ALENA – Journal of Elementary Education
Vol. 3 No. 2, July, 2025, Pages 287-297
e-ISSN: 2963-0649| DOI: 10.59638/jee.v3i2.370

THE EFFECTIVENESS OF THE THINKING ALOUD PAIR PROBLEM SOLVING (TAPPS) LEARNING MODEL ON THE IPAS LEARNING OUTCOMES OF GRADE IV

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ARTICLE INFO

Article History **:**
Received : date of received article
Accepted : date of accepted article

Keywords **:**

Keywords 1; Effectiveness of TAPPS Model
Keywords 2; *Science Learning Outcomes*

ABSTRAK

The purpose of this study is to examine the effectiveness of the Thinking Aloud Pair Problem Solving (TAPPS) learning model in enhancing the IPAS learning outcomes of fourth-grade students at SD Wahdah Islamic School 03 Makassar. Specifically, the study aims to: (1) determine how effective the TAPPS model is in improving student achievement, (2) analyze the differences in learning outcomes before and after the implementation of TAPPS compared to conventional learning methods, and (3) assess the extent to which TAPPS can enhance students' critical thinking skills in understanding IPAS material. This research adopts an experimental design using the One Group Pretest-Posttest approach. The population includes all fourth-grade students at the school, with a sample consisting of 24 students. Data collection techniques include observation, interviews, learning achievement tests, and documentation. The data were analyzed using both descriptive and inferential statistics. Based on the results of the statistical analysis and observations, it is concluded that the application of the TAPPS learning model has a significant impact on improving the IPAS learning outcomes of the students.

1. INTRODUCTION

Education plays a highly strategic role in improving the quality of human resources and in realizing the ideals of the Indonesian nation to promote general welfare and to enlighten the life of the nation. Efforts to enhance human resource development through education require special attention (Astiti et al., 2021). Education is an important means to improve the quality of human resources in ensuring the progress of a nation and state. Improving the quality of human resources can be realized in facing global competition today (Alannasir, 2018). Law No. 20 of 2003 on the National Education System states that education functions to develop capabilities and shape the character and civilization of a dignified nation in order to educate the life of the nation (Salehha, O. P., Khaulah, S., & Nurhayati, 2022). The current curriculum requires student activeness in learning, where teachers not only carry out teaching activities but teachers also think about how the knowledge transfer process

occurs, namely how students can understand a teaching material to master the subject matter (Alannasir & Selvi, 2018). It aims to develop the potential of learners to become individuals who are faithful and devoted to the One and Only God, possess noble character, are healthy, knowledgeable, skilled, creative, independent, and democratic citizens who are responsive to the challenges of the times (Dwiningsih, 2020). Therefore, it is clear that education is a deliberate activity aimed at shaping learners to have good attitudes and character. Thus, the implementation of education must be carried out in accordance with the National Education System based on Law No. 20 of 2003. As stated by Allah SWT in Surah Az-Zumar (39): 9:

Are those who know equal to those who do not know? Indeed, only those who possess sound intellect can take heed."

Muhammad SAW said:

"Whoever follows a path to seek knowledge, Allah will make it easy for him to follow a path to Paradise." (HR. Muslim, No. 2699).

Based on the researcher's observations at SD Wahdah Islamic School 03, it was found that the fourth-grade students being studied experienced conventional teaching methods, which tended to be monotonous. The teacher used a lecture method, where the teacher was overly active in explaining while not paying attention to how students were engaging in the learning process (Dakhi, 2020). As a result, many students felt bored, and some were not paying attention because they were busy with their own activities, such as disturbing other students or chatting during lessons (Setianingrum & Purwaningsih, 2020). The teacher used text-based reading materials without any media or visual aids, and most students were only asked to memorize IPAS theories and concepts without truly understanding them, making the learning experience less meaningful. Additionally, the teacher explained lessons filled with many terms that were only delivered orally and theoretically (Mardhatillah et al., 2022). According to initial observations made by the researcher, the learning outcomes of IPAS for these students were still low, with an average score of 65. As stated in the curriculum, the minimum completion criteria (KKM) for the IPAS subject at SD Wahdah Islamic School 03. Out of 24 students, 13 did not meet the KKM standard, while 11 students reached or exceeded the KKM.

The low IPAS learning outcomes are influenced by weak teaching practices (Muliani & Wibawa, 2019). Student activity in class remains low, with students generally staying quiet and merely listening to the teacher's explanations. When the teacher asks questions, students tend to remain silent, hesitating to answer or express their opinions. When given the opportunity to ask questions, typically no students take initiative (Hendaryati, 2019). When given assignments, most students are more inclined to cheat from their peers rather than asking questions or discussing with their classmates to complete the task (Sinta et al., 2022). This is where the problem lies, as students tend to be passive and are unable to understand IPAS material well (Murniyetti et al., 2016). The Thinking Aloud Pair Problem Solving (TAPPS) learning model can be an effective approach to achieve both academic and social learning outcomes (Wati, 2020). This model positions students as active learners, which can help increase their motivation and understanding as they are actively involved in the learning process (Komalasari, D., & Karlina, 2019).

Based on the description above, the researcher conducted a study entitled **"The Effectiveness of the Thinking Aloud Pair Problem Solving Model on IPAS Learning Outcomes in Fourth Grade Students at Wahdah Islamic School 03."**

2. METHODS

This study uses a quantitative approach with an experimental method aimed at testing a hypothesis regarding causal relationships (Wahid et al., 2021). The research was conducted at SD Wahdah Islamic School 03, Makassar, in August 2024, with five meetings according to the IPAS lesson schedule. Population is a generalization area consisting of: objects/subjects that have certain qualities and characteristics set by researchers to study and then draw conclusions, the population is not only people, but also objects and other natural objects (Alannasir, 2023). The population of this study consists of 24 fourth-grade students, using a saturated sampling technique that involves the entire fourth-grade class. The research design used is the One-Group Pretest-Posttest Design, which aims to compare students' learning outcomes before and after the intervention using the Thinking Aloud Pair Problem Solving (TAPPS) learning model (Widayati & Maiwati, 2019). Data were collected through observation, tests (pretest and posttest), and documentation. The instruments used include observation sheets to monitor the activities of both the teacher and the students, as well as tests to measure students' understanding of the material (Mandailina, V., & Mahsup, 2018). Data analysis was conducted using descriptive and inferential techniques, including tests for normality, homogeneity, and hypothesis testing with the t-test to determine the effect of the TAPPS model on students' learning outcomes (Noti, 2018).

3. RESULTS AND DISCUSSION

A. Research Results

1. Application of the Thinking Aloud Pair Problem Solving (TAPPS) learning model in social studies learning to the learning outcomes of grade IV students at SD Wahdah Islamic School 03 Makassar.

a. Results of Observation of Teacher Activities

Based on the results of observations made at SD Wahdah Islamic School 03 Makassar on August 7, 2024 in the implementation of the Thingking Aloud Pair Problem Solving (TAPPS) learning model on student learning outcomes, it was found that at the initial meeting there were very positive results. This observation aims to evaluate the effectiveness of the Thinking Aloud Pair Problem Solving (TAPPS) learning model in improving students' ability to solve complex problems in science learning, especially related to the material provided (Nurrita, 2018). The observation score showed extraordinary achievement, with a score of 13 out of 16 or equivalent to a percentage of 81.25%, reflecting significant success in the application of the Thinking Aloud Pair Problem Solving (TAPPS) learning model, which succeeded in encouraging students to think deeper, analyze, and apply the concepts learned into learning.

b. Student Observation Results

Based on the results of student observations conducted at SD Wahdah Islamic School 03. The application of the Thinkin Aloud Pair Problem Solving (TAPPS) learning model in improving students' problem-solving skills showed good results (Nurussyfa & Panggiarti, 2020). This observation aims to evaluate the effectiveness of the Thinking Aloud Pair Problem Solving (TAPPS) model in helping students develop critical, analytical, and creative thinking skills in solving problems relevant to the learning context (Wahyuni, 2020). From the observation results, students managed to achieve a score of 15 out of 17, with a percentage of 88.23% which was categorized as excellent. This achievement shows that student learning activities in the implementation of teaching and learning take place in actions carried out using observation sheets and student learning activities have improved very well.

2. Comparison of Learning Outcomes of Students Using the Thinking Aloud Pair Problem Solving (TAPPS) Pretest Learning Model

a. Social Science learning outcomes of Grade IV students of SD Wahdah Islamic School 03 Makassar before the implementation of the Thinking Aloud Pair Problem Solving (TAPPS) Learning Model

Based on the results of research conducted by researchers at SD Wahda Islamic School 03 Makassar from August 7 – August 21, 2024, data collected through the institution so that the results of IPAS learning in the form of grades from grade IV SD WIS 03 Makassar can be known as follows:

Table 1. Pretest Score

Statistik	Skor
N	24
Mean	60.20
Std.Deviation	15.63
Variance	244.52
Range	50
Minimum	30
Maximum	80
Sum	1445

Source : IBM SPSS Static Version 29

From the results of the calculation above, an N value (number of students) was obtained, which is 24, the mean value of the average score of all participants is 60.20 by adding up all the scores by dividing the number of participants, the standard deviation value of the standard deviation, which shows how large the values are from the average. The score is 15.63, which means that there is a considerable variation in the participants' scores, this result shows the contribution of the pretest score. The value of variance is 244.52, the value of the range of values is the ratio between the highest and lowest values: 80-30 = 50, the minimum value is 30, the maximum value is 80 and the total sum value is 1445. As for being categorized in the guidelines of the Ministry of Education and Culture (Depdikbud), student information can be seen in the following table:

Table 2. Pretest material mastery level

No	Interval	Frekuensi	Persentase (%)	Learning Outcomes Categories
1	0 – 30	0	0	Very Low
2	35 – 54	8	33,4	Low
3	55 – 64	5	20,8	Keep
4	65 - 80	11	45,8	Tall
5	90 – 100	0	0	Very high
Skor		24	100	

Based on the data that can be seen in the table above, it can be concluded that the learning outcomes of students in the Pretest stage using test instruments are categorized as very low 0%, low 33.4%, medium 20.8%, high 45.8% and very high at 0% looking at the results of the existing percentage, it can be said that the level of student understanding of IPAS learning before applying the Thinking Aloud Pair Problem Solving (TAPPS) learning model is classified as tall.

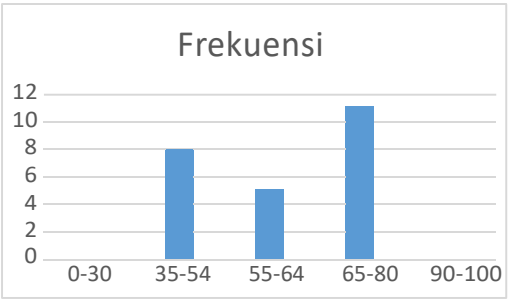

Figure 1. Diagram Pretest

This shows that the initial understanding of each student of the material is still not optimal because there are still 8 students who have learning success in the low and medium categories, there are 5, so there is a need for treatment or models that can increase their passion for learning, one of which is the use of the Thinking Aloud Pair Problem Solving (TAPPS) learning model.

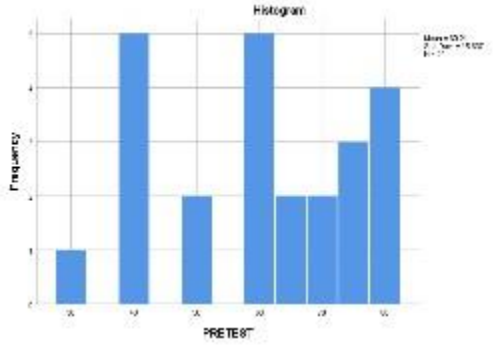

Figure 2. Histogram Pretest

Based on the histogram, the category of each value can be known. There were 1 student who got a score of 30 including the very low category, 5 students who got a score of 40 including the low category, 5 students who got a score of 60 including the medium category, 2 students who got a score of 65 including the medium category, 2 students who got a score of 70 including the high category, 3 students who got a score of 75 including the high category, 4 students who scored 80 including the high category.

b. Posttest of the learning outcomes of IPAS students in grade IV of SD Wahdah Islamic School after applying the Thinking Aloud Pair Problem Solving (TAPPS) learning model

Data on the learning outcomes of IPAS students in grade IV of SD Wahda Islamic School 03 after the application of the Thinking Aloud Pair Problem Solving (TAPPS) teaching model:

Table 3. Postest score score

Statistik	Skor
N	24
Mean	82.29
Std. Deviation	5.70
Variance	32.56
Range	20
Minimum	75
Maximum	95
Sum	1975

Source: IBM SPSS Static Version 29

From the results of the calculation above, the learning outcomes of the fourth grade students of SD Wahdah Islamic School 03 were obtained after the application of the Thinking Aloud Pair Problem Solving (TAPPS) learning model, the mean value of the average score was 82.29, the standard value of the standard deviation of the standard side deviation showed how much the value was from the average. The value is 5.70, the value of the square variance from the standard side is 32.56, the value of the range of values is 20, the minimum value is 75, the maximum value is the highest value is 95 and the total sum value is 1975. As for the categories in the guidelines of the Ministry of Education and Culture (Depdibud), student information can be seen in the table:

Table 4. Posttest Material Mastery Level

No	Interval	Frekuensi	Persentase (%)	Learning Outcomes Categories
1	0 – 30	0	0	Very Low
2	35 – 54	0	0	Low
3	55 – 64	0	0	Keep
4	65 - 85	18	75	Tall
5	90 – 100	6	25	Very high
Skor		24	100	

Based on the data that can be seen in the table above, it can be concluded that the learning outcomes of social studies students at the posttest stage using test instruments are categorized as very low 0%, low 0%, high 75% and very high 25% looking at the existing percentage, it can be said that the level of students' understanding of social science subjects after applying the Thinking Aloud Pair Problem Solving (TAPPS) model is classified as very high.

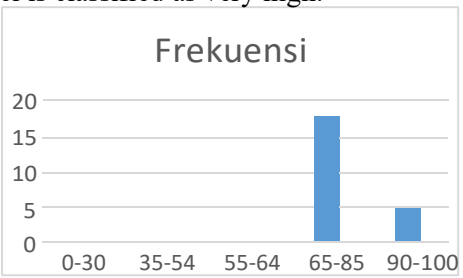

Figure 3. Diagram Posttest

The diagram above shows the posttest results of the students, namely the high and very high categories. This shows that there is a rapid increase in the learning outcomes of social studies students by using the Thinking Aloud Pair Problem Solving (TAPPS) learning model so that students' understanding of the material is faster to capture and solve the problems given.

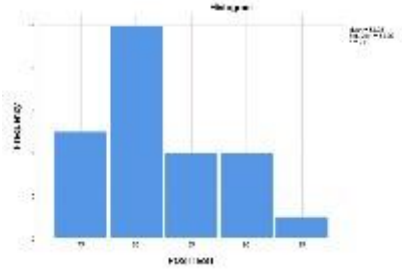

Figure 4. Post-test histogram

Based on the histogram, the category of each value can be known. There were 5 students who got a score of 75 including the high category, 9 students who got a score of 80 including the high category, 5 students who got a score of 85 including the high category, 4 students who got a score of 90 including the very high category, 1 student who got a score of 95 including the very high category.

3. The Effectiveness of the Thinking Aloud Piar Problem Solving (TAPPS) learning model on the learning outcomes of grade IV students of SD Wahdah Islamic School 03.

a. Determining the Essential Question
The essential question posed in this study was highly effective. It successfully sparked students' curiosity and required them to think critically about the impact of species loss on ecosystems. This encouraged students to start thinking deeply about the concepts of animal life cycles and to develop hypotheses based on their prior knowledge.

b. Designing the Learning Implementation Plan
This step was effective because it encouraged students to independently organize the learning process. With the teacher acting as a facilitator, students were able to plan their learning well. They discussed how to manage time, divide tasks within groups, and identify problems. Student involvement in solving a problem also enhanced their analytical and collaborative thinking skills.

c. Planning the Schedule
Creating a work schedule was effective in developing students' time management skills. They learned to prioritize tasks and manage their time efficiently to complete assignments on time. Moreover, having a clear schedule made students more responsible and disciplined in completing their projects.

d. Monitoring Students
Monitoring the learning process was very effective in keeping students motivated and focused. Teachers could provide immediate feedback on students' work, helping them overcome challenges during task completion. Through consistent guidance, students were able to correct mistakes more quickly and effectively. This also helped them learn how to solve problems that arose during the working process.

e. Testing the Results
Testing students' work outcomes was highly effective in enhancing their communication skills. They were trained to present their work clearly, answer questions from teachers and peers, and connect their learning outcomes with scientific concepts studied. This stage also reinforced their understanding of animal life cycles and the problem-solving processes they engaged in.

f. Evaluating the Experience
Evaluating the experience was very effective in helping students internalize their learning. Through reflection, students could recognize their strengths and weaknesses during the process, and learn from past mistakes. This not only improved their problem-solving abilities but also helped them develop metacognitive skills — the ability to understand and manage their own thinking processes.

A. Inferential Analysis

a. Normality test

The following are the results of the pretest and posttest data normality test:

Table 5. Normality Test Results of Pretest and Posttest Data

Tests of Normality							
		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Kelas	Statistic	Df	Sig.	Statistic	Df	Sig.

Student Learning Outcomes	Pretest	0,161	24	0,107	0,911	24	0,161
	Posttest	0,239	24	0,001	0,897	24	0,239

Data source : IBM SPSS Stetistics version 29

The table above shows that the data of the pretest and postest results are normally distributed. Based on the results of the normality test, the p-value in the pretest was 0.161 and the posttest was 0.239 or described in the pretest 0.161>0.05 and the posttest 0.239>05 so that the value of "p-value (Sig) was 0.05. Thus, it can be concluded that obtained from the pretest and the posttest are normally distributed.

b. Homogeneity Test

The following is the data on the results of the pretest and posttest homogeneity test.

Table 6. Pretest and Posttest Homogeneity Test Results

Test of Homogeneity of Variance					
		Levene Statistic	df1	df2	Sig.
Student Learning Outcomes	Based on Mean	2,472	3	19	0.093
	Based on Median	,847	3	19	0.485
	Based on Median and with adjusted df	,847	3	13.345	0.492
	Based on trimmed mean	2.394	3	19	0.100

Data source : IBM SPSS Statistics version 29

Based on the table above, it shows that the results of the pretest and posttest homogeneity test are at a significance level of 0.093. with a Degree Of Freedom (df 1) which is 3 and a Degree Of Freedom (df 2) which is 19. From the table, it can be concluded that the pretets and posttest homogeneity tests are said to be homogeneous because they are 0.093>0.05. The pertest and posttest homogeneity tests are said to be homogeneous because 0.093>0.05" means that the data can be considered to have the same variance, thus satisfying one of the important assumptions for further parametric statistical analysis.

c. Hypothesis Test

The following are the results of the pretest and posttest hypotheses:

Table 7. Hypothetical Results

Paired Samples Test									
		Paired Differences					t	Df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	pretest – posttest	-22,083	11.880	2.425	27,100	17,067	9.107	23	0,000

Data source: IBM SPSS Statistics Version 29

Based on the table above the tcount value > the table, the results obtained in the table are 27,100>17,067, showing that the results of the hypothesis test with a significance value of 0.000>0.05 mean that H0 is rejected and H1 is accepted, which means that there is an average difference between the pretest and posttest learning outcomes which means that there is an influence on the use of the Thinking Aloud Pair Problem Solving (TAPPS) learning model.

B. Discussion

Based on the data analysis conducted in this study, it was found that students' learning outcomes in the subject of Natural and Social Sciences (IPAS) showed an average pretest score of 60, which is considered low, while the average posttest score increased significantly to 85. The average posttest score was 82.29, indicating that students' IPAS learning outcomes improved after the application of the Thinking Aloud Pair Problem Solving (TAPPS) learning model, compared to before its implementation. Furthermore, the percentage distribution of score categories was: very low 0%, low 0%, medium 0%, high 75%, and very high 25%.

These results demonstrate a significant effect of the Thinking Aloud Pair Problem Solving (TAPPS) learning model on students' IPAS learning outcomes, which aligns with the observations made during the study. Initially, during the early stages of learning, some students were disengaged or indifferent during the lessons. Only a few students actively participated in solving the problems provided by the teacher. However, with the continued implementation of the TAPPS learning model, student engagement in problem-solving activities increased significantly (Purnama et al., 2021).

Hamalik states that "learning outcomes are patterns of behavior, values, understandings, attitudes, and abilities acquired by students." Therefore, the researcher developed a conceptual framework for how to apply the Thinking Aloud Pair Problem Solving learning model to achieve optimal IPAS learning outcomes. These learning outcomes were measured through teacher and student observations in Grade IV at SD Wahdah Islamic School 03 Makassar.

In these observations, the researcher focused on evaluating both teachers and students in relation to the effectiveness and proportionality of the applied learning model. Thus, the observation results served as one of the indicators for assessing the achievement of IPAS learning outcomes in Grade IV at SD Wahdah Islamic School 03 Makassar and became the foundation for designing appropriate learning treatments.

Based on the results of descriptive and inferential statistical analysis, as well as classroom observations, it can be concluded that the implementation of the Thinking Aloud Pair Problem Solving (TAPPS) learning model has a positive influence on the IPAS learning outcomes of Grade IV students at SD Wahdah Islamic School 03 Makassar.

4. CONCLUSIONS AND SUGGESTIONS

1. Based on the results of the study, it can be concluded that the implementation of the Thinking Aloud Pair Problem Solving (TAPPS) learning model for fourth-grade students at SD Wahdah Islamic School 03 Makassar was successful and effective. This model was applied through systematic stages, where students were divided into pairs and alternately assigned the roles of "problem solver" and "listener."
2. Furthermore, in terms of learning outcomes, students showed significant improvement after the TAPPS model was applied in IPAS learning. This was evident from the comparison between pre-test and post-test results, which showed an increase in the class average score and in the number of students who met the Minimum Mastery Criteria (KKM). Students also became more capable of identifying problems, developing problem-solving strategies, and expressing their ideas with greater confidence.
3. Finally, based on the collected data and the analysis carried out, it can be concluded that the Thinking Aloud Pair Problem Solving (TAPPS) learning model is effective in improving the IPAS learning outcomes of fourth-grade students at SD Wahdah Islamic School 03 Makassar. This

model not only enhances academic achievement but also develops higher-order thinking skills that are essential in 21st-century learning.

Based on the results of this study, future researchers are encouraged to conduct research on other subject matters or topics, as this study only focused on one specific subject.

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