779/pedi.v1i1.27

The Impact of Math Game Cards on Third-Grade Students' Learning Motivation at SDN 2 Sambirejo

Dimas Suprayogo[1], Dya Ayu Agustiana Putri[2], Eka Yuliana Sari[3]
[1] Department of Elementary School Teacher Education, Universitas Bhinneka PGRI
[2] Department of Elementary School Teacher Education, Universitas Bhinneka PGRI
[3] Department of Elementary School Teacher Education, Universitas Bhinneka PGRI
Correspondence: dimsu1922@email.com

Article Info

Article history:
Received Jun 22th, 2025
Revised Jul 26th, 2025
Accepted Jul 29th, 2025

How to cite this article:
Suprayogo, D., Putri, Dya. A. A., & Sari, Eka Y. (2025). The impact of math game cards on third-grade students' learning motivation at SDN 2 Sambirejo. *Primary Education Insight, 1* (1), 53-66. https://doi.org/10.65779/pedi.v1i1.27

ABSTRACT

Mathematics is a fundamental discipline in all fields of science, yet many students lack interest in learning it. To address this challenge, innovative and engaging learning media such as mathematics game cards are needed to foster students' motivation. This study aimed to examine the effect of using game cards as instructional media on the learning motivation of third-grade students at SDN 2 Sambirejo. Employing a quantitative approach with a quasi-experimental design, the study involved 54 students divided into experimental and control groups. Data were analyzed using an independent sample t-test with JAMOVI 2.3.2 software. The pre-test results showed no significant difference in motivation between the two groups ($p = 0.152 > 0.05$), whereas the post-test results indicated a significant improvement in motivation for students who used the game card media ($p < 0.001$). These findings suggest that mathematics game cards can significantly enhance students' learning motivation and serve as an effective alternative to conventional instructional methods.

Keyword:
Mathematics, learning motivation, game card

INTRODUCTION

Mathematics is a subject that plays a crucial role in developing logical and systematic thinking skills in students from an early age. Not only in academics, but mathematical skills are also essential in everyday life, such as counting money, telling time, and making simple decisions. However, the reality on the ground shows that many elementary school students still struggle to understand mathematics. They often feel stressed, bored, and even afraid when math lessons begin. This is partly due to a less engaging and one-way learning approach (Supriyanto, 2021). When teachers only use the lecture method, students become passive and tend not to fully understand the material. This condition is exacerbated by the limited variety of learning media used in the teaching process. Students are more interested in active, interactive learning that provides space for play while learning. Therefore, innovation in learning media is needed that can attract students' interest while strengthening conceptual understanding. This is where the importance of teachers choosing media that is not only informative but also enjoyable.

Instructional Media own role important in form experience richer and more meaningful learning for participant educate. Through the right media, teachers can bridge gap between material abstract with experience concrete that can understood children. Pratiwi et al., (2020) explains that the media does not only convey information, but also can create atmosphere learn more live and spark involvement students. One of the media that is currently This start used is a game media educational, such as math game card. Game This designed for involving student in a way active in learning with a fun and challenging way. In an atmosphere playing, children can study mathematics without feel burdened or

depressed. Anggraeni and Lestari (2021) stated that approach experiential through game capable increase trust self and interaction social children. Not only that, game cards also facilitate learning based experience, which makes draft mathematics more easy digested by participants educate. With use card games, students not only study counting, but also learning strategy, cooperation, and decision-making. This becomes important capital in increase motivation.

Motivation is a key psychological factor that significantly influences students' academic achievement. When students are motivated, they tend to be more enthusiastic, focused, and actively engaged in the learning process. Conversely, a lack of motivation often results in passive behavior, boredom, and disinterest in the subject matter. One effective way to foster motivation is through the use of engaging learning media. Yuliani (2022) found that the use of card-based media in mathematics instruction significantly increased students' enthusiasm for learning. Similarly, game-based media not only provide enjoyable learning experiences but also reduce anxiety associated with mathematics. Herawati (2017) emphasized that game media offer opportunities for students to learn independently and collaboratively, thereby enhancing both social interaction and self-confidence. The effectiveness of such media is not only evident in cognitive outcomes but also in affective domains, such as students' attitudes, interest, and motivation. Therefore, learning media like math game cards have the potential to be effectively implemented in lower-grade classrooms, aligning with young students' natural inclination toward play while simultaneously promoting academic success.

In the context of primary education, student engagement in the learning process is essential. Teachers are expected to create learning environments that prioritize not only outcomes but also the quality of student participation. According to Hidayah and Sulistyaningrum (2019), learning activities that incorporate game cards can enhance students' concentration and focus by integrating elements of entertainment and challenge. The structured play inherent in such media allows students to gradually comprehend mathematical concepts without feeling overwhelmed by academic pressure. Moreover, experiential learning through games facilitates better understanding of abstract ideas. However, many teachers still face challenges in developing instructional strategies that align with students' characteristics and needs. Addressing this requires not only creativity but also a deep understanding of how to optimize media use in the classroom. Effective learning media support the achievement of instructional goals while simultaneously increasing student motivation. Based on these considerations, this study seeks to examine the influence of math game card media on the learning motivation of third-grade students, particularly in mathematics lessons.

LITERATURE REVIEW

Mathematics is one of the basic lessons learned focus main in the world of education because become based for various discipline knowledge others. The role of mathematics is very important in life, starting from activity simple until solution problem complex in various field. As knowledge basic mathematics taught in a way sustainable from level education base until college high (Hidayat & Fitria, 2023). However so, a little participant student who consider mathematics as eye difficult, boring, even lessons scary compared to eye lesson others (Wulandari et al., 2021). Assumption This appear because material mathematics lots load concepts that are abstract, complex formulas, and demand accuracy tall in calculation (Sari & Nugroho, 2022). This condition exacerbated by the method learning that tends to lack of use of interesting learning media, so reduce participation active participant educate in the learning process (Ningsih & Wahyuni, 2022). Therefore that, is necessary approach innovative and contextual learning so that mathematics can understood in a way more fun and meaningful.

Paradigm learning the 21st century emphasizes development ability 4C, namely critical thinking, creativity, communication, and collaboration. This modern learning participant, oriented educate as subject active in the learning process, with atmosphere collaborative, interactive, and meaningful learning. The role of the teacher is not again only as transmitter information or leader class, but rather as facilitator who encourages participant educate for critical thinking, working the same, and build knowledge they in a way independent through projects, discussions, and work group. In the

context of this, learning 21st century no only emphasize aspect cognitive, but also foster process skills, character, and competencies social participant students (Sulistyaningrum et al., 2019). In addition, integration digital technology and learning contextual become part important in support development ability 4C (Putri & Ramadhan, 2021). Adaptive and centered learning proven increase motivation and engagement student in the learning process (Rahmawati & Subekti, 2023).

Learning mathematics started since level elementary school up to college high, so that mathematics becomes eye very important lesson for mastered by participants educate. However, in the learning process mathematics, a lot participant educated feel bored Because the material presented nature abstract and difficult understood in a way concrete (Yanti & Handayani, 2022). This condition often caused atmosphere learning become not enough fun and exciting difficulty in understand concepts mathematics. Perception negative to mathematics also appears consequence experience bad previously, such as get low value or not understand material, which then evoke fear to lesson this (Purnamasari & Kartowagiran, 2021). Anxiety mathematics is feeling not comfort that arises because instability emotions, marked with worry, tension, difficulty concentration, even symptom somatic moment face to face with activity counting. Challenge the biggest in context this is how change perception negative participant educate and grow interest to mathematics, especially in mastery numeracy (Hasibuan & Siregar, 2023). Knowledge numeric beginning even believed can predict ability mathematics in the future in framework formal education (Zorrilla, 2022).

According to the results of research conducted by Professor John Hattie from the University of Auckland, the dominant factors determining student achievement are student characteristics (49%), the role of the teacher (30%), and other factors (21%). In this regard, teachers play a strategic role in influencing students' psychological aspects, particularly in fostering interest in learning, which ultimately impacts the quality of learning (Suparno & Astuti, 2022). One important aspect that needs to be developed is the use of creative and innovative learning models. The effectiveness and efficiency of the learning process are greatly influenced by the strategies implemented by teachers and the use of appropriate learning media (Harsanti & Lathifah, 2023). Learning will take place effectively if students are actively involved and the process is centered on them, not depend on the teacher (Maulida & Fitriana, 2021). Unfortunately, in practice, many teachers still have not maximized the use of learning media when teaching. Most still predominantly use the lecture method and assume that delivering material orally is sufficient for students to understand the lesson content. This view is mistaken, because students tend to forget quickly if they only listen without visual reinforcement or activities that involve them directly (Ramadhani et al., 2022). As a result, many students feel bored, lack concentration, feel sleepy, or even think about other things during the lesson. This naturally impacts poor understanding of the material and suboptimal learning outcomes.

When children begin formal education, their basic numeracy skills have actually been developing for several years. These abilities include skills such as counting, comparing quantities, and understanding basic number concepts, although the level of development shows significant differences between individuals (Suparno & Astuti, 2022). Therefore, educators need to pay attention to students' initial readiness for numeracy so that the learning process can be more effective and meaningful. One effort that can be done is through the use of appropriately designed learning media to support the learning process. Media plays a crucial role as a communication tool that enables students to understand material more easily and concretely (Harsanti & Lathifah, 2023). According to some opinions, media is not merely a visual aid but also a bridge between teaching materials and students' learning experiences (Nasaruddin, 2015; Mulyawati & Kowiyah, 2018; Kurniawati & Unik, 2021). Effective media can increase students' active involvement in the learning process and encourage them to think critically and creatively (Ramadhani et al, 2022). Therefore, teachers are required to be able to integrate methods, strategies, techniques, and media into a harmonious whole to optimally achieve learning objectives (Maulida & Fitriana, 2021). An appropriately integrated and media-based learning approach has been proven to improve motivation, conceptual understanding, and numerical achievement in early grade students.

Media is a crucial component in determining the success of the learning process. Media serves as a tool that connects the learning messages designed by the teacher with the recipients, namely the students, so that the material delivery process becomes more effective and engaging (Pratiwi & Widodo, 2020). Through appropriate media, teachers can design learning activities that enable students to actively participate directly in learning activities, thereby optimally achieving learning objectives. One approach that can be utilized is experiential learning through games, which provides opportunities for students to learn in a safe environment, while practicing and interacting socially with their peers (Anggraeni & Lestari, 2021). This approach encourages educators to focus not only on lectures or one-way instructions but also provides space for students to actively engage, especially in mathematics learning, which is often considered abstract and difficult. Learning media that suit these needs are game-based media, such as playing cards or games Cards. The use of cards in learning has been shown to significantly increase student motivation, participation, and learning outcomes (Yuliani, 2022). Other studies have shown that cards provide a fun learning experience and strengthen understanding of mathematical concepts (Herawati, 2017). Specifically, the use of cards in mathematics learning can encourage active student engagement and improve their learning achievement (Hidayah & Sulistyaningrum, 2019).

METHODOLOGY

Research Design

This study employed a quantitative research design to examine the contribution of math game card learning media to the learning motivation of third-grade students at SDN 2 Sambirejo. A quasi-experimental design was used in the operational product trial phase, specifically adopting the nonequivalent control group design, which is similar to the pretest-posttest control group design. This design allows for the evaluation of the intervention's effectiveness by comparing the outcomes between the experimental and control groups. The structure of this design is illustrated in Figure 1, highlighting the sequence of pretests, treatments, and posttests administered to both groups.

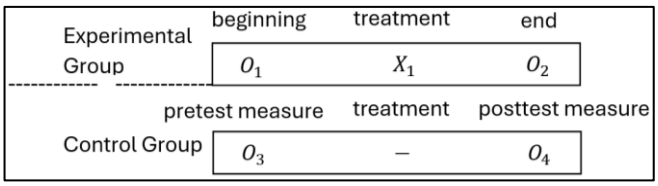

Figure 1. Quasi-Experimental Design with Nonequivalent Control Group Design

Research Sample

The instrument was tested on a sample of 52 third-grade students. These students were divided into experimental and control groups for analysis. The selection was designed to compare the learning motivation of students who used math game cards with those who did not. The experimental group received learning interventions using math game cards as teaching media, while the control group followed conventional learning without the aid of game cards. This sampling aimed to evaluate the effectiveness of game-based learning in enhancing students' motivation in mathematics.

Data Collection

Data on students' learning motivation were collected using a learning motivation questionnaire designed to evaluate the impact of using math game cards in the classroom. This instrument was administered to both the experimental group (students who received instruction using math game cards) and the control group (students who received conventional instruction without game cards). Before its use in the main study, the instrument was tested for reliability and validity. The reliability analysis was conducted using Factor Reliability Analysis in JAMOVI version 2.3.2, which produced a Cronbach's Alpha coefficient to assess internal consistency. The interpretation of the coefficient values follows Guilford's (1956) classification as presented in Table 1. Higher alpha values indicate that the instrument

yields more consistent and reliable results. A coefficient close to +1.00 reflects strong internal consistency and low measurement error, while lower values suggest greater potential for error in capturing students' motivation accurately.

Table 1. Classification of Cronbach's Alpha Coefficient

Cronbach's Alpha Coefficient	Interpretation of Cronbach's Alpha Coefficient
0.40 – 0.69	moderate reliability
0.70 – 0.89	high reliability
0.90 – 1.00	very high reliability

To establish construct validity, the study applied Exploratory Factor Analysis (EFA), which is appropriate when the measurement structure is still being explored. This process involved defining theoretical constructs of learning motivation, examining the variance-covariance matrix, and analyzing eigenvalues and scree plots. The validation confirmed that the questionnaire items aligned well with the intended theoretical constructs, making the instrument suitable for measuring learning motivation in the context of math game card-based instruction.

Data Analysis

Data analysis was conducted to determine the effectiveness of math game card-based learning on students' learning motivation. Prior to hypothesis testing, assumption tests were carried out, including tests of normality and homogeneity, to ensure that the data met the requirements for parametric analysis.

The normality test was conducted using the Shapiro–Wilk test via JAMOVI version 2.3.2, applied to both the pretest and posttest motivation scores of the experimental and control groups. Data were considered normally distributed if the p-value > 0.05, in accordance with Sugiyono (2007). The hypotheses for the normality test were as follows:

- H_0: The data are normally distributed
- H_1: The data are not normally distributed

Following the normality test, a homogeneity test was conducted to examine whether the variances between groups were equal. This was also performed using JAMOVI. If the significance value (p-value) was greater than 0.05, the data were considered homogeneous. The hypotheses for this test were:

- H_0: Group variances are homogeneous
- H_1: Group variances are not homogeneous

After the assumptions of normality and homogeneity were met, an Independent Samples t-test was used to test the research hypothesis. This test was selected to determine whether there was a statistically significant difference in the mean learning motivation scores between students who learned with math game cards and those who did not. The analysis was conducted using JAMOVI version 2.3.2 at a significance level of 0.05 ($\alpha = 5\%$).

The hypotheses tested were:

- H_0: There is no significant difference in learning motivation between students who use math game cards and those who do not ($\mu_1 = \mu_2$).
- H_1: There is a significant difference in learning motivation between students who use math game cards and those who do not ($\mu_1 \neq \mu_2$).

The decision criteria were defined as follows:

- Accept H_0 if p-value > 0.05
- Reject H_0 (and accept H_1) if p-value < 0.05

This statistical procedure allowed the researcher to determine the significance of the effect of the math game cards on student motivation, based on empirical data obtained through controlled comparison.

RESULTS

The instrument used in this study was a learning motivation questionnaire consisting of 15 items. To assess the reliability and validity of the instrument, a pilot test was conducted involving 52 third-grade elementary school students. Based on the analysis of the questionnaire data using the JAMOVI application, the results of the learning motivation instrument test are presented in Table 2.

Table 2. Scale Reliability Statistics of Student Learning Motivation Instrument

	Mean	Cronbach's α
scale	3.51	0.946

As shown in Table 2, the learning motivation test instrument demonstrated a reliability coefficient of 0.946, as indicated by the Cronbach's Alpha value generated using the JAMOVI application. This coefficient reflects a very high level of reliability in the measured data. According to the classification of Cronbach's Alpha values proposed by Guilford (1956), a coefficient of 0.946 falls within the "very high" reliability category. This implies that the instrument consistently measures the intended construct. In line with Retnawati (2016), a high Cronbach's Alpha coefficient indicates strong internal consistency, thereby confirming the reliability of the instrument used in this study.

Table 3. Item Reliability Statistics of Student Learning Motivation Instrument

	Mean	Item-rest correlation
S1	4.10	0.526
S2	3.31	0.724
S3	4.10	0.441
S4	3.40	0.915
S5	3.40	0.915
S6	3.42	0.903
S7	3.31	0.724
S8	3.31	0.724
S9	3.38	0.913
S10	3.54	0.478
S11	3.38	0.913
S12	3.17	0.547
S13	3.38	0.913
S14	3.44	0.681
S15	4.00	0.529

In this context, the item-rest correlation assesses the extent to which each item in the instrument correlates with the overall test score. A positive correlation indicates that the item appropriately represents the construct being measured, whereas a low or negative correlation may suggest issues in item construction or wording, potentially requiring revision or removal. As presented in Table 3, item reliability statistics of student learning motivation instrument, all item-rest correlations yielded positive values. The item-test correlations for all 15 items demonstrated strong relationships, with an average correlation exceeding 0.60, suggesting that each item contributes positively to the overall reliability of the instrument. The consistent positive correlation between each item and the total score indicates that all statements effectively support the measurement of students' learning motivation. These results provide evidence that the instrument was well-constructed and accurately measures the intended construct. Consequently, the outcomes of the analysis using the JAMOVI application confirm that the learning motivation instrument demonstrates high reliability in measuring the research variables.

Table 4. Bartlett's Test of Sphericity of Student Learning Motivation Instrument

χ^2	*df*	*p*
540	105	<.001

As shown in Table 4, Bartlett's Test of Sphericity of student learning motivation instrument, the analysis yielded a significance value of $p < 0.001$ (Retnawati, 2016). This result indicates that the p-value is well below the 0.01 threshold, suggesting that the correlation matrix is not an identity matrix. In other words, there are sufficient intercorrelations among the items to justify the use of factor analysis. A significant Bartlett's Test confirms that the data are suitable for structure detection and that the sample size used in this study is adequate for conducting exploratory factor analysis.

Further insights into the internal structure of the instrument can be explored through the correlation heatmap, which visually illustrates the strength and direction of relationships among the questionnaire items. As shown in Figure 2, the heatmap confirms strong positive correlations between items, indicating consistency in how each item measures the construct of learning motivation. This visual representation complements the results of Bartlett's Test and item-rest correlations, reinforcing the conclusion that the instrument demonstrates high internal reliability and is appropriate for use in exploratory factor analysis (Retnawati, 2016).

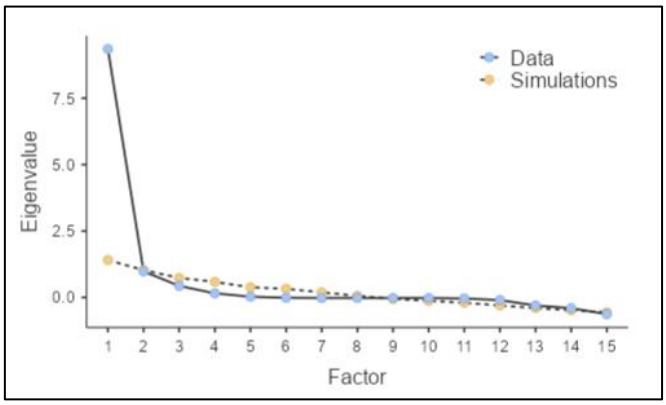

Figure 2. Correlations Headmap Reliability of Student Learning Motivation Instrument

The unidimensionality of the instrument is further supported by the results of the scree plot analysis, which reveal a single prominent slope. This suggests that the items within the instrument converge on measuring a single underlying construct—students' learning motivation. The finding is consistent with the correlation patterns observed in the heatmap, where strong positive inter-item relationships were identified. Additionally, the eigenvalue analysis, as presented in Table 5, shows that only one factor has an eigenvalue significantly greater than 1, while the others fall below this threshold. These results collectively confirm that the instrument is structurally sound and appropriately designed to assess a single, well-defined dimension of learning motivation.

Table 5. Initial Eigenvalues of Exploratory Factor Analysis of Student Learning Motivation Instruments

Factor	Eigenvalue
1	9.3505
2	0.9792
3	0.4330
4	0.1524
5	0.0278
6	-0.0158
7	-0.0230
8	-0.0230
9	-0.0230
10	-0.0230
11	-0.0403
12	-0.1022
13	-0.3056
14	-0.4055
15	-0.6310

The findings presented in Table 5 provide strong evidence supporting the validity of the instrument used to measure students' learning motivation. The scree plot analysis reveals a distinct inflection point after the first factor, indicating the unidimensionality of the instrument. This implies that the questionnaire items consistently measure a single underlying construct—students' motivation to learn. These results further reinforce the conclusion that the instrument is appropriate for assessing learning motivation as a single, coherent construct.

Establishing this unidimensional structure is crucial, as the instrument assessed changes in students' motivation before and after the intervention involving the mathematics game card media. By confirming the validity of the questionnaire, the results in Table 5 ensure the reliability of the subsequent statistical analysis. These results formed the basis for comparing pretest and posttest motivation scores in the control class (Class III A, taught using conventional methods) and the experimental class (Class III B, taught using mathematics game card media). The motivation data collected were analyzed using JAMOVI version 2.3.28 to test the assumptions of normality and homogeneity prior to further inferential analysis.

Table 6. Normality Test (Shapiro-Wilk)

	W	p
Questionnaire beginning	0.962	0.618
Final Questionnaire	0.978	0.917

Furthermore, the normality test results presented in Table 6 show p-values of 0.618 for the pre-test and 0.917 for the post-test, both of which are greater than the significance level of 0.05. These values indicate that the data in both the pre-test and post-test stages meet the assumption of normality. In other words, the distribution of the data does not significantly deviate from normality, and the null hypothesis (Ho), which states that the data are normally distributed, is accepted. This conclusion is further supported by the QQ Plot assessing normality, which illustrates that the data points closely follow the expected normal distribution line, as shown in the Figure 4 and Figure 5.

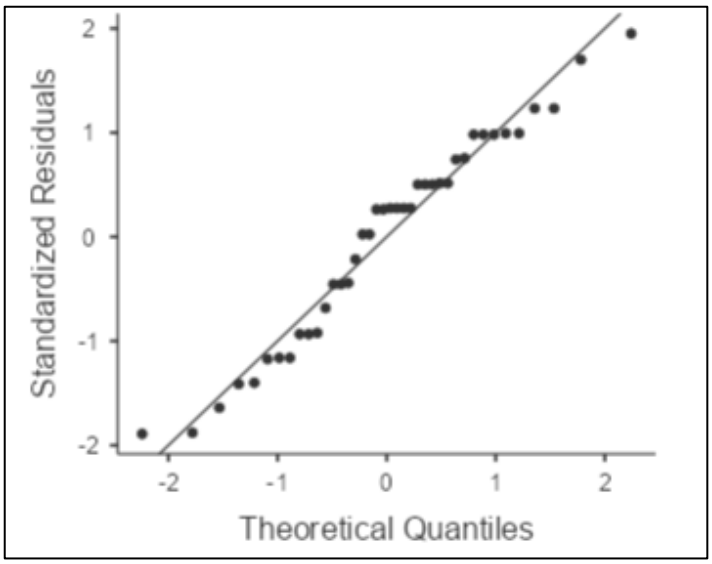

Figure 4. QQ Plot Assessing Multivariate Normality of Initial Questionnaire

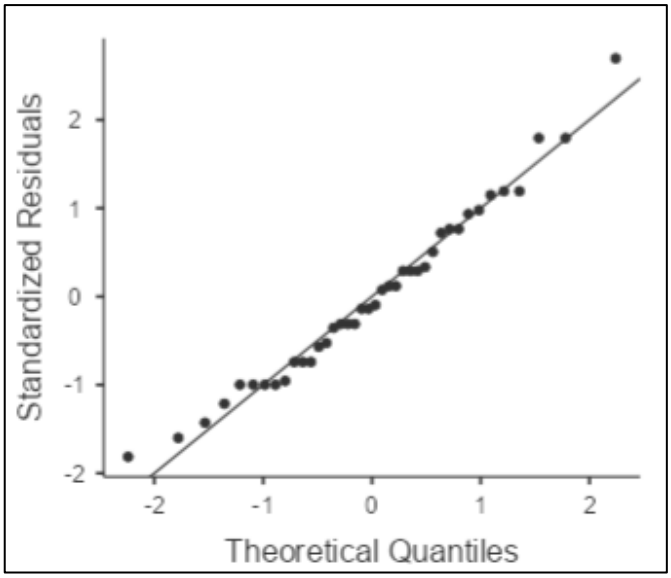

Figure 5. QQ Plot Assessing Multivariate Normality of the Final Questionnaire

As illustrated in Figures 4 and Figure 5, the data points closely follow the reference line in the QQ plots, indicating that the residuals are approximately normally distributed. This visual evidence reinforces the findings of the statistical normality tests reported in Table 6, supporting the assumption of normality required for subsequent parametric analyses. With the assumption of normality met, the next step in the analysis involves testing the homogeneity of variances to determine whether the variability of scores across groups is statistically equivalent—an important prerequisite for conducting further inferential statistical procedures, such as t-tests or ANOVA.

Table 7. Homogeneity of Variances Test (Levene's)

	F	df	df2	p
Questionnaire beginning	1,189	1	38	0.282
Final Questionnaire	0.275	1	38	0.869

As shown in Table 7, the homogeneity test results yielded p-values of 0.282 for the pre-test and 0.869 for the post-test, both of which are greater than the significance level of 0.05. These values indicate that the assumption of equal variances is satisfied for both sets of questionnaire data. In other words, the data are homogeneous, and the null hypothesis (H_0), which states that there is no significant difference in variance between groups, is accepted. With both assumptions—normality and homogeneity of variance—fulfilled, the prerequisites for conducting an independent samples t-test are met. Therefore, the analysis proceeded with the application of an independent samples t-test to determine the effectiveness of the intervention.

Table 8. Independent Samples T-Test

		Statistics	df	p
Questionnaire beginning	Student's t	1.46	38.0	0.152
Final Questionnaire	Student's t	4.05	38.0	<.001

The hypotheses tested in this study are as follows:

- H_0: There is no significant difference in the learning motivation of third-grade students at SDN 2 Sambirejo, Trenggalek Regency, between those who use mathematics game card learning media and those who do not (H_0: $\mu_1 = \mu_2$).
- H_1: There is a significant difference in the learning motivation of third-grade students at SDN 2 Sambirejo, Trenggalek Regency, between those who use mathematics game card learning media and those who do not (H_1: $\mu_1 \neq \mu_2$).

The criteria for hypothesis testing are as follows:

- If p-value > 0.05, H_0 is accepted and H_1 is rejected.
- If p-value < 0.05, H_0 is rejected and H_1 is accepted.

Based on the results presented in Table 8, the p-value for the pre-test is 0.152. Since this value is greater than 0.05, the null hypothesis (H_0) is accepted, indicating that there is no significant difference in students' learning motivation between the experimental and control groups prior to the intervention. However, for the post-test, Table 8 shows a p-value of < 0.001. This value is less than the 0.05 significance level, leading to the rejection of H_0 and acceptance of the alternative hypothesis (H_1). Thus, it can be concluded that there is a statistically significant difference in learning motivation between students who used the mathematics game card media and those who did not, following the intervention.

DISCUSSION

Research result show that use of learning media math game card give impact positive to motivation study participant education. Improvement motivation study seen from involvement active student during the learning process ongoing. This findings in line with Santrock's (2018) opinion states that that involvement emotional in activity study can increase student in face challenge academic. Game media allows participant educate feel atmosphere fun learning, without pressure, and full interaction social. According to Hamzah (2019), learning that involves element play capable build connection affective student to material. In addition, students become more believe self when face to face with questions mathematics Because activity play make, they feel more safe for explore. Pratiwi et al. (2020) also emphasized that educational media-based game provide stimulus to aspect affective and cognitive at the same time. On the other hand, teachers play a role as facilitator who creates atmosphere inclusive and interactive classes (Maulida & Fitriana, 2021). This condition push student for more open in convey opinions and collaboration with friend peers. Interaction social construction through game card become an effective medium in grow students' internal motivation. This show that the media is designed with good capable awaken interest study in a way experience.

Motivation study is aspect important in the world of education because related direct with intensity effort and perseverance student in learning. When students feel like with method learning used, then spirit study they also increased. According to Marisa (2019), high motivation push student for endure in activity study although face difficulties. Implementation math game card proven can trigger interest and curiosity know student because they feel like currently playing, not currently tested. Hermawan and Cahyani (2020) stated that approach creative learning capable change perception student to eye the original lesson considered difficult. Through games, students pushed for finish challenge without feel stressed in a way psychological. Hidayah and Sulistyaningrum (2019) also emphasized that the card media in mathematics give effect positive to participation and concentration students. This research strengthen view that motivation study not only influenced by the teaching material, but also by the approach used by the teacher. The more interactive the method used, the bigger opportunity student for develop potential (Astuti, 2022). With increasing motivation, results learning also tends to show repair significant (Suparno, 2021). This prove that the right learning strategy impact direct to aspect psychological and performance academic participant educate.

Fun learning requires media that is capable of accommodate characteristics student age school active and loving basis motor activity. Math game card give room for student for interact, move, and at the same time think logical in an unavoidable situation burdensome. According to Piaget (Desmita, 2019), child age school base is at in stage operational concrete, so that learning will more effective If involving object real or symbol concrete. Use card game bridge need with present visual representation and activity physical provocation involvement directly. A study by Yuliani (2022) supports this matter with show that student more easy understand draft abstract if served through game interactive. in addition, the activities the group that was carried out in game help student study work same and mutual value differences (Anggraeni & Lestari, 2021). The collaboration that occurred in a way experience This create atmosphere positive and motivating learning student for keep going. In Vygotsky's view,

learning effective happen through interaction social, especially when student is at in the development zone proximal (Supriyadi, 2021). So, no amazed if motivation study student increase in a way significant moment they involved active in game. Findings this become proof that math game card no merely additional media, but rather a structured pedagogical strategy.

The application of appropriate media can overcome student boredom in facing mathematics lessons, which are often considered difficult and boring. Many students find it helpful when they learn while playing, because they subconsciously continue to absorb the material without pressure. This aligns with Winkel's (2017) opinion, which emphasizes the importance of a learning environment that provides a sense of safety and comfort. In such situations, students will find it easier to concentrate and be more motivated. Games Cards as a learning medium stimulate the right and left brain simultaneously, there by encouraging students' creativity and logic (Kustandi & Sutjipto, 2020). Learning becomes more lively and varied because it does not only rely on lectures as the main method. Ramadhani et al. (2022) noted that learning that relies solely on lectures can quickly cause students to lose interest and forget easily. On the other hand, when students are directly involved in the learning process, they feel valued and take greater responsibility for their assignments (Harsanti & Lathifah, 2023). Directed play activities also strengthen memory because the material is linked to enjoyable experiences. Therefore, it's natural that the learning outcomes of students taught using math media improve. Games card is higher than in conventional classes. This study shows that learning motivation can be increased through a humanistic and contextual approach.

Motivation study no only influenced by internal student factors, but also greatly influenced by the strategies used by teachers in teaching. A capable teacher present atmosphere active and communicative class can increase spirit study student in a way as a whole. In the context of this, math game card media functioning as bridge that connects need student with objective learning. According to Daryanto (2018), the appropriate media not only clarify delivery material, but also build interaction emotional between students and lessons. When students enjoy the learning process, then they will more easily accept information new and maintain it in memory term long. Wulandari et al. (2021) emphasized that success learning No Can released from aspect emotional and affective students. Because of that that, learning that is too stiff and one direction must start abandoned, replaced with a more approach flexible and participatory. In research this class experiment shows improvement motivation because student feel valued and involved in a way full. This is in line with view Campen et al. (2024) that motivation grow when student own control on method they learn. With Thus, the teacher does not again only play a role as transmitter information, but also as director and provider experience effective learning.

study this give proof strong that use of learning media innovative like math game card own influence significant to motivation Study student school basic. Involvement active in learning through game push student for think critical at a time build connection healthy social life. In addition, this strategy also helps foster a sense of responsibility answer and believe self-student in understand material. This is strengthened Slavin's (2018) opinion states that learning effective need involvement emotionally and socially balanced. Findings this is also in line with study conducted by Handayani & Prasetyo (2021), which shows that student more enthusiastic moment given room for express and compete in a way healthy. With use math game card, students not only study mathematics but also develop skills social like work team and communication. Learning become richer and more meaningful because student active build understanding they alone. The teacher has role crucial in selecting and implementing appropriate learning media with need students (Nasution, 2019). Therefore that, approach kind of this need expanded and implemented in various context learning. The success of math game card media in increase motivation study proves that innovation pedagogical is very much needed in modern education. This research strengthens importance creative, fun, and needs oriented learning participant educate.

CONCLUSION

Based on the research findings and data analysis, it can be concluded that the use of mathematics game card learning media has a significant impact on enhancing the learning motivation of third-grade students at SDN 2 Sambirejo, Trenggalek Regency. This learning media was effective in creating an interactive, enjoyable, and challenging classroom atmosphere, thereby encouraging greater student engagement in the learning process. The implementation of game-based mathematics media also resulted in observable positive changes in affective aspects of learning, such as increased enthusiasm, self-confidence, and willingness to actively participate in solving mathematical problems. These outcomes highlight that creative and contextualized learning media can foster students' interest and perseverance in mathematics learning. Compared to conventional teaching methods, the use of game card media led to higher student participation and motivation. Therefore, mathematics game card media can be considered a promising alternative instructional innovation to improve elementary students' motivation in learning mathematics.

Despite its positive findings, this study has several limitations that should be acknowledged. First, the sample was limited to a small population from a single school, which may restrict the generalizability of the results to broader educational contexts. Second, the study only measured short-term effects on motivation without investigating long-term retention or academic performance. Additionally, the research relied solely on self-reported questionnaires, which may be influenced by students' perceptions and response biases.

To address these limitations, future research is recommended to involve a larger and more diverse sample across multiple schools or regions to enhance the external validity of the findings. Longitudinal studies are also needed to examine the sustained impact of game-based learning media on both motivation and mathematical achievement. Furthermore, it would be beneficial to incorporate multiple data collection methods, such as classroom observations, interviews, and academic performance records, to provide a more comprehensive evaluation of the media's effectiveness. Expanding the scope of the research in these ways will contribute to a deeper understanding of how interactive media can transform mathematics learning in primary education settings.

REFERENCES

Anggraeni, M., & Lestari, P. (2021). The role of interaction social in development ability collaborative child age school basic. *Journal of Elementary Education*, *9* (1), 55–63. https://doi.org/10.26740/jpd.v9n1.p55-63.

Anggraeni, T., & Lestari, H. (2021). Experiential learning model in increase involvement students. *Journal of Education and Learning*, *28* (2), 112–119. https://doi.org/10.31227/jpp.v28i2.567.

Arikunto, S. (2019). *Basics Evaluation Education (3rd ed.)*. Bumi Aksara.

Astuti, Y.D. (2022). Learning active for increase motivation and results study students. *Journal of Education and Innovation*, *10* (2), 113–122. https://doi.org/10.31227/jpi.v10i2.678.

Campen, Caroline A. N. K., Graaf, J. V. D., Horvers, A., Kooi, R., Dijkstra, R., & Molenaar, I. (2024). Enacting control with student dashboards: The role of motivation. *Journal of Computer Assisted Learning*, *40*(3), 1137-1153.

Daryanto. (2018). *Learning Media*. Gava Media.

Desmita. (2019). *Psychology Development Participant Educate*. Rosdakarya Youth.

Guilford, J. P. (1956). *The Structure of Intellect*. McGraw-Hill

Hamzah, B.U. (2019). *Motivation Learning and The Role of Teachers in Learning*. Rajawali Press.

Handayani, S., & Prasetyo, W. (2021). Learning creative and innovative through educational games. *Journal Educational Sciences, 23* (3), 201–210. https://doi.org/10.23887/jip.v23i3.3224.

Harsanti, N.R., & Lathifah, H. (2023). The role of teachers in increase effectiveness 21st century learning. *Journal Educational Innovation, 9* (2), 127–136. https://doi.org/10.31004/jip.v9i2.2023.

Hasibuan, A., & Siregar, N. (2023). The role of basic literacy and numeracy on ability cognitive student. *Journal Indonesian Educational Innovation, 12* (1), 33–42. https://doi.org/10.36709/jipi.v12i1.785.

Herawati, D. (2017). The influence use of card media to results study students. *Journal of Elementary*

Education, 5 (2), 98–105.
Hermawan, R., & Cahyani, T. (2020). Learning model innovative in increase motivation study students. *Journal of Character Education, 11* (1), 12–21. https://doi.org/10.21831/jpk.v11i1.32018.
Hidayah, N., & Sulistyaningrum, R. (2019). Application of card media in learning mathematics for improving learning outcomes. *Journal of Mathematics Education, 7* (1), 67–75.
Hidayat, R., & Fitria, N. (2023). The role of mathematics in development 21st century skills. *Journal of Elementary Education, 15* (2), 87–95. https://doi.org/10.21009/jpd.152.06.
Kurniawati, A., & Unik, M. (2021). Use of learning media interactive in learning mathematics. *Journal Scientific Mathematics Education, 9* (2), 76–84.
Kustandi, C., & Sutjipto, B. (2020). *Learning Media: Manual and Digital.* Prenadamedia Group.
Marisa, S. (2019). Pengaruh motivasi dalam pembelajaran siswa upaya mengatasi permasalahan belajar. *Jurnal Taushiah*, 9(2), 20-27.
Maulida, S., & Fitriana, R. (2021). Student centered learning: learning solutions active in elementary school. *Journal of Elementary Education, 8* (1), 22–30. https://doi.org/10.33369/jpd.v8i1.1178.
Mulyasa, E. (2018). *Becoming A Professional Teacher Create Learning Creative and Fun*. PT Remaja Rosdakarya.
Mulyawati, R., & Kowiyah. (2018). The influence of learning media towards learning outcomes mathematics elementary school students. *Journal of Elementary Education, 6* (1), 45–50.
Nasaruddin. (2015). Use of learning media in increase quality learning mathematics. *Journal of Education, 16* (2), 123–134.
Nasution, S. (2019). *Various Approach in The Learning and Teaching Process*. Literary Earth.
Ningsih, D., & Wahyuni, S. (2022). Innovative strategy in learning mathematics for increase participation active students. *Journal of Mathematics Education, 10* (1), 45–54. https://doi.org/10.31004/jpm.v10i1.1234.
Nurgiyantoro, B. (2020). *Statistics Applied For Education*. Gadjah Mada University Press.
Piaget, J. (in Desmita, 2019). *Psychology Development Participant Educate*. Rosdakarya Youth.
Pratiwi, R.D., Widodo, S., & Lestari, F. (2020). The role of learning media in grow activity study student. *Journal Educational Technology, 8* (1), 25–33. https://doi.org/10.31004/jtp.v8i1.292.
Pratiwi, R., Saputro, HD, & Andayani, M. (2020). The influence of game media to interest and motivation study. *Journal Innovation in Elementary Education, 6* (2), 88–94. https://doi.org/10.26877/jipd.v6i2.6064.
Purnamasari, W., & Kartowagiran, B. (2021). Students ' mathematics anxiety and its impact to performance learning. *Journal of Mathematics Education, 15* (2), 120–129. https://doi.org/10.21831/jpm.v15i2.4356.
Putra, A., & Handayani, E. (2022). Analysis of educational data based statistics parametric. *Journal Educational Statistics, 3* (1), 33–41. https://doi.org/10.26740/jsp.v3n1.p33-41.
Putri, A.N., & Ramadhan, F. (2021). Implementation of 4c based learning in 21st century curriculum. *Journal of Education and Technology, 5* (2), 55–63. https://doi.org/10.21009/jpt.v5i2.123.
Rahmawati, D., & Subekti, H. (2023). The influence learning collaborative to involvement study students in the digital age. *Journal of Innovative Education, 11* (1), 21–30. https://doi.org/10.31004/jpi.v11i1.543.
Ramadhani, R., Sari, D.P., & Oktavia, A. (2022). The influence of the lecture method on memory student in learning. *Journal of Educational Evaluation, 6* (1), 45–54. https://doi.org/10.31227/jep.v6i1.405.
Retnawati, H. (2016). *Analisis Kuantitatif Instrumen Penelitian*. Paraman Publishing.
Santrock, J. W. (2018). *Educational Psychology (6th Ed.).* McGraw-Hill.
Saputra, M.H., Hasanah, U., & Widodo, A. (2021). Assumptions statistics in study experiment. *Journal Educational Research and Evaluation, 25* (1), 1–12. https://doi.org/10.21831/pep.v25i1.38210.
Sari, P., & Nugroho, H. (2022). Analysis difficulty study mathematics for students elementary school. *Journal Educational Sciences, 10* (3), 112–120. https://doi.org/10.36709/jip.v10i3.3041.
Slavin, R.E. (2018). *Educational Psychology: Theory and Practice (12th Ed.).* Pearson Education.
Sudjana, N. (2019). *Method Statistics.* Tarsito.
Sugiyono. (2011). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D.* Bandung: Alfabeta.
Sulistyaningrum, ME, Setyarsih, W., & Budiyanto, MA (2019). 21st century learning: Preparing human resources superior. *Journal Educational Innovation, 13* (1), 33–41.

Suparno, P., & Astuti, D. (2022). The role of teachers in increase motivation study student elementary school. *Journal Psychology and Education, 10* (3), 210–219. https://doi.org/10.32698/jpp.v10i3.482.

Supriyadi, T. (2021). Perspective Vygotsky's theory in learning mathematics. *Journal of Mathematics Education, 6* (2), 120–129. https://doi.org/10.32678/jpm.v6i2.3915.

Supriyanto, A. (2021). Learning strategies mathematics based need participant educate school basic. *Journal Innovation in Elementary Education, 6* (1), 10–18. https://doi.org/10.25037/jipd.v6i1.130.

Syahputra, A., Hidayati, N., & Lismita, D. (2021). Assumptions basic statistical tests parametric and its applications. *Journal of Educational Research, 5* (2), 97–106. https://doi.org/10.21009/jrp.052.07.

Widyoko, E.P. (2020). *Compilation Techniques Instrument Research*. Student Library.

Winkel, W.S. (2017). *Psychology Teaching*. Grasindo.

Wulandari, A., Setiawan, H., & Yulianto, R. (2021). The influence of game media to improvement motivation Study students. *Indonesian Journal of Elementary Education, 6* (1), 25–34. https://doi.org/10.29407/jpdn.v6i1.14432.

Yanti, D., & Handayani, S. (2022). Strategies for cultivating interest in numeracy in learning mathematics elementary school. *Journal Elementary Education Science, 9* (1), 45–53. https://doi.org/10.31004/jipd.v9i1.304.

Yuliani, F. (2022). Effectiveness use of card media to motivation study mathematics. *Journal Innovation Learning Mathematics, 10* (3), 145–154. https://doi.org/10.23887/jipm.v10i3.3148.

Yuliani, S. (2022). Effectiveness use of game media in learning mathematics class low. *Journal Horizons of Education, 41* (3), 675–685. https://doi.org/10.21831/cp.v41i3.48220.

Zorrilla, M. (2022). Early numeracy skills as predictors of future mathematics performance. *Journal of Educational Research and Practice, 12* (3), 201–213. https://doi.org/10.5590/JERAP.2022.12.3.16.