Afeksi: Jurnal Penelitian dan Evaluasi Pendidikan
Volume 6 Nomor 6 Tahun 2025
https://afeksi.id/jurnal/index.php/afeksi
e-ISSN: 2745-9985

Effectiveness of Make A Match Learning Model on Mathematic Outcome in Elementary School

Zuliana[1], Ithafur Rahman [2]
UIN Salatiga
Email: zulliannaa@gmail.com[1], ithafurrahman@uinsalatiga.ac.id[2]

Abstract
This study aims to determine how effective the make a match learning model is on the learning outcomes of mathematics on spatial geometry material for fifth grade students of SD Islam Al Azhar 22 Salatiga. This type of research is quantitative with a pseudo-experimental approach, using a Non-equivalent Pretest-Posttest Control Group design. The data collection technique in this study was by providing tests to assess learning outcomes and documentation as supporting data. The results of this study indicate that the Make a Match learning model has good effectiveness in improving the mathematical understanding of fifth grade students of Al Azhar 22 Salatiga Islamic Elementary School on the material of building spaces. The results of the analysis using the Independent Sample T Test showed a significance value <0.001 which means less than 0.05. Thus, it can be concluded that Ha is accepted and H0 is rejected. In addition, the results of the N-Gain test in the experimental class reached 58.83% which is in the range of 56% - 75% included in the fairly effective category. Based on these results, it can be concluded that the use of the make a match learning model has a fairly effective impact on the learning outcomes of mathematics in spatial geometry material for fifth grade students of SD Islam Al Azhar 22 Salatiga in the 2024/2025 academic year.
Keywords: *Learning Model; Make A Match; Learning Outcomes*

INTRODUCTION

Education in elementary schools (SD) has a very important role in forming the foundation of children's knowledge and character. Learning components in SD such as learning models, learning media, learning methods and others should also be integrated according to the child's cognitive and psychosocial levels. According to Sugiono, a learning model is a design that describes the process in detail and creates environmental conditions that allow students to interact so that changes or developments occur within students (Nurhayati & , Langlang Handayani, 2020). The learning model contains interactions between educators, students, and learning materials. In addition, the learning model also includes strategies, approaches, methods and learning techniques. Choosing the right learning model can have a positive influence on the development of students' hard skills and soft skills (Mayung et al., 2023).

To achieve optimal learning outcomes at the Elementary School level, teachers need to understand that elementary school children are in the concrete-operational thinking development phase, as explained in Piaget's cognitive development theory. Therefore, the learning process needs to be designed in such a way that it is in accordance with the real-life context and is easy for students to understand. Learning that involves physical movement, educational games, group discussions, and contextual problem solving has proven to be more effective in strengthening conceptual understanding and building students' social skills. By combining a constructivist approach and active learning strategies,

it is hoped that a pleasant learning atmosphere can be created, stimulating curiosity, and encouraging students' activeness in participating in learning activities.

The level of effectiveness of education at the elementary school level is highly dependent on the extent to which the learning process is able to develop students' understanding of concepts, skills, and shape their character as a whole. Effective education is not only seen from academic achievement, but also from students' ability to think logically, work collaboratively, and demonstrate a positive attitude in social interactions. For this reason, every element of learning such as objectives, content, methods, and evaluations must be arranged in an integrated manner and in accordance with the developmental stage of elementary school children. An active, meaningful, and contextual learning approach is very important to implement. When learning strategies are able to provide space for students to build knowledge independently and work together with friends, then the success of education at the elementary school level can be achieved optimally.

According to Miarso, learning effectiveness is one of the criteria that evaluates the quality of education. Learning effectiveness can also be defined as the ability to manage situations appropriately (Chartier, 1972). According to Wahyuddin and Nurcahaya, learning effectiveness can be measured through several indicators, namely:

a. Achievement of mathematics learning outcomes by students

b. The level of student activity in the mathematics learning process

c. The level of implementation or implementation of learning according to plan

d. Student responses or responses to the course of the learning process (Hamzah et al., 2022).

Education at the elementary school level has a role beyond simply imparting knowledge, it is also an important medium in shaping children's character and social skills. At this stage, children's cognitive development is still in process, so learning methods must be adjusted to their concrete thinking skills and psychosocial needs. The combination of learning models, media, and techniques needs to take this into account so that learning activities feel fun and meaningful, while supporting children's overall growth. Thus, choosing the right learning model can help students master academic material while developing soft skills such as communication, collaboration, and self-confidence.

In addition, an effective learning model at the Elementary School level needs to support active interaction between teachers and students as well as between students. Interactive and participatory learning models can increase interest in learning and facilitate understanding of abstract concepts, especially in mathematics. In this case, the teacher functions as a facilitator and motivator who encourages students to think critically and explore. Therefore, it is important for educators to develop and implement innovative learning models that are in accordance with the characteristics of students in order to create a conducive learning environment and improve the achievement of learning outcomes as a whole.

Along with the advancement of digital technology and the dynamics of curriculum change, the role of teachers has shifted significantly. Teachers are no longer only tasked with conveying information, but must also be able to design learning that motivates and actively involves students. This condition requires the use of innovative learning models that are relevant to the characteristics of elementary school students, who generally tend to be active, think concretely, and like playing activities. Therefore, the development of interesting and meaningful learning strategies and approaches is a must for educators in creating effective learning experiences.

The use of learning models in SD is mostly still conventional, where teachers deliver material through lectures. This model is easy to implement and efficient in delivering material, but tends to be less interactive and can make students passive in the learning process. Therefore, although conventional models are still used, it is important to consider the integration of more active learning models that are relevant to the needs of the times.

SD Islam Al Azhar 22 Salatiga is one of the leading elementary schools in demand in the city of Salatiga. This can be seen from the academic and non-academic achievements that have been achieved, but in reality there are still shortcomings in the learning process. Based on the results of direct observations and interviews conducted with grade V teachers during the introduction of the school field (PLP) and further observations before the research at SD Islam Al Azhar 22 Salatiga, it was found that grade V students had difficulty in understanding mathematics material which was seen from the low learning outcomes of students. This difficulty is thought to be due to the use of a learning model that is still conventional, namely lectures.

Mathematics is an exact science that requires an interactive learning model so that students are able to understand concepts more effectively. The use of conventional learning models, especially lectures, is less appropriate for mathematics subjects at SD Islam Al Azhar 22 Salatiga. The Make a Match learning model is considered more appropriate for mathematics learning, especially spatial geometry material because of its interactive and fun nature. This model can help students understand abstract concepts of spatial geometry by matching relevant questions and answers. According to Kurniasih and Berlin, the Make a Match learning model is able to improve cooperation skills between students through matching card activities to answer the questions given. Students activeness in finding card pairs makes the learning process more interesting and is able to generate enthusiasm and real student involvement (Fauhah & Rosy, 2020). The steps for implementing the make a match learning model according to Huda are as follows:

1. The teacher delivers the material to the students then prepares cards containing questions and answers related to the material. Students are divided into 2 groups then the teacher gives question cards to group A and answers to group B.
2. The teacher explains to the students that students are asked to match the question cards with the appropriate answer cards, and conveys the maximum time limit that has been set to complete the task.
3. The teacher instructs group A to find the matching card pair from group B. After finding a matching pair, students are asked to inform the teacher. Students will be

notified by the teacher when the time limit has run out. Students who have not found a card pair are asked to gather separately. The teacher calls each pair in turn to present their matching results, while the other students listen and assess whether the pair is correct. After the presentation, the teacher confirms the correctness of the question and answer pairs. The teacher calls the next pair until all students have presented.

4. If students succeed in matching the cards before the time limit, then the students get a score or award (Fauhah & Rosy, 2020).

According to Aris Shoimin, the Make a Match learning model has a number of advantages and disadvantages as follows:

1. Advantages: a sense of joy will be created during the learning process, collaboration between students occurs actively and the spirit of togetherness and cooperation between students appears evenly among all students.
2. Disadvantages: direction from the teacher is needed in implementing learning, the classroom atmosphere becomes crowded so that it has the potential to disturb other classes and the teacher must also prepare supporting materials and tools (Sundanah & Rahmadiansyah, 2022).

An interactive and fun learning approach is needed in teaching mathematics at the elementary school level, especially for abstract materials such as spatial geometry. One model that can be applied is Make a Match, which combines elements of educational games with group work. Through the activity of matching question and answer cards, this model provides a more real and interesting learning experience for students. In addition to encouraging fast thinking skills, this model also develops social skills such as collaboration and communication between students. With this potential, it is important to conduct a scientific study to assess the effectiveness of this model in the context of learning. Research conducted by Viza Mastura, Arjudin, and Asri Fauzi (2024) shows that the Make a Match model can significantly improve students' mathematics learning outcomes. In a study conducted on grade IV students of SDN 1 Ampenan, the results of the analysis using the independent sample t-test showed a t-count value of 3.786, which was higher than the t-table of 1.673, with a significance level of 0.000 which is below 0.05. This confirms that there is a significant difference between students who learn using the Make a Match model and students who learn conventionally. This finding is a strong basis that the Make a Match learning model is worthy of being used as an alternative strategy in improving mathematical understanding in elementary schools.

Innovative learning models such as Make a Match have great potential in creating a dynamic and interactive classroom atmosphere, which is very appropriate for the developmental stage of students at the elementary school level. The activity of matching question cards with their answers not only trains students' thinking speed, but also strengthens their ability to work together and build communication between individuals. This is relevant because elementary school students are in a phase of social development that requires encouragement through group activities. A learning process that is fun, interactive, and contains elements of play can reduce boredom and increase student focus,

especially in understanding mathematics lessons that are often considered difficult and abstract.

By seeing the urgency of implementing learning that is right on target and in accordance with the characteristics of elementary school-aged children, it is important to integrate models such as Make a Match into classroom learning activities. Spatial geometry material, which requires visual and concrete understanding, is greatly helped by strategies that involve manipulative media such as question and answer cards. It is hoped that the use of this model can improve student learning outcomes not only in the cognitive domain, but also in aspects of attitudes and motor skills. Therefore, this research is seen as important as a form of contribution to improving the quality of mathematics learning through a more fun, collaborative, and contextual approach.

The application of the Make a Match learning model is not only intended to improve learning outcomes, but also to encourage active student participation during the learning process. In facing the challenges of learning in the 21st century, students are required to not only understand the subject matter, but also have the ability to think critically, work together in teams, and solve problems creatively. The Make a Match model provides students with the opportunity to engage in cooperative learning through information matching activities, which ultimately can increase students' activeness, communication, and understanding of the material. An interactive and enjoyable learning atmosphere also contributes to increasing learning motivation, which indirectly has a positive impact on learning achievement. Therefore, a scientific study is needed to determine how effective this learning model is, especially in delivering spatial geometry material which is often considered difficult by elementary school students.

Although the Make a Match learning model has been used in various subjects, its application in mathematics learning-especially on the topic of building spaces at the elementary school level-is still relatively rare as the object of research. In addition, studies using a quantitative approach with a quasi-experimental design to test the effectiveness of this model are still limited. This condition shows the need to examine more deeply the extent to which the Make a Match model can improve mathematics learning outcomes while encouraging active student involvement in the learning process.

The effectiveness of a learning model is not only measured by the quantitative increase in student grades, but also by how the model is able to create a learning environment that motivates, engages, and empowers students actively. In this context, the Make a Match model provides a fun learning experience through information matching activities, which require students to think quickly, work together, and discuss with each other. The interactions that occur during the learning process not only strengthen understanding of the material, but also train social skills that are important for the development of elementary school-age children. Therefore, learning models such as Make a Match are considered relevant to be applied in 21st-century learning, which requires students to have collaborative, communicative, and critical skills.

This research focuses on the topic "The Effectiveness of Make a Match Learning Model on Learning Outcomes of Geometry of Spatial Buildings Material for Grade V

Students of Al Azhar 22 Salatiga Islamic Elementary School in the 2024/2025 Academic Year." The main purpose of this study is to analyze the extent to which the Make a Match learning model is effective in improving students' mathematics learning outcomes, especially in the geometry of built space material in class V of SD Islam Al Azhar 22 Salatiga.

METHODS

This research uses a quantitative approach. Quantitative research is a type of research that uses statistical analysis methods and statistical analysis techniques to test hypotheses, draw conclusions and understand how the variables studied are related (Candra Susanto et al., 2024). The method used in this research is the experimental method using the Quasi Experimental Design design. According to Sugiyono, this design involves two groups, namely the experimental group and the control group. However, in this design the control group cannot fully function to control outside variables that can affect the course of the experiment (Putri et al., 2023). This study used a Non Equivalent Pretest-Posttest Control Group Design involving two groups, namely the experimental class using the make a match learning model and the control class using the conventional learning model.

Before the experiment began, both groups were given a pretest to measure students' initial abilities. After the implementation of the Make a Match learning model in the experimental group and the conventional learning model in the control group, a posttest was conducted to evaluate the improvement of student learning outcomes. The pretest and posttest results were then statistically analyzed to assess the effectiveness of each learning model. During the implementation of the study, researchers also tried to minimize the interference and influence of outside variables so that the results obtained truly reflect the impact of learning models on student learning achievement.

The population in this study were all fifth grade students of Al Azhar 22 Salatiga Islamic Elementary School in the 2024/2025 school year, totaling 72 students. This study used cluster random sampling technique, which divides the population into individual groups (clusters) and the sample is randomly selected from each group (Sari Anita et al., 2023). Therefore, in this study, the samples of class V B were used as the control group and class V C was used as the experimental group with a total of 22 students each. The data collection technique used two methods, namely tests and documentation. The instrument used in this study was a test to measure student learning outcomes.

In an effort to ensure that the instruments used are in accordance with the research objectives, a content validation process is carried out by experts (expert judgment), namely academics and educational practitioners who have expertise in the field of learning evaluation. This validation aims to assess the quality of test items in terms of content, structure, and language use to match the characteristics of elementary school students. This step is important to ensure that the instruments used not only have statistical validity, but are also pedagogically appropriate and suitable for the learning context, so that the data generated can be trusted in drawing research conclusions. The validation process of this study began with a UIN Salatiga mathematics lecturer as an academic expert and continued with a fifth grade teacher at Al Azhar 22 Salatiga Islamic Elementary School. After

revisions were made based on the input from the experts, the items were then tested on grade VI students who had already learned about building spaces. The research instrument was tested for quality through analysis of trial data which included validity, reliability, item difficulty, and item differentiation.

Validity testing is used to determine the extent to which a measurement instrument (test) is able to measure precisely and accurately in accordance with the function that should be performed (Ramadhan et al., 2024). A question is considered valid if the significance value (sig.) <0.05. Reliability testing aims to measure the extent to which an instrument produces consistent and reliable data when used under the same conditions (Ramadhan et al., 2024). A question is considered reliable if its reliability value is greater than 0.6, which shows the consistency of the instrument. The level of difficulty is a measure of the extent to which a question item is difficult to answer, which is expressed in numerical form. The difficulty index describes the level of difficulty of the question. Questions are categorized as easy if the index is between 0.71-1.00, moderate if it is at 0.31-0.70, and difficult if the value is between 0.00-0.30 (Rajagukguk & Naibaho, 2023). Question discriminating power is the ability of a question item to distinguish between students with high abilities and students with low abilities (Saputri et al., 2023). Questions with differentiating power between 0.71-1.00 are categorized as very good, 0.41-0.70 are good, 0.21-0.40 are considered sufficient, while 0.00-0.20 are considered poor. If the value of differentiating power is negative, then the question is included in the very bad category, because it tends to be answered correctly by low ability students (Kolin et al., 2025).

Meanwhile, data analysis was carried out through several stages, namely normality test, homogeneity test, hypothesis test using independent sample t-test and N-Gain test analysis. The normality test is used to determine whether the data collected comes from a population that has a normal distribution or not (Amiruddin & Basri, 2022). The homogeneity test is a prerequisite test in statistical analysis that aims to determine whether two or more groups of sample data come from a population with uniform variance or not (Iyan Nurdiyan Haris, 2018). The hypothesis test used is the t-test type of independent sample t-test is a statistical technique used to compare two sample groups that are not statistically related (Syafriani et al., 2023). Meanwhile, the N-Gain test is used to assess the effectiveness of learning or intervention in improving student learning outcomes (Sukarelawan et al., 2024).

FINDING AND DISCUSSION

The analysis test of the instrument trial results aims to determine the quality of the test items that will be used in the study. This analysis includes testing the validity, reliability, level of difficulty of the questions, and the differentiating power of each test item to ensure that the instrument is truly feasible and able to measure learning outcomes accurately. The results of the analysis show that 16 questions have a significance value (sig.) <0.05 so that they are declared valid, while 4 questions have a significance value > 0.05 and are declared invalid. The instrument is also declared reliable with a reliability coefficient value of 0.807 which is included in the high category. The results of the difficulty level test of 20 questions show that most of the questions are in the moderate category. In detail, as many as 14

questions are included in the moderate category with a difficulty index between 0.31–0.70, 5 questions are included in the easy category with a difficulty index between 0.71–1.00 and 1 question is included in the difficult category with a difficulty index of 0.30. The results of the discriminatory power test analysis of 20 questions showed that 1 question was included in the very good category with a discriminatory power index of 0.739, 12 questions were included in the good category with an index between 0.40–0.69, 3 questions were included in the sufficient category with an index between 0.20–0.39 and 4 questions were included in the very bad category because they had a negative discriminatory power index. Based on these results, 4 questions in the very bad category were eliminated from the instrument, while 3 questions in the sufficient category were revised in the questions and answer choices.

Initial data analysis tests were conducted to determine whether there were significant differences between the control group and the experimental group before treatment was given. This test includes normality tests and homogeneity tests to ensure that both groups are in statistically equivalent initial conditions. Meanwhile, the final data analysis test was conducted using the independent sample t-test and the N-Gain test to determine differences in learning outcomes after treatment was given and to see the level of effectiveness of the learning model used on learning outcomes in each group.

Table 1. Normality Test Results

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Kelas	Statistic	df	Sig.	Statistic	df	Sig.
Hasil	PreEks	,193	22	,032	,927	22	,107
	PostEks	,179	22	,065	,939	22	,185
	PreKontrol	,165	22	,120	,944	22	,235
	PostKontrol	,122	22	,200*	,955	22	,389

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

The data normality test used in this study was Shapiro-Wilk because the number of samples was less than 50. The results of the experimental class normality test obtained a pre-test significance value of 0.107 and a post-test of 0.185, while the control class obtained a pre-test significance value of 0.235 and a post-test of 0.389. Based on these results, it can be concluded that all data are normally distributed, because the significance value of each is greater than 0.05.

Table 2. Pre-Test Homogeneity Test Results

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
HASIL	Based on Mean	1,430	1	42	,238
	Based on Median	,978	1	42	,328
	Based on Median and with adjusted df	,978	1	41,940	,328
	Based on trimmed mean	1,451	1	42	,235

Table 3. Post-Test Homogeneity Test Results

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
HASIL	Based on Mean	2,233	1	42	,143
	Based on Median	2,224	1	42	,143
	Based on Median and with adjusted df	2,224	1	36,884	,144
	Based on trimmed mean	2,407	1	42	,128

The homogeneity test is used to test the similarity of variance between groups to be analyzed. The SPSS IBM 30 program was used to test the homogeneity of this study with the provision that if the sig. value > 0.05 then the two data groups are declared homogeneous and if the sig. value < 0.05 then the two data groups are declared non-homogeneous (Meila Noor Syafria, I. A., Pratiwi & Kuryanto, 2020). The results of the pre-test homogeneity test in the control and experimental classes obtained a Based on Mean significance value of 0.238. Meanwhile, the results of the post-test homogeneity test in both classes obtained a Based on Mean significance value of 0.143. Based on these results, it can be concluded that the pre-test and post-test data for the control and experimental classes have homogeneous variance.

Table 4. Independent Sample T-Test Results

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					
						Significance			
		F	Sig.	t	df	One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference
Hasil Belajar Matematika	Equal variances assumed	2,233	,143	-5,490	42	<,001	<,001	-17,636	3,212
	Equal variances not assumed			-5,490	37,484	<,001	<,001	-17,636	3,212

The make a match learning model is effective for mathematics learning outcomes in spatial geometry material in class V of SD Islam Al Azhar 22 Salatiga. The control class was treated using a conventional model, namely lectures, and the experimental class was treated with the make a match learning model. The pre-test results of control class students obtained an average score of 53 and a post-test of 63. Meanwhile, for experimental class students, they obtained an average score of 53 and a post-test of 80. In this study, hypothesis testing was carried out using IBM SPSS software version 30. The decision-making criteria are based on the significance value (Sig.), namely: if the Sig. value is less than 0.05, then the alternative hypothesis (Ha) is accepted and the null hypothesis (H_0) is rejected. Conversely, if the Sig. value is more than 0.05, the null hypothesis (H_0) is accepted and the alternative hypothesis (Ha) is rejected (Akbar et al., 2024). The results of the independent sample t-test also obtained a significance value (two-tailed) of < 0.001. This shows that there is a difference in pre-test and post-test scores in the two classes. These results also indicate that the use of the make a match learning model in the experimental class has a greater influence on student learning outcomes.

Table 5 N-Gain Test Results

Descriptives

	KELOMPOK			Statistic	Std. Error
NgainPersen	EKSPERIMEN	Mean		58,83	2,971
		95% Confidence Interval for Mean	Lower Bound	52,65	
			Upper Bound	65,01	
		5% Trimmed Mean		59,88	
		Median		60,48	
		Variance		194,139	
		Std. Deviation		13,933	
		Minimum		16	
		Maximum		81	
		Range		64	
		Interquartile Range		18	
		Skewness		-1,268	,491
		Kurtosis		2,960	,953
	KONTROL	Mean		22,67	2,778
		95% Confidence Interval for Mean	Lower Bound	16,89	
			Upper Bound	28,45	
		5% Trimmed Mean		21,31	
		Median		19,10	
		Variance		169,745	
		Std. Deviation		13,029	
		Minimum		10	
		Maximum		61	
		Range		52	
		Interquartile Range		15	
		Skewness		1,651	,491
		Kurtosis		2,844	,953

N-Gain analysis is a method used to measure the level of effectiveness of a learning model or intervention by comparing pretest and posttest scores to assess improvements in student learning outcomes (Sukarelawan et al., 2024). Based on the results of the N-Gain test, the control class obtained an average value of 22.67%, this indicates that the use of conventional learning models (lectures) is not effective on student learning outcomes. Meanwhile, the experimental class obtained an average N-Gain value of 58.83%, which is included in the moderately effective category. Based on these results, it can be concluded that the application of the Make a Match learning model in the experimental class is more effective in improving learning outcomes compared to the learning model used in the control class.

Overall, the findings from the statistical analysis indicate that the Make a Match learning model is effective in improving students' learning outcomes. The higher increase in the average post-test score in the experimental group compared to the control group, as well as the results of the t-test and N-Gain which show statistical effectiveness, reinforces that the interactive and collaborative learning approach is more effective in helping students understand mathematical concepts, especially geometry space material. In addition to cognitive aspects, this model is also proven to be able to increase student activeness, group cooperation, and create a more pleasant learning atmosphere. The results of this study are in line with research conducted by Hepi Gustia, Hariani Juwita and Jemiyo Siswanto (2021) regarding the effectiveness of the make a match learning model on

learning outcomes in class VIII beam material SMP N 1 Tanjung Sakti PUMU. Based on the results of data analysis, the tcount value is 1.96, while the ttable is 1.668. Because tcount> ttable, the alternative hypothesis (Ha) is accepted and the null hypothesis (H_0) is rejected. Thus, it can be concluded that the Make a Match learning model is effective in improving students' mathematics learning outcomes on the material of building block space in class VIII SMP Negeri 1 Tanjung Sakti PUMU in the 2017/2018 academic year. Thus, these findings provide a strong basis for recommending the Make a Match model as an innovative learning alternative to improve the quality of mathematics learning in primary schools.

CONCLUSION

Based on the results of the data analysis test of this study, it can be concluded that the use of the make a match learning model is more effective than the conventional learning model on the mathematics learning outcomes of fifth grade students of SD Islam Al Azhar 22 Salatiga in terms of spatial geometry. These findings imply the importance of using active and collaborative learning models in increasing student engagement and understanding of mathematical concepts.

The use of the Make a Match method in learning activities not only contributes to improving students' academic achievement cognitively, but also strengthens social skills through activities that emphasize collaboration and communication between individuals. Throughout the learning process, learners demonstrate active engagement through cooperation, peer discussions, and the development of critical thinking and quick decision-making skills. This condition is in line with the demands of 21st-century education that prioritizes mastery of the 4C competencies, namely critical thinking, communication, collaboration, and creativity. Therefore, Make a Match is worth considering as an alternative learning approach that is not only effective in academic aspects, but also relevant to shaping students' character and competencies as a whole.

However, this study has limitations, such as the scope is limited to one school and certain materials, so the results cannot be generalized to a wider context. Nevertheless, this study provides an initial contribution in showing the effectiveness of educational game-based learning strategies, especially Make a Match, in mathematics learning at the elementary school level. For further research, it is suggested that the Make a Match model be applied to different materials and grade levels, and compared with various other active learning models. In addition, the development of more diverse instruments is also needed to evaluate the impact of learning more comprehensively.

In addition to providing a positive influence on students' cognitive abilities, the Make a Match learning model also has a significant impact on social and emotional aspects, such as improving cooperation skills, communication, and self-confidence during the learning process. This condition encourages teachers to continue to create and apply variations of creative and fun learning models, so that learning is not only academically effective but also able to accommodate the development of various dimensions of students as a whole. Therefore, learning at the elementary school level is expected to not only focus

on academic achievement, but also on character formation and the development of comprehensive life skills.

REFERENCES

Akbar, R., Sukmawati, U. S., & Katsirin, K. (2024). Analisis Data Penelitian Kuantitatif. *Jurnal Pelita Nusantara*, *1*(3), 430–448. https://doi.org/10.59996/jurnalpelitanusantara.v1i3.350

Amiruddin, T., & Basri, B. (2022). Analisis Statistik Parametrik. In *Yayasan Khalifah Cendekia Mandiri*. http://eprints.unm.ac.id/32291/1/Buku penelitian dan statistik 20123 Final Editing.pdf

Candra Susanto, P., Ulfah Arini, D., Yuntina, L., Panatap Soehaditama, J., & Nuraeni, N. (2024). Konsep Penelitian Kuantitatif: Populasi, Sampel, dan Analisis Data (Sebuah Tinjauan Pustaka). *Jurnal Ilmu Multidisplin*, *3*(1), 1–12. https://doi.org/10.38035/jim.v3i1.504

Chartier, M. R. (1972). Learning Effect. *Simulation & Games*, *3*(2), 203–218. https://doi.org/10.1177/003755007200300206

Fauhah, H., & Rosy, B. (2020). Analisis Model Pembelajaran Make A Match Terhadap Hasil Belajar Siswa. *Jurnal Pendidikan Administrasi Perkantoran (JPAP)*, *9*(2), 321–334. https://doi.org/10.26740/jpap.v9n2.p321-334

Hamzah, F., Mujib, A., Firmansyah,), Muslim, U., Al, N., Medan, W., Garu2, J., & Sumatera Utara, M. (2022). Efektivitas Pembelajaran Blended Learning Menggunakan Schoology Pada Pelajaran Matematika 1). *Januari*, *10*(1), 95–104.

Iyan Nurdiyan Haris, 2018. (2018). *Pengaruh Penggunaan Pasta Labu Kuning (Cucurbita Moschata) Untuk Substitusi Tepung Terigu Dengan Penambahan Tepung Angkak Dalam Pembuatan Mie Kering* (Vol. 15, Issue 1). https://core.ac.uk/download/pdf/196255896.pdf

Kolin, A. K., Rosliyah, Y., Setiawati, A. S., & Oesman, A. M. (2025). *Analisis butir soal ulangan akhir semester bahasa jepang kelas xi di sma negeri 1 semarang analysis of final semester exam questions for japanese language class xi at sma negeri 1 semarang*. *11*(1), 81–90.

Mayung, R. A., Tandiayu, W. N., Untu, Z., & Widajanti, A. (2023). SEMINAR NASIONAL PENDIDIKAN PROFESI GURU TAHUN 2023 e-ISSN: 2829 - 3541. *Seminar Nasional Pendidikan Profesi Guru Tahun 2021*, *2020*, 105–111.

Meila Noor Syafria, I. A., Pratiwi, I. A., & Kuryanto, M. S. (2020). Pengaruh Model Pembelajaran Picture And Picture Ditinjau Dari Kemampuan Berpikir Kritis Siswa Sekolah Dasar. *Jurnal Basicedu*, *5*(5), 3(2), 524–532. https://journal.uii.ac.id/ajie/article/view/971

Nurhayati, H., & , Langlang Handayani, N. W. (2020). Jurnal basicedu. Jurnal Basicedu,. *Jurnal Basicedu*, *5*(5), 3(2), 524–532. https://journal.uii.ac.id/ajie/article/view/971

Putri, A. D., Ahman, A., Hilmia, R. S., Almaliyah, S., & Permana, S. (2023). Pengaplikasian Uji T Dalam Penelitian Eksperimen. *Jurnal Lebesgue : Jurnal Ilmiah Pendidikan Matematika, Matematika Dan Statistika*, *4*(3), 1978–1987.

https://doi.org/10.46306/lb.v4i3.527

Rajagukguk, M. J. T., & Naibaho, D. (2023). Mampu Memilih Soal Berdasarkan Tingkat Kesukaran. *Jurnal Pendidikan Sosial Dan Humaniora*, *01*(4), 1–23.

Ramadhan, M. F., Siroj, R. A., & Afgani, M. W. (2024). Validitas and Reliabilitas. *Journal on Education*, *6*(2), 10967–10975. https://doi.org/10.31004/joe.v6i2.4885

Saputri, H. A., Zulhijrah, Larasati, N. J., & Shaleh. (2023). Analisis Instrumen Assesmen : Validitas, Reliabilitas, Tingkat Kesukaran, dan Daya Beda Butir Soal. *Didaktik : Jurnal Ilmiah PGSD FKIP Universitas Mandiri*, *09*(05), 2986–2995.

Sari Anita, Dahlan, Tuhumury Nicodemus August Ralph, Prayitno Yudi, Siegers Hendry Willem, Supiyanto, & Werdhani Sri Anastasia. (2023). *Buku Annita sari Dkk Dasar-dasar Metodologi Penelitian*. 71.

Sukarelawan, M. I., Indratno, T. K., & Ayu, S. M. (2024). *N-Gain vs Stacking*.

Sundanah, & Rahmadiansyah, R. (2022). Pengaruh Model Pembelajaran Make a Match Terhadap Kemampuan Komunikasi Matematis Siswa Smp Kelas VII Pada Materi Himpunan. *Desanta …*, *2*, 310–322.

Syafriani, D., Darmana, A., Syuhada, F. A., & Sari, D. P. (2023). Buku Ajar Statistik Uji Beda Untuk Penelitian Pendidikan (Cara Dan Pengolahannya Dengan SPSS). *Cv.Eureka Media Aksara*, 1–50.