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The Effect of the Think-Pair-Share Learning Model on the Learning Outcomes of Grade XI Students at SMK Nusantara

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Abstract

Mathematics is a subject often considered complex due to its abstract nature, requiring a deep understanding of concepts and difficult for students to grasp concretely. Therefore, an interactive approach is needed, one of which is using optimal learning methods that are suited to each student's characteristics. Suboptimal learning methods will result in a lack of student interest in learning, passive student activity, and decreased student learning outcomes. The think-pair-share learning method is an interactive and cooperative approach that encourages students to think independently, discuss in pairs, and share results, thereby increasing student participation and is expected to improve student learning outcomes. Thus, the purpose of this study was to determine whether the think-pair-share learning model could influence the learning outcomes of 11th grade students at SMK Nusantara. This study used a quantitative method with a one-group pretest-posttest design. This type of design only has one sample subject that is given treatment and measured through pretest and posttest. This research was conducted at SMK Nusantara with a sample of 22 students from class XI SMK Nusantara. The research instrument used a test sheet with 5 essay questions.The data collection procedure was obtained through pretest and posttest questions. The research hypothesis was tested using a t-test. The t-test results showed a significant increase (sig. 0.001<0.05). The post-test average score of 78.7273 was higher than the pre-test score of 58.7273 Thus, it can be concluded that there was a difference in learning outcomes between the pre-test and post-test. This means that the think-pair-share learning model affected the learning outcomes of grade XI students at SMK Nusantara.

Keywords: Impact, Learning Outcomes, Think Pair Share

1. Introduction

One of the most important influences in the world of education is learning outcomes, as they serve as a benchmark or benchmark for determining the success and achievement of the objectives of a learning process (Irawan, 2017). Furthermore, learning achievement is competence that a person has through a series of participation during learning activities and then provides a measure of the value obtained. Learning outcomes are achievements students obtain through behavioral changes, both related to thinking skills, behavior, and physical abilities (Rivai & Mohamad, 2021). Learning outcomes are the grades or numbers students obtain

through tests, both in academics and attitudes and behavior. Good learning outcomes will encourage increased student achievement, learning motivation, and overall learning quality. A learning activity can be said to be successful or achieved if students are able to fully master each subject with various demands that cover aspects of the cognitive, emotional, and psychomotor domains. This will also be a statement of maximum learning outcomes (Wahyuningsih, 2020). Learning outcomes are a crucial part of the learning process because they determine their skills and quality (Rahman, 2021). This is inextricably linked to the implementation of an independent curriculum in schools, which influences students' learning interests, particularly in mathematics, so that students are expected to achieve optimal learning outcomes (Saputri et al., 2024).

However, several studies show that vocational high school students in Indonesia, particularly in mathematics, achieve low learning outcomes. This deficiency is caused by low learning interest and a teacher-centered learning model that leads to passive learning (Nabillah & Abadi, 2019; Pattinama et al., 2023). This learning model focuses solely on repeating information without understanding the material's meaning. Initial observations by researchers at SMK Nusantara confirmed this problem. XI grade students demonstrated low learning interest and difficulty understanding matrix material, such as operating with determinants and inverses. Furthermore, students also failed to apply matrices. Matrices are an abstract learning material that requires in-depth conceptual visualization but is difficult to grasp concretely without an interactive approach (Yahya et al., 2025).

The primary step in facilitating student understanding of mathematics is selecting effective learning methods that can enhance student activity in class and improve student learning outcomes in line with the desired learning objectives. Achievement of learning objectives is influenced by student and teacher engagement during the learning process. Effective learning activities focus not only on the teacher but also on student engagement in class, such as actively asking questions, answering questions, and engaging in individual and group assignments. This provides optimal feedback, prevents boredom during learning activities and ensures that desired learning objectives.

In Indonesia, think pair share can be used as a learning model that helps students overcome difficulties in learning, especially in masthematics lessons at the SMK. This learning model is effective in enhancing student activity by directly involving them in group discussions in class (Sukadana, 2022). The implementation of the Think Pair Share (TPS) concept consists of several stages: 1) In the initial stage, the teacher introduces and explains the procedures for using the learning model, then provides direction and encouragement to encourage student participation in the learning process. 2) Thinking: By using demonstrations appropriate to the subject matter, the teacher explores students' prior knowledge. The teacher then provides a stimulus in the form of a question and asks them to think independently about the question, and asks them to write their answers on paper within a certain time limit, taking into account their prior knowledge. 3) Pairing: Students find a partner at this stage and discuss their answers within a specified time. 4) Sharing: At this stage, students present the results of their group discussions to the class (Rianingsih et al., 2019).

Overall, the use of the think-pair-share has proven effective in fostering students' enthusiasm for learning to achieve learning outcomes. Learning activities become more diverse and less boring, so students are more enthusiastic in learning and achieve good learning

outcomes (Setiawan & Cahyaningsih, 2023). Various studies have shown that the think-pair-share learning method has a positive impact, increasing student engagement and becoming a recognized learning method that can facilitate learning and encourage students to think critically (Niyibizi et al., 2024). Other findings show that the think pair share model can create an interesting and intellectually stimulating learning environment, which ultimately improves students' mathematics achievement (Zaki et al., 2024).

Although numerous studies have examined the think-pair-share learning model, there is limited empirical evidence regarding the specific impact of its use on student learning outcomes. Most studies have been conducted at the elementary and junior high school levels, and generally focus on student achievement and engagement in various subjects. However, few have examined its potential in mathematics, particularly in matrices at the vocational high school level. Given the complexity of mathematics learning at the vocational high school level, which requires systematic thinking skills, the structured nature of matrices facilitates their use in everyday life, such as budget management, engineering, and computer science.

Therefore, the purpose of this study is to examine the effect of the think-pair-share learning model on student learning outcomes. This research is expected to contribute to the world of education as a whole.

2. Methods

The research used an approach that focuses on numerical data and only has one group of research subjects who are given treatment and the results are tested through a pretest and posttest (Sugiyono, 2013). This research was conducted at SMK Nusantara with all SMK Nusantara students as the research population with a randomly selected sample of 22 clas XI students who were first given 5 pretest questions using a conventional learning model and the given 5 posttest questions using the think pair share model which consisted of independent thinking steps ad the initial stage which then discussed with a desk partner and the final stage was conveying the results of the discussion to classmates.

The research instrument consisted of 5 pretest questions and 5 posttest questions. The pretest and posttest items were validated by two experts using a 4-point Linkert scale. Analysis using the Aiken V-Index yielded V = 0.888 (LKPD) and V = 0.775 (teaching module). Data collection techniques used pretest and posttest questions. Data were examined through descriptive and inferential statistical analysis. Descriptive statistics provide a summary of the implementation and results of the TPS model, while inferential statistics, such as t-test are used to compare pretest and posttest scores.

3. Result and Discussion

The research was conducted over 2 meetings with a sample of 22 students with the aim of obtaining information and analyzing the impact of learning models on learning outcomes in grade XI students of SMK Nusantara. Then the data obtained from the analysis using parametric

statistics t-test assisted bu the IBM SPSS version 31.0 application that the think pair share model affects student learning outcomes which can be seen in the following table:

Tabel 1

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pretest	58.7273	22	10.82406	2.30770
	Posttest	78.7273	22	4.51644	.96291

Based on table 1 above, the average pretest score was 58,7273, while the posttest score increased in the average score of 20,0000 after the action was carried out on 22 respondents. Then there is a standard deviation showing that the data attributed after action is more consistent, as seen from the standard deviation score of 4.51644 on the posttest, which is smaller that the standars deviation of 10.82406 in the pretest.

Tabel 2

Paired Samples Correlations					
				Significance	
		N	Correlation	One-Sided p	Two-Sided p
Pair 1	Pretest & Posttest	22	.861	<,001	<,001

Table 2 shows a correlation score of 0.861, indicating a good relationship between the pretest and posttest. The correlation analysis showed a significance value of less than 0.05, i.e., <0.001, with a sample size of 22 data pairs. The results indicate a substantial correlation between the pretest and posttest, which is not a coincidence. This indicates that the test is consistent and that student performance patterns before and after the treatment are similar.

Tabel 3

Paired Samples Test										
		Paired Differences							Significance	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	One-Sided p	Two-Sided p
					Lower	Upper				
Pair 1	Pretest - Posttest	-20.00000	7.30297	1.55700	-23.23795	-16.76205	-12.845	21	<,001	<,001

In table 3, there is a difference in the average pretest - posttest value as evidenced by the value of -20.00000 (pretest-posttest) then the calculated t value is recorded at -12.845 with a degree of freedom (df) of 21 which means it involves 22 students as a sample. The significance value obtained is smaller than 0.05 which is <0.001. Therefore, the results of the t test show an influence (sig.0.001 <0.05) so that Ho is rejected and Ha is accepted which means there is an influence of the use of the think pair share model on class XI students of SMK Nusantara through an increase in learning achievement.

The results of the data analysis obtained an average value of 58.7273 in the pretest and an increase of 78.7273 in the posttest. Thus, it can be stated that the improvement in the learning outcomes of class XI students of SMK Nusantara was influenced by the use of the think pair share model. This is also in line with the research of Setiawan & Cahyaningsih (2023) which states that student learning outcomes are influenced by the think pair share learning model. Therefore, the use of the think pair share model is one of the efforts to increase student involvement during the learning process because this model requires students to think not only independently but also collaboratively through discussions and solutions, thus enabling them to be directly involved in learning activities and achieve learning outcomes in accordance with the provisions of the completion value. This learning model also has an effective impact on student learning achievement (Oluwadayo et al., 2022; Widyantoro et al., 2025). Furthermore, findings from (Abiola & Rasheed, 2021; Chinyere & Kenechi, 2025) show that students taught mathematics using the Think-Pair-Share (TPS) learning strategy performed better than students taught using direct learning strategies. Learning outcomes are positively influenced by student participation in class. Students who actively learn will more easily understand the material, which can improve their learning outcomes.

4. Conclusion

The results of the test conducted on 22 students produced an average value of 58.7273 before testing and 78.7273 after testing using the think pair share learning method, which means that Ho is rejected and Ha is accepted with the final results showing a positive impact that influences learning outcomes by using the learning model and a significance value of <0.05 is obtained.

The use of this model is expected to provide motivation and comprehensive student involvement during learning activities which will then foster students' complex understanding of mathematics subjects. In addition, the use of the think pair share model can also be integrated with other learning strategies to foster enthusiasm for learning and achieve the best learning outcomes for students in mathematics.

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6. References

Abiola, A. I., & Rasheed, S. (2021). Effects Of The Think-Pair-Share Instructional Strategy On Students ' Learning Achievements In Secondary School Mathematics. *Abacus (Mathematics Education Series)*, *46*(1), 118–127.

Chinyere, N. M., & Kenechi, N. M. (2025). Effect Of Think Pair Share Instructional Strategy On The Academic Achievement Of Senior Secondary School Students In Mathematics In Onitsha Education Zone, Anambra State. *Unizik Journal Of Educational Research and Policy Studies*, *19*(1), 246–257.

Irawan, R. A. (2017). *Penerapan Model Pembelajaran Tipe Think Pair Share (TPS) Dalam Meningkatkan Hasil Belajar Pendidikan Agama Islam (PAI) Peserta Didik Kelas VIII I SMP N 31 Bandar Lampung* (Vol. 11, Issue 1).

Nabillah, T., & Abadi, A. P. (2019). Faktor Penyebab Rendahnya Hasil Belajar Siswa. *Sesiomedika*, 659–663.

Niyibizi, O., Igiraneza, F., Niyirema, E., Niyigena, C., Tuyemere, G. P., Uwitatse, M. C., & Nepomuscene, J. (2024). Exploring The Contribution Of Think-Pair-Share Supportive Learning Approach On Secondary School Mathematics Students. *Jurnal Of Inventive and Scientific Research Studies (JISRS)*, *II*(1), 1–14.

Oluwadayo, A. T., Akorede, A., Ogundeji, M. A., Odupe, T. A., & Rasaki, M. G. (2022). Effect Of Think-Pair-Share Strategy On Student Achievement In Senior Secondary School Mathematics. *Journal Of Mathematics and Science Education*, *3*(2), 20–25.

Pattinama, J. C., Lsurens, T., & Ayal, C. S. (2023). Analisis Faktor Yang Mempengaruhi Rendahnya Hasil Belajar Siswa Pada Materi Fungsi Eksponensial Kelas X SMA. *Jurnal Of Mathematics And Applications*, *2*(1), 46–55.

Rahman, S. (2021). Pentingnya Motivasi Belajar Dalam Meningkatkan Hasil Belajar Siswa. *ALFIHRIS : Jurnal Inspirasi Pendidikan*, *2*(3), 289–302. https://doi.org/10.59246/alfihris.v2i3.843

Rianingsih, D., Mawardi, M., & Wardani, K. W. (2019). Penerapan Model Pembelajaran Tps (Think Pair Share) Dalam Rangka Meningkatkan Keterampilan Komunikasi Siswa Kelas 3. *NATURALISTIC : Jurnal Kajian Penelitian Pendidikan Dan Pembelajaran*, *3*(2), 339–346. https://doi.org/10.35568/naturalistic.v3i2.394

Rivai, S., & Mohamad, F. D. (2021). Pengaruh Penggunaan Model Pembelajaran Think Pair Share Pada Terhadap Hasil Belajar Siswa Pada Materi Penyajian Data Kelas IV Sekolah Dasar. *Aksara: Jurnal Ilmu Pendidikan Nonformal*, *7*(2), 685. https://doi.org/10.37905/aksara.7.2.685-712.2021

Saputri, L. D., Ferianti, F. W., & Septiadi, W. (2024). Pengaruh Kurikulum Merdeka Belajar Terhadap Minat Siswa Pada Mata Pelajaran Matematika. *Pendidikan Matematika (Al-Khawarizmi)*, *4*(1), 26–29.

Setiawan, Y., & Cahyaningsih, U. (2023). Pengaruh Penggunaan Model Think Pair And Share Terhadap Hasil Belajar Matematika. *Polinomial : Jurnal Pendidikan Matematika*, *2*(1), 35–39. https://doi.org/10.56916/jp.v2i1.278

Sugiyono, D. (2013). Metode penelitian pendidikan pendekatan kuantitatif, kualitatif dan R&D.Bandung:Alfabeta

Sukadana, I. N. (2022). Model Pembelajaran Kooperatif Tipe Think Pair Share (TPS) Untuk Meningkatkan Hasil Belajar IPA Siswa SMP. *Jurnal Penelitian Dan Pengembangan Pendidikan*, *6*(1), 50–55. https://doi.org/10.23887/jppp.v6i1.44596

Wahyuningsih, E. S. (2020). Model pembelajaran mastery learning upaya peningkatan keaktifan dan hasil belajar siswa. Deepublish.

Widyantoro, A., Samsiyah, N., Pratiwi, C. P., & Widyaningrum, H. K. (2025). Model Pembelajaran Think Pair Share Guna Meningkatkan Hasil Belajar Matematika Siswa Kelas VI. *Jurnal Ilmiah Pendidikan Matematika*, *13*(2), 143–154.

Yahya, M. H., Raharjo, K., Ammarulloh, S., Putri, A. A.-Z., & Himawan, I. (2025). Kajian Penerapan Mtriks Dalam Kehidupan Sehari-hari Untuk Meningkatkan Motivasi Belajar. *Al-Aqlu Jurnal Matematika, Teknik Dan Sains*, *3*(2), 130–136.

Zaki, A., Sahid, Nurhaliza, R., Naufal, M. A., Huda, M., & Hassan, M. N. (2024). Enhancing Mathematical Achievement through the Think-Pair-Share Cooperative Learning Model with Higher-Order Thinking Skills Questions. *Jurnal Riset Pendidikan Matematika*, *11*(2), 106–117.