



## TEACHER'S INNOVATION IN IMPROVING CHILDREN'S COGNITIVE ASPECT

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### Abstract

The current problem that takes place is the low cognitive abilities of children in Group B of Kindergarten Kenanga Banjarmasin in solving everyday problems and acting creatively. Efforts to improve developmental activities and outcomes, particularly through a combination of direct instruction, demonstration, problem-based learning, and experimentation were done. This study aims to analyse teacher activities, children's activities, and children's development outcomes. Three meetings were used to conduct the qualitative classroom action research (CAR) portion of this study. Ten children from Group B of Kindergarten Kenanga Banjarmasin were used as research subjects. The research results showed that the teacher's activities received a score of 22 for quite good criteria at meeting I and a score of 34 for very good criteria at meeting III. 40% of children's activity occurs at meeting I, 60% at meeting II, and 100% at meeting III. At the first meeting, the child's cognitive development was 40 percent, and at the third meeting, it was 100 percent.

**Keywords: Cognitive, Problem Based Learning, Demonstration, Direct Instruction, Experiment method.**

### INTRODUCTION

As an educator, students' character and knowledge are greatly influenced by their teachers. A good teacher should be someone who students can look up to. Teachers should use everyday words, manners, and examples of good behavior as examples of good behavior. This applies both in the school environment and in society. It will have a significant impact on the school environment, family environment, and community environment if the enthusiasm for learning among students is increased and organized. The way teachers carry out their duties as educators is very responsible for the smooth implementation of education and teaching in schools. The work environment in which teachers work will have an impact on their ability to carry out their responsibilities as educators (Karso, 2019). Education is the conscious

direction by the teacher towards physical improvement that is informed towards the formation of primary character. Teaching must be completed from the start, which can be done by the family, school, and local environment. Parents' efforts to pass on their knowledge, experience, and abilities to the younger generation in an effort to prepare them for the functions of physical and spiritual life are included in education.

PAUD is short for from education to child age. Early education is education that is designed to help children grow and develop in general or emphasizes the development of all aspects of a child's development. PAUD is a school that encourages the overall development and improvement of children aged birth to six years by combining physical and non-actual aspects by providing appropriate physical, mechanical, scientific, close-to-home and social stimulation. Nutrition, intellectual stimulation, and many



opportunities for exploration and active learning are some of the efforts made (Huliyah, 2017).

A young child is usually aged between 0 and 6 years. The rate of development is very fast at that age. As a result, the early years are referred to as the golden age because of their significance. Everyone has an early age. However, this early age only happens once in a lifetime, so it is important to make the most of it (Khaironi, 2018).

In early childhood science education, the introduction of colors, color mixing, plants, animals and other natural phenomena are still included. Teaching children how to experience, understand, and experiment with various natural phenomena is very important. The examples include experiments involving color recognition and mixing, volcanic eruptions, and other natural phenomena. All of which are related to these experiments. These experiments will teach children how to be creative and how to have the courage to try something new and worthwhile with adults. Science can help children develop critical thinking skills because children do not simply accept or reject something. They observe, evaluate existing data by conducting science experiments. Children's processing skills can improve their scientific abilities (Khaeriyah et al., 2018).

Cognitive development can be understood as a comprehensive understanding of reasoning power, creativity, language skills and memory. Cognition is a combination of the maturity of the child and the environment. However, due to different characteristics of children, each child's cognitive development is also unique (Novitasari, 2018).

The development of children's cognitive abilities, namely the ability to think, reason and solve more complex

problems, will make it easier for them to gain broader general knowledge and enable them to think normally in everyday social situations (Novitasari, 2018).

Cognitive abilities are closely related to a person's knowledge and the way they think about events, actions and what they see around them. A person's cognitive development determines whether or not they are able to solve problems quickly. As a result, a child's potential for later stages is greatly influenced by their individual cognitive development (Veronica, 2018).

Cognitive factors play an important role in determining the success of children in learning because most activities in learning are always related to problems of remembering and thinking. Shapes, colors, patterns, sizes, concepts, letters and number symbols can be remembered through these two cognitive activities. Children's ability to conceptualize numbers, especially by naming and matching number symbols, shows this ability. As a result, children's cognitive growth must be accelerated from an early age (Pertiwi et al., 2018).

The experimental method is a way of presenting teaching materials where students test a question or hypothesis by conducting experiments. Experimentation is a skill that is often associated with science, and the experimental method is a teaching method in which students carry out experiments, observe processes, and record the results in writing. The results of these observations are then communicated to the class and evaluated by the teacher. An experiment or trial can be described as a procedure that a child must master to understand a concept or the basic concepts of an experiment. However, the possible questions are how do they find the process or how something happened, why something happened, how to solve existing problems, and finally how to make something useful through these activities (Khaeriyah et al., 2018).



The reality that occurred in the field was found in Banjarmasin Kenanga Kindergarten, precisely in group B children is that there were still children who are less than optimal in the development of cognitive aspects in terms of solving daily problems and behaving creatively. These problems occurred because learning was less interesting and there were no examples directly. Only a few children are able to solve problems and behave creatively. Based on the reality on the ground, the researchers overcame these problems using Classroom Action Research (CAR), namely through the Problem Based Learning (PBL), Demonstration, and Direct Instruction models with the color mixing experiment method.

Problem Based Learning (PBL) is a learning model that really supports the development of students' thinking abilities. The development of this model takes constructivism that learning must be built through a process, not just rote memorization. In their learning activities, the use of this learning model directs students to matters related to problem solving such as formulating problems, finding appropriate solutions and making decisions (Agusta & Suriansyah, 2020).

Apart from that, the demonstration model is a learning model that helps teachers to explain material with the help of teaching aids and learning devices that make it easier for students to understand instructions. In implementing this learning model, it needs careful planning because it requires the help of objects to be able to concrete the material that students are studying. Apart from using learning media and teaching aids, this model can also use cases, events, rules and sequences of using things (Agusta & Suriansyah, 2020).

Then, the direct learning model or Direct Instruction is a teacher-centered educational model because all activities and decisions are made by the teacher.

The application of this learning model is very dependent on mastering the skills possessed by the teacher so that the process and learning outcomes are good or bad depending on the way the teacher teaches (Agusta & Suriansyah, 2020).

The experimental method is a teaching material in which students test a question or hypothesis by conducting experiments on themselves. The experimental method is a teaching method in which students conduct experiments, observe procedures, and record their findings in writing. The teacher then discusses and evaluates the observation findings with the class (Khaeriyah et al., 2018).

## **METHOD**

This study used classroom action research (CAR) with qualitative methods in three meetings. The first step in conducting action research is planning. It requires careful and careful planning. The purpose of implementation is to practice what was planned in stage one, namely appearing in class. In carrying out action research, a plan must be followed rather than being planned.

Observations can be used to find out how far it has reached the target. Activities carried out and observations are observed simultaneously. Repeating what has been done is the purpose of reflection. Self-evaluation or reflection can only occur after the action has been taken.

A total of ten children, including two girls and eight boys, from Kindergarten Kenanga Banjarmasin participated in this research.

The factors of this study contain of teacher activity in developing cognitive aspects through experimental methods using the Problem Based Learning, Demonstration, Direct Instruction model, Children's activities in developing cognitive aspects using experimental methods with the Problem Based Learning, Demonstration, Direct



Instruction model, and the results of increased development cognitive activity of children in the experimental method using the model of Problem Based Learning, Demonstration, and Direct Instruction.

In this research, the results of the development of cognitive aspects of the experimental method were collected using the Problem Based Learning model using rubrics and observation sheets along with data on teacher activities and children's activities in developing the cognitive aspects of the experimental method.

The indicator of success in this study is that teacher activity can be categorized as successful, if the score of teacher activity in each lesson reaches a score of  $\geq 36$  with very good criteria. A child's activity is categorized as successful if the child gets the criteria  $\geq 76\%$  in the very active category. Meanwhile, development results are declared successful if the child can carry out experiments mixing colors individually, at least the child gets 3 stars in the DAE category and classically achieves  $\geq 76\%$  of children getting the DVG category.

**RESULTS AND DISCUSSION**

The learning process used the Problem Based Learning, Demonstration, Direct Instruction model for group B children at TK Kenanga Banjarmasin which was held in 3 meetings. At each meeting the teacher's activities, children's activities, and the results of the development of children's cognitive aspects in mixing colors using the Problem Based Learning, Demonstration, Direct Instruction model have increased. The increase in teacher activity during implementation can be seen in Table 1.

Table 1. Trends in Teacher Activities

Meeting	Score	Category
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I	22	Fairly good
II	28	Good
III	34	Very good

The teacher's activities at three meetings are seen in Table 1. With a score of 22, the teacher's activities received a Fairly Good criteria at the first meeting. Apart from that, the teacher's activities received a score of 28 in the Good category at the second meeting. Meanwhile, with a score of 34 at the third meeting, it was again increased to the Very Good category.

This shows a rapid increase in teacher activity. As Table 2 shows, children's activity has also increased.

Table 2. Trends in Children's Activities

Meeting	Score	Category
I	40%	Fairly Active
II	60%	Active
III	100%	Very active

Based on Table 2, children's activities at the first classical meeting received a Fairly Active score of 40 percent. Furthermore, in meeting II it increased with a score of 60% in the Active category. whereas at meeting III there was an increase in obtaining a score of 100% in the Very Active category, therefore the activity can be said to have reached an indicator of success.

The results of the development of children's cognitive aspects in the experimental method of mixing colors are written in Table 3.

Table 3. Trends in Cognitive Development Results

Ability Results	Meeting		
	I	II	III
$\geq$ DAE	40%	70%	100%
$<$ SD	60%	30%	0%

At each meeting, the results of the development of cognitive aspects in the experimental method of mixing colors increased and achieved indicators of success. Graph 1 depicts teacher activities, children's activities, and children's cognitive development results, which shows the tendencies of the three factors studied.



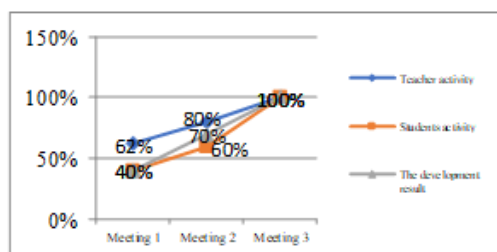


Figure 1. Teacher Activities, Children's Activities, and Children's Cognitive Development Results

It can be seen from the Graph 1 that the three factors studied each experienced an increase, at first the teacher and children were still not able to carry out activities properly, and children were still not used to participating in learning. Conversely, if activities are carried out repeatedly with guidance, then the activities of the teacher and children and the results of child development always increase at every meeting.

The teacher's activities at each meeting are reflected in each activity so that this increase occurs. The teacher can review or improve what has been done by reflecting on the learning activities that have been completed to identify and overcome deficiencies in order to improve the steps taken by the teacher to practice learning.

One of the important roles in improving learning is reflection, because reflection can help teachers develop awareness of their own thoughts as seen in the way a person improves or develops activities (Rais & Aryani, 2019).

The learning carried out by the teacher runs optimally because the teacher in each cycle always makes reflections so that from these reflections the teacher knows what deficiencies should not be made at the next meeting, the teacher also masters the learning model better so that the learning carried out runs optimally (Ramadina & Cinantya, 2022).

Teachers are the main factor in education. A teacher is often used as a role model by children who is the main figure in self-development. Therefore,

teachers must have behavior and abilities that can develop children as a whole (Sopian, 2016).

In carrying out their duties, teachers are required to master various things in order to improve their talents. Therefore, teacher ethics are expected to influence and be influenced by the teaching and learning process situation. Teachers must be able to align with the development of children who have varied characters (Sopian, 2016).

The teacher is a person who directly deals with children in the classroom. The teacher has the role of planning and designing which is then carried out by the teacher, teachers as learning planners are required to be able to comprehensively understand the current curriculum, student characteristics, existing facilities and resources so that all these components can optimally support the achievement of learning objectives (Rahmawati & Permatasari, 2022).

In the opinion above, a teacher plays an important role in developing and improving learning activities to achieve success. This is because teachers have direct contact with students and can act as planners or learning designers in the education system. To include all these elements in the RPP, the relevant curriculum, student characteristics, and available facilities and resources must be understood by teachers to support learning. In ongoing learning activities, the role and activeness of a teacher is very decisive. Teachers should always try to facilitate or create a learning environment so that students can learn on their own, both actively and consciously.

In age early in age child between 0-6 years. The rate of development is very fast at that age. As a result, the early years are called the golden age because of their significance. Everyone has an early age, the only difference is that it only happens once in everyone's life, so it's important to



make the most of it. The best time to encourage individual growth is at a young age (Khaironi, 2018).

Therefore, early childhood education can be used to develop children's activities and developmental outcomes. Key components for achieving early childhood education in the future front. Various children's potentials can be changed and improved through early childhood education to prepare them and adapt to their environment (Ariyanti, 2016). Several supporting factors that influence increased children's activities include: Perseverance; Concentration; Interest; Skill; and Inspiring (Nursyaidah, 2014). In addition to these elements, activities that work for teachers, activities for children, and cognitive development outcomes for children will all benefit from using appropriate models.

The first model is Problem-Based Learning (PBL) which is the main model used in this research, and is the model used in this research because with this model it is considered that it can foster children's learning interest and make children progress in their learning process. The second model is the Demonstration model, namely the provision of learning by displaying or demonstrating to children about a process or situation that you want to learn. Learning is provided in depth and forms good knowledge. So that children are able to pay attention and observe learning directly. The third model is Direct Instruction, which supports children's learning processes in relation to structured knowledge by providing direct instructions.

Problem Based Learning allows children to be taught to think critically and find solutions to problems by asking them questions. Through direct inclusion with learning objects and exploratory testing practices, the PBL model is able to inspire children to be more enthusiastic about science education. Children's

creativity, independence and critical thinking capacity are all enhanced by their ability to participate in the experimental phase. Children acquire science concepts through activities that are adrenaline, interesting, and important. Children can learn about science themselves and apply it to everyday problems and phenomena in the environment (Poerwati et al., 2021).

Problem-Based Learning (PBL) is very suitable to be used to train students in higher level thinking because this model can enable students to overcome problems that they will or have not yet faced in real life in their environment, so that they are accustomed to dealing with problems related to their life in their environment (Maulana et al., 2019). Children are taught to connect questions and answers or work in pairs to solve problems in addition to listening to the teacher's explanation. Apart from that, this model fosters cooperative child interactions (Darmiyati & Jannah, 2020).

Cognitive growth describes how a child's mind grows and functions to be able to think. Cognitive growth is a combination of brain and nervous system maturity, and adapting to the area (Afrida et al., 2022). Teachers can always guide children, both individually and collectively, using experimental teaching and learning strategies. Viewed From this research it is clear that teachers are able to improve teaching methods and always guide children. Teachers use learning concepts when they play in the classroom because children are able to acquire and process information while they are playing, which allows them to discover new things, and practice skills they already have. Playing also has the potential to develop children's creativity, so that teachers can provide more focused science activities to students (Hayati et al., 2018).

Science games are great for kids because they can make the environment fun and spark their imaginations, which in



turn can help them learn more. It is hoped that not only kindergarten teachers but also parents will take an active part in developing and varying various science games at home.

The experimental approach also aims to teach children to do their own experiments to find various solutions to the problems they face. Children can learn to think scientifically by using experimental methods, and they can prove the validity of a theory they learn (Pujiawati, 2018).

Increased teacher involvement in learning activities influences the results of children's cognitive development because the activity of recognizing number symbols in the crank game contributes to the development of children's cognitive abilities. It is very important to develop children's cognitive abilities from an early age because early childhood education is a golden period in child development. This means fostering children's positive character and balancing all aspects of development so that children grow according to their age.

Playing and thinking are very important for developing children's activities, the experience that children have is a raw material in the development of children's mental structures. Learning is a holistic and meaningful adaptation that comes from within a person to new situations so that they experience relatively permanent changes (Maimunah & Cardona, 2022).

## CONCLUSION

The Problem-Based Learning, Demonstration and Direct Instruction model was successfully used in combine colors material in Kenanga Banjarmasin Group B Kindergarten to improve children's cognitive abilities. Teacher activities and children's activities are the same get a chance category very good and categories are very active in mixing colors. All factors made significant

progress. Developing According to Expectations (DAE) category, as well as the Very Well Developing (VWD) category are indicators of successful cognitive development outcomes. Children are able to participate in every teacher's learning implementation so that the findings of this study can be used to improve children's cognitive abilities.

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