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Efforts to Increase the Development of Number Concepts through Dice Games 1-20 in Children Aged 5-6 Years in Group B of Widya Kusuma Saladara Islamic Kindergarten in 2026

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Abstract
Background. Understanding number concepts is a key aspect of cognitive development and a foundation for learning mathematics at the next level. However, observations in Group B of Widya Kusuma Saladara Islamic Kindergarten show that most children aged 5–6 years still have difficulty recognizing number symbols, sequencing numbers, connecting number symbols with numbers, and distinguishing odd and even numbers.
Objectives. This research aims to improve understanding of numbers 1–20 through the use of number dice games.
Methods. This study uses the Classroom Action Research (PTK) method, which is carried out in two cycles with stages of planning, action implementation, observation, and reflection. The research subjects were 10 children in Group B: 5 boys and 5 girls. Data were collected through observation, documentation, and child development assessment, then analyzed descriptively, quantitatively, and qualitatively.
Results. The results showed a gradual increase in number concepts. In the pre-cycle stage, only 2 children (20%) achieved success indicators. After implementation, Cycle I increased to 5 children (50%), and in Cycle II it increased to 9 children (90%). Number dice games with variations in size, color, and shape increased children's interest, motivation, active involvement, and understanding of number concepts, including recognizing number symbols, distinguishing odd and even numbers, and understanding simple summation.
Conclusion. Thus, number dice games have proven to be effective as a fun learning medium and in accordance with the characteristics of early childhood learning in developing number concepts.

Keywords: early childhood, number concept, number dice game, classroom action research, cognitive development.

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INTRODUCTION

The Independent Curriculum is an innovative advancement in the Indonesian education system, namely in Early Childhood Education (PAUD). This study aims to examine the

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Independent Curriculum policy in PAUD (Early Childhood Education) through a literature review. In particular, the researcher will analyze and evaluate policies, regulations, and theories related to the definition of the Independent Curriculum in Early Childhood Education. The researcher gathers information from reliable sources, including scientific publications, books, and official government papers (Lisnawati et al., 2024).

The inhibiting factors are inadequate funds, students and parents who have various characteristics, and there is no harmony between the school and parents; 3) Efforts to improve the quality of ethics carried out by teachers in instilling ethical values, namely by encouraging children to save, providing good material delivery, providing good examples or examples, and providing parenting education and approaches to parents. (Lesmi et al., 2025). he external supporting factors include cooperation with PAUD Post partners. In managing early childhood education at the Nurul Hikmah PAUD Post, an inhibiting factor is parents' lack of attention to their children. Program delays are due to conflicts with programs of other educational institutions at the same time. Efforts to overcome existing obstacles include communicating and contacting the parents of students. Meanwhile, late programs can be overcome by replacing them on another day or time. The flagship program of PAUD Nurul Hikmah Post is an extracurricular program that includes dance, pencak silat, and painting. Meanwhile, religious lessons have always been part of the daily education program, including memorizing short letters, daily prayers, and Asmaul Husna and Dhuha prayers (Khotimah et al., 2025).

Education is an effort to strengthen to improve the quality of children's abilities. This effort is carried out in Early Childhood Education (PAUD) through formal or informal education, as stated in Law of the Republic of Indonesia No. 20 (2003), Article 1, paragraph 4, which states that PAUD is a coaching service provided by educators for children aged 0-6 years. The purpose of PAUD is to provide educational stimulation to optimize children's physical growth and development and prepare them mentally for higher education in accordance with provisions related to the national education system.

When children are 0-6 years old, which is the Golden Age, children need to receive special attention to support their growth and developmental skills. One of the aspects to increase children's growth and development is cognitive development. One of the cognitive aspects that need to be developed in children aged 5-6 years is the understanding of number concepts. Number concepts include the ability to recognize number symbols, name the order of numbers, connect number symbols with the number number, and understand the meaning of numbers in daily life

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Early childhood education not only aims to equip an initial understanding of numbers, letters, or shapes, but must also be directed at the development of critical, logical, and creative thinking skills through activities that are designed in a structured manner. The role of teachers is very important in creating a learning environment that is able to stimulate children's cognitive development in an active, fun and meaningful way. Teachers can choose a variety of models, methods, and media in learning that are in accordance with the learning objectives of number concepts.

At the age of 5-6 years, children are in the preoperational stage that requires a concrete and fun learning experience. However, in learning practice, there are still some children who still have difficulties in recognizing and understanding the concept of numbers

Education is a process that is needed to achieve balance and perfection in the development of individuals and society. Education is a basic need for every individual. Therefore, the importance of education that follows the learning process activities in acquiring knowledge and skills that begins from an early age. Law No. 20 of 2023 concerning the National Education System states that Early Childhood Education is an effort to coach children aged 0-6 years old which is carried out through the provision of educational stimuli to help physical and spiritual growth and development so that children have readiness to enter further education levels.

Educators need to create a conducive educational situation, which is able to provide a sense of security, tranquility, and fun for children. By using strategies, methods, materials or materials, as well as interesting and easy-to-understand media, children are expected to be able to explore, find, and utilize the objects around them so that learning becomes enjoyable. A teacher must master various abilities, one of which is the ability to develop themselves professionally. Therefore, a teacher is required to master the learning material and also be able to see and assess his own performance in the classroom.

Evaluation aims to find out whether the expected learning goals can be achieved. Learning evaluation in kindergarten has been oriented towards an informed strategy, prioritizing process over results, not a formal evaluation using a standard test. Motivation can be interpreted as a driver, which is a conscious effort to influence a person to be moved to act to do something to achieve certain results and goals (Purwanto, 1997:71)

The definition of the concept of numbers according to Adminpintarharati (2022) is "a set of objects or numbers that can provide meaning". The concept of numbers is always associated with the work of connecting, both objects and symbols of numbers. In addition, the

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concept of numbers is one of the elements in mathematics, namely the ability to perform calculations. The introduction of number concepts in early childhood is very important to make it easier for children to follow the process of further education, especially in mathematics. The ability to recognize the concept of numbers is a person's skill/ability to know shapes (symbols), names, sequences, and numbers (numbers).

In daily activities, the concept of numbers is the basis for the development of mathematical skills and children's readiness to participate in education at the next level. At the elementary school level, children will encounter more complex numbering activities, so that children must have a good readiness and understanding of number concepts so that they do not experience many obstacles in learning related to number concepts. The development of the concept of knowing numbers in early childhood is a very important ability in the learning process. The development of the concept of knowing numbers includes the following:

1. Recognition of quality (quantity), where children count a predetermined number of objects, is carried out in stages 1-5, 6-10, then 11-20.
2. Memorizing the order of number names, that is, saying the names of numbers (numbers) in the order correctly.
3. Calculating rationally, in the sense that children are said to understand numbers/numbers if they are able: counting objects while mentioning their names and numbers, making one-on-one correspondence, and realizing or understanding that the last number mentioned represents the total/number of objects in a group (Sujiono & et al., 2008).
4. Getting to know odd numbers and even numbers.

The characteristics of understanding the concept of numbers for children aged 5-6 years or kindergarten children in group B are as follows: counting up to twenty, mentioning the order of numbers, making a sequence of numbers 1-20 with objects, connecting number symbols with objects, distinguishing and making two sets of objects of the same number, which are not the same, more and fewer, According to Ahmad Susanto (2011:107) in (Reswita & Wahyuni, 2018)

Factors Influencing the Development of the Early Childhood Number Concept:

a. Concrete experiences: Children learn number concepts better through hands-on experience with real objects, such as counting fruits, toys, or objects in their environment.
b. Social interaction: Discussions and games with friends, parents, or caregivers can help children understand the concept of numbers, especially in everyday contexts.

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c. Educational games: Using games that involve counting, such as board games, cards, puzzles, dice, blocks can speed up children's understanding of numbers.

Media in an activity can be interpreted as anything that can be used to convey messages or lesson content, stimulate children's thoughts, feelings, attention, and abilities so that they can encourage the achievement of the process of activities stimulated by teachers (Shofia & Dadan, 2021). Games are activities that are carried out for the purpose of entertainment, education, or skill development. Games can involve one or more people and often involve certain rules, interactions between players, and challenges or goals that must be achieved. The game-based learning approach aims to increase student engagement, motivation, and understanding of mathematics by providing a more in-depth and enjoyable learning environment (Shofia & Dadan, 2021)

Learning that utilizes games is one of the right approaches to overcome these problems. Through play activities, children get the opportunity to learn actively, exploratory, and contextual. One form of game media that can be used in learning to recognize numbers is the dice game. This game has advantages because it is concrete, easy to apply, and able to involve children directly in counting activities and getting to know numbers through a fun play experience.

Dice games not only function as a tool to introduce numbers, but are also designed to train children in associating number symbols with the number of objects, improving social interaction, and developing overall cognitive abilities through fun learning experiences. Thus, this study aims to describe and analyze the application of dice games as an effort to improve understanding of the concept of numbers 1-20 in children aged 5–6 years. The results of the study are expected to make a theoretical contribution to the development of game-based learning in early childhood education, as well as provide practical contributions for early childhood educators in designing innovative, effective, and developmental learning activities in accordance with the characteristics of children's development.

Improving Mathematical Ability by Playing Dice by Nugroho (2017) aims to investigate the effectiveness of playing dice in improving early childhood mathematical skills.

The effectiveness of dice throwing games in improving children's math skills by Hastuti (2018). This article discusses the effectiveness of dice throwing games in improving early childhood math skills. Hastuti Theory (2018):

1) Ability to Understand Mathematical Concepts: Ability to understand the basics of mathematics such as numbers, calculation operations, geometry and measurement.

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2) Ability to Apply Mathematical Concepts: Ability to use mathematical concepts in real-world situations.
3) Math Problem Solving Ability: The ability to use mathematical concepts to solve problems.

Based on some of the opinions above, the author concludes that games have an important role in learning activities of the concept of understanding numbers 1-20, dice games help children to learn and understand the concept of numbers 1-20 at Widya Kusuma Saladara Islamic Kindergarten easily and fun so that children are motivated to learn to understand the concept of numbers, in addition to that with appropriate and varied learning media, facilities and facilities can support the success of a more creative and effective learning process.

METHODS

Research Subject

This class action research was carried out at Widya Kusuma Saladara Islamic Kindergarten which is located on Jl. Saladara No. 18, Karyamulya Village, Kesambi District, Cirebon City. The implementation of the research took place from April to May 2026. The subject in this study was the children of Group B2 of Widya Kusuma Saladara Islamic Kindergarten, Kesambi District, Cirebon City. The number of students involved was 10 children, consisting of 5 boys and 5 girls. The learning theme applied in the first cycle was the Universe, while in the second cycle the theme of Natural Phenomena was used. The implementation of this class action research activity was carried out in stages according to the schedule that had been planned as follows.

Table 1 Research Implementation Schedule

Yes	Cycles	Day/Date	Time
1.	Pre-Cycle	Friday, 17 April 2026	08.00 - 10.30
2.	Cycle I	Monday-Friday, 20-24 April 2026	08.00 - 12.00
3.	Cycle II	Monday-Monday,April 27-May 4, 2026	08.00 - 12.00

An overview of the characteristics of children in Group B2 of Widya Kusuma Saladara Islamic Kindergarten, Kesambi District can be seen in Table 2.

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Table 2. Overview of the Condition of Group B2 Children of Widya Kusuma Saladara Islamic Kindergarten, Kesambi District, Cirebon City

Yes	Child's Name	Gender		Background Behavior
		L	P	
1	EOS	√		Quiet
2	MDS	√		Attractive
3	MAR	√		Agile
4	MAM	√		Quiet
5	ALH	√		Agile
6	SFM		√	Attractive
7	AMA		√	Attractive
8	OR		√	Attractive
9	JUICE		√	Quiet
10	AP		√	Attractive

Description Per Cycle

In this activity, the researcher observes the conditions in the classroom. Broadly speaking, the description of the class action research plan that the author conducts in each cycle goes through the following stages.

Cycle 1

Planning Stage

Actions to be carried out/alternative improvements in the one-cycle plan in cycle 1 in the form of RPPH (Daily Learning Development Plan) improvement scenarios:

RPPH 1: The action I will do is to sing to know the numbers 1-10, then play picture guessing with matching number symbols with the number of picture patterns using LKA

RPPH 2: Repeat the identification of numbers 1-10 then watch the video using PID for the identification of numbers 11-20

RPPH 3: Introduce the concept of even numbers in numbers 1-20, then children are given the task of choosing number cards, then matching number cards according to the number of pebbles.

RPPH 4: Introduce the concept of odd numbers in numbers 1-20, then the child is given the task of choosing a number card, then matching the number card with the number of blocks he chooses.

RPPH 5: The child counts the bottles that fall or are still standing and match them to the numbers on the dice. The activity is carried out through a bowling game.

Repair steps

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RPPH Repair Scenario 1

The teacher introduces the concept of numbers 1-10 and asks the child to pay attention The teacher asks the child to look at the picture pattern and count it and put the number card on it; The teacher asks the child one by one to try to match the picture pattern with the number symbol 1-10; The teacher gives motivation and praise to the students.

RPPH 2 Repair Scenarios

The teacher repeats the previous activity; The teacher invites the child to watch a learning video to introduce the concept of numbers 11-20 using PID; Ask the students to step forward one by one and match the picture pattern with the symbol of numbers 11-20 using PID

RPPH 3 Repair Scenario

The teacher explains the concept of even numbers 2-20; The teacher invites the child to pay attention to the objects shown by the teacher, there are pebbles arranged on the table and there are number cards with an upside-down position so that the number symbols are not visible; The teacher explains the activity to be carried out; The teacher asks the child to choose one of the cards and then match the number of pebbles; the teacher asks the students to take turns trying the activity; the teacher gives motivation and praise to the child.

RPPH 4 Improvement Scenario

The teacher explains about the concept of odd numbers 1-19; The teacher invites the child to pay attention to the objects shown by the teacher, there are blocks arranged on the table and there are number cards with an inverted position so that the number symbols are not visible; The teacher explains the activity to be carried out; The teacher asks the child to choose one of the cards and then matches the number of blocks that have been arranged on the table; The teacher asks the students to take turns trying the activity; The teacher gives motivation and praise to the child.

RPPH 5 Repair Scenario

The teacher invites the child to leave the classroom; The teacher invites the child to pay attention to the objects shown by the teacher there are dice, balls, and bottles that have been arranged; The teacher explains and practices the bowling game activities to be carried out; The teacher asks the students to count the falling bottles and the bottles that are still standing and then match them with the number dice; The teacher asks the students to take turns trying the activity; The teacher gives motivation and praise to the child

Implementation Stage

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The implementation stage includes activities to determine Supervisor 2 and the assessor Supervisor 2 and the assessor is the Principal of Widya Kusuma Saladara Islamic Kindergarten, named Ratna Dumilah, BA, SE, S.Pd, M.MPd, using a statement of willingness to act as supervisor 2 and assessor in the implementation of PKP, which was shown to the Head of UPBJJ Bandung and signed by the Principal of Widya Kusuma Saladara Islamic Kindergarten, Cirebon City.

The Assessor's duties include studying the PKP guidelines; studying the PKP APKG 1 and 2; Assessing the RPPH made by students and their implementation using the PKP APKG 1 and 2; submitting the results of the PKP APKG assessment 1 and 2 to the practitioners; assessing the PKP report with the supervisor; The supervisor's duties include: Providing orientation for student PKP; information and discussion about the nature of PKP and student duties.

Various experiences about the problems of development activities faced; similar perceptions about the nature of PTK; preparation of RPPH: guiding and supervising students in PKP; assessing the design of cycles 1 and cycle 2; reviewing RPPH and reflections made by students, as well as reviewing the results of the PKP 1 and 2 APKG assessments from assessors; assessing students to simulate the improvement of activities in the classroom; guiding and providing input on the PKP report.

Development activity procedures

RPPH 1: The action to be carried out is for the child to recognize and understand the concept of numbers 1-10, and to be asked to match the pattern of the picture with the symbol of the numbers 1-10.

RPPH 2: The child watches watching the video using PID for the introduction and understanding of the concept of numbers 11-20, there are several numbers of pictures and asks the child to pair a hype pattern with the symbol of the number 11-20.

RPPH 3: An activity to understand the concept of even numbers in numbers 2-20 using gravel media and number cards.

RPPH 4: An activity to understand the concept of odd numbers in numbers 1-29 using the medium of blocks and number cards.

RPPH 5: an activity in a bowling game, and the child can understand the concept of numbers 1-20, which is counting bottles that fall into the bowling ball or those that do not fall, as well as choosing the number symbols that are on the number dice.

The development process and activities are a systematic description of a series of

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learning actions carried out by teachers that involve the ability of students to understand the concept of numbers for the ages of 5-6 years who originally did not fully understand the concept of numbers 1-20, understand the concept of odd numbers and even numbers with various varied activities, interesting games so that they can be easily understood by students. This is also inseparable from the motivation of educators as facilitators for the achievement of the goal of developing aspects of children's development in a directed, gradual and measurable manner, including the development of understanding of the concept of numbers 1-20 for children aged 5-6 years can be observed, guided and improved.

In carrying out the improvement of the development of cycle 1, data collection is carried out through observation. The instruments used are: One cycle plan, 5 RPPH activity plan, RPPH 1-5 improvement scenario, PKP 1 and 2 APKG. Reflection sheet after carrying out improvement and development activities.

Observation of instrument data collection

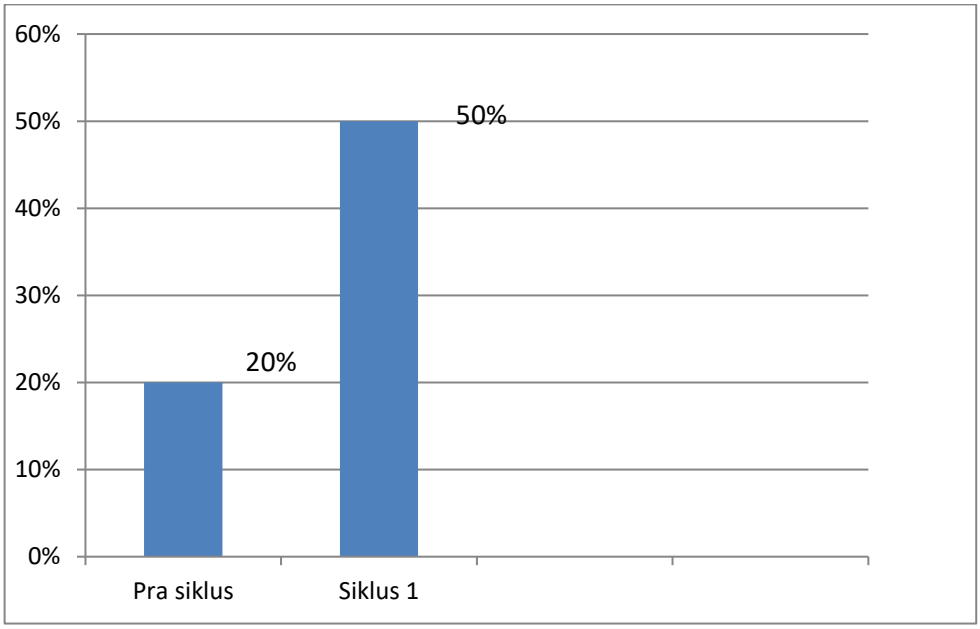
From the results of observations in the field, it can be reported as follows:

Table 3. Research Cycle Observations

NO	Description	Number of Children		Value
		Pre-Cycle	Cycle 1	
1.	Number of children observed	10	10	
2.	Number of children who understand the concept of even and odd numbers	2	3	
3.	Number of children who understand the basic concept of counting	2	5	
4.	Number of children who can understand the concept of numbers 1-20	2	5	
5.	Number of children who do not understand the concept of numbers 1-20	8	5	

Graph of the acquisition of improvement values in cycle 1 on the introduction and understanding of the concept of numbers 1-20 with various media

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From the observation research of activities in the field, it can be reported as follows:

Table 4. Research Observations

NO	Aspects observed	Cycle 1	
		Yes	No
1.	Can the media used improve children's understanding		√
2.	Whether the media used is able to attract children's attention in the implementation of the teaching and learning process	√	
3.	Whether the media used is able to explain the material in detail to children		√
4.	Are learning activities adequate by using the media effectively		√
5.	Does the media used contain the information to be conveyed		√
6.	Is the technique of delivering material in accordance with the media used	√	
7.	Is the media used able to explain the learning material to be delivered?		√

The reflection that was carried out after the implementation of learning improvements, I got a clearer picture of my weaknesses and strengths in the learning process that had been implemented. This reflection activity helped me identify various aspects that still need to be improved, both in planning, implementation, and evaluation of learning. Through this reflection, I can determine more appropriate improvement steps to increase learning effectiveness and optimize the development and learning outcomes of students in the next

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learning activity. And the results of my reflection from the RPPH 1 improvement scenario to the RPPH 5 improvement scenario in cycle 1 are:

Strengths and weaknesses of development improvement measures after implementing

Implementation of RPPH 1 repair

Strength : The action I carried out was to guess and match the picture pattern with the number symbol to make these children able to practice 2 skills at once, namely counting and recognizing the number symbol.

Disadvantages : There are still children who are less enthusiastic about the guessing game in learning to understand the concept of numbers. This game seems boring and less in demand because the pictures seem less interesting. In the future, I will make guessing activities with more interesting media and methods.

Implementation of RPPH 2 repair

Strengths: With digital learning using PID, children are very happy because the learning conveyed has colors, pictures, sounds, and music, and they can also play many games related to the concept of numbers 11-20. In this activity, children play games by choosing a number symbol that matches the number of images on the screen.

Weaknesses: There are children who still do not understand because the explanation video is too fast and the concept of numbers that appear on their screen, the number 11–20—so that the child feels confused because he sees a screen full of images that are too tight and small so that it is difficult to count. In the future, the video that is shown is not too fast and the image on the screen is not too tight. When the image on the screen is too full, the video should be paused first and then zoomed in and asked the child to count together

Implementation of RPPH 3 repair

Strengths: I am able to convey activity materials that clearly introduce the concept of even numbers 2–20 through interesting play activities so that they can be understood by children.

Disadvantages: The gravel media prepared is too small and too tight, making it difficult for children to count even numbers at numbers 2–20. It is still minimal, so there are still children who do not understand and do not participate in direct practice in the game, so that the child is only a spectator and a listener. In the future, I will prepare the amount of media that must be adjusted to the number of children in the class and change the strategy, namely by replacing the media that has been used.

Implementation of RPPH 4 repairs

Strengths: I was able to convey the activity material that introduced the concept of odd numbers

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1-19 clearly through interesting play activities so that it could be understood by children. Weaknesses: Lack of classroom arrangement. The block play area is not large so that children feel limited in moving during activities.

Implementation of RPPH 5 repair

Strengths: I am able to provide learning activities through interesting games. In addition, bowling can train several aspects such as motor, cognitive, language, and social-emotional.

Weaknesses: time efficiency and less effective strategies. There are some children who are not right or miss when rolling the ball towards the bottle, so the activity must be done repeatedly on the child because it is rarely too far away. Other children who are waiting for their turn feel tired and bored because they have to wait for their turn to play. In the future I will make a learning activity strategy that involves more children and provides more dice media, so in cycle 1 it is concluded that my strengths and weaknesses are:

Strength : I am able to provide varied, creative and interesting learning activities.

Weaknesses: I still lack in choosing media, learning strategies, managing classes and time efficiency well.

Cycle 2

Planning Stage

Corrective actions that will be implemented in one cycle.

RPPH 1: Play dice roll and match with number cards using regular dice.

RPPH 2: Play dice roll and ask the child to say whether the numbers that come out include odd numbers using small, colored dice.

RPPH 3: Play dice and ask the child to say the number that comes out using a large dice medium made of foam

RPPH 4: Play dice rolling and introduce the concept of simple summing numbers using colored large dice media and assigned tasks using LKA

RPPH 5: Play dice roll for understanding the concept of simple addition using 12-sided dice media, 8-sided dice, number cards and assigned tasks using LKA.

Repair steps

RPPH Repair Scenario 1

Play roll dice and match them with number cards using 2 ordinary dice; The teacher asks the child to pay attention to the activity to be carried out; The teacher gives an example of the activity to be carried out, namely throwing the two dice together then circling the pattern

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of the sun drawing according to the point of the dice that come out; The teacher invites the children to count together and add up the circled picture patterns; The teacher asks the children to show the number cards according to the number of picture patterns that have been calculated; The teacher asks the children one by one to try the activity; The teacher gives motivation and praise to the students.

RPPH 2 Repair Scenarios

Matching the number symbol with the number bottle cap through a game of 2 small colored dice.; The teacher asks the child to pay attention to the activity to be carried out; The teacher explains the concept of odd numbers from the numbers 1-19; The teacher gives an example of the activity to be carried out, which is to throw the two dice at the same time then attach the number symbol on the bottle cap to be paired with a bottle according to the symbol of the same number; The teacher invites the children to count together; The teacher asks the child to show the bottle cap that matches the number symbol; The teacher asks the children one by one to try the activity; The teacher gives motivation and praise to the students.

RPPH 3 Repair Scenario

Matching the even number symbols 2-10 on the bottle cap through a dice game made of larger foam; The teacher asks the child to pay attention to the activity to be carried out; The teacher explains the concept of even numbers from the numbers 2-20; The teacher gives an example of the activity to be carried out, which is to throw the two dice at the same time then pair the number symbol on the bottle cap to be paired with the bottle according to the symbol of the same number; The teacher invites the children to count together; The teacher asks the child to show the bottle cap that matches the number symbol; The teacher asks the children one by one to try the activity; The teacher gives motivation and praise to the child.

RPPH 4 Improvement Scenario

Play throwing dice and matching them with number cards using large and colored dice; The teacher asks the child to pay attention to the activity to be carried out; The teacher gives an example of the activity to be carried out, namely throwing two dice at the same time (1 dice using a dot pattern and 1 dice using a number) then circling the rainbow pattern according to the number of dice that come out then calculating from the number of circled picture patterns and matching them with number cards.

The teacher invites the children to count together; The teacher asks the child to show a number card that matches the number symbol; The teacher asks the children one by one to try the activity; The teacher gives motivation and praise to the child.

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RPPH 5 Repair Scenario

Play roll dice and match them with number cards using the number dice on sides 8 and side 12; The teacher asks the children to pay attention to the activity to be carried out; The teacher gives an example of the activity to be carried out, namely throwing the two dice at the same time (1 dice of the number of sides 8 and 1 dice of side 12) then circling the pattern of the image of the moon and star according to the number of dice that come out, then counting from the number of picture patterns circled and matching them with number cards; The teacher invites the children to count together; The teacher asks the children to show the number cards that match the number symbols.; Uru asks the children one by one to try the activity.
Teachers give motivation and praise to students.

Planning Stage

RPPH 1: Children are focused on understanding the concept of numbers 1-20 through the game of adding up the results of the two ordinary dice rolls and matching them with number cards.
RPPH 2: The child understands the concept of odd numbers at the numbers 1-19 through a game of 2 small colored dice.
RPPH 3: Children understand the concept of even numbers at numbers 2-20 through the play of 2 large dice.
RPPH 4: Children understand the concept of numbers 1-20 and get to know the concept of basic summation through a game of large and colored dice (1 dot dice and 1 number dice).
RPPH 5: Children are able to understand the concept of numbers 1-20 through dice using 1 dice of the number 8 and 1 dice of the side number 12.

Observation/data collection/instruments

In carrying out the improvement of the development of cycle 1, data collection is used through observation/observation; The instruments used are: One cycle plan, 5 RPPH activity plan, RPPH 1-5 improvement scenario, PKP 1 and 2 APKG; Reflection sheet after carrying out development improvement activities.

Observation of instrument data collection

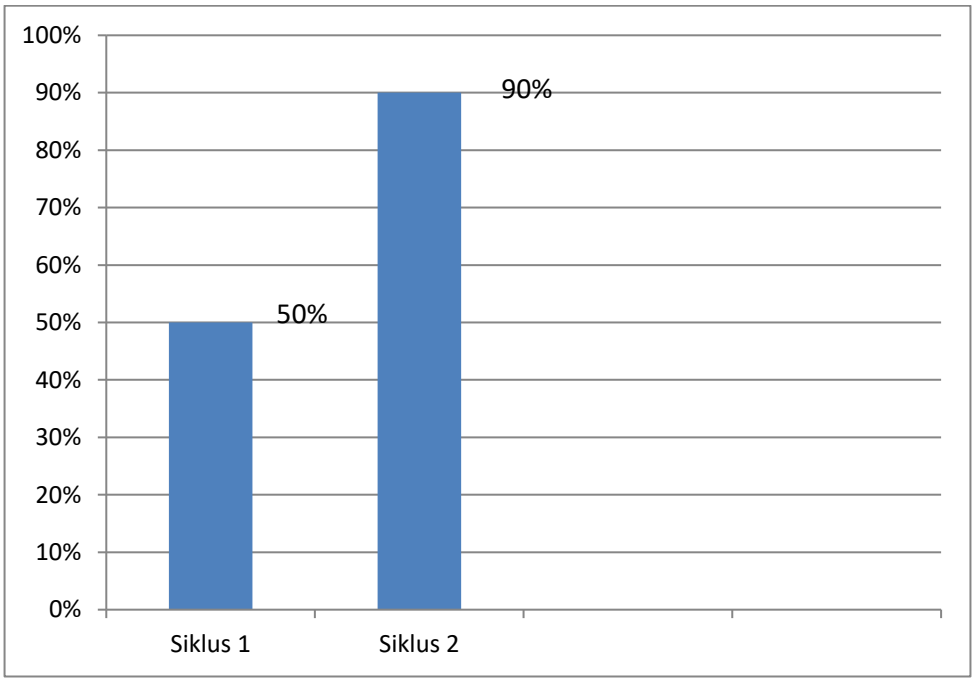
From the results of observations in the field, it can be reported as follows:

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Table 4. Reflection Sheet

NO	Description	Number of Children		Value
		Cycle 1	Cycle 2	
1.	Number of children observed	10	10	
2.	Number of children who understand the concept of even and odd numbers	3	8	
3.	Number of children who understand the basic concept of counting	5	9	
4.	Number of children who can understand the concept of numbers 1-20	5	9	
5.	Number of children who do not understand the concept of numbers 1-20	5	1	

Graph of the acquisition of improvement values for cycle 2 on the introduction and understanding of the concept of numbers 1-20 through the number dice game:



From the observation research of activities in the field, it can be reported as follows:

Table 5. Observation Results

NO	Aspects observed	Cycle 2	
		Yes	No
1.	Can the media used improve children's understanding	√	

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2.	Whether the media used is able to attract children's attention in the implementation of the teaching and learning process	√	
3.	Whether the media used is able to explain the material in detail to children	√	
4.	Are learning activities adequate by using the media effectively	√	
5.	Does the media used contain the information to be conveyed	√	
6.	Is the technique of delivering material in accordance with the media used	√	
7.	Is the media used able to explain the learning material to be delivered?	√	

Reflection

RPPH Scenario 1

Strengths: I am able to create interesting learning strategies through dice games because the dice medium provides an opportunity for children to understand the concept of numbers through direct and concrete experience

Weakness: Out of 10 children, only 3 children are interested in the activity because the dice media is too small, making it difficult for them to see the numbers and dots on the dice media.

RPHH Scenario 2

Strengths: The learning method I implemented was quite good because I used small colored dice media.

Weakness: Out of 10 children, only 4 children are interested in this hobby because the dice medium still seems ordinary.

RPPH Scenario 3

Strengths: I was able to convey the material clearly and use a larger dice medium made of foam.

Weaknesses: Out of 10 children, only 6 children are interested in the activity. There are even children who say that the dice are not good.

RPPH Scenario 4

Strengths: I am able to optimize my child's abilities by using a more interesting medium, namely large and colored dice media.

Weaknesses: Even though the children's enthusiasm increases, there are still 2 children who still do not understand the activities carried out. The child still has an upside down in writing

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the number symbol. For example, I asked the child to write the number 14 but the number 41 was written.

RPPH Scenario 5

Strengths: I am able to optimize children's ability to understand the concept of numbers and provide interesting and different media, namely the 12-sided and 8-side dice media whose shape they have never known. And these media make the children enthusiastic about playing the dice.

Cons: The media provided is still minimal and makes children scramble.

So in this 2nd cycle it is concluded that my strengths and weaknesses are:

Strength : I am able to provide varied, creative and interesting learning activities. Many children already understand the concept of numbers 1-20 such as distinguishing odd and even numbers from the numbers 1-20. Children also begin to understand and learn the concept of addition through dice play.

Disadvantages: Minimal media preparation that causes children to scramble to the point of lack in class mastery.

RESULTS AND DISCUSSION

Research Results

Cycle 1

From the beginning in planning, the understanding of the concept of numbers 1-20 includes, recognizing and sorting the symbols of numbers 1-20, distinguishing odd and even numbers in numbers 1-20, understanding the concept of many and little, through interesting games and using various media, the following data are obtained: Teachers are still lacking in choosing media, learning strategies, managing classes and time efficiency well; In learning to understand the concept of numbers which includes recognizing the symbols of numbers 1-20, sorting numbers 1-20, distinguishing even and odd numbers in numbers 1-20, understanding the number of banayk and little, only 5 children out of 10 children who already understand the concept of numbers 1-20.

Cycle 2

From the initial data above, the improvement plan for cycle 2 is called, namely: Teachers can motivate children to understand the concept of numbers 1-20 through diverse, varied and interesting dice games. Teachers teach understanding of the concept of numbers 1-20 through dice games using various dice media and collaborating with other media so that they can

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provide varied and fun learning strategies.

This success can be seen from the data obtained as follows:

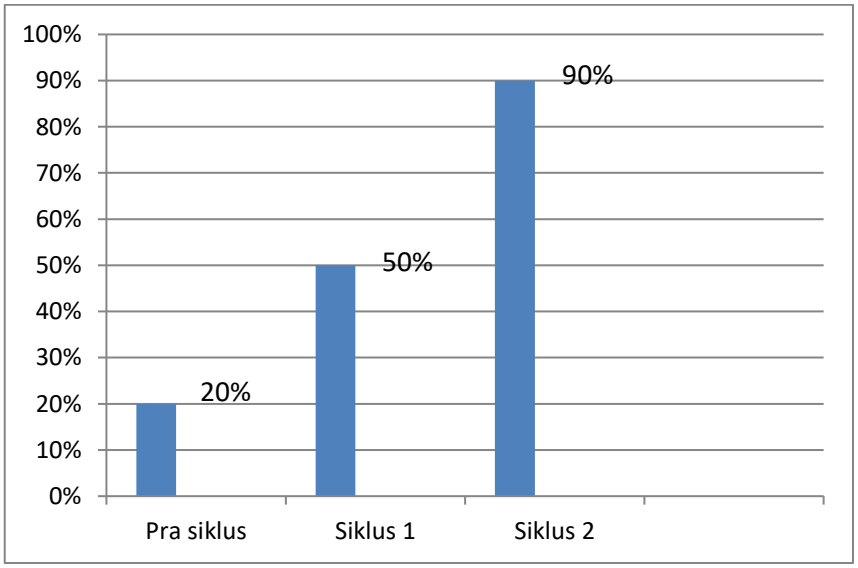
Table 6. Success

Activities	Many children	Percentage
Pre-cycle	2 children	20%
Cycle 1	5 children	50%
Cycle 2	9 children	90%

Table 7. Child Development Assessment Table

Yes	Child's Name	Child Development Values		
		Pre-Cycle	Cycle 1	Cycle 2
1.	Azland	●	●	●
2.	Ayrah	○	●	●
3.	Aghni	○	●	●
4.	Aftah	○	○	●
5.	Asheeqa	○	●	●
6.	Darrel	●	●	●
7.	ElGavin	○	○	●
8.	Luthfan	○	○	●
9.	São Paulo	○	○	●
10.	Zunaira	○	○	○

Child Development Assessment Chart



Discussion of Each Cycle

Based on the data from each cycle, it can be concluded that in :

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Cycle 1

Learning activities that use games and media are able to increase the interest and involvement of some children in understanding the concept of numbers 1-20. Of the 10 children who participated in learning, only 5 children correctly understood the concept of numbers 1-20 while the other 5 children were still less enthusiastic in an activity and had difficulty achieving the set indicators. There are obstacles such as inappropriate media, learning strategies that are not optimal.

From the assessment criteria in cycle 1 it is still not successful and must be improved in cycle 2.

Cycle 2

Providing learning through games that use number dice is effective in improving the understanding of number concepts in children aged 5–6 years. Through the number dice game, children can learn to recognize the symbols of numbers 1–20, distinguish between odd and even numbers, and understand the concept of addition in a fun and concrete way.

The use of varied dice media can increase children's interest, enthusiasm, and active involvement in the learning process. The more attractive the shape, size, and variety of dice used, the higher the child's motivation to participate in learning activities.

Number dice games can be used as an effective alternative learning medium to improve understanding of number concepts in early childhood because they provide a meaningful, fun, and developmentally appropriate approach. Of the 10 children aged 5-6 years who have been declared, 9 children managed to understand the concept of numbers 1-20 through the number dice game.

Sun & Phakamach (2024) highlight the practical significance of optimizing the design of a learning management system platform and improving learners' learning outcomes. At the same time, it also provides data support and theoretical reference for future research in related fields. Rahmawati et al. (2025) found that developing a relevant and innovative curriculum, combined with the application of interactive learning methods, enables students to actively engage in the learning process and achieve better learning outcomes. Lesmi et al., (2025) found that staff and infrastructure, as well as expert and teacher discipline, are supported by the spirit of the teacher himself and the motivation from the principal to the teachers. Ridwan et al. (2024) found that this program is instilled from an early age, from kindergarten to early childhood education, so that akhlakul karimah will be formed in adolescence and adulthood and prepare them to become future leaders.

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Conclusion

Number dice games can help improve understanding of number concepts in children aged 5–6 years. At the beginning of learning, not all children are interested and understand the activities given. This can be seen in Cycle I, where only 5 out of 10 children were able to achieve the indicator of understanding number concepts 1–20. I realized that the media used at that time was still not interesting and not fully suited to the needs of children. Through interesting and unique number dice games, namely larger, colorful, and varied dice sizes, children look more enthusiastic and actively participate in learning. They find it easier to understand number concepts because they can learn while playing and practicing them directly. In addition to knowing and sorting numbers 1–20, children also begin to be able to distinguish odd and even numbers and understand the concept of simple addition. Number dice games are an effective medium to improve understanding of number concepts in early childhood because learning becomes more interesting, fun, and in accordance with the learning method of children who prefer direct play activities.

Suggestions

Islamic Kindergarten teacher Widya Kusuma Saladara must be creative in creating media and learning methods that are tailored to children's needs. Media that is interesting, appropriate to the child's age, and provides opportunities for each child to be directly involved in play and learning activities. Kindergarten organizers are expected to be able to support and facilitate media for all activities that are in accordance with the abilities achieved at the child's developmental stage according to their age.

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