Vygotsky: Jurnal Pendidikan Matematika dan Matematika
7 (1) Februari 2025, pp. 73 - 80
E-ISSN: 2656-5846 P-ISSN: 2656-2286
Journal Page is available to
https://jurnalpendidikan.unisla.ac.id/index.php/VoJ

The Effect of Bamboo Dacing Learning Model to Improve Mathematics Learning Outcomes

Dede Apriani[1*], Eva Julianti[1], Laili Habibah Pasaribu[1]
[1]Pendidikan Matematika FKIP, Universitas Labuhanbatu, Indonesia

Email Correspondence: aprianidede426@gmail.com

ARTICLE INFO

Article History
Received : 02 Jan 2025
Revised : 15 Jan 2025
Accepted : 21 Feb 2025
Available Online : 28 Feb 2025

Keywords:
Bamboo Dancing
Mathematics Learning Outcomes
Quasi-Experiment

Please cite this article APA style as:
Apriani, D., Julianti, E. & Pasaribu, L. H. (2025). The Effect of Bamboo Dacing learning Model to Improve Mathematics Learning Outcomes. *Vygotsky: Jurnal Pendidikan Matematika dan Matematika*, 7(1), pp. 73-80.

ABSTRACT

This study aims to determine the learning outcomes of mathematics in class VIII MTS Ponpes Darus Sholihin before and after using the Bamboo Dancing learning model. This research was a quasi-experiment involving two classes, each with 25 students. Data were collected through observation and tests. The results showed that the control class had an average pretest score of 67.72, while the experimental class, after treatment, had a posttest average of 85.76. Statistical analysis (sig = 0.000 < 0.05) confirmed a significant effect, meaning the Bamboo Dancing model improved learning outcomes. This model enhances engagement, understanding, and social skills, making it effective in mathematics learning.

1. Introduction

Education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble character, and skills needed by themselves and society. Education has an important role in individual progress and nation building. Today's education is designed to produce a generation that is able to face the challenges of the information age and the development of communication technology, in accordance with the objectives of national education. As the main pillar in the development of quality human resources, learning mathematics plays a very significant role.

Mathematics is a subject studied by students in *Madrasah Tsanawiyah* (MTs).

E-ISSN: 2656-5846
P-ISSN: 2656-2286

However, researchers found that students often struggle to receive and process learning materials. Observations conducted with class VIII teachers at MTs Darus Sholihin revealed that students' understanding of mathematical concepts was still low. This was evident when teachers introduced learning models, yet students continued to rely on memorizing formulas from textbooks rather than grasping underlying concepts. Additionally, monotonous teaching methods made students passive and less enthusiastic about learning. The lack of variation in instructional approaches, which remained predominantly teacher-centered, further contributed to this issue. Students merely absorbed what was presented without active engagement, limiting their conceptual understanding.

Many factors cause low student ability, including many students who are afraid (phobia of mathematics), not used to expressing opinions, lack of ability to analyse the meaning of the problem, and lack of student interest in the material being taught. Students receive material delivered by the teacher actively by taking notes and without a single student expressing an opinion or asking questions verbally related to the material. The learning method used is still limited to the lecture method so that students appear passive during the learning process. According to Setiawan in Pangestu & Fathani (2024) states that mathematics learning must begin by introducing problems or proposing real-world problems. Therefore, it is necessary to design a lesson that accustoms students to construct their own knowledge and can understand mathematical concepts that affect the improvement of learning outcomes.

According to Sudijono (2012), learning outcomes serve as an evaluation tool encompassing cognitive (thinking processes), affective (attitudes and values), and psychomotor (skills) domains. In other words, they help assess student achievement after the learning process. Hidayat (2017) noted that teacher-centered learning often leads students to focus on memorization rather than conceptual understanding. Similarly, Rahmawati (2015) emphasized that conventional models, such as lecture-based teaching without student involvement, result in passive learning. To improve mathematical comprehension, it is essential to implement engaging and varied instructional strategies that encourage active student participation.

One of the main challenges in learning mathematics is how to overcome fear and boredom that can hinder students understanding of the material. Therefore, an innovative and fun approach is needed to improve student learning outcomes. One method that can be applied is the Bamboo Dancing learning model. This model, which is originally a traditional game that relies on body coordination and co-operation, can be adapted for the educational environment, especially in learning mathematics. By integrating active, creative and collaborative elements, it is expected that this model can attract students' interest and improve their learning outcomes, especially in mathematics (Julianti, 2016).

Bamboo Dancing learning model is a type of cooperative learning model, this learning model is relevant to mathematics learning. In this learning, students will learn in heterogeneous groups. The teacher will act as a facilitator and students will play a full role in this learning. According to Anita Lie as cited in Zuraida (2015), the Bamboo Dancing Learning Model begins with listening to the presentation of mathematics material information

E-ISSN: 2656-5846
P-ISSN: 2656-2286

from the teacher, then students learn in groups in pairs or face to face. The material that has been discussed is then taught to members of other groups, by shifting in a clockwise direction and returning to the original pair. The Bamboo Dance learning model aims for students to share information together with different partners in a short time regularly. The selection of this model is felt to make students more active and improve students' understanding of concepts

Based on previous research, the Bamboo Dance learning model can provide information evenly. This strategy is suitable for teaching materials that require exchange and experience between students. The syntax is that some students stand in a line at the front of the class or between the benches of the table and some others stand opposite the first group of students, students who face each other share experiences and knowledge, students who stand at the end of one line move to the other end of the line, and return to sharing information (Ana, 2019).

2. Method

This research uses a quantitative approach with the type of quasi experiment (quasy experiment). The variables in the study were the independent variable (Bamboo dancing learning model) and the dependent variable (Mathematics Learning Outcomes). The design used in this research is Nonequivalent control group design. This study divides the class into two, namely the experimental class and the control class. The experimental group is the group that gets treatment. In this study, class VIII A was the experimental class that used the bamboo dancing learning model. And class VIII B which became the control class using a conventional learning model.

The population in this study were all students of class VIII MTs Darus Sholihin. In this study, Non Probability Sampling technique was used. The sample was taken using saturated sampling technique, which means that all members of the population were used as samples. Arikunto (Arifani et al., 2023) said that if the subject is less than 100, it is better to take all so that the research is population research. In this study, the research was conducted twice, namely before the experiment and after the experiment. The assessment before the experiment is called the pre-test and the assessment after the experiment is called the post-test. Then the data analysis technique in this study uses a Comparative Hypothesis Test, namely the Parametric Test in the form of the Independent Sample t-Test and Paired Sample t-Test tests using SPSS version 22.

3. Results and Discussion

This research is a quantitative study with an experimental design that aims to determine the effect of the Bamboo Dancing learning model to improve the mathematics learning outcomes of 8th grade students of MTs Ponpes Darus Sholihin. This research was conducted with different treatments between the experimental class using the Bamboo Dancing learning model and the control class using the conventional learning model.

E-ISSN: 2656-5846
P-ISSN: 2656-2286

Table 1. Descriptive Analysis Results

Desciptive Statistics					
	N	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
Experimental Pretest	25	56	77	68.12	6.566
Experimental Posttest	25	80	92	85.76	3.455
Control Pretest	25	55	84	67.72	7.492
Control Posttest	25	67	89	78.00	5.212
Valid N (listwise)	25				

Based on table 1, the results of descriptive statistics obtained the average value of the control class prestest of 67.72, the control class posttest of 78.00 and the average value of the experimental class pretest of 68.12 while the experimental class posttest of 85.76. these results indicate that there is an effect of the bamboo dancing learning model to improve the learning outcomes of mathematics students in class VIII MTs Darus Sholihin. After descriptive analysis is carried out, the data analysis prerequisite test is carried out which consists of normality test and homogeneity test.

3.1. Normality Test

The normality test is used to determine whether the data under study is normally distributed or not. The normality test was calculated using SPSS 22 for windows with the Kolmogrov-Smirnov test and the Shapiro-Wilk test. If the significance (sig) obtained is greater than α = 0.05, then the data is normally distributed or vice versa. Based on table 2 below shows> 0.05, the data is normally distributed.

Table 2. Tests of Normality

		Kolmogorov-Smirnov			**Shapiro-Wilk**		
		Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
Learning Outcomes	Experimental Pretest	.112	25	.200	.927	25	.073
	Experimental Posttest	.133	25	.200	.951	25	.261
	Control Pretest	.124	25	.200	.966	25	.543
	Control Posttest	.151	25	.147	.960	25	.409

3.2. Homogeneity Test

Homogeneity test is used to determine whether the data studied comes from a normally distributed population. The normality test of student data was calculated using SPSS 22 for windows with one way ANOVA analysis. with testing criteria; if the significance value (Sig) obtained is greater than α = 0.05, then the data is homogeneous. Based on table 3, it can be seen well the results of the homogeneity test obtained a significance value of 0.243. this shows that the significance> 0.05, so it can be concluded that it comes from the same or homogeneous population

Table 3. Test of Homogeneity of Variances

	Levene Statistic	**df1**	**df2**	**Sig.**
Learning Outcomes	1.398	1	48	.243

3.3. Hypothesis Test

Hypothesis testing using the Paired Sample t Test is a test used to compare the

E-ISSN: 2656-5846
P-ISSN: 2656-2286

difference in mean data from two paired samples with the assumption that the data is normally distributed. Paired samples come from the same subjects, each variable is taken during different situations and circumstances. This test is also called the t test.

Table 4. Independent Samples Test for Learning Outcomes

	Levene's Test Equality of Variances		**t-test for Equality of Means**						
								95% Confidence Interval of the Difference	
	F	**Sig.**	**t**	**df**	**Sig. (2-tailed)**	**Mean Difference**	**Std. Error Difference**	**Lower**	**Upper**
Equal Variances Assumed	1.398	.243	6.204	48	.000	7.760	1.251	5.245	10.275
Equal Variances not Assumed			6.204	41.681	.000	7.760	1.251	5.235	10.285

The analysis results in table 4. show that the sig. (2-tailed) value of 0.000, which is smaller than 0.05. This indicates that H_0 is rejected and H_a is accepted. Thus, it can be concluded that there is a significant influence between the application of the Bamboo Dancing learning model on students' mathematics learning outcomes in class VIII MTs Darus Sholihin.

This finding is in line with previous research which shows that collaborative learning, such as the Bamboo Dancing model, can improve student learning outcomes. For example, research conducted by (Sahlan, et al., 2024) found that the Bamboo Dancing model encourages students to be more active in the learning process, increases. interaction between students, and strengthens concept understanding through group discussions. Students' involvement in collaborative activities in the Bamboo Dancing model allows them to share ideas, discuss material, and solve problems together. This provides a more in-depth learning experience compared to conventional learning methods. Therefore, the results of the analysis showing the significant effect of applying the Bamboo Dancing model support previous findings that interactive and collaborative learning approaches are effective in improving student learning outcomes, especially in mathematics subjects that require strong conceptual understanding.

4. Conclusion

The Bamboo Dancing learning model is proven to have a positive influence in improving the learning outcomes of mathematics class VIII students at MTs Ponpes Darus Sholihin. The research data shows that the average post-test score in the experimental class (using the Bamboo Dancing model) is higher (85.76) than the pre- test average (68.12), and better than the average value of the control class which only uses conventional learning methods. The results of hypothesis testing with paired samples test showed

https://doi.org/10.30736/voj.v7i1.1148

E-ISSN: 2656-5846
P-ISSN: 2656-2286

a significance value of 0.000 (<0.05), which indicates that there is a significant difference in student learning outcomes between the use of the Bamboo Dancing model and conventional learning methods. Thus, it can be concluded that learning with the Bamboo Dancing model is able to increase students' activeness and understanding of mathematical concepts compared to conventional methods.

This model contributes to creating a more active, collaborative, and fun learning atmosphere, thus becoming an innovative alternative to improve mathematics learning outcomes. Some recommendations from the Bamboo Dancing learning model for the development of science are This study shows that the Bamboo Dancing model is effective in improving mathematics learning outcomes. Further research could be conducted to apply this model to other subjects, such as social science or language, to measure its impact on concept understanding and student engagement. This research underlines the importance of innovation in learning. It is recommended to develop more activity-based learning methods that involve students' active participation, such as project-based methods or simulations, to reduce the fear of certain subjects.

Author Contributions

The first author focuses on collecting, processing and analysing data and presenting it in the form of scientific work, the second and third authors as mentors in the process of forming this article.

Acknowledgment

The author is grateful to MTs Ponpes Darus Sholihin and the Mathematics Education Study Programme, Labuhanbatu University for supporting this research.

Declaration of Competing Interest

As the author, I hereby declare that I have no conflict of interest or competing interests related to this research. All results of this research were prepared with objectivity and without influence from any party that could affect the validity and independence of the findings.

References

Ana, S. L. (2019). Pengaruh Model Pembelajaran Kooperatif Tipe Bamboo Dancing Pada Materi Koloid Terhadap Hasil Belajar Siswa Kelas XI SMAN 1 Wanaraya. *Jurnal Pendidikan Kimia dan Ilmu Kimia*, 2 (2).

Eko Prastya Hati, n. (2021). Meningkatkan hasil belajar matematika materi persamaan garis lurus melalui metode inkuiri pada siswa kelas VIII-D MTs Negeri 4 Jember Semester 1 tahun 2019/2020. *Jurnal Ilmiah Pendidikan*.

Fiyani, F. N. (2018). Keefektifan Model pembelajaran Bamboo dancing da jigsaw ditinjau dari hasil belajar matematika siswa kelas 4 SD JTAM . *Jurnal Teori dan Aplikasi Matematika*.

Istarani. (2011). *58 Model Pembelajara Inovatif* . Medan: Media Persada.

E-ISSN: *2656-5846*
P-ISSN: *2656-2286*

Julyanti, E. (2016). Upaya Meningkatkan Aktivitas Dan Hasil Belajar Melalui Pembelajaran Kooperatif Tipe Student Teams Achievement Division Di Kelas VIII Smp Swasta Torgamba. *Jurnal Sigma*.

Kunardi. (2021). Peningkatan Hasil Belajar Matematika Materi Persamaan Garis Lurus Melalui Model Pembelajarankooperatif Tipe Make A Match. *Jurnal Ilmiah Pro Guru*.

Lestari, R., Apriani, M. S., Kesuma, R. P., Cahyo, R. D. & Siagian, T. A. (2024). Desain dari Media Pembelajaran "MathArt" Berbasis Android Media Pembelajaran "MathArt" pada Materi Bunga, Diskon, dan Pajak Sederhana di Tingkat Pendidikan Menengah Pertama. *Vygotsky: Jurnal Pendidikan Matematika dan Matematika*, 6(2), pp. 99-110.

Mohammad, S. (2024). Pengaruh Model Pembelajaran Tipe Bamboo Dancingterhadap Hasil Belajar Peserta Didik. *Jurnal Penelitian Dan Ilmu Pendidikan*.

Nuritasari, F., Tafrilyanto, C. F., Aini, S. D., Hasanah, S. I.& Surahmi, E. (2024). Mathematics Learning Using Japanese Multiplication Method (JAMED) Solving Multiple Problems Class III Basic Education Students. Vygotsky:*Jurnal Pendidikan Matematika dan Matematika*, 6(2), pp. 87-98.

Pangestu, I.N & Fathani, A.H (2024). Pengembangan Perangkat Pembelajaran Matematika Sekolah Menengah Atas Berbasis Masalah dengan Pendekatan Pembelajaran Responsif Budaya. *Vygotsky: Jurnal Pendidikan Matematika dan Matematika.* 6(2). pp 111-118

Pasaribu, L. H. (2021). increasing students' communication skills and independence through realistic mathematics learning assisted by google classroom. *Jurnal Pendidikan Matematika*, 42-29.

Pasaribu, L. h. (2021). Pengaruh Motovasi, Minat Belajar dan Lingkungan Terhadap Prestasi Belajar Matematika Siswa. *Jurnal Cendekia*, 106-108.

Pasaribu, S. w. (2022). Peningkatan kemampuan berpikir kreatif dan motivasi siswa melalui pembelajaran matematika realistik. *Jurnal Cendekia*.

PGMI, L. (2009). *Pembelajaran* Pkn *MI.* Surabaya: Lapis PGMI.

Poni, L. (2023). Pengaruh Fasilitas Belajar, Motivasi Belajar dan Disiplin belajar terhadap hasil Belajar Mata Pelajaran Humas Kelas XI OTKP Di Smkn Jakarta Barat. *Jurnal Media Administrasi*, 35-47.

Purwati, A. (2015). *Efektivitas Model Pembelajaran Kooeratif Teknik Bamboo Dancing dalam upaya peningkatan Hasil Belajar Pkn siswa Smp N 5 Sleman Yogyakarta.* Yogyakarta.

S, P. (2022). Pengaruh Model Pembelajaran Bamboo Dancing Terhadap Hasil Belajar Matematika Siswa SMP PAB 2 Helvetia TP 2019/2020. *Diskusi Panel Nasional Pendidikan Matematika*, 8.

Sarumaha, M. (2020). Pengaruh Model Pembelajaran Bamboo Dancing Terhadap Kreativitas Siswa. *Jurnal Ilmiah Aquinas*.

Sereliciouz. (2021, November). *Quipper Blog*. Pengertian Persamaan Garis Lurus – Rumus, Grafik dan Soal: https://www.quipper.com/id/blog/mapel/matematika/persamaan-garis-lurus/

Sihombng, D. R. (2012). Perbedaan Model tari Bambu dan Index Card Match Terhadap Hasil Belajar Matematika. *SEMNARA*.

E-ISSN: *2656-5846*
P-ISSN: *2656-2286*

Siti Chotidja, d. (2014). Pengaruh Model Pembelajaran Tari Bambu Terhadap Kemampuan Berpikir Kritis Dan Hasil Belajar Fisika SiswaKelas X Sma Negeri 1 Sapuran. *Jurnal Berkala Pendidikan Fisika*.

Supardi. (2018). Hasil Belajar Matematika SiswaDitinjau dari interaksi Tes Formatif Uraian dan kecerdasan Emosional. *Jurnal Formatif*.

Zainal, A. (2013). *Model-model, Media dan Strategi Pembelajaran Kontekstual (Inovatif.* Bandung: Yrama Widia.