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Teori Perkembangan Jean Piaget dan Implikasinya Dalam Perkembangan Anak Sekolah Dasar

Nafiah Nur Shofia Rohmah[1], Murfiah Dewi Wilandari[2], Darsinah[3]

[1]Mahasiswa Universitas Muhammadiyah Surakarta
[2,3]Dosen Universitas Muhammadiyah Surakarta

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Abstract

The goal of this study is to determine how Jean Piaget's theory of development and its effects on elementary school students' development. A qualitative descriptive method with a literature study approach was used as the research methodology. Books, journals, articles, and other scientific works that are pertinent to the topic under study serve as the sources of information for the literature study. The findings demonstrated that elementary school-aged children's cognitive development varies depending on their age. According to Piaget's cognitive theory, children's cognitive development in the elementary school years is in the concrete operational phase (ages 7 to 11), which is a stage in which kids can think logically, rationally, scientifically, and objectively about something concrete or real. As a result, the teacher must present learning material that is empirical (real), not abstract or fictitious, during teaching and learning activities. The learning process must be grounded in reality, for instance, by providing concrete examples of the material being studied (modeling) and engaging in hands-on practice (experiments).

Keywords: *Developmental Theory, Jean Piaget, Elementary School Children.*

(*) Corresponding Author: nafiah078@gmail.com

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INTRODUCTION

To realize oneself in accordance with the stages and tasks of optimal development so as to reach a certain level of maturity, all life processes and all types of individual interactions with their environment, both formal and informal, are included in education (Abin, 2004). Thus, when viewed in a broader context, education helps students reach their individual potential. According to a limited and practical perspective, education can be understood as a knowledge transfer process known as the teaching and learning process, teaching and learning process, teaching and learning interaction, or in a formal form known as teaching (Abin, 2004). In other words, education is a deliberate coaching effort carried out on students by educators (including parents) with a view to maximizing the potential of students to create an ideal personality (insan kamil) (Marimba, 1980).

Understanding development theory is very important for those working in education. Understanding development is very important, especially when it comes to young children. It is very important for children to understand and know this knowledge. Because it will be a guideline for analyzing the personality and needs of the child, even though the child is still in the early stages of development. Elementary school -age children need to master certain aspects of development,

especially those related to knowledge or cognition. Cognitive or intellectual potential, or the ability to reason and solve problems, is one aspect of development in relation to the intellectual abilities possessed by each individual (Latifa, 2017). Because each stage of development will have a different character, then everyone has cognitive development that needs to be understood. Thus, a theory of cognitive development emerged that covers the stages of human cognitive development from childhood to adulthood.

Children's cognitive development has a significant impact, and the work of psychologists in studying this developmental phenomenon cannot be separated from their contribution. The psychologist is Jean Piaget, and Jean Piaget has succeeded in integrating psychology, logic, and biology in his research to explain how all children can learn. Piaget claimed that the complex activities of exploration, construction, and manipulation make it easy to acquire knowledge. In addition, Piaget describes how children develop (Hanafi & Sumitro, 2019).

According to Jean Piaget's theory of child development, the concrete operational stage of children (7-12 years) has a different perspective from parents. As a result, it is not possible to compare the cognitive development of young children with those of adolescents and adults. In general, elementary school -age children still have limited cognitive abilities in the concrete and real fields. For example, children as young as 6 or 7 years old can understand that a glass can break if it hits the floor. When elementary school- age children are asked why the earth revolves around the sun, for example, their ability to think abstractly is limited. Children's cognitive abilities have not developed to the point of complex thinking, so they will struggle and may become confused when asked to provide scientific answers to these questions. When forced, they will also feel stressed.

An understanding of the cognitive development of elementary school -aged children is very important in the process of providing elementary school (SD) or Madarasah Ibtidaiyah (MI) education so that it can be used as a reference in the context of educating and teaching. If children can understand the teaching material presented, teaching and learning activities (KBM) will be maximized. This can happen if the level of difficulty of the material in accordance with the level of cognitive development of the child. Even according to research, there is a discrepancy between the contents of students' books (K13) and the level of thinking ability of children in SD/MI, so it is often found that teachers make their own teaching materials by modifying their students' teaching materials. cognitive abilities . Learning objectives will not be achieved optimally if the amount of material presented in KBM is too high. As a result, teaching and learning activities are not effective, children do not get the desired knowledge, and stress is often experienced.

The guide to choosing learning strategies, models, methods, and evaluation techniques is to have an understanding of children's cognitive development in addition to teaching materials. If the teacher presents the material in a way that is appropriate to the level of students' cognitive development, students will easily understand it. For example, because the thinking power of elementary school -aged children (7-11 years) is low, the teacher must use the experimental method (practice) or provide direct examples related to the object being studied (modeling) when teaching science. Real does not exist in the realm of imagination or

abstraction when thinking concretely. Therefore, it is very important for the success of a teaching and learning process, especially the development of children's cognitive competencies, to have a thorough understanding of how children's minds develop cognitively as they age.

Based on the description above, the purpose of this study is to find out how Jean Piaget's theory of development and its implications for the development of elementary school children.

METHODS

The concept of cognitive development as defined by Jean Piaget is discussed in this study, along with its implications for the development of elementary school students, using a qualitative descriptive methodology. When using this research strategy, you can do library research. Because researchers use library resources not only to prepare a research design, deepen theoretical studies, or sharpen methodologies, but also to obtain research data or answers, this research utilizes library resources (Zed, 2008). Books, journals, articles, and other scientific works related to the subject of this research are used as sources of information for this literature study.

RESULTS & DISCUSSION

Jean Piaget's Basic Concepts of Cognitive Development

One theory that can explain how children are able to adapt and interpret themselves to objects that occur in their immediate environment is Jean Piaget's theory of cognitive development. Children begin to learn much from the nature and purpose of the things they come into contact with, including toys, food, and household items and other social objects such as themselves, their families, friends, and society. Children are also expected to be able to separate and compare the objects they group, as well as examine events or events to develop healthy cognitive concepts.

Jean Piaget suggested that the processes and mechanisms of cognitive development in humans begin in infancy, childhood, adolescence, to become independent adults who have high reasoning in order to develop children's thinking about cognitive development. He argued that each person's genetic development is not passive because it can take place actively through adaptation and interaction with the environment. For more information on Jean Piaget's theory of cognitive development, which focuses on schema, adaptation, assimilation, accommodation, balance, and organization (Dariyo, 2007)

a. Scheme

   Schemas are closely related information about different objects of life that are logically organized in the child's mind. According to Jean Piaget's theory, this scheme begins to be formed when the child is still a baby and can only use his sensory-motor abilities to see, grasp, and suckle objects. These experiences will be documented and stored in the child's memory. In other words, the ability and memory of the child will increase with the more active the child is doing activities. As a result, the brain will continue to develop concepts.

b. Adaptation

The adaptation process involves the creation of unique experiences as a result of social interaction with one's environment. In this situation, the brain is able to quickly adjust to each new experience. These new encounters can also be incorporated into pre-existing patterns. so that both the positive and negative impacts of each person's adaptation process can be seen in the activities carried out. As a result, children's adaptive capacity can have an impact on their cognitive and intelligence development.

c. Assimilation

Assimilation is the integration of new information into an existing schema. Cognitive schemas, attitudes, and behaviors that help people adapt to their environment are the agents of change here.

d. Accommodation

To accommodate the new experience, the accommodation has been updated. When one's old schema cannot explain a new experience, it is because the new experience does not fit into the old schema; Therefore, it is necessary to form a new scheme with variations.

e. Balance

The balance mentioned in Jean Piaget's theory is a balance between external demands and internal desires. The functions of accommodation and assimilation can assist children in their adaptation to balance internal demands with external demands when they experience cognitive discomfort.

f. Organization

Ideas or ideas grouped together to allow logical thinking is what this theory calls organized. This requires accommodation and assimilation into a cohesive system in order to be achieved. For example, look at a child's ability to play ball. Around the age of 6-7 years, children begin to show interest in objects and collect some concept ideas while playing. For example, a child can run, throw, kick, and pass the ball to others while actively moving his legs and arms. According to Jean Piaget, the ability of students to play soccer is called organization (Hanafi & Sumitro, 2019).

Stages of Cognitive Development

Four stages of cognitive development of children were identified by Jean Piaget. He argues that children's capacity for thinking or mental fortitude varies depending on their stage of development. According to Piaget, the cognitive development of healthy children is influenced by their own potential and the experiences they have in their environment. In this case, the teacher acts as a facilitator and motivator to ensure that children grow according to their developmental stages by including experiences that maximize their potential.

Piaget's Four Levels of Cognitive Development Scheme (Suparno, 2011)

Stage	**Age**	**Main Characteristics of Development**
sensorimotor	0-2 years	• Based on action • Step by step
Preoperative	2-7 years	• Use of symbols/sign language
Concrete Operation	8-11 years old	• Use clear/logical rules • Reversible and immutable

Formal Operation	11 years and over	• Hypothesis • Abstract • Deductive and Inductive • Logical and Probability

Santrock (2011) states the same thing , dividing children's cognitive development into four major stages that are appropriate and progress with age, including:

1. Sensory stage (sensory motor)

   This stage of cognitive development occurs between the ages of 0 and 2 years. The process of "decentration" is a key concept in this stage of cognitive development. In other words, babies at this age have not been able to separate themselves from their environment. He has himself as his "center". He doesn't really become selfish until the next stage (Setiono, 2009). Babies transition during this sensory stage from their innate reflex actions at birth to the emergence of symbolic thought. Infants combine sensory experiences with physical actions to create an understanding of the world (Desmita, 2010).

   The child's thinking begins to combine sight, hearing, shift, touch, and taste at this point. Therefore, children can experience everything through their senses. According to Piaget, this time is very important for fostering the development of thought, which serves as the foundation for the growth of intelligence. Children think practically and in line with their actions. Therefore, letting children learn through their environment is very beneficial (Syarifin, 2017). According to this theory, if a child has started to respond verbally to adults, it is more of a habit and has not yet progressed to the stage of thinking.

2. Preoperational stage (preoperational)

   The age of 2 to 7 years is when this stage of cognitive development takes place. Children begin to use words and pictures to describe the world at this age . These phrases and images show the extension of symbolic thought beyond the relationship between sensory information and motion. Children's thinking is illogical, inconsistent, and unsystematic at this age . It is distinguished by the following properties:

   a) Transductive reasoning, which is an inductive or deductive but illogical way of thinking
   b) Improper cause-and-effect relationships, where children illogically recognize cause-and-effect relationships
   c) Animism, which holds that everything behaves like itself.
   d) Artificialism, or the idea that everything in the environment has a soul similar to that of a human.
   e) Perceptually bound, meaning that children make judgments about something based on what they observe or hear.
   f) A mental experiment in which the child tries to solve a problem on his own.
   g) Centration, in which a child ignores other qualities and concentrates on what he finds most attractive.
   h) Egocentrism, where a child views the world and its surroundings according to his preferences (Ibda, 2015).

3. Stage of concrete operations (concreteoperational)

   Ages 7 to 11 are when the concrete operations stage takes place. You will be able to categorize objects into various forms at this point and think logically about concrete events. Although classification is possible, it has not succeeded in solving complex problems. Real concrete objects are the subject of concrete operations, which are mental operations that can be reversed.

   Instead of concentrating on only one aspect of an object, children can coordinate various characteristics with the help of concrete operations. Children can mentally perform tasks that were previously only possible for them to physically complete, and they can reverse these concrete operations too, at the level of concrete operations. Classifying or dividing something into various subs and understanding their relationship is very important for the ability of the concrete operational stage (Mu'min, 2013).

   At the age of seven, this stage begins with the progressive decentralization stage. Most children are able to remember the size, length, or amount of fluid. The idea that a quantity will remain the same even if its outward appearance changes is a point of memory held here. The preoperational child's focus will be drawn to the scattered marbles and they will appear to multiply if you show them four marbles in a box and then scatter them on the floor. On the other hand, a child who has reached the concrete operational stage will immediately realize that there are still 4 marbles. Children will also notice that if you pour milk from a fat glass into a nonfat glass, the volume remains the same unless you intentionally pour a different amount of milk.

   A child will begin to remember substances around age 7 or 8. He will be able to tell that a piece of clay is still the same if you flatten it or divide it into ten smaller pieces. He realizes that the clay is the same even if you turn it back into a ball like the original. The reverse process is what is known as.

   The final capacity for memory maintenance, namely spatial memory, begins to develop around the age of 9 or 10 years. If you place four 1 x 1 cm square objects on a 10 cm sheet of paper, a child with a good memory will notice that the space occupied by the four small objects on the paper is the same no matter where you put them. . A child also picks up sorting (classification) and sorting skills at this stage (seriation). In this case, asking children to understand the relationships between classes is an illustration of Piaget's experiment. Seriation is a concrete operation that involves a sequence of stimuli along a quantitative dimension and is one of these tasks. A teacher can randomly place 8 sticks on the table, each of a different length, to see if students can sort them out. Students are then instructed to group sticks based on their length by the teacher. Each rod must be longer than the previous one, or the next rod must be shorter than the previous one, according to concrete operational thinking. Transtivity, or the capacity to logically combine relationships to understand certain conclusions, is another aspect of reasoning about relationships between classes.

4. Formal operational stage (formal operational)

   The formal operational stage is in the age range of 11 years-adult. This phase is also known as adolescence. Teenagers think in a more abstract, logical, and more idealistic way. Formal operational stage, ages eleven to fifteen. At

this stage the individual has begun to think about concrete experiences, and think about them in a more abstract, idealistic and logical manner. The abstract quality of formal operational thinking is evident in verbal problem solving. The concrete operational thinker needs to look at the concrete elements A, B, and C to draw the logical conclusion that if A=B and B=C, then A=C.

However, formal operational thinkers are able to overcome this problem even if it is only conveyed orally. Formal operational thinkers have the capacity to idealize and imagine possibilities in addition to abstraction skills. Children at this age begin to make assumptions about the ideal qualities they want for themselves and others. Children can make deductive hypotheses about how to solve problems and arrive at conclusions systematically, according to formal operational concepts.

Jean Piaget's Theory of Development and Its Implications in the Development of Elementary School Children

Children first enter primary school between the ages of 7 and 11. According to Piaget's cognitive theory, the thinking of elementary school -aged children is referred to as concrete operational thinking (Desmita, 2015). Children who are able to use their minds to reason logically about something concrete or real are said to be in a Piaget condition called "concrete operational meaning". As long as thinking can be applied to concrete or specific examples, logical thinking now replaces intuitive thinking (instinct) (Santrock, 2007). The disadvantage of this stage is that the child will have difficulty and may not even be able to solve abstract problems correctly when presented verbally without a real object.

Children's reasoning is still limited; while they can understand causal relationships and reason logically, they cannot reason hypothetically or abstractly (Upton, 2012). Only when the object of the problem is empirical (real) or can be perceived by the senses, rather than just fictitious, can children solve it. For example, a first grader is told that there are three glasses of red, black, and white when given a statement. Then asked what color glass would appear more luminous. Due to cognitive limitations, children will have difficulty responding in these situations, and because their answers will not be based on scientific and objective logic, they may not all be correct. When the child sees the tricolor glasses, the question will be answered correctly.

A child's cognitive skills develop rapidly during this stage. In a typical environment, the abilities of elementary school -aged children grow over time. When children first enter school, their thinking power slowly develops, leading to concrete thinking and egocentricity. In the past, children's thinking abilities were still imaginative, subjective, and egocentric. The child begins to use his mind to think logically and objectively when he sees something in front of him, and he is able to solve a problem logically.

Children have a better understanding of spatial concepts, causal relationships, grouping, inductive and deductive reasoning, conservation, and numerical/mathematical concepts at the concrete operational stage than preoperational children (2-7 years) (Papalia & Feldman, 2009). Regarding understanding these ideas, children's ability to understand how things change from what they see is known as their cognitive capacity. For example, if a child observes

that a bottle of water gets heavier as it is filled, they may conclude that water is the cause of weight gain and begin to believe that all water weighs the same.

Second, the idea of grouping, especially the child's ability to classify objects of the same or different type, color, and size. Serialization, transitive inference, and class inclusion are among the relatively complex cognitive skills of elementary school -aged children at the concrete operational stage of grouping, which gradually increase between early and middle age children (Papalia & Feldman, 2009). The ability to arrange a stimulus or an object based on quantitative dimensions, such as length, color, weight, and so on, is known as harmony (Santrock, 2009). For example, by placing 10 types of pencils at random on the table, children can rank the lengths of pencils, starting with the shortest.

To understand a particular conclusion, one must be able to logically combine the relationships, which is known as transitive inference. A child might be shown three red, yellow, and green balls, for example. Green is slightly smaller than yellow, yellow is slightly smaller than red, and red is slightly larger. He will be able to determine that the red ball has the largest size without making comparisons.

The capacity to understand the relationship between the whole and its parts is another aspect of class inclusion. A child may receive a bouquet of flowers with five stalks of jasmine, three white roses, and many petals on each stalk. The child will answer that there are more petals when asked whether there are more jasmine flowers or not because each flower has many petals. The child will answer that there are more petals when asked whether there are more jasmine flowers or not because each flower has many petals. Children only see the comparison of jasmine flowers to white roses, so they tend to answer the question of the number of jasmine flowers more accurately than children at the preoperational stage.

Deductive and inductive reasoning is in third place. Deductive reasoning is the opposite of inductive reasoning as it involves looking at the facts broadly before drawing a particular conclusion. Observing certain members of the class of people, animals, objects, or events, children at the concrete operational stage only use inductive reasoning, according to Piaget, before drawing general conclusions about the class as a whole. When solving a problem, a child who thinks in terms of concrete operations enters it immediately. They will first think theoretically, then identify or classify, then look for solutions, and finally take action to solve the problem, in contrast to children who think formally (11 years and over) (Monks, Knoers&Adinuto, 2014). When children hear, for example, that red guava has a sweet taste, they may mistakenly conclude that all red guavas taste the same.

Fourth, the principle of conservation, which states that although the shape of an inanimate object changes, its physical properties will not change (Wade, Tavris & Garry, 2016). In one experiment, a child was treated to two clay lumps that were the same size but different shapes one long and the other round and were able to understand eternity. This shows that children who are at the concrete operational stage are able to do this. The child was then asked about the ratio between the length and the roundness of the lump of earth. Most of the 7 or 8 years old who answered the question said that the size of the land remained unchanged. Understanding the concept of conservation means knowing that even though the shape of an object changes, its size (including length, weight, volume, and mass) remains constant.

Children's ability to process numbers through operations such as addition, subtraction, multiplication, and division is the fifth concept related to numbers and mathematics. Many children can count in their heads by the time they are 6 or 7 years old (Papalia & Feldman, 2009). The difference between abilities in other disciplines, which should usually be presented as objects, is the capacity to manage this number. Children's math abilities vary depending on their age or grade level; The higher the grade level, the better the math skills.

According to the above, children do not necessarily develop at the same rate between the ages of 7 and 11. Piaget's explanations serve only to generalize to the fact that children possess these skills when they reach concrete operational age. Children differ in their capacity to reason, think logically, remember, memorize, understand and analyze information at every age level. The difficulty level of teaching materials, strategies, models, and learning techniques in SD/MI is based on the child's ability to think about things with varying degrees of difficulty.

Children's cognitive development will progress from time to time. For example, the material to be studied will be more difficult or more complex the higher the score. Because it is influenced by various factors, including brain volume, diet, education, experience, and environment, an increase in cognitive power can occur. However, experience and environmental factors have the greatest influence on a process of cognitive development. According to Piaget, active people always adjust (adaptation) as a result of their interaction with the environment (Sumanto, 2014). Children's knowledge and insight grows as a result of participating in various educational activities or processes, which is the next logical explanation. When children encounter more complex concepts, they are ready to consider them in order to learn new information and deal with problems that have arisen.

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One of the important elements that must be understood in the educational process, especially in teaching and learning activities, is the cognitive development of children in elementary schools (KBM). Each age level of elementary age children has different cognitive abilities. According to Piaget's cognitive theory, children's cognitive development in the elementary school years is in the concrete operational phase (ages 7 to 11 years), namely the stage where children can think logically, rationally, scientifically, and objectively about something concrete or real. Teachers must present empirical (real) learning material, not hypotheses, during this teaching and learning stage. The teaching and learning process must be placed in a real-world context, for example by providing concrete examples of the subject matter being studied (modeling) and doing direct practice (experiments).

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