Use of flannel puzzle to improve the initial of counting ability

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Abstract. The initial of counting ability is essential for children to solve problems in everyday life. This study aims to describe the use of Flannel Puzzle in improving the initial of counting ability in Renggali one of the early childhood education institutions. This action research on 15 student who were the subject of research. Data are analysed by descriptive qualitative and quantitative. Stages of planning, action, observation, and reflection. The results of the study conclude that: flannel puzzles can improve initial of counting ability. By using the flannel puzzle the initial of counting ability of students can increase. Students' abilities increase from 44.66% before action and increased in the first cycle around 49.25% and in the second cycle became 90.16%.

1. Introduction
Flannel Puzzle is a medium made from flannel, dacron, triflek / duplex to begin counting learning innovations for kids. Learning that is applied by using flannel puzzles can be done by playing while learning and learning while playing. Flannel Puzzle is useful for early childhood, among others: improving cognitive abilities, improving children's social skills and being trained in playing games. The results of research conducted by Aral and his friends that the flannel puzzle is beneficial is done to improve cognition, social-emotional, language, and motor [1]. Furthermore, research conducted by Levine and his colleagues proved that puzzle games are of great interest to boys than girls but, flannel puzzles still have a tremendous influence on improving children's cognitive and language abilities, both men and women [2].

Playing Flannel Puzzle according to Rusell et al. is the activity of dismantling and rearranging the puzzle pieces into an intact form. This activity aims to train the coordination of the eyes, hands, and mind of the child in arranging puzzle pieces consisting of various forms by matching the pieces of the image to each other to form a whole and excellent picture [3]. Benefits of playing flannel puzzles include: (1) practicing patience (2) sharpening the brain. By playing puzzleflannel, the intelligence of the child's brain will trained because playing puzzleflannel trains cells to solve problems, (3) trains concentration (4) trains cooperation between eyes and hands. Because the child must match the piece of the puzzle and arrange it into a complete picture.

2. Research method
The method used is action research using Kemmis and Mc Taggart. Taggart and Kemmis define action research as a form of self-reflective joint research undertaken by participants in social situations. Research actions are taken on students group B of 15 children through four stages of planning, action,
observation, and reflection. Data are analyzed by descriptive qualitative and quantitative. Stages of planning, action, observation, and reflection.

3. Result and discussion
This research conducted in 2 cycles during 14 times. Quantitatively, the initial of counting ability student’s by playing flannel puzzles is increasing in each cycle. Data of The initial counting ability student's pre-action, cycle I and cycle II showed in the table 1 and figure 1 below:

| Subject | Score Pre-Action | % | Score cycle 1 | % | Score cycle 2 | % |
|---------|------------------|---|---------------|---|---------------|---|
| ASY     | 40               | 50 | 68            | 85 | 78            | 97.5 |
| ELT     | 42               | 52.5 | 70           | 87.5 | 78            | 97.5 |
| GFR     | 43               | 53.75 | 70        | 87.5 | 79            | 98.75 |
| GBN     | 32               | 40 | 60            | 75 | 75            | 93.75 |
| JYD     | 36               | 45 | 61            | 76.25 | 77            | 96.25 |
| KNZ     | 28               | 35 | 54            | 67.5 | 67            | 83.75 |
| KYN     | 32               | 40 | 60            | 75 | 77            | 96.25 |
| CHK     | 33               | 41.25 | 58       | 72.5 | 68            | 85 |
| NWD     | 48               | 60 | 75            | 93.75 | 80            | 100 |
| NRH     | 28               | 35 | 47            | 58.75 | 60            | 75 |
| QNSY    | 35               | 43.75 | 58       | 72.5 | 70            | 87.5 |
| RSY     | 28               | 35 | 49            | 61.25 | 62            | 77.5 |
| RKS     | 23               | 28.25 | 46        | 57.5 | 55            | 68.75 |
| RYN     | 46               | 57.5 | 72            | 90.0 | 78            | 97.5 |
| RYM     | 42               | 52.5 | 70            | 87.5 | 78            | 97.5 |
| TOTAL   | 536            | Average= 44.66 | 918                   | Average= 76.5 | 1082       | Average=90.16 |

**Figure 1.** Histogram of Improving initial counting ability student's pre-action, cycle I and cycle II by using Puzzle.
Based on the figure 1, there is an increase from pre-action in cycling I and cycling II. Pre-action is indicated by a blue rod while the action of cycle I shown by a red rod and the cycle II action is shown by a green rod which is clear that the green rod is higher than the red one and the red stems are higher than the bluestems, this shows that the initial ability to count children by playing puzzles significantly shows an increase in children's numeracy. The things that need to consider are the number of pieces of the puzzle. The amount dramatically affects children's moods. This is also evidenced by Bliss et al., that children will love it when they see a little piece and food must give as a gift to maintain their mood [4].

Next, Elson et al. recommend puzzle games to be applied in class, because researchers believe puzzle games can bridge the knowledge gap in the classroom [5]. Thus the activity of playing puzzles applied to children aged 4-5 years, the more often a child plays puzzle activities, the more trained the intelligence, cognitive and motivation of the child. Playing puzzles is useful for early childhood, among others: improving cognitive abilities, improving children's social skills and being trained in playing games.

Puzzle games are a new contribution in teaching mathematics and problem-solving [6]. Playing puzzles can develop children's ability to thinking and planning [7], encourage children's curiosity [8], and develop independence in children [9]. Jigsaw games and puzzles to do in early childhood classes in teaching language to early childhood. This will help build a strong foundation for the next education. From play Education, it is in desperate need of a game tool that Educates like one of them is a toy puzzle, the puzzle is one of the educational toys for children. Whereas research result that puzzle games support children in the classroom to learn to solve problems, meaning in children's emotional, social puzzle games when learning to solve problems in mathematics is very significant [7].

Playing, the point of view regarding education is a game that improve executive function [10], educates and based training stimulates the development of cognitive, social, emotional, and physical aspects that children have [11]. Other studies conducted by Davis and friends prove that the game Puzzle helps students to learn this evidenced by the results of tests conducted by the teacher [12]. A teacher must be able to stimulate children's intelligence by exploring potential one of them by using a puzzle. However, the potential will not manifest tangibly if not stimulated by the environment.

The results of the studies that have been carried out are still focused on increasing one of the cognitive development of children, while this study focuses on puzzle games, to improve the initial numeracy ability of children aged 4-5 years through Mathematics and problem solving, among others: Initial counting for children can explore the potential of each child.

Then there is a need for a business that is appropriate to the conditions of each child. This effort can do in a variety of ways including through counting the start. By using a flannel puzzle

This research to improve the ability to calculate the beginnings through this puzzle game is very important because the media used are puzzle made from the panel, dacron, and duplex which is ramahanak. This panel-based puzzle has not used in PAUD / kindergarten schools.

Furthermore, in the study of Chin and Zakaria, shows that there is a significant influence on the implementation of games based learning modules on the ability of number concepts including counting and comparing and number operations which include additions and subtractions [13].

As for Kurniawati's study entitled Improving the ability to start counting in children in Group B shows that there is an increase in preliminary numeracy through a number stick play strategy, in the pre-cycle of 28 children, only 35.71% of children reached the completeness indicator, then After doing the action research in cycle 1 of 28 children who reached the indicator of completeness in this researcher that is at least developing according to expectations there are 75%. In cycle 2 of 28 children, the number of children who reached the completeness indicator in this study was that it developed at least 85.71% [14].

Elson and his friends recommend puzzle games to be applied in class because researchers believe puzzle games can bridge the knowledge gap in the classroom [5]. Such is the activity of playing flannel puzzles that applied to children, the more often a child performs content playing activities, the more trained the child's intelligence, cognitive and motivation.
Puzzle games are a new contribution to teaching mathematics and problem-solving [6]. Playing flannel puzzles can develop children's ability to think, playing puzzles encourages children's curiosity, developing independence in children. In correspondence activities, one by one the child can match the puzzle flannel piece with the number symbol can recognize the concept of a little and the concept of a lot and can know the order of rank 1-10 displayed by using various flannel puzzles [11].

The implication in this study is children aged 4-5 years have a short concentration so they must be supported by fun activities that make children enjoy learning and can be done by playing. To get more optimal results, it is necessary to support parents to try to repeat the learning that has been carried out in school by inviting any children in the home environment to remember what they have taught in school. with no coercion or pressure on children. The flannel puzzles that are used for numeracy learning should be displayed first so as not to interfere with children's concentration during learning so that children are immediately motivated to learn and curious to try so that they motivate them to learn to count.

4. Conclusion

Results of the study concluded that by using the Puzzle flannel, the students' early numeracy could improve. Student Ability increased from 44.66% before action and increased on first cycle about 49.25% and in the second cycle becomes 90.16%. Student's ability is high enough at a game process that uses puzzles, ice cream sticks and buttons clased in flannel.

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