

Improving The Ability To Recognize Numbers Using Pictured Number Cards For Group B1 Intan Cendana Putri Kindergarten

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Abstract

This study aims to describe the improvement of the ability to recognize numbers 1–20 using illustrated number cards media in Group B1 children at TK Intan Cendana Putri in the Academic Year of 2025/2026. This research is a Classroom Action Research (CAR) utilizing the John Elliot model which was conducted in one cycle consisting of 3 meetings, with stages including planning, action, observation, and reflection. The subjects in this study were 20 children of Group B1 at TK Intan Cendana Putri, consisting of 2 boys and 18 girls. Data on children's ability to recognize numbers were collected through direct observation techniques using instrument sheets, interviews, activity documentation, and performance tests. The collected data were then analyzed using percentage descriptive analysis techniques to measure children's learning success both individually and classically. The results of this study are: (1) The initial ability (pre-action) of Group B1 children in recognizing numbers was still relatively low, with classical success reaching only 40% (8 children succeeded) and a class average score of 54.00, (2) Learning using illustrated number cards media in Cycle I ran very effectively and was able to transform the learning atmosphere to be more interactive and concrete, (3) There was a marked cognitive improvement in children at the end of Cycle I, where classical success jumped drastically reaching 85% (17 children succeeded) with the class average score increasing to 79.00. This final achievement has successfully met and exceeded the specified classical success indicator of at least 80%, thus the action was concluded successfully in Cycle I

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1. INTRODUCTION

The importance of mastering numbers in early childhood often clashes with the reality on the ground, triggering academic anxiety. The phenomenon found shows that many children are only able to verbally list the sequence of number symbols (memorization), but do not yet understand the meaning or value contained behind the numbers. This gap between expected abilities and the reality in the classroom reflects that cognitive stimulation has not yet touched on aspects of deep understanding. If this condition is allowed to persist, children will lose a crucial foundation of basic mathematics, so a concrete solution is needed to bridge this barrier to number understanding.

Early Childhood Education (PAUD) is a form of strategic development aimed at children from birth to six years of age. This program serves as the primary foundation for optimizing all aspects of child development through planned educational stimulation. The goal is to support physical growth and mental development so that children are well-prepared for the next level of education. In line with Pramudyani's view in Fitriani et al. (2025), PAUD encompasses comprehensive development efforts at every stage of child development, based on government regulations. This period is widely known as the "Golden Age," a critical period spanning the ages of 0 to 6. It is during this stage that important foundations for cognitive, physical, social, and emotional development are laid, which will influence a child's future.

In the context of cognitive development, particularly in mathematics, Minister of Education and Culture Regulation Number 137 of 2014 sets standards that include flexible problem-solving skills, logical thinking skills in classifying patterns and cause and effect, and symbolic thinking skills. One crucial representation of these cognitive abilities is number mastery as the foundation of early numeracy. Number recognition is crucial for children's cognitive readiness to understand more complex mathematical material in the future. At the kindergarten (TK) level, this learning implementation is realized through activities that train children to sequence numbers 1-20 and connect number symbols with concrete object representations. Thus, number mastery is not merely a technical skill, but an indicator of a child's academic readiness for basic education (Handina et al., 2023). Providing appropriate, age-appropriate stimulation is essential to support this golden period (Hafidza et al., 2024).

Entering Kindergarten until the beginning of Elementary School, children's numeracy skills have increased significantly, where they begin to be proficient in counting and connecting number symbols with their numbers (Afifah, 2022). Especially for children aged 5-6, this competency is built systematically through the introduction of the sequence of numbers 1 to 20 as well as simple addition and subtraction operations. However, based on initial observations in Group B1 of Intan Cendana Putri Kindergarten, it was found that children's ability to recognize numbers is still not optimal. The phenomenon that appears is that many children are fluent in counting numbers 1-20 orally, but are confused when asked to show the number symbol that corresponds to the number of objects in front of them. Children also often get confused in distinguishing numbers that have almost similar physical shapes, such as numbers 6 and 9, or numbers 3 and 8.

This is evident from observations at Intan Cendana Putri Kindergarten, which showed that students' understanding of numbers had not yet reached the expected development indicators. Preliminary data showed that of the 20 students in Group B1, only around 40% had achieved the criteria for Developing According to Expectations (BSH) and Developing Very Well (BSB). The majority of children still fell within the criteria for Not Developing (BB) and Starting to Develop (MB). This low ability is strongly suspected to be due to the learning process, which is still extensive, not yet focused on deep learning, and the lack of media used, which tends to be abstract (Fitriani et al., 2023).

This gap between learning practices and children's developmental needs aligns with Jean Piaget's theory of cognitive development. According to this theory, children between the ages of 2 and 7 are in the pre-operational stage. Children in the pre-operational stage still require concrete learning media that can bridge the gap between number symbols and tangible quantities that can be seen, touched, and counted directly. According to Vygotsky (in Kurniati, 2025), a child still in the learning stage should have ample opportunities to develop their

potential. Teachers, as facilitators, need to provide various types of scaffolding so that children can solve the problems they face, including understanding numbers.

Learning media plays a crucial role in the process of disseminating educational materials for early childhood. According to Sudaryanti (in Sharentinie, 2025), numbers are abstract mathematical objects. Therefore, the use of illustrated number cards is highly relevant. This medium has superior value through the presentation of information visually and concretely, which facilitates children's engagement in kinetic interactions through direct object manipulation (Aprilianti & Hewi, 2025). Given the urgency of solving this problem, this study focused on implementing Classroom Action Research (CAR) to describe and analyze the improvement of children's ability to recognize numbers 1-20 using illustrated number cards in Group B1 of Intan Cendana Putri Kindergarten.

2. RESEARCH METHOD

This study used the Classroom Action Research (CAR) method. CAR is a cyclical assessment activity consisting of planned activities to improve teacher performance and thus improve student learning outcomes (Rahayu & Saskia, 2025; Salim et al., 2020). The design used refers to John Elliot's model, which consists of four main stages in detail: (1) Planning, (2) Action, (3) Observation, and (4) Reflection (Gustaman, 2021). A distinctive feature of Elliott's model, compared to the simpler Kemmis and McTaggart design, is that a single cycle can accommodate several action steps or meetings before the researcher moves to observation and reflection, which is why Cycle I in this study was carried out across three consecutive meetings (May 22, 25, and 26, 2026) rather than a single session. Prior to data collection, the researcher and the collaborating teacher set an explicit stopping rule: the cycle would be considered complete, and no further cycle would be conducted, if classical completion reached at least 80% at the end of the cycle's reflection stage; if this threshold were not met, the reflection results would be used to revise the RPPH and proceed to a second cycle. Because the Cycle I performance test showed classical completion of 85%, exceeding the pre-set 80% threshold, the researcher and collaborating teacher jointly agreed during the reflection stage that the intervention had met its objective and that a second cycle was therefore not necessary, so the study was concluded after a single cycle in accordance with this pre-established criterion.

This research was conducted at Intan Cendana Putri Kindergarten in Sembulan Batu, Senaru Village, Bayan District, North Lombok Regency, during the even semester of the 2025/2026 academic year. The subjects were all 20 students in Group B1, consisting of 2 boys and 18 girls. The informants in this study were the class teachers who acted as observers and collaborators (Sutoyo, 2020).

Data collection techniques used in this study included interviews, observation, documentation, and performance tests. Observations were used to record children's counting activities and the accuracy of matching number symbols with pictures, as well as teacher performance in applying media (Sanjaya, 2022). Performance tests were used to directly measure children's ability to name number symbols 1-20, indicate sequences, and match the number of pictures (Arikunto, 2022). Instruments were validated to ensure the accuracy of the measuring tool in describing the variables studied (Arifa, 2023; Widoyoko, 2020).

The collected data were analyzed using descriptive statistical analysis techniques (Sugiyono, 2021). Learning completion was measured individually and in a class setting. Individually, a child was considered complete if they achieved a minimum score of 75% (the Developing According to Expectations category). The class setting indicator for success was

set at 80%. This means the study was declared successful and the intervention was discontinued if at least 80% of the total children in the class had achieved completion (a combination of the Developing According to Expectations and Very Good Development categories).

3. RESULTS AND DISCUSSION

3.1 Research Results (Initial Conditions / Pre-Action)

Before implementing the action, the researcher conducted a pre-test on March 11, 2026, to determine the initial abilities of Group B1 children at Intan Cendana Putri Kindergarten in recognizing numbers 1-20. The results of the observation showed that many students' number recognition abilities were still underdeveloped. Most children were not yet able to name the numbers shown, were not yet able to order numbers 1-20, and were not yet able to connect number symbols with the number of objects. Previous learning was still conventional and abstract, making children less enthusiastic.

The results of the pre-action evaluation showed that out of 20 children, 4 children (20%) were in the Not Yet Developing (BB) category, 8 children (40%) were in the Starting to Develop (MB) category, 6 children (30%) were in the Developing According to Expectations (BSH) category, and 2 children (10%) were in the Very Well Developing (BSB) category. Classical completion only reached 40% with an average score of 54.00. This indicates the need for corrective action.

3.2 Results of Cycle I Implementation

Cycle I was conducted in three meetings on May 22, 25, and 26, 2026, with the theme "Plants" and the subtheme "Fruits." During the planning stage, researchers and teachers prepared the RPPH, observation instruments, and number cards depicting fruit. During the implementation stage, children were invited to observe the number cards 1-20, count them together, and play a game of matching the number of fruits/concrete objects with the corresponding number cards.

The assessment results at the end of Cycle I showed a marked increase in ability. Class organization was orderly, and the children were very enthusiastic. Based on the results of the Cycle I performance test, there were no more children (0%) in the Not Yet Developing (BB) category, 3 children (15%) in the Starting to Develop (MB) category, 7 children (35%) were Developing as Expected (BSH), and 10 children (50%) were Developing Very Well (BSB).

3.3 Inter-Cycle Analysis

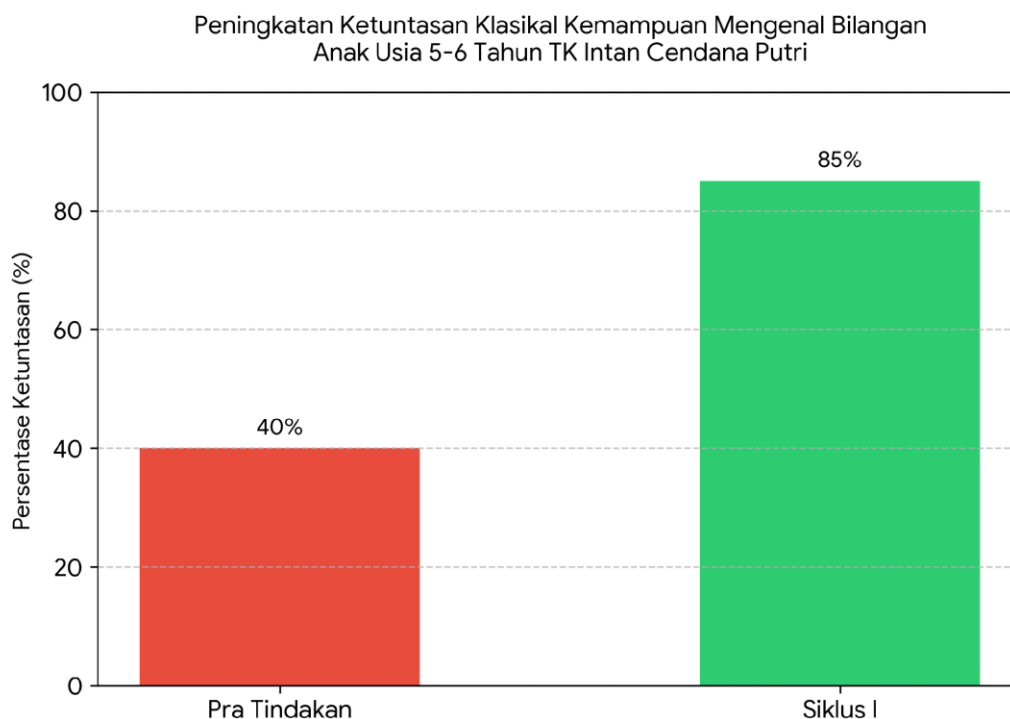
To comprehensively see the improvement in early childhood children's number recognition abilities from before the action was given (pre-Action) to after the action was given in Cycle I, the following is a summary table of research data results:

No	Child's Name	Pre-Action (Score)	Cycle I (Shoes)	Cycle I Description
1	Atika Fitria Tsabita	40	60	BSH
2	Baiq Naiela Hapipa	20	40	MB
3	Hanifa Lailatul Syahla	40	60	BSH
4	Itmam Lutfi	40	100	BSB
5	Izzatun Apriani	20	40	MB
6	Harnita	40	60	BSH
7	Kadek Laras Acitya Dewi	100	100	BSB

8	Lili Juliantika	40	60	BSH
9	Nazwa Hipatul Iswari	60	100	BSB
10	Ni Kadek Ayu Sri Ratna Dewi	60	100	BSB
11	Ni Luh Yoana Ginanti	100	100	BSB
12	Renata Aulia Putri	40	100	BSB
13	Riya Wita	40	60	BSH
14	Tila Astuti	40	60	BSH
15	Vira Alifatulaini	20	40	MB
16	Jeni Alvani	20	60	BSH
17	Holifah Husna	60	100	BSB
18	Dede Abdian Zulfa	60	100	BSB
19	Yan Adira	60	100	BSB
20	Zazkia Aura	60	100	BSB

Table 1. Research Data on Number Recognition Ability of Children in Group B1 Between Cycles

The increase in classical completeness of children's number recognition abilities from pre-action conditions to Cycle I is more clearly presented in Graph 1 below:



Graph 1. Improvement in Classical Completion of Children's Number Recognition Ability

3.4 Discussion

The ability to recognize numbers is a crucial foundation for early childhood before they enter higher academic stages. Initially, classical mastery only reached 40% with an

average score of 54.00. This low achievement is due to learning patterns that are still conventional and verbal. Educators tend to convey number material abstractly, for example, only writing on the board or asking children to memorize number sequences verbally without bridging the gap with concrete learning media. The thinking characteristics of early childhood, who are still in the preoperational phase (Piaget in Pitriani et al., 2023), greatly require real visual stimulation to understand abstract mathematical symbols.

After the intervention in Cycle I using illustrated number cards, the children's abilities experienced a marked increase. Classical completion increased sharply from 40% to 85%, with an average class score reaching 79.00. The composition of children's development changed drastically, with 17 children (85%) reaching the level of Developing According to Expectations and Developing Very Well. Because this 85% achievement has successfully exceeded the research success indicator of 80%, the intervention was declared successful and was stopped in Cycle I.

This leap in success aligns with Vygotsky's theory, which emphasizes the importance of measurable scaffolding in learning, where teachers facilitate media and interactions that make children feel safe transitioning from concrete objects to abstract symbols (Kurniati, 2025). More specifically, the illustrated number cards appear to have functioned as a concrete scaffold within children's zone of proximal development: rather than asking children to manipulate the abstract symbol directly, the cards first anchored each number to a familiar, countable picture (fruit), allowing children to verify a number's meaning by counting the illustration before transferring that understanding to the symbol alone, which is consistent with the pre-operational thinking pattern described by Piaget (in Pitriani et al., 2023) that was identified as the source of children's initial difficulty. This also explains why the two children who remained at the Starting to Develop (MB) level after Cycle I, based on the researcher's field notes, were those who tended to name the picture rather than the number symbol, suggesting the scaffold had not yet been fully withdrawn for them and that a second round of practice bridging picture to symbol may still be required. Furthermore, these results are consistent with, and add nuance to, several relevant previous studies. Research by Indriyanti et al. (2024) and Handina et al. (2023) similarly found that illustrated number cards improved children's number recognition, but both studies measured this improvement over multiple cycles rather than a single one; the present study's success within a single cycle suggests that the combination of illustration and direct object-matching play used here may accelerate this process compared to card-only exposure. Raudilah et al. (2021), meanwhile, specifically highlighted that illustrated media help children distinguish visually similar numbers, which corresponds with this study's finding that confusion between the numbers 6 and 9, initially reported as a dominant problem, was no longer observed among children who reached the Developing Very Well category by the end of Cycle I. Taken together, these comparisons suggest that the illustrated number cards were effective not merely because they were visual, but because they combined visual illustration with direct, repeated object manipulation, a combination that more clearly operationalizes Vygotsky's scaffolding concept than illustration alone.

4. CONCLUSION

Based on the results of Classroom Action Research (CAR) in Group B1 of Intan Cendana Putri Kindergarten in the 2025/2026 Academic Year, it can be concluded that the use

of illustrated number cards was effective in improving children's ability to recognize numbers 1-20, raising classical completion from 40% in the pre-action condition to 85% by the end of Cycle I, thereby exceeding the 80% success indicator and concluding the intervention after a single cycle. The use of illustrated number cards has been proven to be able to reduce the abstraction of number symbols into visual and concrete concepts, so that pre-operational children can connect number symbols with the quantity of objects in a fun, accurate, and independent manner.

5. SUGGESTION

Based on these conclusions, it is recommended that PAUD teachers at Intan Cendana Putri Kindergarten and similar institutions consistently use illustrated number cards during the number-introduction stage of thematic learning, specifically pairing the counting-together activity with the object-matching game format used in this study's Cycle I, rather than relying on verbal or blackboard-based number instruction alone. Because this study was limited to a single class, a single cycle, and descriptive analysis without a comparison group, schools (kindergarten principals) are encouraged to trial the same media across other groups at the same grade level before adopting it school-wide, while also providing the specific Educational Teaching Aids (APE) needed, such as durable illustrated card sets and matching concrete objects, rather than general play facilities. For future researchers, given that this study did not test retention over time or compare the media against an alternative method, it is recommended to conduct a follow-up cycle or delayed post-test to assess whether children's number recognition is retained after the intervention ends, to include a comparison class using a different medium to isolate the specific contribution of illustrated number cards, and to extend the media to early numeracy stages such as simple addition and subtraction or a three-dimensional interactive format.

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