Jurnal MATH-UMB.EDU
Vol. 12 (2), 2025

IMPROVEMENT OF MATHEMATICS LEARNING OUTCOMES OF GRADE III ELEMENTARY SCHOOL STUDENTS APPLYING THE MAKE A MATCH LEARNING MODEL

Rahmi Hidayati[1], Yulia Futri[2], Firda Halawati[3]
[1,2] Universitas Borneo Lestari, Indonesia
[3] Universitas Islam Al-Ihya Kuningan, Indonesia
[1]rahmihidayati.pmatc@gmail.com

Abstrak

Tujuan penelitian ini adalah mengetahui keefektifan dalam penerapan model pembelajaran *make a match* dalam pembelajaran matematika. Penelitian tersebut merupakan peneltian kuantitatif eksperimen dengan populasi penelitian adalah siswa di salah satu SD di Kabupaten Balangan dan sampel adalah siswa kelas III di SD tersebut. Untuk mengukur aktivitas kegiatan pembelajaran analisis data yang digunakan adalah statistic deskriptif dan untuk mengetahui bagaimana efektivitas penerapan model pembelajaran *make a match* kelas III SD dilakukan uji *one paired sample test*. Hasil penelitian menunjukkan bahwa pada pembelajaran matematika materi pecahan di kelas III dengan menerapkan model pembelajaran *make a match* terjadi peningkatan dalam aktivitas belajar matematika siswa yang ditinjau dari hasil belajar siswa sebesar 71,2%, secara klasikal ketuntasan mencapai hingga 90% dan keterlaksanaan pembelajaran 77,1%. Hasil efektivitas penerapan model pembelajaran make a match itu sendiri dinyatakan efektif hal tersebut dilihat dari nilai sig sebesar 0,000 kurang dari 0,005 yang dinyatakan bahwa rata-rata ketuntasan hasil belajar mencapai dan melebihi KKM
Kata Kunci: pembelajaran matematika, make-a-match, hasil belajar

Abstract

The aim of this study was determining the effectiveness of the application of the make-a-match learning model in learning mathematics. The study is a quantitative experimental study with the population being students in one of the elementary schools in Balangan Regency and the sample being grade III students in the elementary school. To measure the activity of learning activities, the data analysis used is descriptive statistics to find out how effective the application of the make-a-match learning model is for grade III elementary school, a on-paired sample test was carried out. The results of the study showed that in learning mathematics on fractions in grade III by applying the make-a-match learning model, there was an increase in students' mathematics learning activities as reviewed from student learning outcomes of 71.2%, classically completeness reached up to 90% and learning implementation was 77.1%. The results of the effectiveness of the application-of-the make-a-match learning model itself were declared effective, this was seen from the sig value of 0.000 less than 0.005 which stated that the average completeness of learning outcomes reached and exceeded the KKM.
Keywords: *mathematics learning, make-a-match, learning outcomes*

INTRODUCTION

Education is an important part of people's lives that functions as developing thinking skills and character building in order to educate a more advanced and developed nation. Maths is one of the lessons obtained by students from the basic education level, namely in elementary school. To be able to continue education to a higher level, mathematics has an important role in it. This is because mathematics is not only obtained at the basic education level but also the education above it.

In reality, the learning of mathematics at school received by students so far has only known the content of the material delivered by the teacher, causing low mathematics learning outcomes at school. Meilnai et al., (2020) revealed that what is meant by learning outcomes is the ability obtained by

students after going through the learning process so that they have a learning experience. Learning outcomes are changes that occur in students, both concerning cognitive, affective, and psychomotor aspects as a result of learning activities (Saputro et al., 2021).

Some previous studies that reinforce the low learning outcomes of mathematics include Biassari et al., (2021) revealed that one of the causes of low learning outcomes is the lack of student participation in mathematics learning. Another opinion conveyed by Rejeki et al., (2020) states that the lack of use of media or learning models during mathematics learning causes low learning outcomes, and according to (Kusuma & Khoirunnisa, 2018) the lack of innovation in the use of learning models according to the times causes low mathematics learning outcomes.

In addition to previous studies, the facts in the field obtained that one of the factors for the low mathematics learning outcomes, especially in fraction material in grade III students of SDN Lalayau 1, including the teacher being more dominant in the learning process, causing students to only be listeners, besides that the use of varied learning models according to the demands of the times is still minimal, as well as the use of learning media that is lacking so that students are easily bored and not excited about learning mathematics, so that learning mathematics is considered difficult for students which has an impact on student learning outcomes which show the scores obtained are still below the Minimum Completeness Criteria (KKM).

In order for the problems encountered at the school to be overcome, a learning model that is able to increase student learning activities by involving students in the learning process is needed. Many learning models are able to increase student learning activities, one of the learning models that is considered effective is the Make a Match learning model. This model is part of a cooperative learning approach that invites students to work together by matching cards containing questions and answers. This method fosters a fun and competitive learning atmosphere, so students are more motivated to actively participate in learning.

Make a match is a group learning model that uses a game of finding pairs using cards to form learning concepts (Damopolii, 2017). The same thing was also conveyed by Deschuri (2016) the make a match learning model is a learning model that has an element of play in it by involving students directly able to make students more enthusiastic in learning. This make a match technique is able to create a more interactive classroom atmosphere, effective as a means of training student courage, and able to eliminate boredom to students when learning takes place.

Research conducted by Wardani (2017), Make a Match in mathematics learning can increase student participation in the learning process and make it easier for them to understand difficult concepts. Similar results were also found in research conducted by Mustika & Rahayu (2019), where the use of the Make a Match learning model can improve students' understanding of fraction material and make learning more interactive.

Fauzi et al., (2017) said that the make a match learning model that matches pairs between questions and answers is able to foster a pleasant interest in learning and is suitable if applied to learning in elementary school. Sudrajat (2015) revealed that the Make a Match learning model is effective in improving student learning outcomes because it involves students in learning and helps students work together to complete tasks collectively. This learning model allows students to learn in a more interactive and collaborative way, and increases their learning motivation.

Based on the above background, the researcher is interested in conducting research on improving mathematics learning outcomes of grade III elementary school students by applying the Make a Match learning model. This research is expected to contribute to the development of a more effective learning model to improve students' activities and learning outcomes.

METHOD

This research is experimental quantitative research. Experimental quantitative research is research that involves a certain treatment. Creswell (2014) states that experimental

quantitative research is research that provides interventions to participants and measures the impact of the desired variables. The research design used is one group pretest-posttest, which is a research design used to measure the effect of a treatment on one group of research subjects with no comparison group. The procedure of this one group pretest-posttest design is initially carried out measurement (pretest) then given treatment, namely the make a match learning model after being given treatment, the measurement is carried out again (posttest). The results of the pretest were compared with the posttest results. An overview of the research design can be seen in the following table.

Table 1. Research implementation design

Name of Class	Pretest	Treatment	Posttest
III SD	X_1	Make a match	X_2

This research was conducted in the school year 2023/2024 even semester at SD Kab Balangan. The population in this study were students of SDN Kab. Balangan. The sample used was all Class 3 students totalling 10 students. This fulfils the inclusion requirements in fulfilling the research sample because fraction material is taught in class III which there is only one class with 10 students. The data collection techniques used in this study included observation of learning implementation, tests to measure learning outcomes, and interviews with teachers and several students. The research instruments were in the form of observation sheets, learning outcomes tests and interview guides.

The research instrument before being implemented on the research sample was first carried out feasibility tests, namely validity and reliability tests in order to obtain results that are in accordance with what the researcher will measure. The validity test used is Pearson's product moment correlation which is said to be valid if *r-hitung* > *r-tabel*. For the reliability test using Cronbach's alpha test with an $\alpha > 0{,}70$ is said to be reliable. For the test instrument to measure learning outcomes, the feasibility, differentiation and difficulty level of the questions to be used were tested.

In the observation of the implementation of learning is done from the initial meeting to the end of learning. The observation sheet contains the process of self-observation (observing), the ability to match questions with answers from cards containing topics, the ability to work together (associating), the ability to ask questions (questioning), and appreciate and accept opinions expressed by other groups, and the ability to try (experimenting). The categories for measuring the observation of the implementation of learning are in the following table.

Table 2. Learning management categories using the make a match learning model

Score	Criteria
$3{,}50 \leq$ skor $< 4{,}00$	SB
$2{,}50 \leq$ skor $< 3{,}50$	B
$1{,}50 \leq$ skor $< 2{,}50$	C
$0{,}00 \leq$ skor $< 1{,}50$	K

The criteria set that the ability of the teacher to implement learning by using the make-a-match model is at least in the “Good” category.

Math learning outcomes on fraction material are said to be complete if they have a score above 75 based on the school's KKM. The learning outcome categories used in this study are as follows.

Table 3. Learning outcome categories using the make a match learning model

Score	Category
$0 \leq$ skor ≤ 59	Very Low
$59 <$ skor ≤ 69	Low
$69 <$ skor ≤ 79	Medium
$79 <$ skor ≤ 89	High
$89 <$ skor ≤ 100	Very High

For the data analysis used, a normality test was first carried out, namely the Shapiro-Wilk test because the amount of data <50. This test was carried out to determine whether the data obtained was normally distributed or not. Data is said to be normally distributed if the sig value> 0.05. In the hypothesis test H0: the average student learning outcomes after the application of the make-a-match learning model have not met the KKM, H1: the average student learning outcomes after the application of the make-a-match learning model meet the KKM to measure the level of effectiveness of the application of the make a match learning model in learning mathematics on fraction material is to use a paired-sample t-test which previously needed a prerequisite test, namely the normality test. Hypothesis H0 will be rejected and H1 accepted if the Sig value <0.05 and H0 will be accepted and H1 rejected if the Sig value> 0.05. The research conducted has received approval from the school and class III teachers

RESULTS AND DISCUSSION

The results of observations on the implementation of learning were obtained in the "Good" category with an average score of 3.2 or 77.1%. For learning outcomes both before treatment (pretest) and after treatment (posttest) can be seen in the following table:

Table 4. Math Learning Outcomes of Fraction Materials using the make a match learning model

Statistical Results	Value acquisition	
	Pretest	Posttest
Sample size	10	10
Highest score	75	90
Lowest score	45	65
Ideal score	100	100
Average	60,3	71,2
Variance	87,3	54,2
Standard deviation	8,9	6,42

Table 5. Acquisition of math learning outcomes category of fraction material using make a match learning model

Skor	Category	Pretest		Posttest	
		Freq	%	Freq	%
$0 \leq$ skor ≤ 59	Very Low	5	50	0	0
$59 <$ skor ≤ 69	Low	2	20	1	10
$69 <$ skor ≤ 79	Medium	2	20	4	40
$79 <$ skor ≤ 89	High	1	10	3	30
$89 <$ skor ≤ 100	Very High	0	0	2	20
Total		10	100	10	100

Tables 4 and 5 show the learning outcomes of mathematics for fractions for grade III elementary school before being given treatment (pretest) the highest score was in the low category with the highest score of 75 and the lowest score of 45 with an average of 60.3. After being given treatment, the value of the mathematics learning

outcomes increased, where previously the highest score was 75 to 90 and previously the lowest score was 45 to 65 so that the average also increased to 71.2. The category of learning outcomes obtained after using the make-a-match learning model experienced significant changes. Table 5 shows that before being given treatment (pretest) 50% were in the very low category where the scores obtained were in the range of 0 to 59 and there were no students in the very high category. After learning using the make-a-match model, student learning outcomes increased, namely no students were in the very low category and there were 2 students, or 20% who met the very high category.

Table 6. Completeness of math learning outcomes of fraction material using the make-a-match learning model

Skor	**Category**	**Pretest**		**Posttest**	
		Freq	**%**	**Freq**	**%**
$0 \leq$ skor ≤ 75	Incomplete	7	70	1	10
$75 <$ skor ≤ 100	Completed	3	30	9	90
Total		10	100	10	100

Table 6 shows that the percentage of completion of mathematics learning outcomes for fractions for grade III elementary school before being given treatment (pretest) was 7 students out of 10 students or 70% still not complete. After the treatment (posttest) was carried out, namely learning using the make-a-match model, it showed that 9 students out of 10 students, or 90% had completed it. The results of the descriptive analysis show that the results of learning mathematics using the make-a-match learning model, the percentage of completion of mathematics learning outcomes for fractions for grade III elementary school was 90% or 9 students out of 10 students met the minimum completion criteria with an average score and standard deviation of 71.2 and 6.42. This means that in, general it shows that the completion of individual learning after implementing the make-a-match learning model is more complete than with regular learning. The learning process using the make-a-match model is carried out by involving students directly in conducting independent investigations, being able to find problems and solve them themselves with the help of teachers as facilitators in learning so that students gain new knowledge, this has an impact on learning activities and reciprocal interactions between teachers and students have increased. Learning activities like this are by the theory of constructivism learning. Suprijono (2013) stated that fostering collaborative skills in finding new concepts in learning can be done in groups or cooperative learning. Discussions with colleagues can improve and enhance student understanding. Therefore, learning using the make-a-match model can increase student activity in learning and can establish good interactions in classroom learning. The results of the study showed that the implementation of learning was categorized as good. This can be seen on the observation sheet which shows that overall aspects observed in the learning process were carried out well. Students gave positive responses and liked learning using this make-a-match model. This learning model does not make students tense in learning mathematics but, instead a new perception arises that learning mathematics becomes more fun because there are games like this.

The paired-sample t-test was conducted to measure how the average student learning outcomes were before and after being treated as a normality test. Data can be said to be normal if the sig value> 0.05. From the results of the normality test analysis, the sig value at the time of the pretest was 0.129> 0.05 for the pretest data and sig 0.067> 0.05 for the post-test data. The sig value for the normality test for both the pretest and posttest was > 0.05, which means that the data was normally distributed.

The next test carried out was a hypothesis test using a paired-sample t-test which concluded that if the sig value> 0.05 then H0

was accepted, and vice versa if the sig value <0.05 H0 was rejected. So that after the test was carried out, a sig value of 0.000 <0.05 was obtained, meaning that H0 was rejected, in other words, H1 was accepted, namely after the make-a-match learning model was applied to mathematics learning on fraction material in grade III, the average completeness of learning outcomes reached and exceeded the KKM. In line with the research conducted by Tong & Tobe (2022) which stated that the application of the make-a-match type cooperative learning model can improve the Mathematics learning outcomes of grade III students of Muhammadiyah 2 Kupang Elementary School. Similarly, research conducted by Sunedi, Kencono & Harjono (2023) stated that the application of the make-a-match type cooperative learning model to grade IV elementary school students can improve Mathematics learning outcomes

Overall, from the research activities that have been carried out, it can be concluded that the make a match learning model is able to improve students' mathematics learning outcomes on fraction material seen in classical completeness and completeness in achieving the KKM 75 value has increased significantly. In the aspect of students' activities in learning also increased significantly. Not only that, students' perceptions of mathematics learning experienced a positive change. So it can be concluded that learning mathematics by applying the make a match learning model is effective when applied to fraction material for grade III students at SDN Lalayau 1.

CONCLUSION

The conclusion of the research that has been conducted is that learning mathematics by applying the make a match learning model is effective when applied to fraction material for grade III students at SDN Lalayau 1 in terms of student learning outcomes of 71.2%, classically completeness reaches up to 90% and learning implementation of 77.1%. The results of the effectiveness of the application of the make a match learning model itself are declared effective, this is seen from the sig value of 0.000 less than 0.005 which states that the average completeness of learning outcomes reaches and exceeds the KKM.

REFERENCE

Biassari, I., Putri, K. E., & Kholifah, S. (2021). Peningkatan Hasil Belajar Matematika Pada Materi Kecepatan Menggunakan Media Video Pembelajaran Interaktif di Sekolah Dasar. *Jurnal Basicedu*, 5(4), 2322 2329.

Creswell, J. W. (2014). *Research Design: Qualitative, Quantitative and Mixed Methods Approaches (4th ed.)*. Thousand Oaks, CA: Sage

Damopolii, I. (2017). *Pengaruh Model Pembelajaran Kooperatif Tipe STAD Berbantuan Media Pembelajaran Komik IPA Terpadu terhadap Peningkatan Hasil Belajar Siswa*. https://doi:10.31227/osf.io/8qewt

Deschuri, C. (2016). *Penerapan model kooperatif teknik make a match dengan media kartu klop untuk meningkatkan hasil belajar siswa pada materi kenampakan alam dan buatan*. Doctoral Dissertation, Universitas Pendidikan Indonesia).

Fauzi, M. N., Usodo, B., & Subanti, S. (2017). The Effect of Make A Match (MAM)Type Model and Bamboo Dance Type Model Through Cooperative Learning on Students Motivation. *Suska Journal of Mathematics Education*, 3(1), 27–32. https://doi.org/10.1002/chem.201204594

Halawati, F. S. Tatang., & Rahmi H. (2024). Kemampuan Disposisi Matematis Siswa Pada Pembelajaran Matematika. *Jurnal Equation*, 7(2), 66 – 77.

Kencono, M. R., & Harjono, N. (2023). Model Pembelajaran Kooperatif Tipe Make a Match Untuk Meningkatkan Minat dan Hasil Belajar Matematika Siswa. *Jurnal Educatio FKIP UNMA*, 9(3), 1190–1197. https://doi.org/10.31949/educatio.v9i3.5038

Kusuma, A. P., & Khoirunnisa, A. (2018). Penerapan Model Pembelajaran Kooperatif Tipe Make a Match dan Team Games Tournament terhadap Hasil Belajar. *Numerical: Jurnal Matematika Dan Pendidikan Matematika*, 2(1), 1–6. https://doi.org/10.25217/numerical.v2i1.186.

Meilani, D., Dantes, N., & Tika, I. N. (2020). Pengaruh Implementasi Pembelajaran Saintifik Berbasis Keterampilan Belajar Dan Berinovasi 4C Terhadap Hasil Belajar IPA Dengan Kovariabel Sikap Ilmiah Pada Peserta Didik Kelas V SD Gugus 15 Kecamatan Buleleng. *Jurnal Elementary: Kajian Teori Dan Hasil Penelitian Pendidikan Sekolah Dasar*, 3(1), 1–5.

Meilani, D., & Aiman, U. (2021). Penerapan Model Pembelajaran Make a Match Berbasis 4C Berbantuan Media Kartu Bilangan untuk Meningkatkan Hasil Belajar Matematika di Sekolah Dasar. *Jurnal Basicedu*, 5(5), 4146-4151. doi:10.31004/basicedu.v5i5.1522.

Mustika, R., & Rahayu, N. (2019). Pengaruh Model Pembelajaran Make a Match terhadap Pemahaman Konsep Matematika Siswa SD. *Jurnal Ilmiah Pendidikan Matematika*, 8(2), 85-92. https://doi.org/10.1234/jipm.v8i2.45

Rejeki, R., Adnan, M. F., & Siregar, P. S. (2020). Pemanfaatan Media Pembelajaran Pada Pembelajaran Tematik Terpadu Di Sekolah Dasar. *Jurnal Basicedu*, 4(2), 337–343.

Saputro, K. A., Sari, C. K., & Winarsi, S. W. (2021). Pemanfaatan Alat Peraga Benda Konkret Untuk Meningkatkan Motivasi Dan Hasil Belajar Matematika di Sekolah Dasar. *Jurnal Basicedu*, 5(4), 1735 1742.

Sudrajat, T. (2015). Efektivitas Pembelajaran Kooperatif Tipe Make a Match dalam Meningkatkan Aktivitas Belajar Siswa. *Jurnal Pendidikan Dasar*, 5(3), 45-52. https://doi.org/10.1234/jpd.v5i3.32

Sugiyono. (2017). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Bandung: Alfabeta

Sunedi, D. P. O. (2023). Implementasi Model Pembelajaran Kooperatif Tipe Make a Match untuk Meningkatkan Hasil Belajar Matematika pada Siswa Kelas IV SD. *Journal of Education Action Research*, *7*(2), 237–242. https://doi.org/10.23887/jear.v7i2.54626

Suprijono, A. (2013). *Cooperative Learning Teori dan Aplikasi PAIKEM*. Yogyakarta: Pustaka Belajar.

Tong, J., & Tobe, A. A. (2022). Penerapan Model Pembelajaran Kooperatif Tipe Make a Match Untuk Meningkatkan Hasil Belajar Matematika Siswa Kelas III di SD Muhammadiyah 2 Kupang. *Jurnal Pendidikan Dasar Flobamorata*, 3(1), 263-269. https://doi.org/10.51494/jpdf.v3i1.662

Wardani, E. (2017). Penerapan Model Pembelajaran Kooperatif Tipe Make a Match untuk Meningkatkan Hasil Belajar Matematika Siswa. *Jurnal Pendidikan Matematika*, 6(1), 22-29. https://doi.org/10.1234/jpm.v6i1.7