Improving numeracy skill through leng kali leng traditional game in learning early math to young learners

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Abstract. The aim of this research was to examine the improvement of counting numbers process in early math among B group students through leng kali leng traditional game. The participants were 20 children from B group. They were in 5-6 years old. A leng kali leng traditional game was used to teach early math. Research method used action research. The qualitative data were collected through classroom observation, check list and students’ worksheet. The improvement of early math process skills were examined through descriptive statistic. Result showed that the early math process skills improved after the intervention of learning. The research also revealed that traditional game was motivating; it provides meaningful contexts for children to play mathematical ideas and skills while reducing the fear of failure and errors, since they can always play again.

1.Introduction
Lately the cultivation of mathematical concepts in early childhood is done by writing numbers. Developing numeracy skills early gives children a foundation for their learning and development. It prepares them for daily life, including general problem solving and handling money. Supposedly, the preliminary counting is the basis for early childhood mastering mathematical abilities by doing activities of counting objects close to everyday life. Doing the activity of counting objects makes the child able to master the early numeracy skill. A major concern of mathematics for early childhood is when doing activities in everyday life starting from the home environment numeracy [1]. As we know that starting counting is a fun activity and also easily understood by children 5-6 years because the numeracy is the ability to apply maths concepts through everyday activities like counting, looking at the shapes and talking about sizes. Moreover [2] [3] explain that early numeracy, including the ability to operate with number word, sequences and enumerate combined with mathematical–logical thinking skills, is at the core of mathematics development in early childhood.

Young learners have high curiosity so that at that time child development must be optimized. This is because education at the age of children will be a determinant of a person's quality when growing up [4][5] The children’s mathematic learning activity which is conducted appropriately will train children’s brain to be developed and cause the knowledge and information becoming more meaningful and directed if it is integrated to the daily life and experience of children. The early childhood study and understand the concept and basic skill of mathematic through the exploration, interactive experience with the subject material, parents, and teachers in preparing mathematic activity,[6] One of the most appropriate ways to optimize golden age is to provide education in a way that children like. This method is an action that can be done with things that are fun and close to the children such as by conducting game.

It is also supported The curriculum of early childhood education in the level of children developmental achievement standard (STPPA) which is related to the counting ability as mentioned in the Regulation of Ministry of Education and Culture No 137 Year 2014 states that the level of children developmental achievement standard (STPPA) in the early childhood in the age of 5-6 years old in the
aspect of cognitive development especially in the scope of symbolical thinking such as the ability to recognize, mention, and use the numerical concept. Playing game also plays an important role in the physical, cognitive and social development processes of children [7] Developing early childhood counting skills should be done in a fun way, namely by playing.

Traditional games can be the true example to show number used to support the rule of games in daily life in Indonesia. The games are exciting activities for the children, but also adults who need to get refreshing from their busy activities. [8] Indonesia is the rich country from traditional games, but it is not clearly anymore to make sure many children to do play traditional games. A traditional children game is proposed as a suitable physical activity for instructional strategy in kindergarten. It helps the social, emotional stability, mental learning and physical abilities of children. Generally, children were playing on the land in front or around their home or school, e.g., cenge-cenge, leng kali leng, sem, benteng and boi. (in bahasa melayu Ternate). The above condition indicated that traditional games involve much physical activity and also promote an active outdoor play among children.

One of the traditional games is Leng kali leng. Its name is unique. There is no exact history of where this name became the identity of this one game and where it came from. This game is the simplest of inventions that can entertain a child for a long period. It is played by many players, one of whom will be the blind Chinese and the other is an ordinary person. The blind Chinese is the person who will be blindfolded with cloth while the other players will make a circle by holding hands and the blind Chinese will sit in the middle of the circle. They will circle around the blind Chinese while singing the song "Leng Kali Leng". In addition, it is right choice for developing children counting skills, beside that it can also train moral values in children lives. The use of this traditional game as starting activity would be media to enhance young children sense of number as well as to be used learning material.

2. Research Method

The research method used mixed methods because the aim of the research is to know the improving of numeracy skill of young learners through the traditional leng kali leng game. The action research method was employed in this research. Action research can be carried out with both qualitative and quantitative method[9]. In each cycle, the procedure involves four steps, which include planning, implementing, observing, and reflecting. The traditional leng kali leng game was implemented during learning activities. By using action research method, researchers collaborated with the classroom teacher to gain practical knowledge and a better understanding of the learning process [10]. The research among subjects was conducted in Santo Yoseph Preschool at Ternate City, North Maluku in the age of 5-6 years old and the class teacher; participate in the leng kali leng traditional game for developing the counting ability. For the qualitative part of this research, data were collected by taking field notes through direct observation and students’. These qualitative data were analysed which followed to three main steps; data reduction, data display and conclusion drawing [11]. In addition, the learning implementation is considered successful when the majority of students (e.g. >75%) in the class have obtained the minimum score mastery of learning.[12]

| Students Mastery | Criteria          |
|------------------|-------------------|
| >80              | Very good         |
| >60-80           | Good              |
| >40-60           | Fair              |
| >20-40           | Deficient         |
| <20              | Poor              |

The formula was used to know the percentage of the students and teacher’s activity during teaching and learning process through leng kali leng traditional game. The formula was as follow [13]:

\[
p = \frac{f}{N} \times 100\%
\]
3. Result and Discussion

Learning early numeracy through the traditional leng kali leng game is planned before the implementation. In the traditional leng kali leng game, there are some preparations and procedures for learning that will be carried out in the activities prepared by the class teacher. It focuses on the activities of introducing the concept of symbol numbers 1-10. The activity is integrated into theme types of plants. The learning objectives achieved are students expected to get to know a variety of fruitful plants. Then the researchers prepared the media used in the game leng kali leng, such as cloth to close the eyes and a paper that read the symbol 1-10. Furthermore, in this research, there are designs that that are conducted for the students. Children are invited to play leng kali leng to recognize the symbols 1-10. This game has been modified by researchers in accordance with the research objectives. Before the game starts, teacher first explains the rules of the game. The students are divided into 2 groups. Both the group consist of 10 students. The first group plays the game first. While waiting for their turn to play, the second group is given the assignment to color the plants and connect the number of plant to the symbol numbers. Besides, the teacher asks the children to cite examples of fruiting plants and conducted an evaluation by calling the children one by one to guess the picture of the plant. To strengthen the results of the evaluation the researchers also gave assignments to complete the mango tree, thicken the symbol 1-10 and to sort the number of bananas with numeral symbol of 1-10.

The Improvement of Children Numeracy Skill

The results of observing the children ability to recognize the concept of numeral symbol 1-10 in the first cycle as follows:

a) The result of first cycle

| Meeting | I | II | I | II | I | II |
|---------|---|----|---|----|---|----|
| Percentage | 53 | 60 | 62 | 63 | 63 | 67 |
| Mean     | 57% | 63% | 65% |

Based on the results of the improvement achieved in the first cycle of the first meeting until the second meeting, there are still indicators of the assessment that have not been reached optimally such as children is still confused at connecting concrete object with numeral symbols of 1-10. In addition, some children are also still do not understand the rules of the leng kali leng game because of the teacher’s voice is not loud enough, often children pay less attention to the teacher and busy themselves. Moreover, the teacher is too fast in modelling the game so students cannot perform the activities independently and occasionally ask for the teacher help. Some children still look doubtful and afraid of being wrong when they count, connect and sort symbol numbers 1 - 10 though some children already know or understood it well. In summary, the teacher is still lacking in creating a comfortable learning atmosphere and the students are still less active in class. (See Figure 1).
b) The result of second cycle

From the research results, it can be seen that there is an improvement in the children numeracy skills through leng kali leng game in each indicator, namely counting 1-10, connecting concrete objects with numeral symbols 1-10 and sorting numeral symbols of 1-10. The results of children’s numeracy skills in cycle II is presented in table 1.2.

| Early Numeracy ability | Counting | Connecting | Sorting |
|------------------------|----------|------------|---------|
| Meeting                | Percentage | Percentage | Percentage |
| III, IV                | 75%      | 78%        | 77%     |
| III, IV                | 63%      | 62%        | 63%     |
| III, IV                | 80%      | 85%        | 90%     |

Table 2. Result of children numeracy skill in the second cycle

Based on the research results conduct in cycle II, the mastery learning in second cycle is more improved compared to first cycle. The readiness of children to participate in learning is very good. Teacher’s explanations can be well received by kindergarten students. They are very enthusiastic playing leng kali leng game. All aspects of the assessment of numeracy skills have achieved good results and have improved in each indicator that is why the improvement of children numeracy skills through traditional leng kali leng game ends in this cycle. The results of second cycle can be seen below:
Figure 2. Grades from meeting III and IV of second cycle.

The improvement of the children numeracy skill of each indicator in first cycles and second cycle can be seen as follows:

Figure 3. The result of numeracy skill in first and second cycle.

From the table above, data showed that majority of students reach completeness in the first cycle is fair, and improving in learning completeness in the second cycle. Based on data obtained in cycle II, it can be said that actions are successful because its score obtained by children has met the minimum standard for the passing criterion of 75%. This improvement was obtained because of in introducing the concept of symbol numbers 1-10 is done with traditional leng kali leng game activities. The traditional leng kali leng game can make it easier for kindergarten children to
recognize the concept of early math deal with counting, connecting concrete object and sorting numeral symbols of 1-10. If it related to other aspects of children development, it is not only the traditional leng kali leng game affect cognitive development but also other aspects of development, those are social emotional, physical motor, language, moral religion and art.

4. Conclusion
The improvement of children numeracy skills can be seen from the average students’ percentage in first cycle to second cycle. The average students on each indicator which is counting 1-10 in cycle I is 57% and in cycle II increase to 77%. It means that there is an improvement of 20%. While on the indicator connecting concrete object to numerical symbols of 1-10 in cycle I show the average of 63% and in the cycle II increase to 81% which means there is an improvement of 18%. Furthermore, on the indicator sorting symbols 1-10 in cycle I is 65% and in cycle II rises to 85% and it means the is an improvement of 20%. Thus, traditional leng kali leng game can improve kindergarten numeracy skills. The research also reveals that traditional game is motivating; it provides meaningful contexts for children to play mathematical ideas and skills while reducing the fear of failure and errors, since they can always play again. For further research, it is better to look for other variable based on the needs and characteristic of kindergarten students.

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