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The Effect of Active Mathematics on the Statistical Literacy Skills of Children Aged 5–6 Years at TK Tri Insani Permata Pekanbaru

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A B S T R A C T

Early childhood is a golden period of development, making it essential to introduce statistical concepts in an active and meaningful way. However, statistics instruction in kindergartens tends to be passive and misaligned with children's developmental characteristics. This study employed a quantitative approach using a quasi-experimental one-group pretest-posttest design involving children aged 5–6 years at TK Tri Insani Permata Pekanbaru. Observations were conducted before and after treatment without a control group. The average score increased from 35.67% (pretest) to 78.00% (posttest). Prior to treatment, 93.33% of children were in the "Emerging" category and 6.67% in the "Not Yet Developed" category; after treatment, 53.33% reached the "Very Well Developed" category and 46.67% the "As Expected" category. The effect of Active Mathematics on improving statistical abilities reached 65.80%, with a moderate normalized gain category. Active Mathematics is effective in enhancing early childhood statistical recognition through active, exploratory, and enjoyable learning activities.

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INTRODUCTION

Early childhood is a developmental stage in which every child possesses unique traits and characteristics in accordance with their phase of growth. This period is often referred to as the "golden age" because it represents the fastest and most significant phase of development. It is a critical phase in life, as it forms the foundation for the development of personality as well as moral and spiritual values that will influence the child's future experiences (Kivuti-Bitok & Cheptum, 2020:326). Essentially, a child's world is a world of play, which is inseparable from the learning process. Children learn, grow, and develop through interactions with their surroundings, starting from the family as the closest environment to broader contexts such as school and the community. The educational environment plays a vital role in providing optimal stimulation to develop children's potential, as education equips them with relevant knowledge and information to support their growth and development (Dianmarta, 2017:1).

Kindergarten is a formal early childhood education institution that serves to provide children with opportunities to socialize, play, and explore within an educational framework, continuing the learning process that begins at home (Diadha, 2019:65). In their process of exploration, children often encounter problems that require solutions. Every problem demands a certain conceptual understanding. Therefore, essential concepts—including statistics—need to be introduced from an early age through early childhood education programs (Rahma, 2017:4–5).

The National Council of Teachers of Mathematics (NCTM) states that early childhood mathematics learning standards include five key areas: (1) numbers and operations, (2) algebra, (3) geometry, (4) measurement, and (5) data analysis and probability. Data analysis, as part of statistics, plays a vital role not only in daily life but also in children's learning processes (Susanti, 2019:4–6). Even before the age of three, children already show an interest in exploring various mathematical contents in their environment—such as numbers, patterns, geometric shapes, measurement, and data collection. Therefore, early childhood is a crucial time to lay the foundations of mathematics, which are believed to influence children's mathematical competence in later life (Solfiah, 2023:103).

Statistics is a branch of science concerned with planning data collection, presentation, analysis, interpretation, and drawing conclusions from data that contains variability and uncertainty (Lisarani, 2023:2). Children aged 5–6 years are generally able to classify objects based on color, shape, size, or function, and can group items into similar categories. To develop this ability, children need opportunities to explore classification activities using objects available in their environment, both indoors and outdoors (Permendiknas No. 137 of 2014 on National Standards for Early Childhood Education). Montague-Smith (2017:125) identifies several indicators of early childhood statistical abilities, namely: (1) asking questions based on identified problems, (2) collecting data, (3) representing data in the form of graphs, tables, or diagrams, (4) analyzing data, and (5) interpreting data based on the questions asked.

Although statistical skills and data literacy are increasingly relevant in the digital age, the practice of teaching statistics actively in early childhood education remains limited (Suhardi, 2017:225). Anggraini (2020:377) states that mathematics learning, including statistics, is often delivered passively and monotonously. Children are not yet adequately introduced to basic statistical concepts such as grouping, counting, ordering, and interpreting data through direct experiences. This is due to the perception that statistics is too complex for young children, leading to a lack of effective and engaging instructional efforts. As a result, children miss out on the opportunity to develop logical and analytical thinking skills from an early age (Fauziddin, 2017:22).

To make statistics learning more appealing, it needs to be packaged in a fun and developmentally appropriate way, aligning with children's tendency toward active and interactive activities. Learning styles play an important role in increasing children's motivation and interest in learning (Sari, 2019:44). Edgar Dale, an educational expert, introduced the concept of the Cone of Experience, which illustrates a hierarchy of learning experiences from the most concrete to the most abstract.

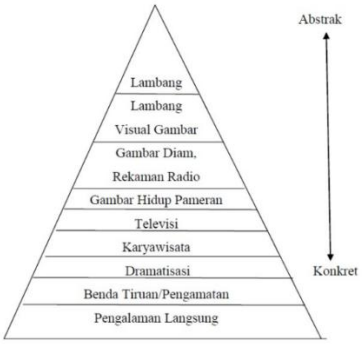

Figure 1. Edgar Dale Cone Experience

The cone shows that the more abstract the learning experience, the lower the level of understanding it generates. Conversely, more concrete learning experiences lead to greater understanding (Kurnia, 2018:12). Thus, direct or concrete experiences represent the most effective form of learning, including in the context of early childhood mathematics education. Therefore, an active learning approach is needed to stimulate children's statistical skills, known as Active Mathematics.

Active Mathematics is a learning approach that directly involves children in activities such as observing, classifying, counting, and presenting simple data from their surroundings. Children's active participation in this process not only strengthens their understanding of statistical concepts in a concrete manner but also fosters critical and analytical thinking skills as well as problem-solving abilities from an early age (Litster et al., 2020:615). This approach creates contextual and meaningful learning experiences aligned with the developmental characteristics of young children. As a result, children are better able to understand mathematical concepts and apply them in everyday life (Fauziddin, 2017:50).

Observations made by the researcher at TK Tri Insani Permata in Pekanbaru identified several issues: (1) children had difficulty grouping objects based on similar types; (2) they were unable to compare quantities (e.g., more and less); and (3) they could not collect or sort data from their surroundings. Interviews with teachers also revealed that they lacked an understanding of how to introduce statistical concepts appropriately and how to create an active learning environment. Teachers were unfamiliar with strategies for introducing statistical concepts suited to early childhood development stages.

Based on these problems, it is concluded that there is a need for the application of an active learning model in introducing statistics to early childhood. Therefore, the researcher conducted an

experimental study titled "The Effect of Active Mathematics on Statistical Recognition Skills of Children Aged 5–6 Years at TK Tri Insani Permata Pekanbaru."

METHOD

This research is categorized as experimental research because it aims to examine the causal relationship between an independent variable and a dependent variable—specifically, the effect of Active Mathematics on statistical recognition skills of children aged 5–6 years at TK Tri Insani Permata Pekanbaru. Experimental methods fall under the quantitative approach and are used to measure the extent to which an independent variable influences a dependent variable. The research design employed was a quasi-experimental design, using a one-group pretest-posttest model. In this design, the experiment was conducted on a single group without a control or comparison group. Observations were carried out twice: before the treatment (pretest/Y_1) and after the treatment (posttest/Y_2) (Sugiyono, 2019).

The variables in this experimental study consisted of:

Independent Variable (X) : Active Mathematic

Dependent Variable (Y) : Statistical Recognition Skills

Table 1. Desain Penelitian One Group PreTest-PostTest design

Pre-Test	Treatment	Post-Test
0_1	X	0_2

Description :

0_1 : Measurement result of children's statistical recognition skills before the treatment using Active Mathematics.

X : Treatment using Active Mathematics.

0_2 :Measurement result of children's statistical recognition skills after the treatment using Active Mathematics

FINDINGS AND DISCUSSION

Findings

This study aimed to introduce Active Mathematics as a method to stimulate statistical recognition skills among children aged 5–6 years. The implementation of Active Mathematics was based on field findings obtained through direct observation. The researcher selected this approach with the expectation that the Active Mathematics design would help children better understand and learn basic mathematical concepts, particularly statistics, more effectively. Additionally, this approach is intended to increase children's interest in learning statistical concepts.

This research adopted a quantitative approach, which is based on the positivistic paradigm that emphasizes systematic investigation of objective phenomena using numerical data analyzed through statistical procedures, structured formats, and controlled experiments. Experimental research is generally used to examine the effect of a specific treatment on another variable under strictly controlled conditions.

Research Location Overview

TK Tri Insani Permata is a private early childhood education institution located on Jl. Anggrek Garuda Sakti Km 2, Pekanbaru City. The school was established in 2009 and has implemented the Merdeka Curriculum as a guideline for its learning activities. The institution is led by Headmistress Afrida Ariyanti, with administrative support from Putri Aulia Susanti. There are five teachers teaching the TK B group at this school.

The research involved 15 children as research subjects, consisting of 6 girls and 9 boys, aged between 5 and 6 years. Learning activities at the school follow a structured approach, supported by technology as a learning tool.

Implementation of the Study

The data collection process was carried out in **six sessions**, including one pretest, four treatments, and one posttest. The entire experiment was conducted through systematic observation of the 15 children. The experimental schedule was structured as follows:

Table 2. Implementation Schedule

Day/Date	**Activity**	**Location**
Tuesday, 29 April 2025	Pretest	**School**
Wednesday, 30 April 2025	Treatment 1 – Introduction to statistics through a game called *"Jemuran Ibu"*. Children sorted origami shirts by color.	School

Wednesday,7 May 2025	Treatment 2 – *"Circle Time"* activity. Children formed a circle and identified items that matched the colors shown.	School
Thursday, 8 May 2025	Treatment 3 – *"What is Your Favorite?"* Children grouped themselves based on their favorite fruits and vegetables.	School
Wednesday, 14 May 2025	Treatment 4 – Children collected leaves from the environment and created a graph using the data.	School
Thursday, 15 May 2025	Posttest	School

Source: Processed Research Data 2025. Appendix 3 Page 57

Data Description

Data analysis was conducted using a paired sample t-test via IBM SPSS v23 to assess the significant difference between pretest and posttest scores. The analysis aimed to determine the effect of Active Mathematics on the statistical recognition skills of children aged 5–6 years at TK Tri Insani Permata Pekanbaru.

Key descriptive statistics included mean, standard deviation, minimum and maximum values:

Table 3. Data Description

Variabel	**Hypothetical Score**				**Empirical Score**			
	Xmin	Xmax	Mean	SD	Xmin	Mmax	Mean	**SD**
Pretest	6	24	15	3	5	09,00	7,1	**1,06**
Posttest	6	24	15	3	13	18,00	15,6	**1,40**

Source: Processed Data Research 2025. Appendix 4 Page 58

Overview of Children's Statistical Recognition Skills Before Active Mathematics (Pretest)

The treatment was applied to assess the statistical recognition skills of children aged 5–6 years at TK Tri Insani Permata Pekanbaru using observation techniques based on one aspect and five assessment indicators. The observation instrument was administered to 15 children as research subjects. The pretest results showed the following:

Tabel 4. Overview of Children's Ability to Recognize Statistics before the Active Mathematics Treatment (Pretest).

No	**Indicator**	**Ideal Score**	**Actual Score**	**%**	**Categori**
1	Asking questions based on identified problems	60	24	40,00	MB
2	Collecting data	60	20	33,33	MB
3	Representing data (tables, graphs, or diagrams)	60	21	35,00	MB
4	Analyzing data	60	21	35,00	MB
5	Interpreting data based on the questions	60	21	35,00	MB
	Total	**300**	**107**	**35,67**	**MB**

Source: Data Processing Research 2025. Appendix 5 Page 60

Based on the table above, it is known that the statistical literacy skills of children aged 5–6 years fall into the "Beginning to Develop" category, with a total score of 107, equivalent to 35.67% of the ideal score. The indicator with the highest score is "asking questions related to identified problems and collecting data," with a final score of 40.00. Meanwhile, the indicator with the lowest score is "representing or visualizing data," which scored 33.33. The indicator for "analyzing and interpreting data based on questions" received a score of 35.00.

Although there are score differences among the indicators, all of them are still within the same developmental category, namely "Beginning to Develop." A more complete overview of the children's statistical literacy skills before being given the Active Mathematics treatment can be seen in the following table:

Table 5. Children's Ability To Recognize Statistics Before Being Given Treatment (Pretest)

No	Category	Range	F	%
1	BSB	76-100%	0	0.00%
2	BSH	51-75%	0	0.00%

3	MB	26-50%	14	93,33%
4	BB	0-25%	1	6,67%
Total			15	100.00%

Source: Processed Research Data 2025. Appendix Page 60

Based on the table above, It is known that the majority of children, namely 14 out of 15 children (93.33%), are in the "Beginning to Develop" category in terms of statistical literacy skills. Meanwhile, one child (6.67%) falls into the "Not Yet Developed" category.

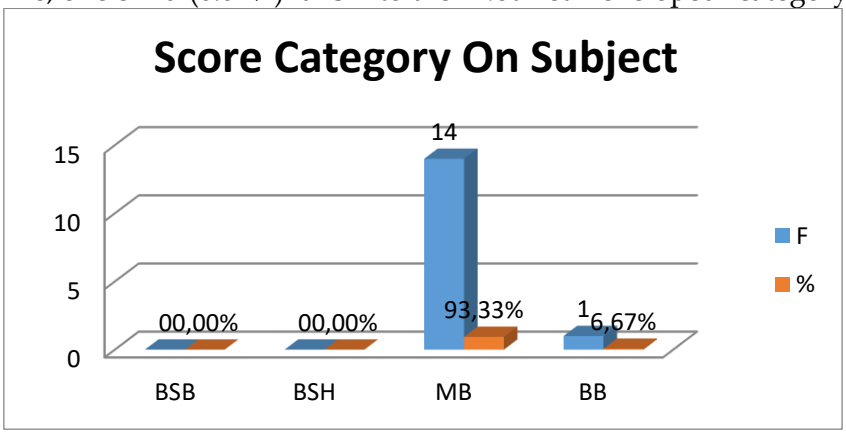

Figure 2. Ability to Recognize Statistics (Pretest)

Overview of the Statistical Literacy Skills of Children Aged 5–6 Years at TK Tri Insani Pekanbaru After the Implementation of Active Mathematics (Posttest)

The research then continued with the implementation of a treatment using the Active Mathematics approach, which was carried out on April 29 and 30, as well as May 7, 8, and 14, 2025. To assess the development of statistical literacy skills after the treatment, a posttest was conducted on May 15, 2025. A summary of the post-treatment results of children aged 5–6 years is presented in the following table:

Table 6. Overview of Children's Statistical Recognition Ability after being treated with Active Mathematics (posttest).

No	Indicator	Ideal Score	Actual Score	%	Categori
1	Asking questions based on identified problems	60	51	85,00	BSB
2	Collecting Data	60	48	80,00	BSB
3	Representing Data	60	47	78,33	BSB
4	Analyzisngdata	60	45	75,00	BSH
5	Interprenting Data	60	43	71,67	BSH
	Total	**300**	**234**	**78,00**	**BSB**

Sources: Research Data Processing 2025. Appendix Page 61

Based on the table above, it is evident that the statistical literacy skills of children aged 5–6 years after the treatment fall into the "Very Well Developed" category, with a total score of 234 or 78.00% of the ideal score. The indicator with the highest score is “asking questions related to identified problems,” which achieved 51 points or 85.00%. Meanwhile, the indicator with the lowest score is “interpreting data based on questions,” with 43 points or 71.67%. Although there are differences among the indicators, all of them still fall within the same category, namely “Very Well Developed.”

Table 7. Kemampuan Mengenal Statistik Anak (posttest)

No	Kategori	Rentang	F	%
1	BSB	76-100%	8	53.33%
2	BSH	51-75%	7	46.67%
3	MB	26-50%	0	0%
4	BB	0-25%	0	0%
Jumlah			**15**	**100%**

Based on the table above, it is known that the average ability to recognize statistics of children aged 5-6 years falls within the Developing as Expected (BSH) category, with a total of 7 children or 46.67%. Meanwhile, 8 other children (53.33%) have reached the Very Well Developed (BSB) category.

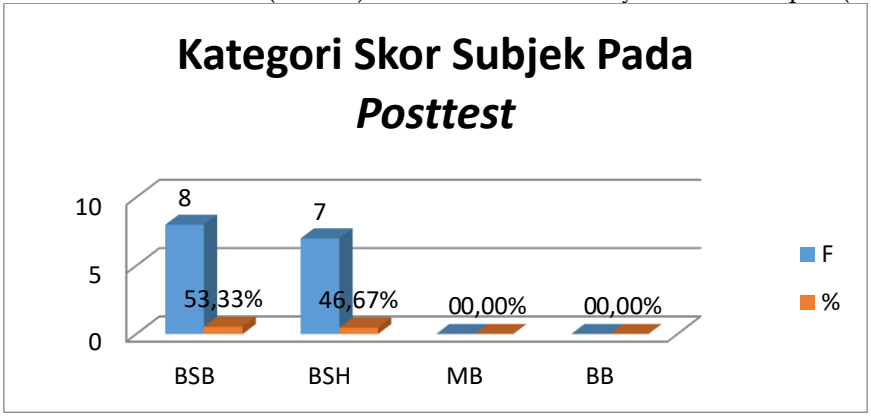

Figure 3 Ability to Recognize Statistics (Posttest)

Comparison of Pretest and Posttest Data

This study employed a One-Group Pretest–Posttest design, in which the results before and after the treatment (pretest and posttest) were compared. The comparison of the pretest and posttest results can be seen in the following table:

Table 8. Recapitulation of Children's Statistical Literacy Skills

No	Categori	Range Skor	F Pretest	%	F Posttest	%
1	BSB	76%-100%	0	0	8	53,33
2	BSH	56%-75%	0	0	7	46,67
3	MB	41%-55%	11	93,33	0	0
4	BB	<40%	5	6,67	0	0
	Jumlah		**16**	**100**	**16**	**100**

Sources: Processed Research Data 2025. Appendix Page 62

These results indicate a **significant improvement** in children's statistical recognition skills following the implementation of Active Mathematics. Initially, most children were in the "Emerging" category, but after the treatment, 53.33% reached "Very Well Developed" and 46.67% were "As Expected."

Hypothesis Testing

Data Analysis

This study employed quantitative data analysis in accordance with the experimental approach. The statistical technique used was the *t*-test, aimed at measuring the partial effect of the independent variable on the dependent variable, at a significance level of 5% ($\alpha = 0.05$), under the assumption that other variables remain constant.

Homogeneity Test

The purpose of the homogeneity test is to determine whether the data being analyzed comes from a population with equal variances. In this study, the homogeneity test was conducted using the Chi-Square test through SPSS version 23.

Table 9. Homogeneity Test Results

Test Statistics		
	Pretest	**Posttest**
Chi-Square	5.333a	5.400a
Df	4	5
Asymp. Sig.	.255	.369

Source: Processed Data Research 2025, Appendix Page 58

Based on the table above, the Asymp. Sig. value for the pretest is 0.255 and for the posttest is 0.369. Since both values are greater than 0.05, H_0 is accepted. Therefore, it can be concluded that the data are homogeneous or have equal variances.

Normality Test

The normality test was conducted to determine whether the data distribution is normal. This study used the One-Sample Kolmogorov–Smirnov test with the assistance of SPSS version 23 software. The test results are presented in the following table:

Tabel 10. Normalitas Test

One-Sample Kolmogorov-Smirnov Test			
		Pretest	**Posttest**
N		15	15
Normal Parametersa,b	Mean	7.1333	15.6000
	Std. Deviation	1.06010	1.40408
Most Extreme Differences	Absolute	.193	.188
	Positive	.150	.188
	Negative	-.193	-.145
Test Statistic		.193	.188
Asymp. Sig. (2-tailed)		.137c	.162c

Source: Processed Data Research 2025, Appendix Page 59

Based on the table above, the data are considered to be normally distributed if the significance value (Sig.) in the Kolmogorov–Smirnov test is greater than 0.05. The test results show that the Sig. value for the pretest is 0.137 and for the posttest is 0.162. Since both values are greater than 0.05, H_0 is accepted. Therefore, the data are normally distributed and suitable for use in the research analysis.

Hypothesis Testing

The comparison of pretest and posttest results in this study was analyzed using a paired sample *t*-test through SPSS version 23. This test aims to determine whether there is a significant difference between the results before and after the implementation of Active Mathematics on children's statistical literacy skills. The testing criteria are as follows: if the significance value (Sig.) is less than 0.05, H_0 is rejected and H_a is accepted, indicating a significant difference. Conversely, if Sig. > 0.05, H_0 is accepted and there is no significant difference. The results of the pretest and posttest comparison for the experimental class are presented in the following table:

Table 11. Uji t

Paired Samples Test									
		Paired Differences							
		Mean	**Std. Deviation**	**Std. Error Mean**	**95% Confidence Interval of the Difference**		**t**	**df**	**Sig. (2-tailed)**
					Lower	**Upper**			
Pair 1	Pretest - Posttest	-8.46667	.99043	.25573	-9.01515	-7.91818	-33.108	14	.000

Source: Processed Research Data, 2025, Appendix Page 59

Based on Table 11, the calculated *t* value is 33.108 (absolute value, due to a two-tailed test), with a significance value of 0.000, which is less than 0.05. This indicates that there is a significant difference between the pretest and posttest results. Therefore, it can be concluded that the implementation of Active Mathematics has an effect on early childhood statistical literacy skills (Sugiyono, 2010).

The Effect of Active Mathematics on the Statistical Literacy Skills of Children Aged 5–6 Years at TK Tri Insani Permata Pekanbaru

To determine the extent to which Active Mathematics influences the statistical literacy skills of children aged 5–6 years at TK Tri Insani Permata Pekanbaru.

Normalized Gain Test

$$G = \frac{Skor\ Posttest - skor\ pretest}{Skor\ Ideal - skor\ pretest} x\ 100\%$$

$$G = \frac{234 - 107}{300 - 107} x\ 100\%$$

$$G = \frac{127}{193} x\ 100\%$$

$$G = 65{,}80\%$$

Explanation:

G = The difference between pretest and posttest scores

Posttest = Score after the treatment

Pretest = Score before the treatment
100% = Constant value

Table 12. Normalized Gain Category

N Gain	Category
G < 30%	Low
30% < G < 70%	Medium
G > 70%	High

Source: Processed Research Data, 2025, Appendix

Based on the results of the calculation using the gain formula (G), an increase of 65.80% was obtained, which falls into the moderate category, as it lies within the range of 30% < G < 70%.

Discussion of Research Findings

Children's ability to solve problems and think critically is greatly supported by mathematics learning (Onoshakpokaiye, 2023:22). Effective mathematics instruction must be conducted actively—by giving children opportunities to manipulate concrete objects, engage in discussion, make predictions, and draw conclusions based on their lived experiences (NCTM, Mathematics in Early Childhood Learning, 2000). Activities such as collecting, classifying, and comparing are essential parts of cognitive development in preschool-aged children, as they help children recognize similarities and differences, improve observational skills, and group objects by specific characteristics (Hikmawati et al., 2022:58). These activities also train problem-solving skills, which are crucial for academic success and daily life (Ahmad, 2016:72).

Active Mathematics is an instructional design that emphasizes children's active participation in learning mathematics through exploratory activities, problem-solving, and discussions. This approach fosters the development of critical, creative, and communicative thinking skills (Rismen, 2009:4–5). As a result, Active Mathematics provides meaningful and enjoyable learning experiences and enhances children's ability to understand statistics.

Pretest Results: Before the Application of Active Mathematics

The statistical recognition skills of children aged 5–6 years at TK Tri Insani Permata Pekanbaru before the implementation of Active Mathematics showed that most children were not yet capable of collecting, classifying, or representing data adequately. The average score was 35.67%, with the majority (93.33%) categorized as Emerging, and one child (6.67%) categorized as Not Yet Developed. The children had difficulty asking questions, collecting data, representing data in tables or graphs, and interpreting information.

These findings indicate that the prior instructional approach was ineffective, necessitating a more engaging method. According to Piaget (in Vera Zamrano, 2022:28), early childhood learners are still in the preoperational stage, meaning that abstract concepts such as statistics must be conveyed through concrete experiences. Hikmawati et al. (2022:58) emphasized that the ability to classify and compare is essential for developing foundational statistical skills. Ahmad (2016:72) also noted that data collection and analysis activities can enhance children's problem-solving skills.

The pretest data showed the highest indicators were in asking questions and collecting data (40.00%), while the lowest was in data representation (33.33%). Nevertheless, all indicators remained in the "Emerging" category. These findings align with Solfiah's (2018) research, which stressed the importance of teacher involvement in early childhood education. Makar & Sousa (2014:6) confirmed that the development of children's statistical skills only occurs through exploratory and meaningful activities. Estrella (2023:3) also emphasized the need for teachers to understand how to nurture statistical reasoning through data-based exploration.

Therefore, an active and contextual instructional design is necessary. The NCTM (in Kerrigan, 2018:36) recommends instructional strategies that allow children to manipulate concrete materials, engage in dialogue, and discover concepts directly. In this context, the Active Mathematics approach—as described by Rismen (2009:4)—is highly relevant because it involves children's active participation through activities such as *"Jemuran Ibu," "Circle Time," "What is Your Favorite?"*, and *"Leaves in My Environment."*

Posttest Results: After the Application of Active Mathematics

Following the application of Active Mathematics, the statistical recognition skills of children aged 5–6 years at TK Tri Insani Permata Pekanbaru improved significantly, with posttest scores rising from 35.67% to 78.00%. Children appeared active and enthusiastic when engaging in hands-on activities designed to introduce statistical concepts in concrete and playful ways—such as *"Jemuran Ibu," "Circle Time," "What is Your Favorite?"* and *"Leaves in My Environment."*

This improvement shows that the Active Mathematics approach was effective in enhancing children's abilities to collect, classify, represent, and interpret data. The findings align with Piaget's constructivist theory (in Subkhi Mahmasani, 2020), which underscores the importance of concrete experiences for children in the preoperational stage. Furthermore, Vygotsky's Zone of Proximal Development (ZPD) (in Vetter, 2020) highlights the importance of social interaction and adult or peer support in developing children's skills—as observed during discussions in the "*Circle Time*" activity.

This approach is also consistent with NCTM principles (2000**)** that advocate for interactive and meaningful mathematics learning. Individual results show that 53.33% of children reached the Very Well Developed category, and 46.67% reached the As Expected category—none remained in the lower categories. This proves that Active Mathematics provided enjoyable and effective learning experiences that improved children's statistical recognition.

The findings are supported by Solfiah (2020), who demonstrated that active learning through daily family activities can enhance young children's statistical skills. Similarly, Yuli Hafizah (2021) stated that active learning strategies give children opportunities to independently experience and understand learning processes.

The Effect of Active Mathematics on Statistical Recognition Skills

Based on the research results, the use of Active Mathematics has been proven effective in improving the statistical recognition skills of children aged 5–6 years at TK Tri Insani Permata Pekanbaru. Learning activities designed through hands-on and playful methods fostered children's learning motivation (Abdullah M. & Yang, 2018).

Research by Petrou & Panaoura (2022) also indicated that combining mathematics instruction with physical play activities enhances preschool children's social, academic, and emotional engagement. At the beginning of the study, children's limited fine motor skills affected their ability to ask questions, gather and represent data, and interpret statistical information. This was likely due to passive instruction and unengaging activity design.

Lewis et al. (2022) highlighted that delays in children's statistical development often stem from limited involvement in exploratory activities. Their study showed that children who participated in sorting and recording activities developed stronger statistical abilities than those who only received passive instruction.

The posttest results in this study revealed a significant improvement, with 53.33% of children classified as high, and 46.67% as developing as expected. However, a few children still showed low motivation toward mathematics learning, which is consistent with findings by Susanti (2024:88), who noted that monotonous, drill-based instruction can lead to boredom and reduced motivation.Therefore, in addition to using the Active Mathematics method, other factors—such as engaging instructional designs and developmentally appropriate strategies—must be continuously developed to ensure that learning objectives in statistics are optimally achieved.In conclusion, Active Mathematics is highly effective in improving the statistical recognition skills of children aged 5–6 years at TK Tri Insani Permata Pekanbaru.

CONCLUSIONS

Based on the results of the study, it can be concluded that the statistical recognition skills of children aged 5–6 years at TK Tri Insani Permata Pekanbaru, prior to the implementation of the Active Mathematics method, were generally in the "Emerging" category, with 93.33% of the children falling into this group and 6.67% in the "Not Yet Developed" category. The children experienced difficulties in understanding basic statistical concepts such as asking questions, collecting, presenting, analyzing, and interpreting data. After the implementation of the Active Mathematics method, there was a significant improvement in their statistical recognition skills, as shown by 53.33% of children reaching the "Very Well Developed" category and 46.67% reaching the "As Expected" category. The method contributed to a 65.80% improvement, and based on the normalized gain category, this increase falls within the moderate category, indicating that Active Mathematics is an effective approach for supporting the learning of statistics in early childhood education.

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