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THE EFFECTIVENESS OF THE IMPLEMENTATION OF THE PROBLEM BASED LEARNING (PBL) STRATEGY IN IMPROVING THE LEARNING OUTCOMES OF IPAS SUBJECTS FOR GRADE IV STUDENTS OF SDIT AL-FIKRI MAKASSAR

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Abstract

Students' learning outcomes are a primary indicator of the success of the learning process, encompassing knowledge, skills, and attitudes. Learning motivation and the learning environment significantly influence students' academic achievement; therefore, teachers need to implement instructional strategies that encourage critical and creative thinking as well as problem-solving skills. One strategy considered effective is Problem Based Learning (PBL), as it actively engages students in solving real-world problems relevant to their daily lives. This study aims to examine the implementation of the PBL strategy in IPAS learning, describe students' learning outcomes after the application of PBL, and analyze the effectiveness of PBL in improving the learning outcomes of fourth-grade students at SDIT Al-Fikri Makassar. This study employed a quantitative approach using a quasi-experimental method with a pretest–posttest control group design. One class was assigned as the experimental group using the PBL strategy, while another class served as the control group using conventional teaching methods. Data were collected through learning outcome tests and analyzed using a t-test and N-Gain analysis. The results indicate that the implementation of PBL has a significant effect on improving students' IPAS learning outcomes. The N-Gain score of the experimental group was in the moderate category (0.58) and higher than that of the control group. The t-test results showed a significance value of < 0.05, indicating a statistically significant difference. Therefore, the PBL strategy is effective in improving IPAS learning outcomes and making the learning process more meaningful and contextual.

Keywords: Problem Based Learning, Learning Effectiveness, Elementary School Students, Active Learning, Critical Thinking


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INTRODUCTION

Student learning outcomes are one of the main indicators in assessing the success of the learning process. Learning outcomes are not only measured from the aspect of knowledge, but also include skills and attitudes formed in students. According to Utaminingtyas et al., learning motivation and learning environment have a significant influence on student learning outcomes.[1] This shows that the success of learning is influenced by a combination of internal factors, such as motivation, as well as external factors, such as learning strategies and a conducive classroom environment. Therefore, teachers are required to be able to choose the appropriate learning approach so that students not only gain theoretical knowledge, but also be able to develop critical thinking, problem-solving, and positive social attitudes skills.

In the context of basic education, the learning strategies used by teachers play an important role. A number of previous studies have shown that innovations in learning can have a positive effect on student achievement. Rizki Ananda's research, for example, found that the use of audio-visual media can increase the understanding of grade IV students in the subject of Civic Education.[2] The media is able to clarify abstract concepts and help with information retention. Meanwhile, Pamungkas et al.'s research shows that learning based on local wisdom in science subjects is able to encourage creativity while improving learning outcomes.[3] This confirms that the relevance of the learning approach to daily life is very important in creating a meaningful learning experience for students.

One of the active learning strategies that is now widely developed is *Problem Based Learning* (PBL). This strategy emphasizes the active involvement of students in solving problems associated with real life. Through this process, students not only master the subject matter, but also develop critical, creative, and collaborative thinking skills.[4]

Innovative learning media, such as virtual reality, can help students not only better understand concepts but also improve their critical and creative thinking skills. This suggests that the use of technology in education can play a significant role in improving student learning

[1] Siwi Utaminingtyas, Subaryana Subaryana, and Erina Nur Endah Puspitawati, "Pengaruh Motivasi Belajar Dan Lingkungan Belajar Terhadap Hasil Belajar Matematika," *Pedagogi: Jurnal Penelitian Pendidikan* 8, no. 2 (2021), https://doi.org/10.25134/pedagogi.v8i2.4157.

[2] Rizki ananda, "Penggunaan Media Audio Visual Untuk Meningkatkan Hasil Belajar Pendidikan Kewarganegaraan Siswa Kelas IV SD Negeri 016 Bangkinang Kota," *Jurnal Basicedu* 1, no. 1 (2017).

[3] Aji Pamungkas, Bambang Subali, and Suharto Linuwih, "Implementasi Model Pembelajaran IPA Berbasis Kearifan Lokal Untuk Meningkatkan Kreativitas Dan Hasil Belajar Siswa," *Jurnal Inovasi Pendidikan IPA* 3, no. 2 (2017), https://doi.org/10.21831/jipi.v3i2.14562.

[4] Tuti Aisyah et al., "Pembelajaran Problem Based Learning," *Incrementapedia: Jurnal Pendidikan Anak Usia Dini* 4, no. 2 (2022), https://doi.org/10.36456/incrementapedia.vol4.no2.a6563.

outcomes, by supporting a variety of learning styles and enabling more personalized learning.[5] The effectiveness of this learning media also depends on how it is applied in the right context and with appropriate teaching strategies. Therefore, the selection of learning media must consider the characteristics of the students and the learning objectives to be achieved.[6]

In addition to improving understanding of concepts, PBL also serves to train students in connecting theory with practice. They not only understand the material in the abstract, but also learn to apply it to real situations. This makes learning more meaningful because students feel directly involved and have an applicative learning experience. Thus, PBL not only emphasizes cognitive aspects, but also affective and psychomotor aspects, such as the ability to work together, sense of responsibility, and communication skills.[7]

The theoretical foundation that focuses on the scope of Learning Outcomes in the context of implementing active learning strategies at Al-Fikri Makassar Integrated Islamic Elementary School (SDIT) can be started by understanding the main concepts of learning outcomes themselves. The scope of learning outcomes includes cognitive, affective, and psychomotor dimensions that are integrated in Nugraha's educational process. In the cognitive dimension, this scope includes knowledge understanding as well as students' critical and analytical thinking skills, which are closely related to how information is conveyed and received. This has a correlation with the learning strategies applied, where an active approach can increase students' absorption and understanding.[8] An environment conducive to active learning allows students to develop a positive attitude towards the subject matter and strengthen their intrinsic motivation. Thus, this approach contributes significantly to the process of character formation and a good learning ethics in students.[9]

According to Howard S. Barrows & Robyn Tamblyn, PBL is a learning method that departs from a problem ("trigger problem") as the focus or trigger of learning activities. The problem is encountered first, then students work (often in small groups) to understand and solve the problem,

[5] Mardiki Supriadi and L. Virginayoga Hignasari, "Pengembangan Media Pembelajaran Berbasis Virtual Reality Untuk Meningkatkan Hasil Belajar Peserta Didik Sekolah Dasar," *KOMIK (Konferensi Nasional Teknologi Informasi Dan Komputer)* 3, no. 1 (2019), https://doi.org/10.30865/komik.v3i1.1662.

[6] Wahyu Agung Dwi Pamungkas and Henny Dewi Koeswanti, "Penggunaan Media Pembelajaran Video Terhadap Hasil Belajar Siswa Sekolah Dasar," *Jurnal Ilmiah Pendidikan Profesi Guru* 4, no. 3 (2022), https://doi.org/10.23887/jippg.v4i3.41223.

[7] Emira Hayatina Ramadhan and Hindun Hindun, "Penerapan Model Pembelajaran Berbasis Proyek Untuk Membantu Siswa Berpikir Kreatif," *Protasis: Jurnal Bahasa, Sastra, Budaya, Dan Pengajarannya* 2, no. 2 (2023), https://doi.org/10.55606/protasis.v2i2.98.

[8] Nugraha Dewa Made Dwicky Putra, "Integrasi Pendidikan Karakter Dalam Penerapan Blended Learning Di Sekolah Dasar," *Jurnal Ilmu Pendidikan* 3, no. 3 (2020).

[9] Deni Firmansyah et al., "Pembelajaran Berdiferensiasi Pada Jenjang Pendidikan Sekolah Dasar," *Jurnal Pendidikan Guru Sekolah Dasar* 1, no. 2 (2023), https://doi.org/10.47134/pgsd.v1i2.199.

including finding new knowledge needed.[10] According to Wood, PBL is a small group teaching method that combines knowledge acquisition with the development of generic skills and attitudes. PBL is based on adult learning theory and constructivism, where students are more actively involved than traditional lecture methods.[11]

In the subject of Natural and Social Sciences (IPAS), the application of PBL is very relevant. This subject is designed integratively to develop students' ability to understand scientific, environmental, and social concepts while training them to think critically about the phenomena that occur around them. PBL can be an effective means because students are invited to relate theory to practice, as well as practice real problem-solving skills. Through group discussions, information collection, data analysis, and solution development, students learn actively and responsibly for their learning process.

SDIT Al-Fikri Makassar was chosen as the location for the research because it is known to have a commitment to the implementation of a modern curriculum that emphasizes the active participation of students. Class IV is used as the focus of research because at this level students already have enough cognitive abilities to be invited to think critically and analyze simple problems that are relevant to their daily lives. In addition, the learning outcomes at this level are an important foundation to support their success in pursuing the next level of education.

The urgency of this research is even stronger because learning in the elementary school is often still dominated by conventional *teacher-centered* methods. Students tend to be passive recipients of information without many opportunities to explore, discuss, or relate the material to real experiences. This condition has the potential to make students get bored quickly, have difficulty understanding abstract concepts, and be less motivated in learning. Therefore, more interactive and contextual learning strategies, such as PBL, are needed to answer these challenges.

This research is expected to prove the effectiveness of the application of PBL in improving the learning outcomes of science subjects for grade IV students of SDIT Al-Fikri Makassar. The results of the research are expected to not only make a theoretical contribution to the development of education, but also provide practical recommendations for teachers in choosing more effective learning strategies. With the implementation of PBL, it is hoped that students will be able to gain meaningful learning experiences, develop critical thinking skills, and improve their academic achievements.

[10] Moh Ghoizi Eriyanto et al., "The Effect of Learning Motivation on Learning Independence and Learning Outcomes of Students in the Package C Equivalence Program," *IJORER : International Journal of Recent Educational Research* 2, no. 4 (2021), https://doi.org/10.46245/ijorer.v2i4.122.

[11] Sri Utaminingsih et al., "Development of Learning Management with Animated Video to Increase Motivation and Learning Outcomes," *Journal of Advanced Research in Applied Sciences and Engineering Technology* 41, no. 2 (2024), https://doi.org/10.37934/araset.41.2.3142.

Thus, the focus of this research is directed to answer the question of the extent to which the application of *the Problem Based Learning* (PBL) strategy can improve the learning outcomes of science subjects for grade IV students at SDIT Al-Fikri Makassar. The answer to this question is expected to enrich the literature on innovative learning strategies while providing practical solutions to improve the quality of basic education in Indonesia.

RESEARCH METHODS

This research is quantitative research, quantitative research is research where the research data being researched is in the form of numbers which are then processed with accurate calculations. Quantitative research is research whose data is in the form of numbers and analyzed based on statistical formulas.[12]

The method used in this study is experimental, as explained by Sanjaya. The purpose of the experimental method is to explain and predict what will happen to the variable depending on when the independent variable receives a certain treatment. In the context of this study, the experimental approach is used to measure the effectiveness of active learning strategies in improving student learning outcomes. This approach involves administering interventions to the experimental group and comparing them with the control group that did not receive the intervention. Measurement of changes was carried out through pre-test and post-test to evaluate the impact of the intervention given.[13]

This study is located at SDIT Al-Fikri Makassar which is located on Jl. Kemuliaan Blok D No 66 B. BTP. Buntusu District. Tamalanrea District. Makassar City, South Sulawesi. Population is all subjects to be studied in a study. The population in the study is all students at SDIT Al-Fikri Makassar, South Sulawesi province. The population determined in this study is class 4A and Class 4B students at SDIT Al-Fikri Makassar which amounts to 2 classes with a total of 57 students. The selection of the sample number is based on the assumption of adequate representation of the variation in attributes in the population. Samples are a subset of the population selected through certain methods for accurate representation. The determination of the right sample is important to ensure the validity and reliability of the research results.

The research instrument used in this study is in the form of a questionnaire, and the scale used is the *Likert scale,* where the *likert scale* is the process of determining the score on the respondent's answers is carried out by making suitable classifications and categories depending on

[12]Imron Imron, "Analisa Pengaruh Kualitas Produk Terhadap Kepuasan Konsumen Menggunakan Metode Kuantitatif Pada CV. Meubele Berkah Tangerang," *Indonesian Journal on Software Engineering (IJSE)* 5, no. 1 (2019), https://doi.org/10.31294/ijse.v5i1.5861.

[13] Wina Sanjaya, "Penelitian Tindakan Kelas," preprint, 2015.

the respondents' responses, then the respondents are asked to choose whether they strongly agree, agree, hesitate, disagree and strongly disagree.[14] To test the research instrument, the validity test and the instrument reliability test were used.

In this study, the data processing techniques used by the researcher in answering problem formulations and hypotheses are using statistical data processing techniques including descriptive analysis techniques and inferential analysis techniques.

RESULTS AND DISCUSSION

Research Results

The application of the experimental class IV A based learning learning strategy

1. Pre test

Based on the research that has been carried out on students at SDIT al-fikri, the researcher can collect data through a test, which is then scored by the researcher on each item. This bond is the result of descriptive analysis for the teacher working group program as follows:

Table 1. Descriptive Analysis of the pre test

Statistics	Statistical Value
Average	60
Standard deviation	7
Maximum	70
Minimum	45
range	30

In order to determine the results of descriptive analysis to find out the pre test, the researcher uses the following formula:

a. Determine the range

R = Xt– Xr

Xt = 70 and 45

R= 70 – 45

= 25

[14]Bambang Wisnu Widagdo, Murni Handayani, and Agus Suharto, "Dampak Pandemi Covid-19 Terhadsap Perilaku Peserta Didik Pada Proses Pembelajaran Daring Menggunkan Metode Pengukuran Skala Likert," *Jurnal Teknologi Informasi ESIT* 15, no. 2 (2020): h. 66

b. Specifying the Number of Interval Classes

K = 1 + 3,322 log

=1 + 3,322 log 29

= 1 + 3,322 x 1,47

= 1 + 4,883

= 6

c. Define interval values with formulas:

$$p = \frac{R}{K}$$

$$= \frac{25}{6}$$

= 4

d. Create a Frequency Distribution Table

Table 2. Pree Test Frequency Distribution

No.	Interval	Frequency	Percentage
1	45-49	4	14%
2	50-54	2	7%
3	55-59	7	24%
4	60-64	7	24%
5	65-69	7	24%
6	70-74	2	7%
Quantity		29	100%

The pre-test frequency distribution table shows that the highest frequencies are at intervals 55-59, 60-64, and 65-69 with a frequency of 7 percent of 24%, while the lowest frequency at intervals of 50-54 and 70-74 is a frequency of 2 percent of 7%

Table 3. Helper Table for Calculating Pre Test Average Score

Class Intervals	Frekuensi f_i	Titik Tengah (X_i)	$f_i X_i$
45-49	4	47	188
50-54	2	52	104
55-59	7	57	399
60-64	7	62	434
65-69	7	67	469
70-74	2	72	144
Quantity	29		1,738

Based on the helper table, the average is obtained as follows:

$$Mx = \frac{\sum fi.xi}{\sum fi}$$

$$= \frac{1.738}{29}$$

$$= 60$$

e. Calculating standard deviations

Table 4. Helper Table

No.	Interval	X_i	$(X_i)^2$	f_i	$f_i X_i$	$f_i(X_i)^2$
1	45–49	47	2,209	4	188	8,836
2	50–54	52	2,704	2	104	5,408
3	55–59	57	3,249	7	399	22,743
4	60–64	62	3,844	7	434	26,908
5	65–69	67	4,489	7	469	31,423
6	70–74	72	5,184	2	144	10,368
quantityquantity				**29**	**1,738**	**105,686**

Based on the helper table, the standard deviation is obtained as follows:

$$S^2 = \frac{n \sum f_i X_i^2 - (\sum f_{i\,X_i})^2}{n\,(n-1)}$$

$$= \sqrt{\frac{n \sum f_i X_i^2 - (\sum f_{i\,X_i})^2}{n\,(n-1)}}$$

$$= \sqrt{\frac{29(105.686) - (1.738)^2}{29\,(29-1)}}$$

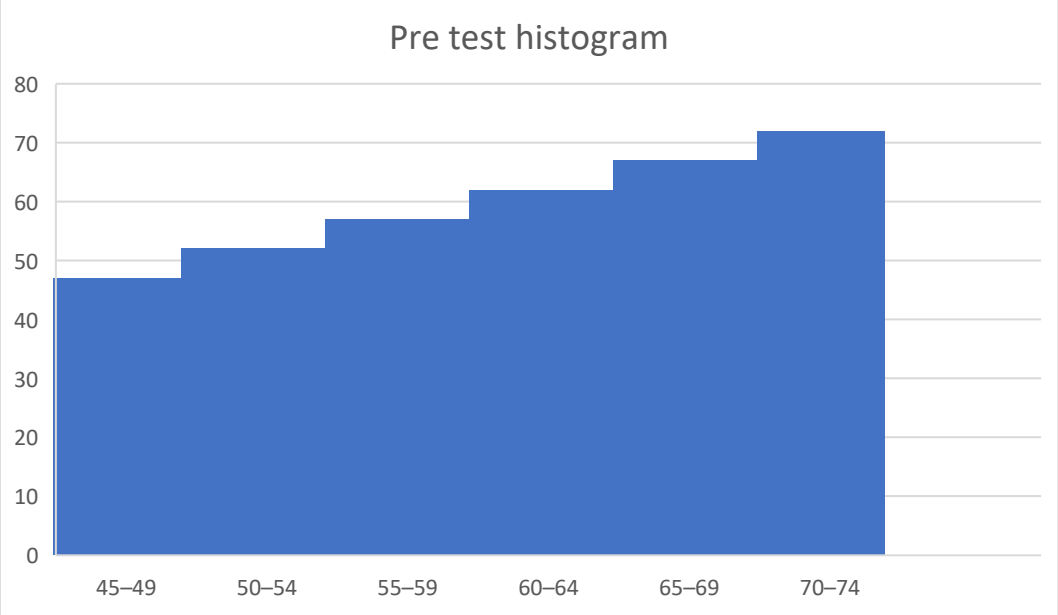
$$= \sqrt{\frac{44.250}{812}}$$

$$= \sqrt{54}$$

$$= 7$$

Based on the results of the calculation above, a standard deviation of 7 is obtained

Diagram 1. Pre test histogram



f. Creating a Category Table

The determination of the pree test data category in this study refers to the categorization of the level with the classification of subjects in 3 categories. The table of pre test categories is as follows:

Table 5. Categorization

Category Limits	Interval	Frequen y	Percentage	Remarks
X < (μ-1,0σ)	X <53	6	21%	Low
(μ-1,0σ) ≤ X < (μ + 1,0σ)	53≤ X <67	21	70%	Medium
(μ + 1,0σ) < X	67≤ X	2	9%	Height
Quantity		**29**	**100%**	

The data in table 5 shows that the results of the study were obtained by 6 respondents who had low scores with a percentage of 20%, there were 21 respondents who had a medium score with a percentage of 70%, and there were 2 respondents who had high scores with a percentage of 9%. Therefore, it can be concluded that the results of the influence of the pree Test at SDIT al-fikri are in the medium category.

2. Post test

Based on the research that has been conducted, the researcher can collect data through the test. This bond is a table of descriptive analysis results for the post test as follows:

Table 6. Post-test analysis

Statistics	Statistical Values
Average	82
Standard deviation	6
Maximum	90
Minimum	70
range	20

In order to determine the results of descriptive analysis for learning motivation, the researcher uses the following formula:

a. determine the range

R = Xt– Xr

Xt = 90 dan 70

R = 90 -70

= 20

b. Specifying the Number of Interval Classes

K = 1 + 3,322 log

=1 + 3,322 log 29

= 1 + 3,322 . 1,47

= 1 + 4,883

= 6

c. Define interval values with formulas:

$$p = \frac{R}{K}$$

$$= \frac{20}{6}$$

= 3

d. Creating a Frequency Distribution Table

Table 7. Frequency Distribution

Class Intervals	Frekuensi (fi)	Percentage
70-73	3	10%
74-77	5	17%
78-81	3	10%
82-85	12	42%
86-89	0	0%
90-93	6	21%
Total	29	100%

The frequency distribution table above shows that the highest frequency is in the interval 82-85 with frequency 12 and a percentage of 42%, while the lowest is in the interval 86-89 with frequency 0 and a percentage of 0%.

e. Calculate the average

Table 8. Helper Table for Calculating Average Score

Class Intervals	Frekuensi (fi)	Titik Tengah (Xi)	fi.xi
70-73	3		214.5
74-77	5	75.5	377.5
78-81	3	71.5	238.5
82-85	12	83.5	1,002.0
86-89	0	87.5	0.0
90-93	6	91.5	549.0
Quantity			2,381.5

$$Mx = \frac{\sum fi.xi}{\sum fi}$$

$$= \frac{2.381,5}{29}$$

$$= 82$$

f. Calculating Standard Deviation

Table 9. Helper Table

Interval	X_i	$(X_i)^2$	f_i	$f_i X_i$	$f_i(X_i)^2$
70-73	71.5	5,112.25	3	214.5	15,336.75
74-77	75.5	5,700.25	5	377.5	28,501.25
78-81	79.5	6,320.25	3	238.5	18,960.75
82-85	83.5	6,972.25	12	1,002.0	83,667.00
86-89	87.5	7,656.25	0	0.0	0.00
90-93	91.5	8,372.25	6	549.0	50,233.50
Quantity				2,381.5	196,699.25

Based on the helper table, the standard deviation is obtained as follows:

$$S^2 = \frac{n \sum f_i X_i^2 - (\sum f_{i\,X_i})^2}{n\,(n-1)}$$

$$= \sqrt{\frac{n \sum f_i X_i^2 - (\sum f_{i\,X_i})^2}{n\,(n-1)}}$$

$$= \sqrt{\frac{29(196{,}699{,}25) - (\mathbf{2.381{,}5})^2}{29(29-1)}}$$

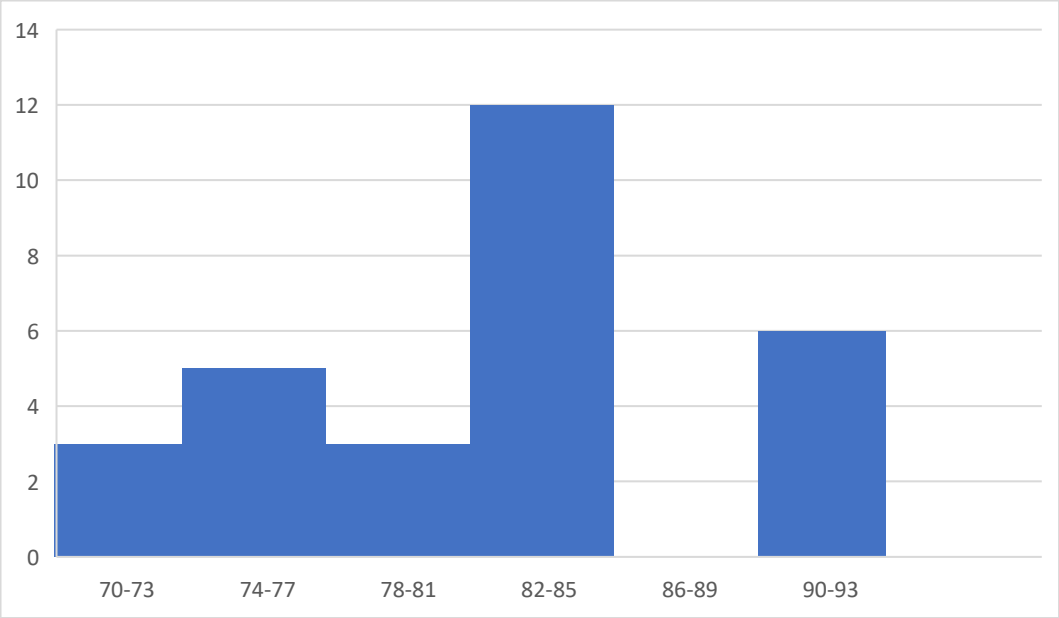
$$= \sqrt{\frac{32{,}736}{812}}$$

$$= \sqrt{40}$$

$$= 6$$

Based on the results of the calculation of the post test results above, a standard deviation of 6 was obtained.

Diagram 2. Post Test histogram



g. Creating a Category Table

Determination of post test data categories. The post test category table is as follows:

Table 10. Post-test categorization

Category Limits	Interval	Frekuensi	Percentage	Remarks
$X < (\mu\text{-}1{,}0\sigma)$	X <76	8	27%	Low
$(\mu\text{-}1{,}0\sigma) \leq X < (\mu + 1{,}0\sigma)$	76≤ X < 88	15	52%	Medium
$(\mu + 1{,}0\sigma) < X$	88≤ X	6	21%	Height
Quantity			**100%**	

The data in the table above shows that the results of the study were obtained with 8 respondents with low scores with a percentage of 27%, there were 15 respondents with medium scores with a percentage of 52%, and there were 6 respondents with high scores with a percentage of 21%. So it can be concluded that the post test data is in the medium category.

The Implementation of Cognitive Learning Strategies Class IV B Control

1. Pre test

Based on the research that has been carried out on students at SDIT al-fikri, the researcher can collect data through a test, which is then scored by the researcher on each item. This bond is the result of descriptive analysis for the teacher working group program as follows:

Table 11. Descriptive Analysis pre test

Statistics	Statistical Values
Average	62
Standard deviation	9
Maximum	70
Minimum	45

In order to determine the results of descriptive analysis to find out the pre test, the researcher uses the following formula:

a. Determine the range

R = Xt– Xr

Xt = 70 dan 45

R= 70 – 45

= 25

b. Determining the Quantity of the Interval Class

K = 1 + 3,322 log

=1 + 3,322 log 28

= 1 + 3,322 . 1,44

= 1 + 4,883

= 6

c. Define interval values with formulas:

$$p = \frac{R}{K}$$

$$= \frac{25}{6}$$

$$= 4$$

d. Create a Frequency Distribution Table

Table 12. Distribusi Frekuensi pree Test

No.	Interval	Frekuensi	Percentage
1	45-49	4	14%
2	50-54	2	7%
3	55-59	7	24%
4	60-64	7	24%
5	65-69	7	24%
6	70-74	2	7%
Quantity		**28**	**100%**

The pre-test frequency distribution table shows that the highest frequency is in the interval 55-59.60-64.65-69 with a frequency of 7 percentage of 24%, while the lowest frequency is in the interval of 50-54, 70-74 frequency of 2 percentage of 7%.

Table 13. Table Penolong untuk Mengcount Skor Average pre test

Class Intervals	Frekuensi f_i	Titik Tengah (X_i)	$f_i X_i$
45-49	4	47	188
50-54	2	52	104
55-59	7	57	399
60-64	7	62	434
65-69	7	67	469
70-74	2	72	144
Quantity		—	1,738

Based on the helper table, the Average is obtained as follows:

$$Mx = \frac{\sum fi.xi}{\sum fi}$$

$$= \frac{1.728}{28}$$

$$= 62$$

e. Calculating Standard Deviation

Table 14. Table Penolong

No.	Interval	X_i	$(X_i)^2$	f_i	$f_i X_i$	$f_i(X_i)^2$
1	45-49	47	2,209	4	188	8,836
2	50-54	52	2,704	2	104	5,408
3	55-59	57	3,249	7	399	22,743
4	60-64	62	3,844	7	434	26,908
5	65-69	67	4,489	7	469	31,423
6	70-74	72	5,184	2	144	10,368
Quantity					1,738	105,686

Based on the helper table, the Standard deviation is obtained as follows:

$$S^2 = \frac{n \sum f_i X_i^2 - (\sum f_{i\,X_i})^2}{n\,(n-1)}$$

$$= \sqrt{\frac{n \sum f_i X_i^2 - (\sum f_{i\,X_i})^2}{n\,(n-1)}}$$

$$= \sqrt{\frac{28(105{,}686) - (1{,}738)^2}{28\,(28-1)}}$$

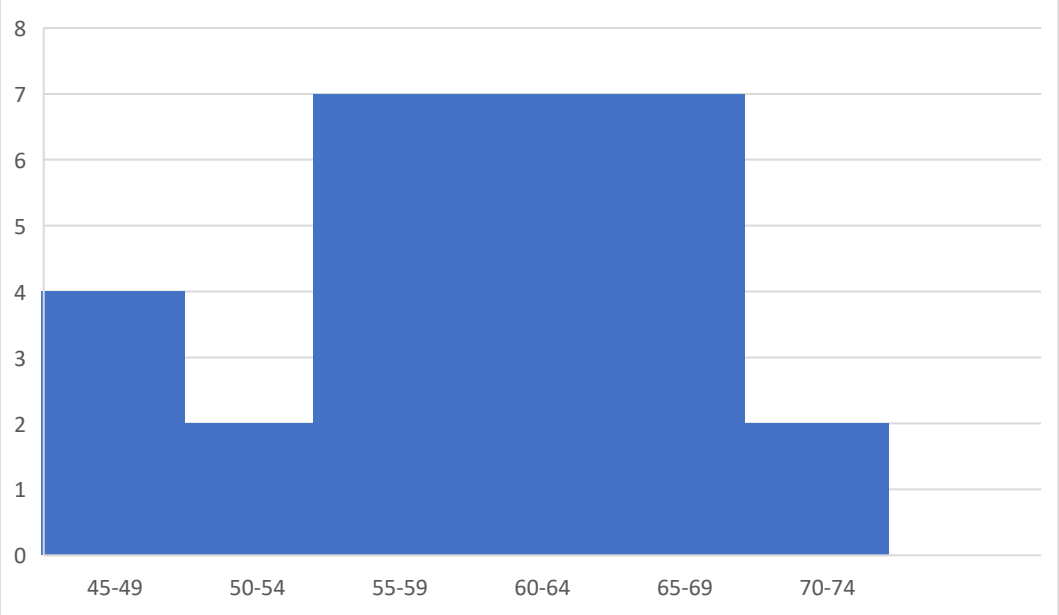
$$= \sqrt{\frac{61.436}{784}}$$

$$= \sqrt{82}$$

$$= 9$$

Based on the results of the calculation above, it was obtained Standard deviation sebesar 9:

Diagram 3. Histogram pre test



f. Creating a Category Table

The determination of the pree test data category in this study refers to the categorization of the level with the classification of subjects in 3 categories. The table of pre test categories is as follows:

Table 15. Kategorisasi

Category Limits	Interval	Frekuensi	Percentage	Remarks
X < (μ-1,0σ)	X <53	6	21%	Low
(μ-1,0σ) ≤ X < (μ + 1,0σ)	53≤ X <71	22	78%	Medium
(μ + 1,0σ) < X	71≤ X	0	0%	Height
Quantity		**28**	**100%**	

The data in table 4.5 shows that the results of the study were obtained from 6 respondents who had low scores with a percentage of 21%, there were 22 respondents who had a medium score with a percentage of 78%, and there were 0 respondents who had high scores with a percentage of 0%. Therefore, it can be concluded that the results of the influence of the pree Test at SDIT al-fikri are in the medium category.

2. Post test

Based on the research that has been conducted, the researcher can collect data through the test. This bond is a table of descriptive analysis results for the post test as follows:

Table 16. Analisis post test

Statistics	Statistical Values
Average	81
Standard deviation	9
Maximum	95
Minimum	65

In order to determine the results of descriptive analysis for learning motivation, the researcher uses the following formula:

a. Determine the range

R = Xt– Xr

Xt = 95 dan 65

R = 95 - 65

= 30

b. Determining the Quantity of the Interval Class

K = 1 + 3,322 log

=1 + 3,322 log 28

= 1 + 3,322 . 1,47

= 1 + 4,883

= 6

c. Define interval values with formulas:

$$p = \frac{R}{K}$$

$$= \frac{30}{6}$$

= 5

d. Creating a Frequency Distribution Table

Table 17. Distribusi Frekuensi

No.	Interval	Frekuensi	Percentage
1	65-70	4	14%
2	71-76	5	18%
3	77-82	7	25%
4	83-88	5	18%
5	89-94	6	21%
6	95-100	1	4%
Quantity		28	100%

The pre-test frequency distribution table shows that the highest frequency is in the interval 77-82 with a frequency of 7 percentage of 25%, while the lowest frequency in the interval of 95-100 frequency is frequency 1 percentage of 4%.

Table 18. Table Penolong untuk Mengcount Skor Average pre test

Interval Kelas	Frekuensi f_i	Titik Tengah (X_i)	$f_i X_i$
65-70	4	67.5	270.0
71-76	5	73.5	367.5
77-82	7	79.5	556.5
83-88	5	85.5	427.5
89-94	6	91.5	549.0
95-100	1	97.5	97.5
Quantity	28	—	2,268.0

Based on the helper table, the Average is obtained as follows:

$$Mx = \frac{\sum fi.xi}{\sum fi}$$

$$= \frac{2.268}{28}$$

$$= 81$$

e. Mengcount Standard deviation

Table 18. Table Penolong

No.	Interval	X_i	$(X_i)^2$	f_i	$f_i X_i$	$f_i(X_i)^2$
1	65-70	67.5	4,556.25	4	270.0	18,225.00
2	71-76	73.5	5,402.25	5	367.5	27,011.25
3	77-82	79.5	6,320.25	7	556.5	44,241.75
4	83-88	85.5	7,310.25	5	427.5	36,551.25
5	89-94	91.5	8,372.25	6	549.0	50,233.50
6	95-100	97.5	9,506.25	1	97.5	9,506.25
Quantity					**2,268.0**	**185,769.00**

Based on the helper table, the Standard deviation is obtained as follows:

$$S^2 = \frac{n \sum f_i X_i^2 - (\sum f_{i X_i})^2}{n\,(n-1)}$$

$$= \sqrt{\frac{n \sum f_i X_i^2 - (\sum f_{i X_i})^2}{n\,(n-1)}}$$

$$= \sqrt{\frac{28(185{,}769.00) - (2{,}268)^2}{28\,(28-1)}}$$

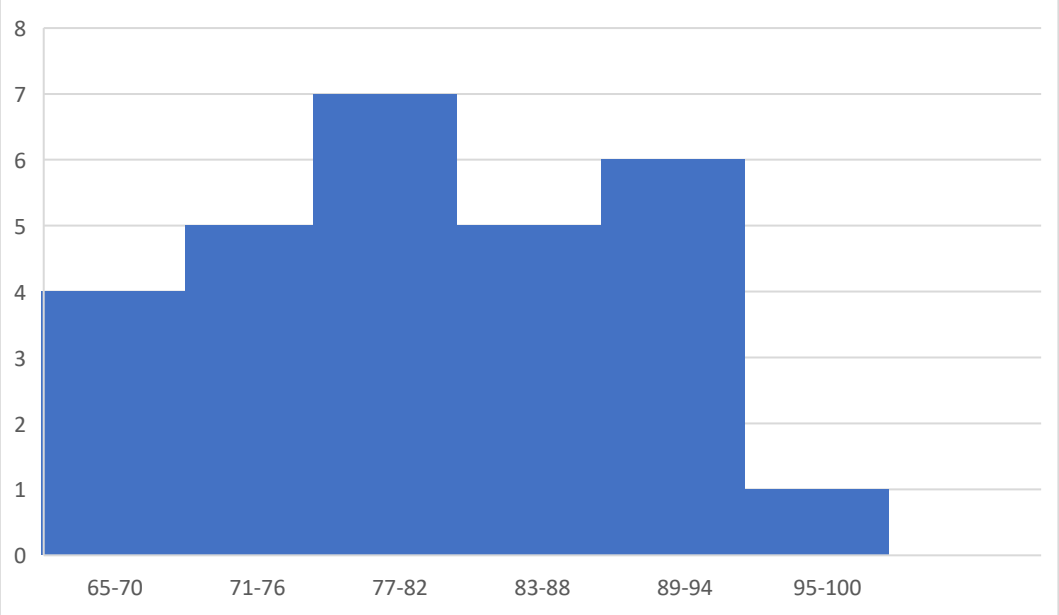
$$= \sqrt{\frac{57{,}704}{784}}$$

$$= \sqrt{74}$$

$$= 9$$

Based on the results of the calculation above, a Standard deviation of 9 was obtained

Diagram 4. Histogram pre test



f. Creating a Category Table

The determination of the pree test data category in this study refers to the categorization of the level with the classification of subjects in 3 categories. The table of pre test categories is as follows:

Table 19. Categorization

Category Limits	Interval	Frekuensi	Percentage	Remarks
X < (μ-1,0σ)	X <72	4	14%	Low
(μ-1,0σ) ≤ X < (μ + 1,0σ)	72≤ X <90	23	82%	Medium
(μ + 1,0σ) < X	90≤ X	7	25%	Height
Quantity		**28**	**100%**	

The data in table 4.5 shows that the results of the study were obtained by 4 respondents who had low scores with a percentage of 82%, there were 23 respondents who had a medium score with a percentage of 82%, and there were 7 respondents who had high scores with a percentage of 25%. Therefore, it can be concluded that the results of the influence of the pree test at SDIT al-fikri are in the medium category.

1) Normality Test

The normality test aims to test whether in the regression model, the residual variable has a normal distribution or not. The data normality test is used to find out whether the data used by the researcher comes from a normally distributed population or not. The data is normally distributed if the sig > α = 0.05 and vice versa, the data is said to be not normally distributed if the sig < α = 0.05. The normality test of the data is carried out using the help of the SPSS 24 application. Based on the analysis of the prerequisite test obtained, the conclusion of the normality test results can be seen in the table below:

a) Normality Test for Class IV A (Experimental Group)

Table 20. Kolmogorov–Smirnov Normality Test

Variabel	K-Sminorv	Remarks
X	0,50	Normal
Y	0,000	Normal

The results of the normality test for variable X were known to have a *significance Kolmogorov-Smirnov* value of 0.50 using a significance level of 0.05. The significance value obtained was greater than (0.50> 0.05). Then the results of the normality test for variable Y were known to have a *significance Kolmogorov-Smirnov* value of 0.000 and by using a significance level of 0.05. The significance value obtained was greater than (0.000> 0.05). So it can be concluded that the influence of the learning based learning strategy on student learning outcomes at SDIT al-fikri is normally distributed.

b) Normality test class IV B Control class

Table 21. Test of Normality of the Kolmogrof smirnov Technique

Variabel	K-Sminorv	Remarks
X	0,792>0.05	Normal
Y	0,689	Normal

The results of the normality test for variable X were known to have a *significance Kolmogorov-Smirnov* value of 0.792 using a significance level of 0.05. The significance value obtained was greater than (0.792> 0.05). Then the results of the normality test for variable Y were known to have a *significance Kolmogorov-Smirnov*

value of 0.2689 and by using a significance level of 0.05. The significance value obtained was greater than (0.689> 0.05). So it can be concluded that the influence of compensal learning strategies on student learning outcomes at SDIT al-fikri is normally distributed.

2) Uji-Ngain

a) Experimental class

Tabel 22. Experimental class

No	Pretest	Posttest	Posttest - Pretest	Skor Ideal - Pretest	N-Gain
1	55	85	30	45	0.67
2	60	85	25	40	0.63
3	55	75	20	45	0.44
4	70	90	20	30	0.67
5	60	85	25	40	0.63
6	45	70	25	55	0.45
7	65	85	20	35	0.57
8	55	85	30	45	0.67
9	65	85	20	35	0.57
10	55	75	20	45	0.44
11	60	80	20	40	0.50
12	45	70	25	55	0.45
13	70	90	20	30	0.67
14	55	85	30	45	0.67
15	60	85	25	40	0.63
16	65	85	20	35	0.57
17	65	90	25	35	0.71
18	50	75	25	50	0.50
19	65	90	25	35	0.71
20	55	80	25	45	0.56
21	50	75	25	50	0.50
22	60	85	25	40	0.63
23	60	85	25	40	0.63
24	65	90	25	35	0.71
25	45	70	25	55	0.45

26	60	90	30	40	0.75
27	55	75	20	45	0.44
28	65	85	20	35	0.57
29	45	80	35	55	0.64

Tabel 23. Increase Categorization Table Based on N-Gain

Nilai N-Gain	Kategorisasi	Frekuensi	Percentage (%)
g > 0,7	Height	5	17,2%
0,3 ≤ g ≤ 0,7	Medium	22	75,9%
g < 0,3	Low	2	6,9%

Based on the table above, most students (75.9%) experienced an increase in learning outcomes in the **medium** category, while 17.2% were in the **high** category, and only 6.9% were in the **low** category. This shows that the application of learning used is quite effective in improving student learning outcomes.

b) Control class

Tabel 24. Control class

No	Pretest	Posttest	Posttest - Pretest	Skor Ideal - Pretest	N-Gain
1	55	85	30	45	0.67
2	55	80	25	45	0.56
3	45	70	25	55	0.45
4	60	80	20	40	0.50
5	55	80	25	45	0.56
6	70	90	20	30	0.67
7	50	70	20	50	0.40
8	60	80	20	40	0.50
9	65	85	20	35	0.57
10	40	65	25	60	0.42
11	60	85	25	40	0.63
12	55	75	20	45	0.44
13	57	80	23	43	0.53
14	70	90	20	30	0.67

15	60	85	25	40	0.63
16	45	75	30	55	0.55
17	65	90	25	35	0.71
18	50	75	25	50	0.50
19	60	90	30	40	0.75
20	55	75	20	45	0.44
21	50	85	35	50	0.70
22	70	90	20	30	0.67
23	45	70	25	55	0.45
24	55	80	25	45	0.56
25	65	80	15	35	0.43
26	50	75	25	50	0.50
27	70	90	20	30	0.67
28	60	95	35	40	0.88

Tabel 25. Increase Categorization Table Based on N-Gain

N-Gain Score	Kategorisasi	Frekuensi	Percentage (%)
g > 0,7	Height	3	10,7%
0,3 ≤ g ≤ 0,7	Medium	25	89,3%
g < 0,3	Low	0	0%
Total		**28**	**100%**

Based on the results of the calculation of the N-Gain test on 28 students, it was found that most of them experienced an increase in learning outcomes in the medium category. The results of the categorization showed that 25 students or around 89.3% were in the medium category, 3 students or 10.7% were in the high category, and no students were included in the low category. These findings show that the learning applied has a positive influence on the improvement of student learning outcomes. In general, the increase that occurred is relatively good because almost all students reached the medium to high category. Thus, the learning strategies used can be said to be quite effective in helping students understand the material and improve their academic abilities.

3) Uji Homogenitas

The homogeneity test is carried out to find out whether the data is homogeneous or not.

Nihil Hypothesis (0) = homogeneous population, value $F_{Count} < F_{Table}$

Alternative Hypotheses (a) = populasi tidak homogen, nilai $F_{Count} > F_{Table}$

Table 26. Uji homogenitas

F_{Count}	F_{table}	Sig.	Remarks
17.450	4,18	0,000	Homogen

Based on the results of the homogeneity test calculation for both variables with the IBM SPPS Statistic version 24 program, the Fcal value was obtained as 4.18 with an error level of 0.05 (5%). The significance value obtained is greater than 0.05, then the variance of each sample is the same (homogeneous), and vice versa, if the significance value is less than 0.05, then the variance of each sample is not the same (not homogeneous). Based on the results of the test of the two variables, a significance value greater than 0.05 is obtained, which is 0.000. This means that both variances have the same sample (homogeneous).

The homogeneity test is carried out to find out whether the data is homogeneous or not.

Hypothesis Nil (0) = homogeneous population, value $F_{count} < F_{table}$

Alternative Hypothesis (a) = inhomogeneous population, value $F_{count} > F_{table}$

Table 27. Uji homogenitas

F_{count}	F_{table}	Sig.	Remarks
13,261	4,20	0,000	Homogen

Based on the results of the homogeneity test calculation for the two variables with the IBM SPPS Statistics version 24 program, the Fcal value was obtained as 4.20 with an error level of 0.05 (5%). The significance value obtained is greater than 0.05, then the variance of each sample is the same (homogeneous), and vice versa, if the significance value is less than 0.05, then the variance of each sample is not the same (not homogeneous). Based on the results of the test of the two variables, a significance value

greater than 0.05 is obtained, which is 0.000. This means that both variances have the same sample (homogeneous).

4) Independent Test Sample T test

a) Independent Sample t-Test (Pretest) Test Results)

An *independent sample t-test* was performed to determine whether there was a difference in initial ability between the experimental class and the control class before being given treatment. Before the t-test was performed, the homogeneity of variance was first tested using Levene's Test.

Table 28. Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
x	Equal variances assumed	.248	.621	.811	55	.421	1.54926	1.91079	-2.28005	5.37857
	Equal variances not assumed			.809	53.796	.422	1.54926	1.91469	-2.28979	5.38832

Based on the SPSS output results, the value of F = 0.248 with Sig. = 0.621 was obtained. Since the significance value is greater than 0.05, it can be concluded that both groups have homogeneous variance. Therefore, the results of the t-test are read on the line Equal variances assumed.

The results of the t-test showed that the value of t = 0.811, with df = 55 and Sig. (2-tailed) = 0.421. Since the significance value was greater than 0.05, there was no significant difference between the mean value of the pretest of the experimental class and the control class. The *mean difference* value of 1.546 indicated that the average of the experimental class was slightly higher, but the difference was not statistically significant.

Thus, it can be concluded that the initial ability of students in both classes is at the same or equivalent level. This means that the treatment or learning strategy given in the experimental class can be further tested without bias in the initial ability.

b) Independent Sample t-Test (posttest) Test Results)

An independent sample t-test was also conducted on the posttest score to find out if there was a difference in learning outcomes between the experimental class and the control class after the treatment was given.

Table 29. Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
x	Equal variances assumed	.268	.606	.431	55	.669	.89532	2.07971	-3.27251	5.06315
	Equal variances not assumed			.430	53.743	.669	.89532	2.08408	-3.28346	5.07410

Based on the SPSS output results, the value of Levene's Test for Equality of Variances shows F = 0.269 with Sig. = 0.606. Since the significance value is greater than 0.05, it can be concluded that both groups have homogeneous variance. Therefore, the results of the t-test are read on the line Equal variances assumed.

The results of the t-test showed that the value of t = 0.431, with df = 55 and Sig. (2-tailed) = 0.669. Since the significance value was greater than 0.05, there was no significant difference between the mean value of the posttest of the experimental class and the control class. The *mean difference* value of 0.895 indicates a small and statistically insignificant mean difference.

Thus, it can be concluded that the learning strategies applied to the experimental class have not provided a significant difference in learning outcomes compared to the control class. However, the average direction of improvement shows that the experimental class has improved even though it has not been statistically significant.

5) Uji Paired Sampel T test

a) Paired Samples Test Experimental Class T-test

The *paired samples t-test* was used to find out if there was a significant difference between the pretest and posttest scores in the same group, i.e. the experimental class treated with an active learning strategy.

Table 30. SPSS Test Results

Statistics	Nilai
Mean Difference	-24.65517
Std. Deviation	2.94657
Std. Error Mean	0.54696
t	-33.168
df	28
Sig. (2-tailed)	0.000

Interpretasi:

The results showed that the Sig. (2-tailed) value = 0.000 < 0.05, so there was a significant difference between the pretest and posttest scores. The average difference value of -24.66 showed an increase in learning outcomes after the implementation of the problem-based learning learning strategy.

Thus, it can be concluded that there was a significant increase in learning outcomes in the experimental class after being treated with active learning strategies in social studies learning.

b) Paired Samples T-test Control Class

This test was also carried out in the control class to see if there was a change in learning outcomes without the application of active learning strategies.

Table 31. SPSS Test Results

Statistics	Nilai
Mean Difference	-23.68
Std. Deviation	3.12
Std. Error Mean	0.59
t	-31.82
df	27
Sig. (2-tailed)	0.000

Interpretasi:

The Sig. (2-tailed) value = 0.000 < 0.05, so there is a significant difference between the pretest and posttest scores. The mean difference (Mean Difference = -23.68**)** shows an increase in learning outcomes after treatment.

6) Uji Hypothesis

Based on the statistical analysis prerequisite test, it was obtained that the data in this study were normally distributed and homogeneous. Therefore, hypothesis testing can be carried out using a simple linear regression test with the aim of seeing the effectiveness of the application of problem based learning strategies in improving the learning outcomes of science science subjects. The table of results of the simple linear regression test is:

Table 32. Hypothesis Test Results

Variabel	Unstandardized Coefficients	T	Sig.	Remarks
Constant	21.184	2,198	.037	Berpengaruh
X	.962			

Dependent Variable: post test (Y)

From the SPSS output above, in the table the coefficient in column constant a is 21,184 and in column b is 0.39 so that the regression equation:ˆ= a + bx or 21,184 + 0.39X. Then the results of the analysis were obtained Thcount = 2.198 while the Ttable value = 1.75 means that the ttable value is greater than the ttable value (tcount > ttable = 21.184> 1.75. Thus, the effectiveness of the application of problem-based learning strategies in improving the learning outcomes of social studies subjects at SDIT al-fikri.

7) Correlation Test

Table 33. Correlation Test Results

Variabel	R	R Square	Remarks
X-Y	0,85	0,715	Efektif 85%

To find out the magnitude of the correlation value and the magnitude of the percentage, it can be seen that the value *of R Square* in the table model *summary* is = 0.85 which means that the percentage of variable x with respect to Y is 85% in the medium correlation category while the remaining 15% is influenced by other variables.

Discussion

This discussion is based on the results of data analysis obtained through descriptive and inferential data analysis, while the discussion will be described as follows;

1. How to apply the Problem Based Learning (PBL) strategy in the science subject of grade IV students of SDIT Al-Fikri Makassar?

   After conducting research before the Based Learning Strategy at SDIT-al Fikri Based on the results of the research that has been carried out with 29 respondents using a Test instrument consisting of several statements, the results of the study were obtained that the maximum score was 70 and the minimum score was 45 with an average score of 60 and a standard deviation of 7. Based on the categorization, the results of the study were obtained there were 6 respondents with low scores with a percentage of 20%, there were 21 respondents with a medium score with a percentage of 70%, and there were 2 respondents who had high scores with a percentage of 9%. Therefore, it can be concluded that the results of the influence of the pree test in the experimental class at SDIT al-fikri are in the medium category.

   Meanwhile, before the study was carried out using conventional methods with a total of 28 respondents in the control class, the results of the study were obtained that the maximum score was 70 and the minimum score was 45 with an average score of 62 with a standard deviation of 9. Based on the categorization obtained by the research results, there were 6 respondents with low scores with a percentage of 21%, there were 22 respondents with a medium score with a percentage of 78%, and there were 0 respondents with high scores with a percentage of 0%. Therefore, it can be concluded that the results of the influence of the conventional method pree test in the control class at SDIT al-fikri are in the medium category.

   This is in line with what was stated by Siregar, Pariang Sonang, Lia Wardani, and Rindi Genesa Hatika, in their research entitled "The application of the innovative creative and fun active learning approach (Paikem) in mathematics learning in grade IV of SD Negeri 010

Rambah". The method used in this research is that the author applies the Paikem (Active, Innovative, Creative, Effective, and Fun Learning) approach to mathematics learning in elementary school. The results show that students feel more enjoyment of learning when they are involved in fun and creative activities. In addition, there is a significant increase in learning outcomes, especially in the field of problem solving. This shows the importance of designing engaging learning to increase students' interest and achievement.[15]

2. What are the learning outcomes of social studies subjects for grade IV students of SDIT Al-Fikri Makassar?

Based on the results of the research that has been conducted with 29 respondents using a test instrument consisting of several statements, the results of the study were obtained that the maximum score was 90 and the minimum score was 70 with an average score of 82 and a standard deviation of 7. Based on the categorization, the results of the study were obtained there were 8 respondents with a low score with a percentage of 27%, there were 15 respondents with a medium score with a percentage of 52%, and there were 6 respondents with a high score with a percentage of 21%. Therefore, it can be concluded that the post test data is in the medium category.

Meanwhile, after conducting research using conventional methods with a total of 28 respondents in the control class, the results of the study were obtained that the maximum score was 95 and the minimum score was 65 with an average score of 81 with a standard deviation of 9. Based on the categorization obtained by the research results, there were 4 respondents with low scores with a percentage of 82%, there were 23 respondents with medium scores with a percentage of 82%, and there were 7 respondents with high scores with a percentage of 25%. Therefore, it can be concluded that the results of the influence of the pree test at SDIT al-fikri are in the medium category.

This is in line with what was stated in the research conducted by IGA Mas Darwati with the research title "*Problem Based Learning* (PBL): A Learning Model to Develop Students' Critical Thinking Ways" Problem Based Learning (PBL) is one of the learning models that requires the mental activity of students to understand a learning concept through the situations and problems presented. Through PBL, students can develop their abilities. The abilities in question include critical, innovative, and creative thinking. When PBL takes place, students are required to be able to solve problems on their own and work independently, so that students can

[15] Pariang Sonang Siregar, Lia Wardani, and Rindi Genesa Hatika, "Penerapan Pendekatan Pembelajaran Aktif Inovatif Kreatif Efektif Dan Menyenangkan (Paikem) Pada Pembelajaran Matematika Kelas Iv Sd Negeri 010 Rambah," *Jurnal Pemikiran Dan Pengembangan Sekolah Dasar (JP2SD)* 5, no. 2 (2017), https://doi.org/10.22219/jp2sd.vol5.no2.743-749.

develop their critical thinking. Students can be trained to develop high-level thinking skills and creative thinking patterns.[16]

3. How effective is the implementation of the Problem Based Learning (PBL) strategy in improving the learning outcomes of science subjects for grade IV students of SDIT Al-Fikri Makassar?

Analysis of the effectiveness of the application of the Problem Based Learning (PBL) strategy in improving the learning outcomes of science subjects for grade IV students of SDIT Al-Fikri Makassar bbased on the results of inferential statistics The results of the normality test for variable X were known *to have a significance value* of 0.50 using a significance level of 0.05. The significance value obtained was greater than (0.50> 0.05). Then the results of the normality test for variable Y were known to have a *significance Kolmogorov-Smirnov* value of 0.000 and by using a significance level of 0.05. The significant value obtained was greater than (0.000> 0.05). So it can be concluded that the influence of the learning based learning strategy on student learning outcomes at SDIT al-fikri is normally distributed.

Based on this, as stated in the research conducted by Aji, Chadia A., and M. Javed Khan, in their research entitled, "The impact of active learning on students' academic performance". Based on the results of the research, it can be concluded that this research focuses on the impact of active learning on students' academic performance. The researcher conducted an experiment by comparing two groups of students, namely the group that applied the active learning method and the control group that used conventional methods. As a result, students who were involved in active learning showed a significant improvement in material understanding, argumentation skills, and learning motivation. This shows that interactive learning can encourage students to participate more and master the concepts taught.[17]

The homogeneity test showed that for both variables with the IBM SPPS Statistics version 24 program, the Fcal value was obtained was 4.18 with an error level of 0.05 (5%). The significance value obtained was greater than 0.05, then the variance of each sample was the same (homogeneous), and vice versa, if the significance value was less than 0.05, then the variance of each sample was not the same (not homogeneous). Based on the results of the test of the two variables, a significance value greater than 0.05 was obtained, which was 0.000. This means that both variances have the same sample (homogeneous).

[16] IGA Mas Darwati and I. Made Purana, "Problem Based Learning (PBL) : Suatu Model Pembelajaran Untuk Mengembangkan Cara Berpikir Kritis Peserta Didik," *Widya Accarya* 12, no. 1 (2021), https://doi.org/10.46650/wa.12.1.1056.61-69.

[17] Chadia A. Aji and M. Javed Khan, "The Impact of Active Learning on Students' Academic Performance," *Open Journal of Social Sciences* 07, no. 03 (2019), https://doi.org/10.4236/jss.2019.73017.

Hypothesis testing shows that the value (t) obtained from the result of calculation (t_{count}) is greater than the value (t) obtained from the distribution table ($T_{table)}$. In the table the coefficient in column Constant A is 21.184 and in column B is 0.39 so that the regression equation:ˆ = a + bx or 21.184 + 0.39X. Then the results of the analysis obtained T$t_{hitung}T_{tabel}$calculation = 2.198 while the value of Ttable = 1.75 means that the value of ttable is greater than the value of ttable (ttable > calculation = 21.184> 1.75. Thus, the effectiveness of the application of problem-based learning strategies in improving the learning outcomes of social studies subjects at SDIT al-fikri, can be seen in the *value of R Square* in the table model *summary* of = 0.85 which means that the percentage of variable x to Y is 85% in the medium correlation category while the remaining 15% is influenced by other variables.

CONCLUSION

Based on the results of data processing and research discussion, it can be concluded that the application of the Problem Based Learning (PBL) strategy in science subjects in grade IV of SDIT Al-Fikri Makassar has proven to be effective in improving student learning outcomes. The initial condition of students' abilities in the experimental class and the control class are relatively the same, namely in the medium category. After the implementation of PBL, student learning outcomes in the experimental class experienced a more significant and even increase compared to the control class using conventional methods, shown by an increase in average scores and an increase in the number of students in the high category. The results of the inferential analysis strengthened these findings, where the normality and homogeneity tests showed that the data met the requirements of statistical analysis, and the hypothesis test showed that the calculated t-value was greater than the t-table so that an alternative hypothesis was accepted. With an R Square value of 0.85, it can be concluded that the PBL strategy has an influence of 85% on the improvement of students' social studies learning outcomes, while the rest is influenced by other factors outside the learning model.

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