

## **THE INTRODUCTION TO MATH FOR CHILDREN IN EARLY AGES**

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### **Abstract**

An early age (0-6) years is a golden period. This is the right time to provide stimulation to optimize all aspects of children development. The aspects of children development that is in questions are: moral, cognitive, motor, language, social, emotional, and art. All of those aspects need to be developed for early childhood education, and one of them is cognitive development consisting of the concept of shapes, sizes, and patterns, a concept of numbers, symbols of numbers and letters that can be introduced through playing math.

The introduction of mathematics is very important for children in early ages. Many everyday problems, even a very simple matter requires mathematical calculations such as, shopping, counting objects, counting time, locating, counting distance, and counting speed. Early childhood education teachers need to master simple math concepts that are appropriate for children in their early childhood. The strategy to introduce simple math needs to be understood in order to train children to count and use other mathematical calculations.

In order to introduce math for children in early childhood, forms of activities are geared towards the development and characteristics of children i.e. by playing. Teacher introduces mathematics by using fun activities and using concrete media. For children in 5-6 years old, their cognitive development is being switched at a pre-operational phase to concrete. At this stage, children learn best through presence objects. Children will easily remember things, numbers, and characteristics even though it was not appeared in front of him. The introduction of mathematics was expected in the various aspects of child developments, especially cognitive development in which it can be developed optimally.

**Keywords:** *Introduction to Mathematics, Early Childhood Education, Early Ages*

### **I. Introduction**

Basically, children do not understand number, and operational number. Gradually, in line with their mental development, children learn to mention number, know number, and count. Children learn to connect the real object with mathematic symbols. One of the examples is that when children hold a thing. It is given number one symbol, and two things are given number 2 symbol.

Various simple mathematic notation and its understanding need to be understand clearly so that it trains children to count and use the other mathematic functions. The introduction of math is best to be done through using concrete things and make them get used to math by using it so that children can understand

mathematics, such as count, number, and operational number (Piaget cited in Suyanto 2005).

One of the examples to know number is done in the beginning process of teacher reminds children about the date today and write it on the whiteboard, and then read it together until they understand the number, get used to count by using songs and things on their surroundings. Another activity that can be used as a way to introduce math for children in early ages is by using sensory motor games, such as inviting them to play in school yard, and using media that are available in school environment such as leaves, branches, and gravels. Fun activities will ease children to know numbers and operational numbers.

Suyanto (2005) added that mathematic standard for kindergarten until fourth grade of elementary school consists of 13 types i.e. 1) math as a problem solver, 2) math as a communication tool, 3) math as, 4) mathematical relationship, 5) Estimation, 6) understand number, 7) whole concept and partial, 8) count complete and partial, 9) identify space and distance, 10) measurement, 11) statistics and probability, 12) fractions and decimals, 13) patterns and relation.

Based on the above-mentioned mathematic standard, it is known that math is not only introduce numbers, symbols, and operational numbers, but also much broader. The thing that becomes a question is about its possibility. It is clear that it is totally possible but in a simple way that can be understood by children by using various games. It is by giving mathematical introduction as a part of children daily life, so that they do not feel that they actually learn.

Loads of obstacles are faced in introducing math in Early Childhood Education. One of them is that there are still teachers that consider math is a difficult subject. This is because most teachers of early childhood education have a mindset that math is understanding 1-10 symbols, operational number that needs to be memorized. Therefore, it is important to give an understanding to early childhood education teacher candidates in order to make them become educators that have skills in teaching math by using various games, so that children will not feel bored about the process of learning mathematics which needs to be integrated with other learning materials.

### ***Math for Young Learners***

Math is everywhere, even though sometimes unseen, math is on our surroundings all the time, in working area, home environment, and in life. Math is used when turning on the alarm, buying necessities, mixing foods, deciding what kind of things that are going to be bought, observing the result score of athletes, sticking wallpaper in the room, deciding what kind of gasoline for a long ride, and many more examples (P.S, 2008).

Then, P.S (2008) said that math is an important ability and it is very needed in the future to face technology world. It is hoped that parents and teachers become math expert that can explain and solve problems in details.

Montessori (in Pitamic, 2013) mentioned that math is an abstract concept, children needs to be given understanding by making math becomes real. In other words, math learning for young learners by using concrete examples until abstract one.

Math is not a difficult material if teachers alter their thoughts, and memorizing can become a fun game for children. Teacher has more skills in making math learning as fun as exercising. One of the examples of teacher teaches math is by counting ten fingers one by one from 1 to 10. Children sit, and they only raise their hands to count. Common learning process can make them feel bored. It is different if the teacher invites them to schoolyard. Children are asked to pick up things in entire school according to their own will and count it together. This can make the situation becomes more exciting when children running around looking for things like gravels, leaves, and branches that are available at school. In the beginning, children is taught how to count 1 to 10 by various games, and then give them math learning by using more fun activity and relate them to daily routines such as, role playing, guessing games, and many more.

### ***The Process of Math Learning for Young Learners***

The process of math learning for young learners is by using concrete media i.e. things that are existed in their surroundings. Teacher's creativity is very needed in creating various learning strategies even though the teacher uses the same media. For example, in counting, the first meeting is that children run and look for things

and gather back to count them by using its number symbols. The next meeting can be changed back like, children group things based on its colours, and count them by inserting the same things into vessels that are prepared by teacher for about one metre each, so that they can move when doing their activities. Sorting things from the smallest to the biggest is better to be categorized as a fun counting activity if in the learning process, children are given challenges for example, by sorting pictures in group and relay running, each child is asked to sort them alternately by sticking them to flannel board that is placed around 1 to 1.5 metres.

The more interesting activity in math learning for young learners is that playing shopping or it is usually called market-like games or buy-sell games. In this game, children are given chance to be seller and buyer by using their own ways for example, when buying things, they need to know how many pieces that they are going to buy, how much it is, how much that should be paid, and how much is the change. For instance:

Seller : “What do you want to buy ma’am?”

Buyer : “I want to buy those vegetables”

Seller : “how many?”

Buyer : “two bundles, how much does it cost?”

Seller : “five hundreds rupiah for each, so that if you buy two bundles, it means a thousand rupiah”

Buyer : “here it is five thousands rupiah, so three thousands are the change right?”

Mathematic learning in playing buy-sell games is not only developed counting ability but also develop some other aspects i.e. social, emotional, where children patiently doing bargain, the aspect of language learning that they use when interact with seller and buyer when doing transaction, and the most noticeable part is that they can develop cognitive skill.

Fractions and decimals are also can be done in math learning process of six-year-old young learners or B group, for instance teacher slices two pieces of bread and give them to two kids, and then they ask how many slices that each child get, so that they would answer “half”. Early Childhood Education teachers introduce math not only by using media that is bought, but also it can be paper media, for

example a paper in a plate shape, and it is cut by teacher, so they will recognise a half, one third, or a quarter.

Another math game is that snake-ladder game by using dice and pawns. They throw the dice and see its dots and count it. If it is two dots, they will move for about two steps, continuously until one of them reaches the top. The pawn is meant to be made for about two metres, so that they will directly become the pawn. The pawn is only given picture that is related to theme, each child moves while counts and mentions what kind of pictures that has been passed by him/her.

In the process of math learning, teacher only becomes a facilitator. If they find a difficulty while doing activity either alone or group, so that they are given chance to ask to the teacher. Children do things not by force; children do activity by happiness because it is a fun game after-all.

Math learning can be done individually and in group. Group activity is done in order to teach them how to respect their friends, and encourage the one who is still not understand, train patience, empathy, and accepting each other. It is definite that the purpose of math learning is needed by young learners for their supply until they grow up even until they participate directly in the society. This is what is called never-ending learning.

In line with the argument of Principles and Standards for Mathematic School (NCTM) in Seefeldt and Wasik (2008) with mathematic concept that is appropriate with children's age, they can a) develop math language, b) have an interactive math learning, c) motivated to be interested in math, in other words planting love to math for children not making them bored and scary.

Seeldt and Wasik (2008) said that math plays an important role in early childhood education curriculum. Children of three, four, and five age still develop cognitive skills that enable them to think about number and quantity. Then, it is said that it gives experience that is possible for them to think their world in numbers, quantity, and category will help them to develop permanent mathematic skills. Integrating math in all curriculum will help young children to develop a strong basic in thinking mathematically.

The development of ideas that can be done by early childhood education teacher in the process or math learning i.e.:

1. Involving children in finding math, not only memorizing symbols and operational numbers.
2. Giving chance to children to explore, investigate, assume, ask, predict, and test their ideas.
3. Invite your children to explore and develop their understanding about concept of mathematic by using materials that can be touched or felt, either natural or factory-made.
4. Teacher guides students in teaching, not dictating what they should do.
5. Give them chance to look at events that are related with math in daily routines and look its relationship with geometry and numbers.
6. Involve them actively in the usage of technology (calculator and computer) to finish various questions about mathematics. (P.S, 2008, p. 104)

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