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Effective Learning Activities To Improve Early Childhood Cognitive Development

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Abstract *Children in their critical period or commonly known as golden age are in their optimal stage where they grow and develop rapidly and absorb anything which is exposed to them. Therefore, this is the period when the parents and older person have the opportunity to give the appropriate influence thus the children's development can result optimally in all areas. The first and most critical aspect is the cognitive ability. Cognitive ability can become the basis of all input to be processed in the children's mind, thus its development will affect the children's ability to absorb anything from their surroundings. This article will discuss about learning activities which are effective to improve early childhood cognitive development. The discussion reveals that children in their early age are more active and effective in activities which are designed as games and will result more in their development as they are engaged in social interaction. Some games are proposed as alternatives for the children and parents to conduct and to be involved in.*

Keywords: *early childhood, cognitive development, games*

Background

Early childhood is a child who is in the age range of 0-6 years. This period is often referred to as the *golden age* because at this time almost all aspects of growth and development take place quickly and rapidly. In this period, parents or teachers must fulfill all the children's needs so that children can grow and develop properly. One of the basic needs of children at this time is education. Older person or teachers should provide education appropriate to the stage of children's development, so that children's development can run well.

Children must be given education in accordance with the stage of development. If the education provided does not meet their needs at a

certain stage of development, then their development will not run optimally. Furthermore, if the education provided exceeds the children's needs at a certain stage of development, it will cause adverse effects as well. The example is that it makes them stressed and depressed. Children's development depends on the education and care provided. If the children are given a good and proper education, then they will develop optimally. On the other hand, if education and care are not given regularly, then they will not develop maximally.

One important aspect of children's development is the cognitive aspect, which is the development of children's brain abilities and intelligence. Cognitive development at this stage is the most important stage for children, because it will affect the next stage development. Therefore, at this stage, older people or teachers should provide the right education so that children's cognitive development can develop well. Therefore, to maximize this cognitive development, various learning activities that are appropriate to the needs of the development stage need to be conducted. This literature review will discuss cognitive development in early childhood and any learning activities that are appropriate to maximize children's early age cognitive development.

Cognitive Development in Early Childhood

Cognitive is one of the most important aspects of children development. Cognitive itself can be interpreted as a learning or thinking ability. Cognitive development is the development of children's mindset and capabilities in understanding things and solving simple problems. Cognitive development is growing rapidly at an early age and despair effect on several aspects of the development of other, like the development of language and physical-motor (Hildayani, 2009). Through this thinking ability, children are able to explore themselves, other people, animals, plants, and everything surrounding so they get new knowledge from these exploration activities. A child whose cognitive development develops maximally will also easily interact with peers. The process of cognition includes various aspects, such as perception, memory, thoughts, symbols, reasoning, and problem solving (Hijriyati, 2016).

The greater the coordination and control of the child's motor, the better the ability to to explore the surrounding environment. Thus, child becomes more creative, more free, as well as imaginative. His/her cognitive world also grows rapidly. When a child learn something, learn new skills, gain a lot of memory, or improve experience, at the moment his mind is developing and the child will become more intelligent (Hijriyati, 2016). As long as the lessons given is in accordance with the needs of the child's development stage then the child's cognitive level will develop well and be a provision for their future. What are expected of children's competence and learning outcomes

in cognitive development include the child's ability to think logically and critically, to give reasons, to solve problems and to find the causal relationship of the problems he face (Hijriyati, 2016) .

Children's cognitive development is influenced by two main factors, namely heredity and environmental factors (Khadijah, 2016). Heredity factor is a factor that every child has since he is in his mother's womb. This factor is in the form of genes passed down by parents to their children. According to some research results, the heredity factor has an important role in children's cognitive development because there is a relationship between family ties with IQ size. Based on the results of research by Erlenmeyer and Jarvik's in 1963, it is stated that generally, individuals have relatively similar IQs with other individuals who have family relationships with them. Similarly, according to the results of the Jenks study in 1972 and Munsinger in 1978, it is concluded that a child tends to have the same IQ as his parents. Therefore, a child born with the possibility of his thinking ability whether he has normal, below normal or above normal thinking skills.

In addition to heredity factors, the child's cognitive development is also influenced by environmental factors. A child who gains knowledge and experience in a good environment will have better cognitive abilities than those in unfavorable environments. There are two main environments that influence children's cognitive development, namely family and school environment. Family is the smallest environment as well as the first and most important means of education for children. Families play an important role in the formation of children's personality and mindset. Therefore, family, especially parents, needs to provide good examples and guidance so that children will be able to develop well. School environment is a formal institution which assists parents in improving children's cognitive abilities. Some efforts can be implemented by schools to improve children's cognitive abilities including creating harmonious interactions between teachers and learners, providing opportunities for children to interact with peers and dialogue with people who are experts in the field, as well as developing children's language skills through various media.

Each child has different potential for thinking skills according to the genes that his parents passed on. The development of this potential depends on the environment in which the child is raised and educated. If the family and school environment are good then the potential of children's thinking ability will also develop well, and the vice versa. There are some experts who research and formulate theories about cognitive development, such as Jean Piaget and Lev Vygotsky. The following is the description of the theory.

Jean Piaget's Cognitive Theory

Piaget whose full name was Jean Piaget was a biologist who was born in Neuchȁtel, Switzerland in 1896. He was interested in studying extensively and in various children's answers related to the problems they faced. Piaget was eager to know about the nature of knowledge and the ways children acquire it. Piaget observed daily activities performed by infants and children and illustrates the logical differences that affect their behavior. Initially, he used a procedure called as a clinical method where children are given various kinds of tasks and problems and asked a series of questions. The children's answers were various, then Piaget string advanced questions. Piaget concludes that the way children think and learn the surrounding is very unique (Hildayani, 2009).

As an active learner, children do not simply collect what they learn and store it as an isolated collection. Rather, children gradually receive a picture of how the world interacts with each other while they are doing activities, for example, observing food, toys, and other nearby objects. Through this, they began to grow awareness early about gravity.

Piaget mentions that everything that is learned by the individual and successfully done will be organized as a schema *(schema)*, a collection of the same and organized mind or activities. At first, naturally most of the child's schemes are in the form of behavior. It then transforms into a mental operation and eventually turns into an abstract. Schemes of a baby are obtained putting everything into his mouth. This scheme is used for various kinds of objects, such as inserting a thumb, the mom's nipples, pacifiers, blankets, toys, and even toes. According to Piaget, children will continue to gain more and more schemes from either the old and new situation. Eventually, individual schemes which everyone has will be integrated into the broader mental process or also called as the operation *(operation)*. The scheme will direct the child towards a more sophisticated and logical way of thinking.

One's ability to handle new information through such means is called *adaptation*. According to Piaget, the adaptation consists of two activities: assimilation *(assimilation)* that refers to a person's ability to take in new information and match it with the existing structure, and accommodation *(accommodation)*, i.e. where the child is able to change or modify the scheme of cognitive structures that already exist to be adapted to the object or event or new information and establish a new scheme to fit.

Accommodation and assimilation are interrelated as the child's knowledge and understanding of the world grows around them. The accommodation hardly happens without the appearance of assimilation. Therefore, it is understandable that the child needs a new experience thus the modification schemes process is likely to happen. Adults are expected to be able to stimulate children's interest to explore, for example by inviting children to observe how shoots can grow from green beans, manipulate the world around

them by seeing the difference in the speed of shoots of green beans with and without the sunlight, encourages children to carry out simple experiments such as by inviting children to cook beans, and observing water flows from high place to low place. The two processes, assimilation and accommodation, must continue to go on for balance and cognitive growth.

Piaget proposes the stage of development with the following characteristics:

1. The *stage* is the whole that is structured in a state of balance. The movement between one *stage* at a later stage involves more qualitative structural changes.
2. Each and every stage was obtained, added, and transformed from the previous stage, and is as preparation to the next stage. In preparation for the next stage, the present stage must have been completed.
3. Each stage follows an unchanged sequence. There is no one stage which can be skipped. Each stage is prepared and obtained by the abilities gained from the earlier stage.
4. Each stage is universal. It has meaning that all people have the same phase sequence.
5. Each *stage* includes *"a coming-into-being and a being"*. There is a preparation period and the final period that will be achieved in each stage *(stage)*. Also, it can be said that there is an unstable period which leads to a more stable period.

Each stage acts as both the result and the beginning for the next stage. The stages of cognitive development are divided into the following:

1. Sensorimotor period, starts from birth until approximately the age of 2 years.
2. Preoperational period, starts from the age of 2 years to approximately 6 or 7 years.
3. The concrete operational stage, starts from the age of 6 or 7 years until about age 11 or 12 years.
4. The formal operational stage, starts at the age of 11 or 12 years old to adult.

Some children may reach a stage a bit faster than the other children, while the others may also start in a slightly older age (Hildayani, 2009).

Lev Vygotsky's Cognitive Theory

The cognitive theory was coined by Lev Semenovich Vygotsky (1886-1934). He is a Russian Psychologist mostly known for his contribution in the theory of children development. He has lived his life for 38 years to collect the works of more than 100 books and articles (Suryana, 2016).

According to Vygotsky, cognitive development is more prioritizing on social aspects. In the social level, the structure and mental processes of a person can be identified from their interactions with others (Danoebroto, 2015). Social interaction can actually form a person's thinking process and create his cognitive structure. This is in accordance with Vygotsky's opinion about social cognition. Social cognition can be interpreted as knowledge about the social environment and interpersonal relationships. This model describes the impact or influence of social experience on cognitive development. In his theory, he emphasizes the decisive factor for an individual development is the culture. This is believed so because only human who can create culture and every child develops in a cultural context.

Culture has a major influence which contributes to the children's intellectual development. With culture, children can gain many facets of understanding and the they can have many ways of thinking or intellectual adaptation tools. Culture has taught children about what and how they think. Vygotsky believes that cognitive development can create instructional social processes in which children learn to exchange experiences in solving problems with others such as parents, teachers, siblings, and peers. The development is an internalization process upon culture which creates knowledge and adaptation tools mainly through language and verbal communication (Arifi, 2016). Therefore, for Vygotsky, social interaction is more than just influence but the origin of higher mental processes such as problem solving.

Appropriate Learning Activities to Maximize Early Childhood Cognitive Development

Game is the most effective learning tool for children and can support the children's development. Many games can be used by parents or teachers to facilitate the children's learning, especially in developing children's cognitive abilities. The following games and the procedures can be as alternatives to play with the children while developing their cognitive and psychomotoric ability at the same time.

1. Playing "Hide and Seek" for babies aged nine to twelve months

   Example activity is as follow. First, the mother talks to her child who is lying in her bed. She then hides around the bed and lets her baby look for her. If the baby has not seen her, she peeks out of the corner of the bed and calls the baby. The baby will crawl up to the corner of the bed where the mother calls him. Later, the baby will imitate what his mother does, hiding and peeping in the corner of the bed. Then if the baby is able to crawl or walk slowly, the mother can produce sound to the game. For example, a mother hiding behind a wall near her son. She calls the baby's name while hiding behind the wall and let the baby look for the voice by crawling or walking slowly. The mental skills that grow in infants aged

9-12 months are the concept of where objects are located. In the activities mentioned, babies are able to remember where the toys are hidden. Hide and seek is suitable for training this memory ability (Rakhmat, 2007).

2. Playing building block game

   Teachers or parents simply provide blocks of various sizes and colors then let the child design and build the blocks according to his imagination. Through playing this building block game, children are given the opportunity to try to be independent and develop their imagination and creativity. This game also helps children to learn arithmetic easily which will lead their interest in architecture (Yuhasriati and Wahyuni, 2016).

3. Playing ball

   The equipment needed in this game is a basket and small balls of various colors. Firstly, the teacher or parents put a ball in a basket then asks the children to add one or two more balls to the basket. Once the children finish throwing the last two balls into the basket, we encourage them to count all the balls in the bin. Through this game, the children's ability to count is trained. The more often the children are given the opportunity to practice their numeracy skills, the better their level of numeracy.

4. Playing Lego

   Lego is a playing tool that can be arranged into various shapes. Lego has various colors such as red, yellow, green, and blue. The shapes are various; triangle, circle, square, and rectangle. Give the lego to the child and accompany him when he or she plays. Through Lego, parents or teachers can introduce some basic colors and some geometric shapes to children. After some time playing lego, the child will be able to know several basic colors such as red, yellow, blue, and green, as well as some geometries shapes such as triangles, squares, and circles (Rosita, fadillah, and Yuniami, 2013).

5. Playing *"Congklak"*

   Congklak is a traditional game. This game is usually played by two people using a board that has 16 holes, consisting of 2 large holes and 14 small holes. The fourteen small holes face each other, and the other two large holes are located at both ends of the *Congklak* board. This game requires 98 congklak seeds to fill 14 small holes each with 7 holes, while 2 large holes are left empty to be used to store the congklak seeds belonging to each player obtained during play. This game trains children's ability to analyze and develop strategies to defeat their friends and also train the children's left brain to think. In addition, this game trained the children's accuracy, patience, and the ability to count (Heryanti, 2014).

6. Play *"Kuda Goyang"*

Playing *Kuda Goyang* is usually done outdoors, such as in the playgrounds. This allows the children to interact, share or play it in turns. Through this game, children can imagine as if they were riding a horse fast, wearing a cowboy shirt and hat (Lindawati, 2008).

7. Painting

Painting activity can train children to improve their cognitive ability. Painting requires the child to identify the surrounding environment and the objects to be painted, distinguish colors according to what he sees, practice to improve his imagination and trained to be independent by completing his own paintings (Lindawati, 2008).

The above games that will be given to children should be adjusted according to the age and abilities of the child. Do not forget also consider the child's favorite of the game type.

Conclusion

Children in their golden age develop rapidly in all aspects of development. One of the most important aspects of development is the cognitive aspect. Cognitive development is influenced by two main factor, i.e. heredity and environmental factors. The continuity of children's cognitive development also depends on the education and care provided by the teachers and the parents.

Piaget's cognitive theory states that children are active learners. Children learn how to explore the environment to find information upon their curiosity. Children receive and store information gradually through a process of observation of the interactions that occur around them. Piaget divides cognitive development into four stages, i.e. sensorimotor stage (age 0-2 years), preoperational stage (age 2-6 or 7 years), concrete operational stage (age 6 or 7 to 11 or 12 years), and operational stage (age 11 years and over).

Vygotsky's theory emphasizes on social interaction because the children's social interaction can improve cognitive ability by forming speech or sharing with parents, teachers, peers and other people. Vygotsky's theory states that culture has a major influence which can contribute to children's intellectual development. With culture, children can gain many facets of understanding and ways of thinking, or intellectual adaptation tools.

The main learning activity for children is to play. There are many games that can help children to train and improve their cognitive abilities, such as playing ball, *Congklak*, building blocks, *Kuda Goyang* and so on. Children's cognitive abilities such as the ability to count, remember, and imagine can be trained through these games.

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