

**THE ENHANCEMENTS OF NUMERACY THROUGH THE
FLAVELL'S PRINCIPAL IN THE COGNITIVE 'S
DEVELOPMENT FOR THE CHILDREN
IN TK B SRIJAYA KM 5,5 PALEMBANG**

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Abstract

This research of class' action is occurred in TK Srijaya Km 5,5 Palembang with the participants of 25 children. With a problem formulation: "Is it possible for the use of Flavell's Principal in numeracy: 1) could increasing the children's motivation for studying? 2) increasing the numeracy of the children?". This research is aimed for increasing the motivation of studying and the numeracy for the cognitive development of children in TK B Srijaya Palembang. The data collecting are the observation and test for each cycle. At the first cycle, achieved for 60 score, and the average ability of children's numeracy is 50 with the deficient category, for eleven children or 44%. The weaknesses of first cycle are: the lack of children's motivation for studying, the lack of curiosity and confidence. In numeracy, there was a child who repeated the specific number and skip the other numbers, so he couldn't able to say the numbers of things which has been counted. Therefore, this condition is fixed in the second cycle by giving the verbal or non verbal enhancements and the various playing activities and more motivations, so it could reached for the good category for 18 children (72%) with average score 70 or the numeracy is 66 with good category for 16 children or 64%. The weakness of this cycle is "The abstraction principle and The Order Irrelevance Principle" where the children were still not confident for doing the task. So, the children couldn't differ the countable things and uncountable things like water, sand, flour. And, the children couldn't represent the things that has been counted as the ordinal symbol of numbers which has been said. This thing is fixed in the third cycle as by giving the maximum motivation and giving the various playing facilities, so the children are motivated for doing the task. It has been proved in the 3rd cycle, as 21 children (87,5%) who are in the good minimum category (score ≥ 70) and the average numeracy in the good minimum category (score ≥ 60) as 20 children (83,33%). Therefore, in TK Srijaya Palembang is suggested for apply the Flavell principal for counting learninf of cognitive development.

Keywords: Flavell Principal, Motivation, The Numeracy of Kindergarten Children

1. Introduction

On the range of 0 up to 6 years old, children experience the golden age which children start to sensitively accept the various stimulations. Stimulation period for each children is different, accordance with the rate of growth and development in children individually. This is occurred because of the physical

and psychological ripeness which are ready to response the stimulation that is given by the environment.

In other words, it is also the first placement period to develop the cognitive, affective, psychomotoric, language, social-emotional and spiritual ability (Asnimar; 2006: 1). Kindergarten A's students are averagely 4-5 years old. On the psychological development program which is arranged in the five development departments in Kindergarten, the teacher has to use the relevant strategy, model, method, media or learning principals. And also the parents or the adults which are around the children's environments, both in school and home, have to understand the numeracy development strategy for the children, so the children will consider about numeracy in the future.

With the statement above, Atkinson said the survey showed that the lack of mathematics basic in this case- numeracy in children, is caused of practical situation. Hughes saw the numeracy problems with the surprising conclusions, it is discovered that in fact, mathematic's language and the understanding of it are really needed in the home's environment for children. Because, they are actually always used in the daily basis of children life even though with the informal language. That is really important for children's numeracy ability in their life.

For reaching the development of four up to five years old children in cognitive ability, especially in numeracy ability, it should be developed in this period. But in fact, the majority in Srijaya Kindergarten Km 5,5 Palembang which are 17 out of 24 children (70,8%) have the numeracy ability are poor and the motivations also are also low. The students who only get score 73 are only six children (25%). The lack of numeracy in that case are in ordering numbers scope and counting things that are surrounding with the children.

For solving the problems above, five principal from Flavell will answer them. The Flavell's Principal implementation starts with counting things in order with the purpose for children's understanding of "ordinal number" and train the well-ordered of counting which reaching the "cardinal number" ability.

And in the end, the children will mentally understand the ordering and number concept.

Research Question

The problems for this research are:

1. Is it possible for the use of Flavell's Principal in numeracy could increasing the children's motivation for studying in Srijaya Kindergarten Km 5,5 Palembang?
2. Is it possible for the use of Flavell's Principal in numeracy could increasing the numeracy of the children?

Purposes

The purposes of this research are:

- 1) For increasing the children's motivation through the Flavell principal's implemantion in Srijaya Kindergarten Km 5,5 Palembang.
- 2) For increasing the children's numeracy ability through the Flavell principal's implemantion in Srijaya Kindergarten Km 5,5 Palembang.

Benefits

The benefits of this research are:

1. For teachers, giving the alternative learning strategies which could develop the numeracy ability for children.
2. For Kindertartens, used for the new knowledge for the refinement of teaching-learning process.
3. For other researchers, as the source and literature for the other research for getting the better conclusions.

2. Method

This research used the class action research which is purposed for develop the children’s study motivation through the Flavell principal and for increasing the children’s numeracy in Kindergarten Srijaya Palembang.

The variable of this research is the children numeracy using Flavell’s principal. The research’s subjects are students batch 2013/2014 in Class A of Srijaya Kindergarten Km 5,5 Palembang. The 24 students are divided by 14 girls and ten boys.

This research is done by three cycles. On each cycle, there are steps which are occurred 1) the preparation, 2) the implementation, 3) the observation, and 4) the reflection. The explanation of that steps are showed by this chart:

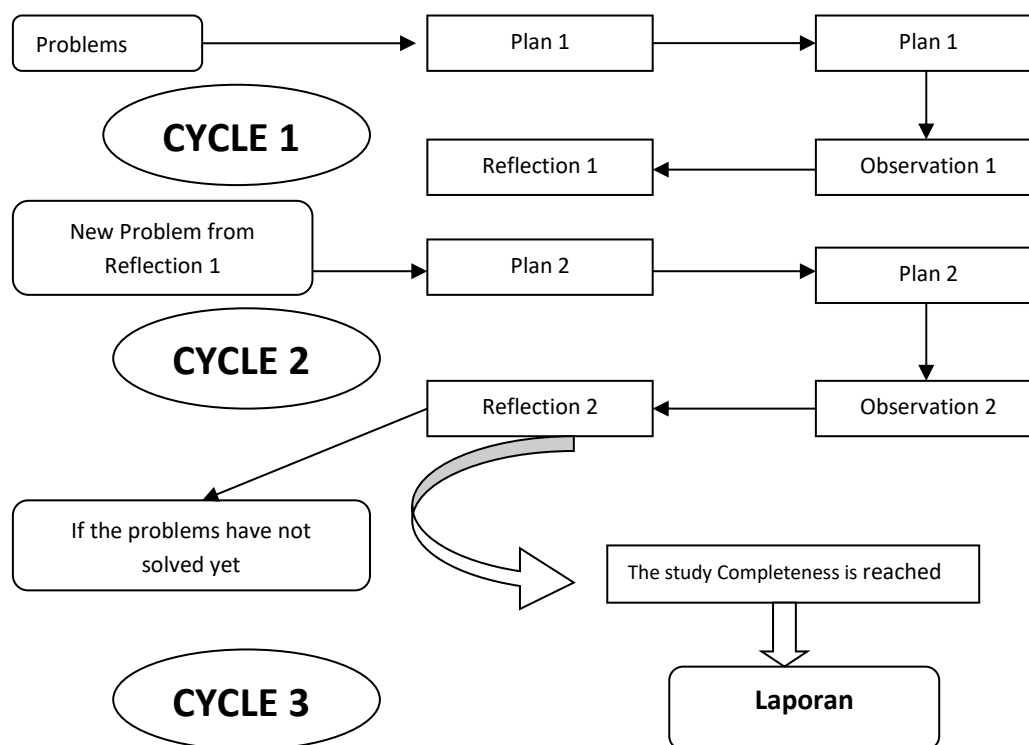


Figure 1. PTK Cycle Steps Chart

Before maintaining the first cycle, the former researchers implemented pre-cycle for take the data which used as the comparison of first cycle data. This pre-cycle is a oral test where the students try the first attempt of counting.

The data collecting technic which is used in this research is test technic and observation. The test technic in this research is both in oral and written. The test which is used in this research consist of beginning test that given at the pre-cycle and last test on each cycle. The beginning test is implemented for knowing the beginning ability of children in numerical. And the last test is for knowing the children ability in counting

Observation is used for knowing the children’s motivation during the learning process-using the Flavell principal. This observation is done by the researcher by documenting the activities which are done by children and teacher during the learning process. The documentation could be videos, photos and observation report.

The data about children ability of numerical are obtained by checking the children’s worksheet. There are steps for analyzing the result data:

- For collecting children numerical data, the scoring is occurred in children workheet for each children worksheets both in written and oral. And also, there are the scoring criterias based on Flavell Principal which are showed in Table 1.

Tabel 1. Scoring Criteria of Numerical

The aspects which are evaluated	Score	Explanation
The one-one Principle	1	Mentioning the numbers 1-10 correctly, less than 5 numbers
	2	Mentioning the order of numbers 1-10 correctly, more than 5 numbers.
	3	Mentioning numbers 1-10 completely.
The Stable-Order Principle	1	Mentioning numbers 1-10 less than half of fluent
	2	Mentioning numbers 1-10 half of fluent
	3	Mentioning numbers 1-10 in order and fluently (neither random nor decreasing counting)
The Cardinal Principle	1	Can’t determine the amount of numbers in the last count
	2	Can count things correctly and determine the amount of numbers without a help.
	3	Can determine the number amount of things independently.
The Abstraction Principle	1	There are no correction or no explanation at all
	2	There is correction but unfinished.
	3	The correction is occurred for seeing the explanation of result and process.
The Order Irrelevance principle	1	Can change the order of numbers 1-10 less than 5 numbers.
	2	Can change the order of numbers 1-10 less more than 5 numbers.
	3	Can change the order of numbers 1-10 less with other things

- Checking the children worksheets which are suited with the answer key that are already made before.
- The final score test is calculated by sum up the score which are collected for each test question and converted it to percentage 0-100. Final test score is calculated by this formula:

$$\text{Final score} = \frac{\text{Collected Score}}{\text{Maximum Score}} \times 100\%$$

- Next, that final score is consulted into Criteria Table. Children’s numerical ability criteria will be determined by the benchmark of children who achieve minimum score 60.

Tabel 1 Criteria of TK Srijaya Students’ Numerical Ability Score

No	Score	Category
1	32 – 45	Very poor
2	46 - 59	Poor
3	60 - 73	Average
4	74 - 87	Good
5	88 - 101	Very good

- After receiving the percentage of success in cycle I, the next thing to do is reflection towards the steps of learning implementation with Flavell principal for increasing the children’s numerical ability.

Observation data analysis is done by counting the amount of children who reach the study motivation which come in each groups. Observation data score is achieved by using likert scale, if one descriptor appears it will be given score 1, if two descriptors appear and then it will be given score 2 and if three descriptors appear then it will be given score 3.

The steps for analyzing the observation data are:

- Make a check mark on observation sheet for each descriptors which appears. The indicators in Observation Sheet are showed on Table 2.

Table 2. Observation Sheet of Students' Study Motivation

Indicator	Descriptor
1. Have the spirit	a. Children come on time Anak datang tepat waktu
	b. Children prepare the stationary and book
	c. Children pay attention on teacher's explanation and answer the teacher's question
2. Have the curiosity	a. Children actively ask during the learning process
	b. Children persist when finishing the task that given by teachers like LKA
	c. Children ask for help in explanation of material which has not already be understood by one group or other child.
3. Have the confidence	a. Children are not anxious during the learning process Siswa tidak gelisah ketika proses pembelajaran berlangsung
	b. Quickly doing the task
	c. Work without any help

- Checking the observation sheet, calculating the received score and converting the score to conversion 0-100. So, the final score will achieve by formula: Memeriksa lembar observasi menghitung skor yang diperoleh dan mengkonversikan skor tersebut ke dalam konversi 0- 100. Sehingga diperoleh skor akhir dengan rumus :

$$motivation\ score = \frac{achieved\ descriptor}{max\ imum\ descriptor} \times 100\%$$

- That score will be converted into qualitative data for determining the students' study motivation category.

Table 3. Students' Study Motivation Criteria Kriteria Motivasi Belajar Siswa

Skor Motivasi	Kategori
87 – 100	Very good
73 – 86	Good
59 – 72	Average
45 – 58	Poor
31 – 44	Very Poor

- Data yang diperoleh dari hasil akhir pada setiap siklus tersebut dianalisis untuk mengetahui adanya peningkatan motivasi belajar anak setelah menggunakan prinsip Flavell. Kriteria peningkatan motivasi, jika anak mencapai skor minimal 73 tergolong kategori baik.

3. Result And Discussion

Before the implementation of cycle I, students' study motivation was in the category "poor" for six children (25%) (score ≥ 73). On the first cycle, the students' study motivation were in the "average" category (score 60) for eight children out of 24 (32%).

On the first cycle, the motivation were still poor, especially in directly responding the task which are given by the teachers and have not gotten use for work in team reaching the learning purposes. On doing the task, the children have not independently worked or had the poor confidence.

Likewise, the information that were given have not been received by the children because of the peculiarity on new condition and lack of basic knowledge. This is caused by the lack of exercise that should be given from the teachers, so in the second cycle the repairment is done towards the action which is the chance for children on task through counting game with using various games tool. The results in second cycle show the students' study motivation increases into "good" category (score ≥ 73) as much as 18 students out of 24 or 72%. These conditions increase again on third cycle as much as 21 students (87,5%) for receiving score ≥ 73 . For further explanation, it can be explained in this table:

Table 4. Study Motivation Enhancement

Steps	Score	Σ Children	Percentage	Criteria
Beginning	≥ 73	6	25 %	Minimum Good
Cycle I	≥ 73	8	33,33 %	Minimum Good
Cycle II	≥ 73	18	75 %	Minimum Good
Cycle III	≥ 73	21	87,5%	Minimum Good

For children’s ability in numeracy, on first cycle reach the mean as 50 with “poor” category as much as 11 children or 44%. The weaknesses on first cycle are: the lack of motivation for studying, the poor curiosity and confidence of children. On counting numbers, there are children who repeatedly name the numbers and skip other numbers, and in the end they couldn’t name the ammount of things which were counted. Hence, this condition is fixed in second cycle by giving the verbal/non verbal strenghten and more various playing activity and more motivation, so it can result the motivation increasing as 18 people (score 70) or 72% and the mean of chidren’s abilidad of numeracy is 66 wit the “avarage” category for 16 students or 64%. The weakness of this cycle is “The abstraction principle and The Order- Irrelevance Principle” where the children are still shy to doing the task that are given by the teachers, so that children can’t tell the difference of countable and uncountable thing like water, sand, and flour. And also, the children haven’t able to represented things that are already counted as the actual symbol of number that they mention before. This problem is fixed in third cycle, by giving the maximum motivation and giving the various game tools, therefore the children can be motivated to doing the task. It is proved in third cycle, for 21 students (87,5%) that are in the “minimum good” category (score ≥ 73) and numerical ability in “minimum average” category (score ≥ 60) for 20 children (83,33%). Thereof, in Srijaya Kindergarten Palembang is suggested to implementing the Flavell principal in counting learning on cognitive development. For further information, it can be seen in this table.

Table 5. Numerical Enhancement

Steps	Score	ΣChildren	Percentage	Category
Beginning	60	7	29,2 %	Minimum average
Cycle I	60	11	45,8 %	Minimum average
Cycle II	60	16	66,7 %	Minimum average
Cycle III	60	20	83,33%	Minimum average

5. Conclusion and Remark

Based on the beginning condition, cycle I, cycle II and cycle III, evidently there are the enhancements for study motivation and children ability of numeracy-step by step that can be seen on the table above.

For the rest of it, it can be avowed that the use of Flavell principal of counting learning can increasing the study motivation and children ability in numeracy. Therefore, the other kindergartens shall use Flavell principal.

Base on that conclusion above, this research is needed to be widen on the other scoupes on higher level and different kindergarten.

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