International Journal of Education Research and Development
https://e-journal.yayasancec.or.id/index.php/corolla
eISSN: 2775-3689; pISSN: 2775-4766

Improvement of Logical-Mathematical Skills Through Jumbo Snake and Ladder Games in Children Aged 5-6 Years

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Abstract. This study aims to improve the logical-mathematical abilities of children aged 5–6 years through the medium of Jumbo Snakes and Ladders games at Aisyiyah 12 Kindergarten, Palembang. The method used is the Kemmis & McTaggart model, Class Action Research (PTK), which consists of four stages: planning, action, observation, and reflection. The research lasted for one month with a collaborative approach between researchers and classroom teachers. Data is collected through observation and documentation, and analysed to measure logical-mathematical indicators, such as number recognition, addition, subtraction, and reasoning. The results of the study show that the use of jumbo snakes and ladders games can increase children's enthusiasm for learning with achievement of success of 18.5% in the category of Developing According to Expectations and 81.5% in the category of Developing Very Well, before the action was carried out 14.8%, increased to 29.6% in cycle l, and in cycle II increased to 81.5%. The increase is seen from the initial condition of the logical-mathematical abilities of children in TK Aisyiyah 12 Palembang which is in the category of Developing Very Well (BSB), before the action was carried out it reached 14.8%, increased to 29.6% in cycle l, and in cycle II increased to 81.8%. strengthen their understanding of basic mathematical concepts, and foster systematic thinking skills. This educational game has proven to be effective as a fun and interactive learning medium in the development of early childhood logical-mathematical intelligence.

Keywords: Logical-Mathematical Ability, children aged 5-6 years, Jumbo Snakes and Ladders,

Introduction

Early Childhood Education (PAUD) is a conscious effort that aims to stimulate the growth and development of children from birth to the age of six. PAUD is carried out through the provision of integrated experiences so that children grow and develop optimally under societal values and norms. One of the important focuses at this stage is the development of logical-mathematical thinking skills, such as number recognition, basic operations of addition and subtraction, and problem-solving.

Early childhood, namely children aged 0–6 years, is a period of rapid development called the golden age. They have unique characteristics and different intelligences, including logical-mathematical terms. Children with this intelligence tend to think systematically, analyse cause and effect, and enjoy classification and analysis activities.

Early childhood development includes six main aspects: religious and moral, social-emotional, physical, motor, cognitive, language, and art. Each aspect has indicators of achievement, such as the ability to recognize religious concepts, social skills, motor skills, and language and art development. Among all these aspects, the cognitive aspect plays a big role in shaping children's intelligence. Cognitive includes the ability to understand and process information, as well as solve problems. One form of cognitive intelligence is logical-mathematical intelligence, which deals with the ability to calculate, reason, and recognize patterns.

Logical-mathematical intelligence helps children understand abstract concepts, think critically, and make rational decisions. However, the results of observations in November 2024 at Aisyiyah 12 Kindergarten Palembang, show that many children have not developed optimally

Article info:
https://doi.org/10.52760/ijerd.v5i2.109
Received 21 December 2024; Received in revised form 10 February 2025; Accepted 24 March 2025

in this aspect. Some children are not fluent in counting, do not understand the concept of numbers, and cannot recognize the number symbols well. One of the reasons is the lack of variety of media and learning methods used.

To overcome these problems, innovations in learning media are needed that can stimulate children's logical-mathematical abilities. One of the media that is considered effective is the Jumbo Snakes and Ladders game. The game is played on a large board or carpet that is modified by adding educational elements such as numbers and mathematical symbols. This game allows children to learn while playing collaboratively.

Previous research supports the use of Snakes and Ladders games to improve children's logical-mathematical intelligence. For example, Badriah et al. (2021) found that this game can foster mathematical logic skills. Rasmani et al. (2023) also stated that children find it easier to understand the concept of numbers through this game. Meanwhile, Srimulyati et al. (2020) proved that the Snakes and Ladders media is effective in introducing the concept of numbers to children.

Based on this, the researcher intends to use the Jumbo Snakes and Ladders game as a learning medium in the study entitled "Improving Logical-Mathematical Abilities Through Snakes and Ladders Games in Children Aged 5–6 Years at Kindergarten Aisyiyah 12 Palembang". The main goal is to develop children's logical-mathematical abilities in a fun and effective way.

Materials and Methods

Classroom Action Research (PTK) is a form of action research that aims to improve the learning process in the classroom to be more effective. PTK was first developed by Kurt Lewin in 1946 through three stages: planning, action, and observation. In the context of education, PTK involves teachers as researchers who take action to improve the quality of learning. PTK is not limited to the classroom alone, but covers all learning communities. This study uses a collaborative approach between teachers and researchers in improving the logical-mathematical abilities of children aged 5–6 years through the game of Jombo Snake and Ladder at Kindergarten Aisyiyah 12, Palembang. Data was collected through direct observation and documentation. Observation is carried out by recording phenomena that occur in the classroom, while documentation in the form of writing, pictures, and videos serves as evidence of the learning process. This study uses the PTK model from Kemmis & McTaggart, which consists of four stages: planning, action, observation, and reflection. Data sources were obtained from school principals, teachers, and students. The research lasted for one month in the even semester of the 2025 school year. The researcher compiled an observation sheet that included logical-mathematical indicators such as number recognition, subtraction, addition, and reasoning, as a reference to assess the success of the actions taken.

Results and Discussion

Results

Description of Child/Pre-Cycle Initial Ability Data

In this classroom action study, researchers initially observed children to assess the children's initial condition to improve the children's logical-mathematical ability through a jumbo Snakes and Ladders game. Researchers directly observed children during learning and teaching activities. The data obtained represent children's abilities on 9 indicators of logical-mathematical ability improvement.

The table below 1 shows the results of pre-cycle observation before the action of the learning process through Snake and Ladder games in increasing children's logical-mathematical comprehension.

Table 1.
Results of observation of pre-cycle children's logical-mathematical ability

No	Child's Name	Total Score	Condition Level	Assessment Criteria
1	SH	25	69%	Growing Up With Expectations
2	HA	26	72%	Growing Up With Expectations
3	AZ	17	47%	Start Growing
4	AI	29	80%	Very Well Developed
5	FA	26	72,2%	Growing Up With Expectations
6	J	9	25%	Not Yet Developed
7	AU	18	50%	Start Growing
8	FA	22	61%	Growing Up with Expectations
9	DA	21	58%	Growing Up with Expectations
10	NA	18	50%	Start Growing
11	QA	16	44%	Start Growing
12	RA	18	50%	Start Growing
13	VA	17	47,2%	Start Growing
14	ZA1	31	86%	Very Well Developed
15	KA	30	83%	Very Well Developed
16	EW	17	47,2%	Start Growing
17	IN	18	50%	Start Growing
18	KHA	26	72,2%	Growing Up with Expectations
19	YA	18	50%	Start Growing
20	MA	27	75%	Growing Up with Expectations
21	NA1	19	53%	Growing Up with Expectations
22	NA2	31	86%	Very Well Developed
23	RA1	18	50%	Start Growing
24	RA2	18	50%	Start Growing
25	ZA2	18	50%	Start Growing
26	QUE	27	75%	Growing Up with Expectations
27	CHAK	17	47%	Start Growing

Based on Table 1 above, it shows that 1 child (3.7%) meets the Undeveloped (BB) criteria, namely Juno. 13 children (48.1%) met the criteria for Starting Development (MB), namely Azkha, Aulia, Nafizah, Qadaffi, Rayhan, Vania, Ewi, and Fiaz.f, Yahya, Raffan, Razka, Zahwa, and Cakra. 9 children (33.3%) meet the criteria of Developing According to Expectations (BSH), namely Hanan, Nadira, Faiz A, Putri, Maira, Khayra, Fathan, Afiza, and Quennzi. 4 children (14.8%) met the criteria of Very Good Development (BSB), namely Aisyah, Zahra, Karim, and Nayla. So, at this stage the percentage of pre-cycle achievement reached 14.8%. The table below will provide an observational recapitulation of the improvement of pre -cycle children's logical-mathematical abilities will be presented in the following Table 2.

Table 2.
Recapitulation of Logical-Mathematical Ability Improvement Data

NO	Assessment Criteria	Number of Children	Completeness Level
1.	Not Yet Developed	1	3,7%
2.	Start Growing	13	48,1%
3.	Growing Up With Expectations	9	33,3%
4.	Very Well Developed	4	14.8%

The results of pre-cycle observations at Kindergarten Aisyiyah 12 Palembang shows that children's logical-mathematical abilities are still low. Of the 27 children, 1 child (3.7%) was not yet developed, 13 children (48.1%) were starting to develop, 9 children (33.3%) were developing as expected, and 4 children (14.8%) were developing very well. So, at this stage 51.8% of children are in the BB and MB categories, 48.1% of children are in the BSH and BSB categories. The majority of children still need the help of teachers in understanding basic math concepts. Therefore, the researcher took action to improve logical-mathematical abilities through Jumbo Snakes and Ladders games that suit the needs of children. This game is considered effective because it involves concrete experiences that help children understand the concepts of numbers, counting, and patterns in a fun way.

Description of Cycle 1 Results

Planning

The first cycle of research was carried out for five days, from March 17 to 21, 2025, with the theme of basic mathematics and a subtheme of the Jumbo Snake and Ladder game. The researcher prepares the RPPH, approved by the principal, and coordinates with the classroom teacher and companion. Learning is divided into opening, core, recalling, and closing activities. Core activities involve Snake and Ladder games to improve children's logical-mathematical skills, such as numeracy and problem-solving. The researcher prepares tools, materials, observation sheets, and documentation. The teacher carries out the learning, the researcher acts as an observer. The results of the first meeting showed an improvement in children's logical-mathematical abilities through a fun and structured approach.

Implementation

At Kindergarten Aisyiyah 12 Palembang, the 1st cycle aims to improve children's logical-mathematical abilities by using the learning process and Snake and Ladder games, especially in group B1 children. This cycle consists of five meetings that focus on learning steps and planning.

1. **Cycle 1 meeting 1 (Thursday, March 17, 2025)**

   In the first cycle of the first meeting (March 17, 2025), learning with the theme of basic mathematics with the subtheme of the Jumbo Snake and Ladder game began with opening activities such as greetings, prayers, and explanations of the material. In the core activity, children are divided into groups to play Jumbo Snakes and Ladders to improve logical-mathematical skills such as arithmetic, recognizing numbers, and completing

math quizzes. Children become pawns in the game and answer questions before taking a step. Some children still have difficulty following instructions and solving problems. The activity was closed with reflection, reinforcement of the material, information on the next day's activities, prayers, and closing greetings. The following are the results of learning activities to improve children's mathematical logical abilities through the Jumbo Snakes and Ladders game at the first meeting of cycle 1, namely:

Table 3.
Cycle Results 1 Meetings 1

NO	Assessment Criteria	Number of Children	Completeness Level
1	Not Yet Developed	**1**	**3,7%**
2	Start Growing	**12**	**44,4%**
3	Growing Up With Expectations	**10**	**37%**
4	Very Well Developed	**4**	**14,8%**

Based on table 3, at the first meeting of the first cycle, one child (3.7%) was classified as Not Developing, twelve children (44.4%) were Starting to Develop, ten children (37%) were Developing as Expected, and four children (14.8%) were Developing Very Good. Children with the initials Zrh and Nay are very active in the game of Snakes and Ladders and can count six numbers on the dice correctly. Meanwhile, Azk and Aul need the teacher's guidance when rolling the dice and counting numbers. This shows the variation in children's logical-mathematical abilities in the game-based learning process.

2. Cycle 1 Meeting 2 (Friday, March 18, 2025)

In the first cycle of the second meeting, the learning theme was basic mathematics, symbolic thinking, with the subtheme of the Jumbo Snake and Ladder game. The opening activity began with routines, prayers, ice breaking, and explanations of the rules of the game. The core activity involves children playing Snakes and Ladders in groups to practice logical-mathematical skills such as counting, recognizing numbers, understanding concepts more and less, as well as addition and subtraction quizzes. Teachers accompany, observe, and help children who are experiencing difficulties. The closing activity included children's reflection, reinforcement of the material, information on the next activity, prayer, and a closing greeting. Some children still need guidance in following the rules and understanding the material. The following are the results of learning activities to improve children's mathematical and logical abilities through the Jumbo Snake and Ladder game at the second meeting of cycle 1, namely:

Table 4.
Cycle Results 1 Meeting 2

NO	Assessment Criteria	Number of Children	Completeness Level
1	Not Yet Developed	**1**	**3,7%**
2	Start Growing	**11**	**40,7%**
3	Growing Up with Expectations	**11**	**40,7%**
4	Very Well Developed	**4**	**14,8%**

Based on table 4.4, at the second meeting of the first cycle, there was one child (3.7%) in the Undeveloped category, eleven children (40.7%) in the Starting to Develop category, eleven children (40.7%) in the Developing as Expected category, and four children (14.8%) in the Very Good Developing category. Field records show an improvement in Nay being ability to perform calculation operations, match numbers, and understand basic mathematical concepts. Zrh remained active and enthusiastic in the Snakes and Ladders game, while Azk and Aul still needed the teacher's guidance in completing simple addition and subtraction during the activity.

3. Cycle 1 Meeting 3 (Friday, March 19, 2025)

In the first cycle of the third meeting, the learning theme was basic mathematics and logical thinking, with the subtheme of the Snake and Ladders game. The opening activity began with morning routines, ice breaking, prayer, attendance, gymnastics, and explanations of the rules and learning objectives according to the RPPH. In the core activity, children are divided into groups and play Jumbo Ladder Snakes while answering simple math quizzes such as addition, subtraction, matching numbers, and more or less concepts. Teachers provide quiz cards, craps, and real play media. During the activity, some children still have difficulty understanding the rules, counting dice steps, and explaining the activities they are doing. Teachers and researchers go around for observation and assist when needed. After playing, the children ate together, then the activity was closed with reflection on feelings, reinforcement of material, information on tomorrow's activities, prayers, and closing greetings. The following are the results of learning activities to improve children's mathematical logical abilities through the Jumbo Snake and Ladder game at the third meeting of cycle 1, namely:

Table 5.
Cycle Results 1 Meetings 3

NO	Assessment Criteria	Number of Children	Completeness Level
1	Not Yet Developed	**1**	**3,7%**
2	Start Growing	**10**	**37%**
3	Growing Up with Expectations	**12**	**44,4%**
4	Very Well Developed	**4**	**14,8%**

Based on Table 4.5, one child (3.7%) is in the category of Not Developing, ten children (37%) are Starting to Develop, twelve children (40.4%) are Developing as Expected, and four children (14.8%) are Developing Very Good. Nay and Kut showed an improvement in logical-mathematical skills, such as addition, subtraction, and matching numbers. Meanwhile, Zrh, Aly, Al Karim, and Ptri were very enthusiastic about participating in the Snakes and Ladders game and actively trying challenges. However, Azk and Aul still need teachers' guidance in understanding the concept of simple addition and subtraction during the activity.

4. Cycle 1 Meeting 4 (Monday, March 20, 2025)

At this meeting, the theme raised was basic mathematics of logical thinking, with the subtheme of the Snakes and Ladders game. The opening activity began with ice breaking, prayer, attendance, and explanation of the rules of the game. In the core activity, children play Jumbo Snakes and Ladders while answering math quizzes related to addition, subtraction, odd-even numbers, and more/less concepts. Children are divided into groups and become pieces in the game. The teacher observes the logical-

mathematical development of the child. Some children still have difficulty understanding rules or arithmetic. The activity was closed with reflection, retelling, reinforcement of material, information on tomorrow's activities, and joint prayer. The following are the results of learning activities to improve children's mathematical logical abilities through the Jumbo Snake and Ladder game at the meeting of four cycles 1, namely:

Table 6.
Cycle Results 1 Meetings 4

NO	Assessment Criteria	Number of Children	Completeness Level
1	Not Yet Developed	**1**	**3,7%**
2	Start Growing	**9**	**33,3%**
3	Growing Up with Expectations	**13**	**48,1%**
4	Very Well Developed	**4**	**14,8%**

Based on table 4.6, one child (3.7%), namely Jn, is in the category of Not Developing, nine children (33.3%) such as Aul, Qdf, and others are in the Starting to Develop category, thirteen children (48.1%) including Afz, Azk, and Ckr are in the category of Developing as Expected, and four children (14.8%) such as Nai, Al krm, and Zrh are in the Very Well-Developed category. show an increase in Kut, Ndr, Ckr, and Qn, which are now in the BSH category. Meanwhile, Jn remained in the BB category due to tardiness, and Nay, Zrh, Al, and Ais were independent in basic math activities.

5. Cycle 1 Meeting 5 (Tuesday, March 21, 2025)

In Cycle 1 of Meeting 5 (Tuesday, March 21, 2025), learning with the theme of Basic Mathematics and Logical Thinking uses a subtheme of the Jumbo Snakes and Ladders game. The activity began with morning routines, ice breaking, prayer, and material explanations. In the core of the activity, children play Snakes and Ladders in groups while answering math problems such as addition, subtraction, the concept of odd-even numbers, and more and less. The teacher observes and guides children who are still having difficulty following the rules of the game and understanding the problems. The activity was closed with reflection, material reinforcement, information on tomorrow's activities, joint prayer, and a closing greeting. The following are the results of learning activities to improve children's mathematical logical abilities through the Jumbo Snake and Ladder game at the meeting of five cycles 1, namely:

Table 7.
Results of the Cycle 1 Meeting 5

NO	Assessment Criteria	Number of Children	Completeness Level
1	Not Yet Developed	**1**	**3,7%**
2	Start Growing	**9**	**33,3%**
3	Growing Up with Expectations	**10**	**37%**
4	Very Well Developed	**7**	**30%**

Based on Table 4.7, it can be seen that children who are included in the criteria of Not Yet Developing 1 children (3.7%) are Jn, and are included in the criteria of Starting to Develop 9 children (33.3%), namely Aul, Nfz, Qdf, Fz.f, Khy, Yhy, Rfn, Rzk, Zhw. Ten children (37.3%) are Hnn, Afz, Fz.a, Ptr, Ewi, Hair, Qn, Ckr, Ndr, Kaut, and seven children (25.9%), namely Nay,

Zrh, Ais, Al Krm, Nfzh, Azk, Fthn. Field records in cycle 1 of the five activities, namely, children with the initials Nfzh, Azk, Fthn, showed an increase in the BSB criteria to be able to complete activities independently without the help of teachers.

Observation

The implementation of the observation cycle 1 is carried out at the same time as the learning process starts to finish. Therefore, the researcher saw firsthand when children and teachers carried out basic mathematics learning activities through Jumbo Snakes and Ladders games during the learning process in improving children's logical-mathematical skills. The research conducted observed indicators, namely the aspect of logical-mathematical ability through the Snake and Ladder game, which includes observation/observation, symbolic thinking, logical thinking, learning, and problem solving. The results of the observation of children's science abilities in the actions of cycle 1 in the observation of the logical-mathematical abilities of children in cycle 1 are clarified through the following table 8.

Table 8.
Recapitulation of Logical-Mathematical Ability Data of Children Cycle l

NO	Assessment Criteria	Number of Children	Completeness Level
1	Not yet developed	1	3,7%
2	Still growing	4	14,8%
3	Growing Up with Expectations	14	51,8%
4	Very Well Developed	8	29,6%

Based on the recapitulation table, the logical-mathematical ability of children in cycle 1 showed variations. One child (3.7%) is categorized as Undeveloped because of special needs (autism). Four children (14.8%) in the Starting Up category began to understand the rules of the game and basic math concepts, although they still needed guidance. Fourteen children (51.8%) in the Develop on Expectations category were able to count, understand the concept of even-odd, and add and subtract with little direction. Eight children (29.6%) in the Very Good Developed category were independent, fast, and accurate in answering math problems. Overall, Jumbo Snake and Ladder games are effective in improving children's logical-mathematical abilities while still requiring teacher support for some children.

Based on data from the actions of cycle L, the learning process through Jumbo Snakes and Ladders games can increase the percentage of children's logical-mathematical abilities. With this increase, the Not Developed (BB) category reached 3.7%, Started to Develop (MB) reached 14.8%, Developed as Expected (BSH) reached 51.8%, and Very Good Developed (BSB) reached 29.6%. In the first cycle stage the success rate reached 29.6%, there was an increase from pre-cycle before action was taken from 14.8% to 29.6%. Based on these results, in cycle l, children's logical-mathematical abilities experienced a significant increase, with more than half of the children being in the category of Developing According to Expectations. That way, through basic math activities using Jumbo Snakes and Ladders games, it is hoped that it can continue to support the maximum improvement of children's logical-mathematical abilities in the next cycle.

Reflection

At the reflection stage, researchers and teachers evaluate the learning process of cycle 1, which still has many shortcomings. Children have difficulty understanding the rules of the game, the number symbols on the dice, addition-subtraction operations, and the concept of even and odd. They also lack focus because they interfere with each other. For cycle 2, improvements are planned such as clearer explanations of rules, maintaining order so that children are focused,

teaching finger counting operations, and increasing the active role of teachers. Despite the improvement, the logical-mathematical abilities of the children of Kindergarten Asia 12 Palembang are not on target, so the Jumbo Snakes and Ladders game needs to be continued with a different approach.

Description of Cycle Results II

Planning

The second cycle of research was carried out for five meetings on March 12–18, 2025, with the theme of basic mathematics through Jumbo Snakes and Ladders games. The researcher coordinated with the B1 grade teacher of Aisia 12 Kindergarten Palembang, prepared the RPPH, and prepared tools and observation sheets. The learning activity began with a morning routine, followed by a Jumbo Snakes and Ladders game that trained children's mathematical logic, such as addition, subtraction, recognizing numbers, and even odd concepts. Children play in groups, answer quizzes, and actively participate. Researchers and teachers observe the process. The activity was closed with reflection, reinforcement of materials, and information on further activities.

Implementation

The second cycle of class action research was carried out as an effort to improve children's logical-mathematical abilities using Jumbo Snake and Ladders games in the Aisyiyah 12 Palembang Kindergarten group. In these 2 cycles it was carried out in five meetings with planning with learning steps.

1. **Cycle 2 meeting 1 (Monday, April 7, 2025)**

   Cycle 2 of the first meeting used the basic mathematics theme of symbolic thinking with the subtheme of the jumbo ladder snake game. The activity began with routine, breaking, attendance, and explanation of the rules of the game. In the core activities, children were divided into groups and played Jumbo Ladder Snakes while completing basic math quizzes. Children are trained to recognize the numbers 1-10, count, and understand the concepts of addition and subtraction. Most children are able to follow instructions, but some still have difficulty understanding even and odd numbers. Teachers give direction and motivation. The activity was closed with a discussion, strengthening of the material, information on tomorrow's activities, prayers, and closing greetings. The following are the results of the observation of logical-mathematical ability using the Snake and Ladder game at the first meeting of this cycle, namely:

Table 9.
Results of Cycle 2 Meetings 1

Yes	Assessment Criteria	Number of Children	Completeness Level
1.	Not Yet Developed	1	4%
2.	Start Growing	7	26%
3.	Growing Up with Expectations	10	37%
4.	Very Well Developed	9	33%

Based on Table 4.10, it can be seen that children who enter the Undeveloped (BB) criteria are one child, 4%, namely JN. Then the children who entered the criteria for Starting to Develop (MB) were 7 children, 26%, namely Qdf, Fz.f, Khy, Yhy, Rfn, Zhw, Rzk. Included in the Developing According to Expectations (BSH) category, there were 10 children (37%), namely Afz, Hnn, Ptr, Aul, Ndr, Ewi, Khr, Ais, Qn, strong. There were 9 children (33%) who were included in the Very Good Development (BSB) category, based on the percentage of the second cycle meeting l children in the BB and Mb categories of 30%, and 70% of children in the BSH and BSB categories. namely Nfz, Azk, Nay, Zr, Al krm,

Fth, Ckr, Fz.a. Field notes in the first meeting cycle, namely, Yahya was seen not wanting to follow the teacher's instructions. However, with motivation and the help of the teacher, Yahya wanted to follow the instructions from the teacher.

2. Cycle 2 meeting 2 (Tuesday, April 8, 2025)

In the second cycle of the second meeting, the learning theme still focuses on basic mathematics of logical thinking with a Jumbo Snakes and Ladders game. The activity began with morning routines, break, and attendance. In the core activity, children are invited to get to know the numbers 1-10, compare larger and smaller numbers, and count dice. Children also answer quizzes and complete addition-subtraction LKA. Most children show logical-mathematical improvements, although some still need help in understanding even and odd numbers. Teachers provide motivation and direction. The activity was closed with reflection, discussion of children's feelings, reinforcement of material, information on tomorrow's activities, joint prayer, and closing greetings. The following are the results of the observation of logical-mathematical ability using the Snake and Ladder game at the first meeting of this cycle, namely:

Table 10.
Results of the 2 Cycle of the 2 Meeting 2

Yes	Assessment Criteria	Number of Children	Completeness Level
1.	Not Yet Developed	1	4%
2.	Start Growing	2	7,4%
3.	Growing Up with Expectations	9	33,3%
4.	Very Well Developed	15	55,5%

Based on Table 4.11, it can be seen that children who enter the Undeveloped (BB) criteria are as many as 4% of children, namely JN. Then the children who entered the criteria of Starting to Develop (MB) were 2 children, 7.4%, namely Vna, Khy. Included in the category of Developing According to Expectations (BSH) are 9 children (33.3%), namely, Aul, Fth, Ryh, Ewi, Kaut, Rza, Nay, Rzk. Children who are included in the category of Developing Very Good (BSB), there are 15 children (55.5%), based on the percentage of the second cycle of the second meeting, 11.4% of children are in the BB and MB categories, 88.8% of children are in the BSH and BSB categories. namely Afz, Hnn, Azk, Ais, fz a.a, Ptr, Nfz, Zr, Al krm, Mra, Ndra, Zhw, Qn, Ckr, Rffn. Namely, Vania and Khayra, it looks like they still cannot do simple summing according to the teacher's instructions. However, with motivation and the help of the teacher, Vania and Khayra can complete simple summing with instructions from the teacher.

3. Cycle 2 meeting 3 (Wednesday, April 9, 2025)

In the second cycle of the third meeting, the activity still raised the theme of basic mathematics of logical thinking with a Jumbo Snakes and Ladders game. Learning begins with morning routines, breaks, and attendance. The core activity focuses on strengthening the understanding of even and odd numbers through games. Children answer quizzes, count dice, and complete addition and subtraction LKA. Most children have demonstrated logical-mathematical abilities independently, although some still need guidance in recognizing even and odd numbers. Teachers continue to provide direction and motivation. The activity was closed with reflection, discussion with children, reinforcement of materials, notification of tomorrow's activities, joint prayer,

and closing greeting. The following are the results of the observation of logical-mathematical abilities using the Snake and Ladder game at the meeting of the three cycles, namely:

Table 11.
Results of the Cycle 2 Meetings 3

Yes	Assessment Criteria	Number of Children	Completeness Level
1.	Not Yet Developed	1	4%
2.	Start Growing	1	4%
3.	Growing Up with Expectations	10	37%
4.	Very Well Developed	15	55,5%

Based on Table 4.12, it can be seen that children who enter the Undeveloped (BB) criteria are one 4% child, namely JN. Then the child who meets the criteria for Starting to Develop (MB) is 1 child, 4%, namely Vna. Included in the category of Developing According to Expectations (BSH) are 10 children (37.1%), namely, Aul, Fth, Ryh, Ewi, Kaut, Rza, Nay, Rzk, Khy. 15 children are included in the Very Well Developed (BSB) category, based on the percentage of the second cycle of the second meeting, 8% of children are in the BB and MB categories, 92.5% of children are in the BSH and BSB categories. namely Afz, Hnn, Azk, Ais, fz, Ptr, Nfz, Zr, Al krm, Mra, Ndra, Zhw, Qn, Ckr, Rffn. Field notes in the third meeting cycle, namely vania, still look like they cannot do simple summing according to the teacher's instructions. However, with motivation and the help of the teacher, Vania and Khayra can complete simple summing with instructions from the teacher.

4. Cycle 2 meeting 4 (Thursday, April 10, 2025)

In the second cycle of the IV meeting, the activity still raised the theme of basic mathematics and logical thinking, with the subtheme of the Jumbo Snake and Ladders game. After the morning routine and explanation of the rules, the children participate in the game in groups. They perform activities such as counting, addition, subtraction, matching number symbols, and answering math quizzes before starting the game. Most children are already independent in counting and knowing numbers, although there are still those who need guidance in understanding even and odd numbers. Teachers continue to provide direction and motivation. The activity was closed with a discussion of children's feelings, learning reflections, information on tomorrow's activities, joint prayers, and closing greetings. The following are the results of the observation of logical-mathematical ability using the Snake and Ladder game at the first meeting of this cycle, namely:

Table 12.
Results of Cycle 2 Meeting 4

No	Assessment Criteria	Number of Children	Completeness Level
1.	Not Yet Developed	-	-
2.	Start Growing	1	4%
3.	Growing Up with Expectations	6	22,2%
4.	Very Well Developed	20	74%

Based on Table 4.12, it can be seen that the children who entered the criteria for Starting to Develop (MB) were 1 child, 4%, namely Jn. Included in the category of Developing According to Expectations (BSH), there were 6 children (22.2%), namely, Ryh, Kaut, Rza, Ewi, Khy, Fz.a. There are 20 children (74%) who are included in the Very Good Development (BSB) category, based on the percentage of the 2nd cycle IV meetings, there is a 4% completeness rate for children in the MB category, 96.2% completeness rate for children in the BSH and BSB categories, namely, Af.z, Hnn, Azk, Ais, Fz. Fz.a, Ptr, Nfz, Zr, Al krm, Mra, Ndra, Zhw, Qn, Ckr, Rffn, Nay, Rzk, Aul, Fth, Yhy. The field record in the fourth meeting cycle, namely Jn, still looks like it has not been able to do simple summing according to the teacher's instructions. However, with motivation and with the help of teachers, Jn was able to complete simple summing with instructions and guidance from teachers.

5. Cycle 2 meeting 5 (Friday, April 11, 2025)

Cycle 2 of meeting 5 is focused on improving children's logical-mathematical abilities through Jumbo Snakes and Ladders games. The activity began with morning routines, ice breaking, and the presentation of game rules. Children learn in groups to solve basic math problems such as addition, subtraction, recognizing numbers, concepts of more and less, and matching number symbols. Children are quite independent in calculating and understanding the instructions of the game, although some still need guidance in recognizing even and odd numbers. Teachers motivate and strengthen the material. The activity was closed with reflection, discussion of feelings, information on tomorrow's activities, joint prayer, and closing greetings. The following are the results of the observation of logical-mathematical ability using the Snake and Ladder game at the first meeting of this cycle, namely:

Table 13.
Results of Cycle 2 Meeting 5

No	Assessment Criteria	Number of Children	Completeness Level
1.	Not Yet Developed	-	-
2.	Start Growing	1	3,7%
3.	Growing Up with Expectations	3	11,1%
4.	Very Well Developed	23	85,2%

Based on table 13, it can be seen that the children who entered the criteria of Starting to Develop (MB) were 1 child (3.7%), namely Jn. Included in the category of Developing According to Expectations (BSH) were 3 children (11.1%), namely, Ew, Fth, Ryh. There are 23 children (85.2%) who are included in the Very Good Development (BSB) category, based on the percentage of the 2nd cycle of the V meeting, there is a 3.7% child completion rate in the MB category, 96.3% child completion rate in the BSH and BSB categories. namely Af.z, Hnn, Azk, Ais, Fz.a, Ptr, Nfz, Zr, Al krm, Mra, Ndra, Zhw, Qn, Ckr, Rffn, Nay, Rzk, Aul, Kaut, Rza, Khy. Yhy, Fz. f. Field records in the 2nd cycle of meeting V, namely Ewi, still seem to be unable to do simple summation according to the teacher's instructions. However, with motivation and with the help of teachers, Ewi, Fthn, and Ryh were able to complete simple summation in Lka as a child's worksheet with instructions and guidance from the teacher.

Observation

The implementation of observation cycle 2 was carried out simultaneously during the

learning process. Therefore, researchers can see firsthand when children and teachers communicate in the learning process through Snakes and Ladders games. The research conducted observed indicators, namely the improvement of children's logical-mathematical skills through Jumbo Snake and Ladder games, which include observation/observation, understanding, classifying, completing tasks, comparing, and communicating. The data from the observation of logical-mathematical abilities above can be clarified in Table 4.16 below:

Table 14.
Recapitulation of Logical-Mathematical Ability Data of Cycle 2 Children

Yes	Assessment Criteria	Number of Children	Completeness Level
1.	Not Yet Developed	-	-
2.	Start Growing	-	-
3.	Growing Up with Expectations	4	18,5%
4.	Very Well Developed	22	81,5%

Based on Table 4.16 of the recapitulation of the logical-mathematical ability data of children in cycle 2, obtained in the table above, 5 children are included in the Developing According to Expectations (BSH) category, with a level of completeness obtained at 18.5%. These five children in this cycle of LL, the child is already able to understand the rules, follow the instructions, count 1-10 correctly, count 6 numbers on the dice, match the numbers with the number symbols on the dice, understand the concepts of even, odd, the ability to solve simple addition and subtraction answering questions quickly but occasionally requiring direction from the teacher. Meanwhile, children who are included in the Very Good Development (BSB) category with a completeness level obtained at 81.4% as many as twenty-two children are able to independently understand the rules, follow instructions, count 1-10 correctly, count 6 numbers on dice, match numbers with number symbols on dice, understand the concepts of even, odd, the ability to solve simple addition and subtraction to answer questions quickly and correctly. Based on the results of observations in cycle 2 and table 4.16, the recapitulation and logical-mathematical ability of the children of cycle 2 can be clarified through the following criteria.

Based on the data obtained from learning through the Snake and Ladder game, there has been an increase in the presentation of children's logical-mathematical abilities, based on observation data from the actions of cycle 2 this increases to Develop According to Expectations (BSH) by 18.5%, Very Good Development (BSB) by 81.8%. So, in cycle 2, the child's logical-mathematical ability increased to 81.8%, which was included in the criteria for very good development.

Reflection

After actions and observations, the next stage is reflection, where the teacher reviews learning and assesses the child's learning outcomes through discussion and the grades obtained. The Snake and Ladder game is used as a logical-mathematical learning medium, such as recognizing even-odd numbers, counting, matching number symbols, and completing simple counting operations. The learning process becomes more interesting because it uses concrete objects that are close to the child's life. The results of cycle 2 showed a significant increase, with a completeness rate of 81.8% in the very good development category. Thus, the research hypothesis is proven, and learning through the game of Snakes and Ladders is considered successful.

Discussion

This research is a Class Action Research (PTK), which is carried out in two cycles, namely Cycle 1 and Cycle 2. Each cycle consists of four stages: planning, implementation, observation, and reflection. This research was conducted by researchers with B1 grade teachers at Aisyiyah 12

Kindergarten, Palembang. The main purpose of this study is to improve the logical-mathematical abilities of children aged 5-6 years through learning media in the form of Jumbo Snakes and Ladders games.

Before the action is taken, the researcher first conducts initial observations. Based on the results of these initial observations, it was found that the children's logical-mathematical abilities were still not optimal. Pre-action data showed that one child (3.7%) was in the undeveloped category, thirteen children (48.1%) were in the early development category, nine children (33.3%) were developing as expected, and four children (14.8%) were in the very well-developed category. Based on these findings, the researchers decided to use the Jumbo Snakes and Ladders game as an interesting and fun learning medium for children, in the hope that it could help improve their logical-mathematical skills. This approach is in line with the findings of Badriah, Dwi, and Santana (2021) who noted that such games can effectively enhance logical thinking skills in early childhood.

In the implementation of Cycle 1, the Jumbo Snakes and Ladders game began to be applied in learning activities. The results of this cycle show an increase. It was recorded that one child (3.7%) was still in the undeveloped category, four children (14.8%) began to develop, fourteen children (51.8%) developed as expected, and eight children (29.6%) were in the very good development category. Despite the increase in pre-action data, it has not yet reached the expected success indicators, so it continues with the implementation of Cycle 2.

In Cycle 2, several improvements were made in the learning process based on reflections from the previous cycle. The results show a significant improvement. As many as 18.5% of children were in the category of developing according to expectations, and 81.5% of children were in the category of developing very well. This percentage shows that learning to use Jumbo Snakes and Ladders games has a positive impact on improving children's logical-mathematical skills. The completeness of learning outcomes increased from 33.3% in pre-action to 81.5% in Cycle 2. This aligns with Astuti and Rohmalina (2024), who found that game-based learning significantly boosts logical-mathematical intelligence in young children.

This increase is influenced by the gradual design of the game, the delivery of interesting material, and the active involvement of the child in the play process. This research is also supported by the opinion of Endang Susetyawati et al. (2024), who stated that the Snakes and Ladders game can improve children's numeracy skills through interactive, fun, and motivating learning activities. According to Fransisca, Wulan, and Supena (2020), using educational games like Snakes and Ladders also enhances children's confidence, contributing to the overall learning process.

In addition, the role of creative and innovative teachers in utilizing learning media also contributes to the success of learning. A fun learning environment encourages children to be more active, focused, and brave in exploring their logical-mathematical abilities. This is consistent with the findings of Rubiyatin (2023), who emphasized the importance of creative teaching strategies in improving student learning outcomes.

From the overall results of this study, it can be concluded that the use of Jumbo Snakes and Ladders games has proven to be effective in improving the logical-mathematical abilities of children aged 5-6 years at Aisyiyah 12 Palembang Kindergarten for the 2024/2025 school year. With a fun approach, children can learn to count more easily and meaningfully.

Conclusion

Based on the results of research and discussion, there was an increase in the mathematical and logical ability of children in the B1 group of Tk Asyiyah 12 Palembang for the 2024/2025 school year. The increase can be seen from the initial condition of the logical-mathematical ability of the Bl group children in the Very Good Developed (BSB) category before the action was carried out, reached 14.8%, increased to 29.6% in the action of cycle l reached 29, 6%, and in cycle 2 it increased to 81.8%. Based on the results of his research above, it can be concluded that learning

through the Jumbo Snake and Ladder game can improve the logical-mathematical abilities of group B children of Asyiyah Kindergarten 12 Palembang. This research is declared feasible to use.

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